A Comparison of the Verbal Productions of Normal and Behaviorally Disordered Children Using Interview and Color Book Techniques

Alan L. Muhlestein

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A COMPARISON OF THE VERBAL PRODUCTIONS OF NORMAL AND BEHAVIORALLY DISORDERED CHILDREN USING INTERVIEW AND COLOR BOOK TECHNIQUES

by

Alan L. Muhlestein

A thesis submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE in Psychology

Approved:

UTAH STATE UNIVERSITY
Logan, Utah
1986
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Finally, to Rosanne who selflessly labored to help complete this research and without whose encouragement and companionship this project would have been most difficult, I extend my deepest gratitude.

Alan Muhlestein
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ABSTRACT

A Comparison of the Verbal Productions of Normal and Behaviorally Disordered Children Using Interview and Color Book Techniques

by

Alan L. Muhlestein

Major Professor: Dr. Glendon Casto
Department: Psychology

The purpose of this study was to test the usefulness of The Color Book in facilitating interactions between an interviewer and a child. Interviews employing The Color Book were compared with interviews in which no art materials were used. More specifically, the question of whether the length of utterances, number of emotional words used and statements about self by the subjects differed between groups using The Color Book and interviews without art materials.

Subjects were forty grade school age children attending public schools. Twenty had previously been classified as behaviorally disordered and the other twenty had no such classification. Half of each group was interviewed with The Color Book and the other half was interviewed without art materials. Interviews were conducted by graduate students in Psychology with experience in interviewing techniques.

A twenty minute segment of the audiotaped interview was analyzed for the subject's mean length of utterance, number
of times an emotion word or phrase was used and the number of times the subject used the words "I", "Me", "My" and "Mine". Two-way analysis of variance failed to detect any significant differences in these variables due the effect of the interviewing conditions.
CHAPTER I
INTRODUCTION

Drawing tests have been used as an assessment device for children for a number of years. The Draw-A-Man test has been used since 1926 as a measure of intelligence as well as a projective test (Knopf, 1979). Initially developed as a measure of intelligence, the freehand drawings of a House, Tree, and a Person (H-T-P) have also been widely used as a projective device (Buck, 1948). More recently the Kinetic Family Drawing test was developed to provide information about the family as well as the child (Burns & Kaufman, 1970). Some clinicians have also used drawing as a technique during therapy sessions (Naumburg, 1947; Chapman, 1965).

Koocher and Pedulla (1977) indicate that 68% of their sample of 110 psychiatrists and psychologists involved in child psychotherapy reported art materials as being often or always useful in therapy. Yet, with this apparent utility of art in therapy, there is a relatively small amount of information available in the literature supporting the efficacy of art in facilitating interaction between therapist and child client.

Therapists with minimal experience in child therapy may find difficulty in relating to the child or in eliciting meaningful conversation and therefore need some activity to facilitate communication. Art could be that activity.
It is necessary to conduct studies to test the efficacy of various art materials in therapy settings so that therapists may be better able to choose a technique suitable to the needs of a particular therapy situation and to their level of experience. This could increase the effectiveness of the therapist and ultimately benefit the client. The purpose of the present study was to investigate the use of one art form, The Color Book, to increase the quantity and quality of interaction with children in a clinical setting.

The Color Book is a collection of 32 outlined drawings specially created by a clinical psychologist with extensive experience in child and school psychology. The pages are standard 8 by 11 inch size and are suitable for completion with crayons. The format of The Color Book is similar to commercial coloring books commonly used by children.

The pictures in The Color Book depict children in various day to day activities. Some of the pictures are of children in school settings, and still others show children and adults in family situations. Some pictures have the potential for indicating problems in the lives of children such as problems with school, peers, family, and abuse. The expressions on the faces of the people in some of the pictures are left purposely vague to allow the freedom to color, and talk about, the picture from the child's own life experiences.
Objectives

The objective of this study was to test the usefulness of The Color Book in facilitating interaction between a therapist and a child. Specifically, the research questions were:

1. Is there a significant difference in the mean length of utterance (MLU), measured in morphemes, as spoken by children to an adult in an interview accompanied by the use of The Color Book or in an interview only?

2. Is there a significant difference in the number of times the child uses the words "I", "me", "my" and "mine" between groups using The Color Book and groups using interview only?

3. Is there a significant difference in the number of affective words spoken by children in groups using The Color Book and groups using interview only?

4. Is there a significant difference in the MLU, number of times a child uses the words "I", "me", "my" and "mine", or number of affective words spoken in an interview between groups of normal children and those classified behaviorally disordered by the school system.

One aspect of interaction between a therapist and a child is language. Ivey and Simek-Downing suggest that "words and sentences form the core of most counseling and psychotherapy approaches" (1980, p. 116). To facilitate the measurement of verbal interaction in this study, the interviews were tape recorded and transcribed. From these
transcripts the mean length of utterance for each subject was calculated. An utterance was defined as all the language the subject emitted between two consecutive comments by the interviewer. For example, the interviewer would speak then the subject would speak and the interviewer would speak again. The subject's or the interviewer's turn at speaking was referred to as an utterance. The MLU was calculated in morphemes which are considered to be the smallest linguistic units which have meaning (Fodor, J. A., Bever, T. G., & Garrett, M. F., 1974; Brown, 1970).

Another facet of interaction in therapy is the disclosure of information about oneself. Clients who talk about self and their life experiences may be more likely to benefit from the therapy experience (Carkhuff & Berenson, 1977). "I", "me", "my" and "mine" were chosen as indicators of how much the subject spoke about self during the interview.

The third research question deals with the amount of emotion the subject talks about in the interview. This variable was measured by counting the number of times the subject used a word or phrase that had been identified as conveying emotion. The list of affective words that were counted was taken from a study by James Russell and Doreen Ridgeway (1983). As part of their study, they asked third, fourth, and fifth grade teachers to provide a list of all the emotion terms that the teachers thought their students would know. This list was given to the students who were to write a synonym for the emotion word or phrase if they could
or put a check if they were unable to write a synonym but thought they knew the meaning of the emotional word. The list was thusly paired down to fifty-five words. That list was used in this study and is found in Appendix A. A further discussion of the MLU, morphemes, affective words and the measurement of "I", "me", "my" and "mine" may be found in the Data and Instrumentation section of chapter 3.
Art has been used as a therapeutic device with adults and children for a number of years. Naumburg (1947) presented a series of case studies relating the use of art in the diagnosis and treatment of children. Largely due to her efforts, art therapy has grown into a specialty of its own. Within the realm of art therapy there are two major approaches. One approach is based on the notion that art is therapeutic in and of itself. The other, following the work of Naumburg, uses art as a tool by which the therapist may obtain insights into the client's problems (Rubin, 1980).

An additional purpose for art therapy has been identified by Salant (1975). This form of therapy is preventive as well as therapeutic. Preschool teachers are encouraged to refer children suspected of having emotional problems to the art therapist. The teacher is instrumental in relating peer troubles and home adjustment problems to the therapist. Many of these children reportedly come from homes in which there has been a separation or divorce and the child lives with a single parent. To complete the team the therapist elicits the cooperation of the parent. The parent keeps the therapist up to date about the details in the home. According to Salant (1975), feelings of anger, abandonment, and of being responsible for the separation of the parents are common themes in the art of these children.
Salant (1981) points out that play therapy can be as useful as art therapy and suggests the use of both. In either case, the therapist may do best by letting the child work through her/his problems while offering occasional direction to their attempts to solve problems. Here the art is as beneficial for its therapeutic results as it is for providing information useful in therapy. She sums up the rationale for this approach with, "The successful resolution of these feelings and behaviors is attributed to art therapy as a preventive strategy presented to the child at an early age when it had not yet developed into more severe psychopathology" (Salant, 1980, p. 23).

Remotigue-Ano (1980) reported the use of an artist as a useful third person in working with a child who communicated poorly in therapy. The artist was not involved in the therapy process beyond the point of doing art work with the child outside the therapy sessions. The therapist arranged for the client and the artist to meet prior to each therapy session and make pictures of the characters that were a part of the client's story. Remotigue-Ano (1980) then used the pictures in the therapy sessions to improve communication with the child. The story and the pictures reportedly mirrored the child's anxieties, fears, and anger. As the story progressed the pictures changed to reflect changes in the client.

Remotigue-Ano (1980) suggests that drawings by client, therapist, or artist can facilitate therapy more rapidly than the more conventional approaches. The pictures and
story hold a "hidden agenda" of thoughts and feelings that may be unconscious to the child. As the story unfolds, this information can be used to tailor therapy to the needs of the child. The use of a third person outside the therapy sessions expands the amount of interaction and communication with the child. Remotigue-Ano (1980) suggests that such increases in interaction and communication can increase the effectiveness of therapy.

It seems likely that with some clients and therapists a third person involved in the therapy may be undesirable. In such instances The Color Book could take the place of the artist. Actually, the duties of the artist would have been completed beforehand leaving the pictures to be finished by the child and therapist.

With a modification of the Kinetic Family Drawing (Burns & Kaufman, 1971), Wilkinson (1985) describes his technique of using art in therapy settings. Referred to as "Drawing up Boundaries", this technique involves the therapist having the child draw a picture of her/his family doing something as per the instructions for the Kinetic Family Drawing. Wilkinson focuses his discussion of these drawings around the boundaries that are often present in the picture. He indicates that the child may draw compartments around individuals in the family, group some family members together, or leave still other members out completely. These indications as well as noting which family members are doing something together provides the therapist information
as to the boundaries and alliances at work within the family.

In the second step, Wilkinson (1985) asks the child to draw a picture of the entire family doing something when one family member is ill. His preference in this drawing is to let the child decide who is ill. The main purpose for this second drawing is to gather information about how the child sees boundaries and alliances changing in the face of illness of a family member. Aside from the child's drawings, Wilkinson has the child give an account of the pictures including who the members are and what each is doing. The drawings, the child's account of the drawings and his own interpretation purportedly help Wilkinson arrive at viable hypotheses about the family structure and areas of potential improvement.

Winnicott (1971) provides a book of 21 case studies depicting what he has called the squiggle technique. The child and therapist take turns making a squiggle on paper from which the other draws something. The squiggle is simply an unspecified shape drawn by one of the participants on a blank sheet of paper. The other person then draws a picture incorporating the squiggle. From the discussion of the drawings, communication is developed which purportedly accesses the inner thoughts and feelings of the child (Claman, 1980). This procedure, referred to as "the exploitation of the first interview" (Winnicott, 1971, p. 218), rapidly lays the groundwork for his short term consultation. The technique is not designed for long term
therapy so much as a first interview method of learning about the problems of the client. His numerous case studies provide examples of the technique and his interpretations of the results.

Claman (1980) discusses the use of a modified version of the squiggle technique with 6- to 12-year old children. After the child draws a picture from the therapist’s squiggle he is encouraged to make up a story to go along with the picture. The therapist will then ask a few questions about the story. The two switch and the child ends up asking questions about the therapist’s picture and story. The game will typically continue as long as it is productive and enjoyable. The therapist’s drawings and stories reflect his understanding of the child’s situation as well as present possible solutions. It is also pointed out that a therapist that does not draw well is at no disadvantage in that the child may feel adequate, or even superior, in this respect.

Claman (1980) presents two case studies that provide useful examples of the technique as well as his interpretations of the drawings and stories. The method appears easy to use and beneficial to a therapist working with children. He provides some instructive background information on Winnicott’s squiggle technique and the storytelling method of Gardner (1971) and Kritzberg (1975), from which the squiggle-drawing game was developed.

Claman (1980) has blended the techniques of drawing and storytelling for use in therapy with children. He does,
however, present this method from a psychoanalytic viewpoint. That is, he believes that the pictures and stories represent material that is in the child's unconscious. He suggests that it is necessary for the therapist to take this into consideration to fully understand the pictures and the child. It seems likely that this technique could be useful to clinicians viewing therapy from other theoretical frameworks, a point missing in his writing.

More recently, Gabel (1984) describes another adaptation of Winnicott's squiggle game and the storytelling techniques of Gardner which is referred to as The Draw a Story Game. This technique is very similar to that used by Claman (1980) described above. Gabel starts the game by making a mark on a piece of paper and then instructing the child to use the mark as a starting point to draw a picture. When the drawing is complete, Gabel asks questions such as "What is happening here?", "Who is that?" and "What's going on there?" (1984, p. 188). This process provides him with the opportunity to verbally interact with the child and is used whenever it is deemed to be beneficial.

Gabel (1984) points out that when it is his turn to draw he begins with a squiggle the child has made. He often draws a similar picture to the one drawn by the child, adding minimally to the picture. This allows the child to unfold the story through pictures rather than being led by the adult. He also includes a case study with pictures to help demonstrate this technique.
A somewhat different use of art materials in psychotherapy is discussed by Patalano (1980). This technique incorporates crayons and coloring books into the assessment or therapeutic session. He suggests that the more structured format of coloring books may be less threatening than the relatively unstructured format of human figure drawings. He indicates that color books may be "...particularly useful in working with shy, withdrawn, resistant or unimaginative children who find it difficult to engage in free drawings and play in the therapeutic situation" (Patalano, 1980, p. 114).

He goes on to indicate that it is often useful to ask the child to make up a story about what is going on in the picture. This storytelling may take place while the child is coloring or after the picture is completed. He further suggests that instructions similar to those given with the Thematic Apperception Test (Murray, 1943) or the Children's Apperception Test (Bellak & Bellak, 1952) may be used. That is, the child is asked to make up a story about the picture including what is happening in the picture, what events led up to the situation, what the figures of individuals in the picture may be thinking and finally, the outcome of the situation (Patalano, 1980).

Patalano (1980), presents his technique rather briefly and without the benefit of case studies. Rather, he merely suggests how the procedure can be used but provides no support for his claims of the utility of this technique.
With all their variations of background, technique, and intention, these writings share one important point. With the exception of Patalano (1980), they all use case studies to support whatever claims they may make. Studies of the efficacy of art in therapy appear to be limited to this type. The large number of case studies, however, suggests that a number of people have found art to be useful with children in a therapy setting.

These case studies suggest that art may have value in a variety of therapy settings with children. It can be used as therapy itself or as a means of releasing deep seated feelings in the child. It is often used simultaneously for both purposes. It appears to be useful as a means to facilitate interaction between child and therapist.

It is necessary in therapy to build rapport with the client to enhance the quality interaction from which the client improves. This is not always easy to do with children. Salant (1975, 1980, 1981) found art useful with preschool age clients and Claman (1980) made use of a drawing and storytelling technique with older children. The Color Book may be equally useful in similar situations. Coloring is a familiar activity enjoyed by many children from preschool through gradeschool ages. The Color Book could provide an easy to use and effective link between child and therapist.

Winnicott (1971) used drawings more as a means of assessment than as a therapeutic tool. The Color Book could be used in this fashion as well. By encouraging the child
to talk about the pictures, vital information could be gained while at the same time building rapport. The Color Book could become a versatile aid in therapy settings. The purpose of this study was to investigate the utility of The Color Book in facilitating interaction with children in a clinical setting. The objective of this investigation was to determine if The Color Book is more effective in building rapport and facilitating interaction than an interview alone.
Subjects were grade school age children attending public school in Granite School District, Salt Lake City, Utah. Twenty subjects who had previously been classified as behaviorally disordered and an additional twenty normal subjects were drawn from a population of students attending classes in grades kindergarten through sixth. Only students whose parents returned a signed consent form were included in the study. Subjects for the behaviorally disordered group were the twenty behaviorally disordered students who met the above criteria. Normal subjects were matched to the sample of behaviorally disordered subjects on age and sex. The sample consisted of 36 males and 4 females. A description of the sample according to behavioral classification, gender, age, grade placement and interviewing condition may be found in Table 1 below.

All behaviorally disordered subjects were randomly assigned to one of two groups, one using The Color Book and a second group using interview alone. The matched normal subject was then assigned to the opposite group, either Color Book or interview only. The design is shown graphically in Table 2 below.
Table 1

Description of Sample According to Behavioral Classification, Gender, Age, Grade Placement and Interview Condition (Int.)*.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age (Yr-Mo)</th>
<th>Grade</th>
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<td>K</td>
<td>I.O.</td>
<td>Male</td>
<td>5-10</td>
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<td>C.B.</td>
<td>Male</td>
<td>7-2</td>
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<tr>
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<td>I.O.</td>
<td>Male</td>
<td>6-9</td>
<td>K</td>
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<td>C.B.</td>
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<td>Male</td>
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<td>12-2</td>
<td>6</td>
<td>I.O.</td>
<td>Male</td>
<td>12-1</td>
<td>6</td>
<td>C.B.</td>
</tr>
<tr>
<td>Male</td>
<td>11-9</td>
<td>6</td>
<td>C.B.</td>
<td>Male</td>
<td>12-0</td>
<td>6</td>
<td>I.O.</td>
</tr>
<tr>
<td>Male</td>
<td>12-1</td>
<td>6</td>
<td>I.O.</td>
<td>Male</td>
<td>11-4</td>
<td>6</td>
<td>C.B.</td>
</tr>
<tr>
<td>Female</td>
<td>11-5</td>
<td>6</td>
<td>C.B.</td>
<td>Female</td>
<td>11-3</td>
<td>6</td>
<td>I.O.</td>
</tr>
</tbody>
</table>

* I.O. = Interview only. C.B. = Interview with Color Book.

Table 2

Treatment Groups

<table>
<thead>
<tr>
<th>The Color Book</th>
<th>Interview only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviorally Disordered N=10</td>
<td>N=10</td>
</tr>
<tr>
<td>Normal N=10</td>
<td>N=10</td>
</tr>
</tbody>
</table>
Design

The interview rooms were equipped with a table and chairs suitable in size for the subjects to work at comfortably. Uncolored pictures and crayons were provided to the interviewer by the experimenter or assistant prior to the interview. Each subject was met at the classroom by the experimenter or an assistant and accompanied to the interview room. The assistant during this phase of the study was a male undergraduate student who received independent study credit from the Department of Psychology, at Utah State University. The subject was introduced to and left with the interviewer. The interviewer, then, turned on the tape recorder and either began the interview or introduced a picture from The Color Book to the subject.

For interviews employing The Color Book, the interviewer colored a copy of the same picture the subject colored. While the subject was coloring, the interviewer encouraged the subject to talk about the picture by asking the questions "What is happening in your picture?", "Who might these people be?", "Have you ever done anything like that?" or "Has anything like that ever happened to you?" and "How does/did it turn out?" (see appendix B). Each subject using The Color Book colored two pictures during the session, each taking approximately 15 minutes time in interview. All subjects in The Color Book group colored copies of the same two pictures.
For the interview only group, the interviewer started the recorder and began the session by engaging the subject in conversation. The interviewer encouraged the subject to talk about friends, school, and especially, family and self. Questions were standardized across the interviewers. The interviewer began with "Tell me about school." If the child talked freely the interviewer was attentive and responsive to the child's comments. If the child provided minimal response to the question, the interviewer would then ask more specific questions, such as "What is the best thing about school?" (see appendix B). Interviewers became familiar with the standardized questions prior to interviewing the subjects.

The experimenter or assistant kept time during the interview. After approximately thirty minutes had elapsed from the beginning of the interview, the experimenter or assistant quietly entered the room to signal the end of the interview. The interviewer thanked the subject and offered him/her four or five M & M candies. The experimenter or assistant accompanied the subject back to the classroom. The candies were consumed by the subjects during the walk back to their classrooms. The experimenter or assistant then met the next subject at the classroom and accompanied the subject to the interview room and the process began again.

While waiting for the next subject, the interviewer would label the pictures and/or tape from the previous session and prepare the tape and Color Book materials as
needed for the next session. All sessions were recorded in their entirety on audio cassette tape recorders provided by the experimenter or interviewer.

Interviewers were graduate students in counseling or clinical psychology who had been trained in interview techniques. Each interviewer interviewed both the subject from the behaviorally disordered group and the matched subject from the normal group. This was the case for both The Color Book and interview only groups. Each interviewer interviewed an equal number of subjects with The Color Book and with interview alone. The interviewers were not told by either the experimenter or assistant whether or not the subjects were classified behaviorally disordered.

Interviewer training was conducted in one session. During the training session the interviewers became familiar with the procedure for the interviewing, the materials, and the questions to be used in the interview. Interviewers were given a copy of Appendix B: Instructions for Interviewers to further aid in their preparation for the interviews. At the end of the training session the three interviewers agreed that they understood the procedure to be used.

Data and Instrumentation

Independent Variables

The independent variables in this study are interview with the use of The Color Book and interview alone. Half of each group, behaviorally disordered and normal subjects, was
interviewed with The Color Book and the other half was interviewed without any art materials. Effects due to interviewer differences were controlled for by having each interviewer interview an equal number of subjects in each of the groups.

**Dependent Variables**

The tape recordings of the interviews were transcribed and typed by the experimenter or an assistant who had previous experience in typing transcripts from audio tape recordings. The assistant was unaware of the nature of the dependent variables to be measured. All dependent variables in this study were measured from a twenty minute segment of the transcripts of the interviews. The 20 minute segment was timed from the point directly after the interviewer said either "I would like you to color some pictures for me today" or "I would like to talk with you today" (See Appendix B).

**Subject variables.** The first dependent measure in this study was the mean length of utterance (MLU) for the subject during the first 20 minutes of the interview session. An utterance is defined as all the speaking done by either the subject or the interviewer between two consecutive, separate vocalizations by the other. That is, if the interviewer speaks then the subject speaks and the interviewer speaks again, the utterance for the subject would be all that was said by the subject between the two vocalizations by the interviewer. The length of the utterance was measured in
morphemes which are basic language units. Fodor, et. al. consider a morpheme to be the "...minimal linguistic unit having a meaning" (1974, p. 41). Counting morphemes, then, amounts to counting language components at a very basic level. It also provides an accurate and precise method with which to measure the subject's verbal production during the 20 minute segment of the interview.

The morphemes were counted by the experimenter or a second undergraduate assistant. The assistant was, at the time the morphemes were counted, attending classes in communicative disorders in which the subject of morphemes had been studied. The assistant was knowledgeable concerning the counting of morphemes and required little training. The assistant was given a list of rules for counting morphemes that was being used by the experimenter (See Appendix C). Spot checks by the experimenter indicated that the assistant and the experimenter were counting morphemes in the same way. The undergraduate assistant received credit for independent research through the Department of Psychology, Utah State University.

Once the number of morphemes per each utterance was counted the MLU was calculated. The total number of morphemes uttered by the subject during the 20 minute measurement period was divided by the number of utterances, yielding the MLU. These calculations were done by the experimenter.

The number of times the subject used the words "I", "me", "my" and "mine" during the 20 minute measurement
period was the second dependent variable in this study. It is desirable in an interview or in therapy for the interviewee to talk about feelings and pertinent life experiences. "I", "me", "my" and "mine" were counted as a means of determining how much the subjects spoke about themselves during the interview.

This variable was counted by the experimenter or the assistant mentioned above. The value of this variable was the total number of occurrences within the 20 minute measurement period.

The third dependent variable was the number of times an affective word was used by the subject during the same 20 time period. The list of affective words that were counted in this study was taken from a study by James Russell and Doreen Ridgeway (1983). To create a sample of emotion words Russell and Ridgeway asked third, fourth, and fifth grade teachers to provide a list of all the emotion terms they thought their students would know. This list was given to the students who were instructed to write a synonym for the emotion word or phrase if they could. If they were unable to write a synonym but thought they knew the meaning of the emotional word they were to put a check mark. The list was paired down to fifty-five words by including those words better known to the students (e.g. a check or a synonym). This list of affective terms and phrases was employed by Russell and Ridgeway in their study, and used in this study because it represents a wide range of emotions, both
positive and negative. The list of affective words to be counted may be found in Appendix A.

The third variable in this study was measured by the experimenter. The transcripts were read through and emotion words or phrases were checked for presence on the list. Only emotion words or phrases indicating that the subject was feeling or had felt the emotion were included. For example, if the subject said "I was really mad", then "mad" was counted. If the subject said "My sister was mad at me", "mad" was not counted. The value of this variable used in analysis was the total number of times an affective word or phrase from the list was used by the subject during the 20 minute measurement period.

Interviewer variables. Two additional measurements were taken to determine the extent to which interviewers interacted differentially across the groups. Specifically, the MLU for the interviewers and the number of times the interviewer asked for emotion from the subjects were measured. The MLU for the interviewers was measured by the experimenter and the same assistant who measured the MLU for the subjects. Measurements and calculations were completed using the same procedure that was used to measure the MLU for subjects. This variable was measured simply to determine if the interviewers spoke more or less to one group or another.

The number of times the interviewers asked for emotion was counted by the experimenter. Examples of the interviewer asking for emotion are "How did you feel about
that?" and "How did that make you feel?" This measurement was completed to help determine that any differences in the number of affective words that may have been found in the subject groups was not attributable to interviewer differences.

Analysis

Analysis of variance was used to test the hypotheses of no difference in the utility of interview alone or interview accompanied with The Color Book in facilitating interaction between a therapist and a child. Specifically, null hypotheses were:

1. There is no difference in the mean length of utterance (MLU), measured in morphemes, spoken by children to an adult in an interview accompanied by the use of The Color Book or in an interview only.

2. There is no difference in the number of times the child used the words "I", "me", "my" and "mine" between groups using The Color Book and groups using interview only.

3. There is no difference in the number of times affective words were spoken by children in groups using The Color Book and groups using interview only.

A 2 by 2 analysis of variance of treatment (Color Book or interview only) by classification (behaviorally disordered or normal) was used in all statistical tests in this study. The significance level for all F-tests of statistical significance was set at $p = 0.05$. 
Analysis of variance was employed to test the hypotheses of no difference in the MLU, use of "I", "me", "my" and "mine", or number of affective words used between normal and behaviorally disordered subjects. This analysis was completed for the following conditions:

1. Normal versus behaviorally disordered using interview only.


3. Normal versus behaviorally disordered using either interview only or The Color Book.

Analysis of variance was also used to detect interviewer bias by determining if the interviewers interacted differentially across the groups. First, the hypothesis of no difference in interviewer MLU between groups using The Color Book and interview only was tested. The hypothesis of no difference in the number of times the interviewer asked for emotion from the subjects was also tested.
Two by two analyses of variance were used to test the null hypotheses presented in previous chapter. The first hypothesis tested was that of no difference in the mean length of utterance (MLU), measured in morphemes, spoken by children to an adult in an interview accompanied by the use of The Color Book or in an interview alone. Analysis of variance failed to detect any significant differences in the MLU for subjects due to interview condition, behavioral classification or interaction effects. Cell means may be found in Table 3 and analysis of variance summary table is located in Table 4.

Table 3
Cell Means and Standard Deviations for the Length of Utterance in Morphemes for Subjects Under Color Book and Interview Only Conditions, and Behaviorally Disordered and Normal Classification. N = 10 per cell.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Behaviorally Disordered</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview Conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color Book</td>
<td>Mean = 12.13</td>
<td>Mean = 8.95</td>
</tr>
<tr>
<td></td>
<td>S.D. = 4.76</td>
<td>S.D. = 3.04</td>
</tr>
<tr>
<td>Interview Only</td>
<td>Mean = 10.69</td>
<td>Mean = 10.35</td>
</tr>
<tr>
<td></td>
<td>S.D. = 4.04</td>
<td>S.D. = 4.46</td>
</tr>
</tbody>
</table>
Table 4  
**Two-Way Analysis of Variance Comparing Color Book and Interview Only Treatment Conditions and Behaviorally Disordered and Normal Classifications for the Mean Length of Utterance for Subjects.**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>0.003</td>
<td>1</td>
<td>0.003</td>
<td>0.201E-03</td>
<td>0.989</td>
</tr>
<tr>
<td>Behavior</td>
<td>30.994</td>
<td>1</td>
<td>30.994</td>
<td>1.820</td>
<td>0.186</td>
</tr>
<tr>
<td>2-Way Interactions</td>
<td>19.980</td>
<td>1</td>
<td>19.980</td>
<td>1.173</td>
<td>0.286</td>
</tr>
<tr>
<td>Explained</td>
<td>50.977</td>
<td>3</td>
<td>16.992</td>
<td>0.998</td>
<td>0.405</td>
</tr>
<tr>
<td>Residual</td>
<td>612.985</td>
<td>36</td>
<td>17.027</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The hypothesis of no difference in the number of times the subject used the words "I", "me", "my" and "mine" between groups using The Color Book and groups using interview only was also tested with analysis of variance. No significant differences were detected due to interview conditions or interaction effects. See Table 5 for cell means and Table 6 for a summary table for the analysis of variance.

There was however, a significant difference detected in the number of times subjects used "I", "me", "my" or "mine" as an effect of behavioral classification. That is, the behaviorally disordered group, both Color Book and interview only, used "I", "me", "my" or "mine" significantly more than the normal group (F = 7.04, p < 0.02, see Table 6).
**Table 5**

Cell Means and Standard Deviations for the Number of Times the Words "I", "Me", "My" and "Mine" were Spoken by Subjects Under Color Book and Interview Only Conditions and Behaviorally Disordered and Normal Classifications. N = 10 per cell.

<table>
<thead>
<tr>
<th>Interview Conditions</th>
<th>Behaviorally Disordered</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Book</td>
<td>Mean = 103.70</td>
<td>Mean = 53.20</td>
</tr>
<tr>
<td></td>
<td>S.D. = 50.37</td>
<td>S.D. = 29.73</td>
</tr>
<tr>
<td>Interview Only</td>
<td>Mean = 105.80</td>
<td>Mean = 88.80</td>
</tr>
<tr>
<td></td>
<td>S.D. = 40.18</td>
<td>S.D. = 37.94</td>
</tr>
</tbody>
</table>

**Table 6**

Two-Way Analysis of Variance Comparing Color Book and Interview Only Treatment Conditions and Behaviorally Disordered and Normal Classifications for the Number of Times the Words "I", "Me", "My" and "Mine" were used by Subjects.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum Of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>3553.225</td>
<td>1</td>
<td>3553.225</td>
<td>2.195</td>
<td>0.147</td>
</tr>
<tr>
<td>Behavior</td>
<td>11390.625</td>
<td>1</td>
<td>11390.625</td>
<td>7.037</td>
<td>0.012</td>
</tr>
<tr>
<td>2-Way Interactions</td>
<td>2805.625</td>
<td>1</td>
<td>2805.625</td>
<td>1.733</td>
<td>0.196</td>
</tr>
<tr>
<td>Explained</td>
<td>17749.475</td>
<td>3</td>
<td>5916.492</td>
<td>3.655</td>
<td>0.021</td>
</tr>
<tr>
<td>Residual</td>
<td>58268.900</td>
<td>36</td>
<td>1618.581</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Analysis of variance was also used to test the hypothesis of no difference in the number of times affective words were spoken by children in groups using The Color Book and groups using interview only. No significant differences in the number of affective words spoken by subjects due to interview conditions, behavioral classification or interaction effects were detected. Cell means are shown in Table 7 and analysis of variance summary table may be found in Table 8.

Table 7
Cell Means and Standard Deviations for the Number of Affective Words Spoken by Subjects Under Color Book and Interview Only Conditions and Behaviorally Disordered and Normal Classifications. N = 10 per cell.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Color Book</th>
<th>Interview Only</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean = 1.60</td>
<td>Mean = 1.10</td>
</tr>
<tr>
<td></td>
<td>S.D. = 2.07</td>
<td>S.D. = 2.13</td>
</tr>
<tr>
<td>Behaviorally Disordered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>Mean = 0.80</td>
<td>Mean = 1.55</td>
</tr>
<tr>
<td></td>
<td>S.D. = 2.18</td>
<td>S.D. = 1.55</td>
</tr>
</tbody>
</table>

To help detect effects due to interviewer bias, analysis of variance was used to test the hypothesis of no difference in interviewer MLU between groups using The Color Book and groups using interview only. There were no significant differences found in the MLU for interviewers due to interview conditions or interaction effects. The
interviewers did not speak significantly more or less to The Color Book group than to the interview only group.

Table 8

Two-Way Analysis of Variance Comparing Color Book and Interview Only Treatment Conditions and Behaviorally Disordered and Normal Classifications for the Number of Affective Words Spoken by Subjects.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>1.600</td>
<td>1</td>
<td>1.600</td>
<td>0.401</td>
<td>0.531</td>
</tr>
<tr>
<td>Behavior</td>
<td>1.600</td>
<td>1</td>
<td>1.600</td>
<td>0.401</td>
<td>0.531</td>
</tr>
<tr>
<td>2-Way Interactions</td>
<td>0.100</td>
<td>1</td>
<td>0.100</td>
<td>0.250E-01</td>
<td>0.875</td>
</tr>
<tr>
<td>Explained</td>
<td>3.300</td>
<td>3</td>
<td>1.100</td>
<td>0.275</td>
<td>0.843</td>
</tr>
<tr>
<td>Residual</td>
<td>143.800</td>
<td>36</td>
<td>3.994</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There was a significant difference in the MLU for interviewers across behavioral classification groups. The MLU for interviewers was lower with the behaviorally disordered group than it was with the normal group (F = 6.36, p < 0.02). Cell means and the analysis of variance summary table may be found in Tables 9 and 10.

The hypothesis of no difference in the number of times interviewers asked for emotion between groups using The Color Book and groups using interview only was likewise tested with analysis of variance. No significant differences in the number of times interviewers asked for emotion from the subjects were detected due to interview
Table 9

Cell Means and Standard Deviations for the Length of Utterance in Morphemes for Interviewers Under Color Book and Interview Only Conditions and Behaviorally Disordered and Normal Classifications. N = 10 per cell.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Behaviorally Disordered</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview Conditions</td>
<td>Mean = 8.84</td>
<td>Mean = 10.40</td>
</tr>
<tr>
<td></td>
<td>S.D. = 1.60</td>
<td>S.D. = 1.80</td>
</tr>
<tr>
<td>Color Book</td>
<td>Mean = 8.53</td>
<td>Mean = 9.60</td>
</tr>
<tr>
<td></td>
<td>S.D. = 1.29</td>
<td>S.D. = 1.85</td>
</tr>
</tbody>
</table>

Table 10

Two-Way Analysis of Variance Comparing Color Book and Interview Only Treatment Conditions and Behaviorally Disordered and Normal Classifications for the Mean Length of Utterance for Interviewers.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>3.020</td>
<td>1</td>
<td>3.020</td>
<td>1.109</td>
<td>0.299</td>
</tr>
<tr>
<td>Behavior</td>
<td>17.305</td>
<td>1</td>
<td>17.305</td>
<td>6.357</td>
<td>0.016</td>
</tr>
<tr>
<td>2-Way Interactions</td>
<td>0.593</td>
<td>1</td>
<td>0.593</td>
<td>0.218</td>
<td>0.644</td>
</tr>
<tr>
<td>Explained</td>
<td>20.918</td>
<td>3</td>
<td>6.973</td>
<td>2.561</td>
<td>0.070</td>
</tr>
<tr>
<td>Residual</td>
<td>98.007</td>
<td>36</td>
<td>2.722</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
conditions, behavioral classification or interaction effects. See Tables 11 and 12 for cell means and analysis of variance summary tables.

Table 11

**Cell Means and Standard Deviations for the Number of Times Interviewers Asked for Emotion from Subjects Under Color Book and Interview Only Conditions and Behaviorally Disordered and Normal Classifications. N = 10 per cell.**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Behaviorally Disordered</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview Conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color Book</td>
<td>Mean = 1.30</td>
<td>Mean = 0.90</td>
</tr>
<tr>
<td></td>
<td>S.D. = 1.83</td>
<td>S.D. = 1.91</td>
</tr>
<tr>
<td>Interview Only</td>
<td>Mean = 1.10</td>
<td>Mean = 2.20</td>
</tr>
<tr>
<td></td>
<td>S.D. = 2.42</td>
<td>S.D. = 3.29</td>
</tr>
</tbody>
</table>

To further determine the extent interviewer bias may have influenced the results, cell means and standard deviations were calculated by interviewer for each of the subject variables and may be found in Tables 13, 14 and 15.

It should be noted that the number of subjects per cell when analyzed by interviewer is very small. For interviewer II, there is only one subject per cell for the behaviorally disordered with interview only group and for the normal with The Color Book group. In light of this, further analysis was limited to comparison of the means of interviewers I and III.
Table 12

**Two-Way Analysis of Variance Comparing Color Book and Interview Only Treatment Conditions and Behaviorally Disordered and Normal Classifications for the Number of Times Interviewers Asked for Emotion from Subjects.**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>3.025</td>
<td>1</td>
<td>3.025</td>
<td>0.510</td>
<td>0.480</td>
</tr>
<tr>
<td>Behavior</td>
<td>1.225</td>
<td>1</td>
<td>1.225</td>
<td>0.207</td>
<td>0.652</td>
</tr>
<tr>
<td>2-Way Interactions</td>
<td>5.625</td>
<td>1</td>
<td>5.625</td>
<td>0.948</td>
<td>3.337</td>
</tr>
<tr>
<td>Explained</td>
<td>9.875</td>
<td>3</td>
<td>3.292</td>
<td>0.555</td>
<td>0.648</td>
</tr>
<tr>
<td>Residual</td>
<td>213.500</td>
<td>36</td>
<td>5.931</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bearing in mind that inferences from the results of statistical tests using data from such small and unequally numbered groups of subjects may be risky, t-tests were performed for the cell means for interviewers I and III. In all, five comparisons of cell means differed significantly from what was expected by chance.

The first significant difference between cell means was found in the comparison of mean number of times subjects use "I", "me", "my" and "mine" between interviewers I and III with the behaviorally disordered group using interview only (t = 2.86, p < 0.05. A look at Table 13 indicates that subjects interviewed by interviewer I (Mean = 129.00) used the self reference words more than subjects interviewed by interviewer III (Mean = 68.80).
Table 13

**Cell Means and Standard Deviations by Interviewer for the Length of Utterance in Morphemes for Subjects Under Color Book and Interview Only Conditions and Behaviorally Disordered and Normal Classifications.**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Behaviorally Disordered</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interview Conditions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Color Book</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interviewer I</td>
<td>M = 10.87</td>
<td>M = 9.62</td>
</tr>
<tr>
<td></td>
<td>S = 1.36</td>
<td>S = 4.70</td>
</tr>
<tr>
<td></td>
<td>N = 2</td>
<td>N = 2</td>
</tr>
<tr>
<td>Interviewer II</td>
<td>M = 16.94</td>
<td>M = 3.79</td>
</tr>
<tr>
<td></td>
<td>S = 3.41</td>
<td>S = ---</td>
</tr>
<tr>
<td></td>
<td>N = 3</td>
<td>N = 1</td>
</tr>
<tr>
<td>Interviewer III</td>
<td>M = 9.74</td>
<td>M = 9.50</td>
</tr>
<tr>
<td></td>
<td>S = 4.40</td>
<td>S = 2.29</td>
</tr>
<tr>
<td></td>
<td>N = 5</td>
<td>N = 7</td>
</tr>
</tbody>
</table>

| **Interview Only** | | |
| Interviewer I | M = 11.34 | M = 10.19 |
| | S = 0.42 | S = 0.91 |
| | N = 2 | N = 2 |
| Interviewer II | M = 5.74 | M = 14.37 |
| | S = --- | S = 3.38 |
| | N = 1 | N = 3 |
| Interviewer III | M = 11.22 | M = 8.00 |
| | S = 4.46 | S = 4.45 |
| | N = 7 | N = 5 |

All four comparisons of cell means for the number of times subjects used affective words differed significantly between interviewers I and III. Subjects interviewed by interviewer I used more affective words in all four comparisons than subjects interviewed by interviewer III.
Table 14

Cell Means and Standard Deviations by Interviewer for the Number of Times the Words "I", "me", "my" and "mine" were Spoken by Subjects Under Color Book and Interview Only Conditions and Behaviorally Disordered and Normal Classifications.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Behaviorally Disordered</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Color Book</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interviewer I</td>
<td>M = 129.00</td>
<td>M = 64.00</td>
</tr>
<tr>
<td></td>
<td>S = 16.97</td>
<td>S = 49.50</td>
</tr>
<tr>
<td></td>
<td>N = 2</td>
<td>N = 2</td>
</tr>
<tr>
<td>Interviewer II</td>
<td>M = 150.00</td>
<td>M = 41.00</td>
</tr>
<tr>
<td></td>
<td>S = 47.15</td>
<td>S = ----</td>
</tr>
<tr>
<td></td>
<td>N = 3</td>
<td>N = 1</td>
</tr>
<tr>
<td>Interviewer III</td>
<td>M = 65.80</td>
<td>M = 51.86</td>
</tr>
<tr>
<td></td>
<td>S = 28.30</td>
<td>S = 29.18</td>
</tr>
<tr>
<td></td>
<td>N = 5</td>
<td>N = 7</td>
</tr>
<tr>
<td><strong>Interview Only</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interviewer I</td>
<td>M = 134.00</td>
<td>M = 91.50</td>
</tr>
<tr>
<td></td>
<td>S = 7.07</td>
<td>S = 4.95</td>
</tr>
<tr>
<td></td>
<td>N = 2</td>
<td>N = 2</td>
</tr>
<tr>
<td>Interviewer II</td>
<td>M = 81.00</td>
<td>M = 117.00</td>
</tr>
<tr>
<td></td>
<td>S = ----</td>
<td>S = 3.46</td>
</tr>
<tr>
<td></td>
<td>N = 1</td>
<td>N = 3</td>
</tr>
<tr>
<td>Interviewer III</td>
<td>M = 101.29</td>
<td>M = 70.80</td>
</tr>
<tr>
<td></td>
<td>S = 44.97</td>
<td>S = 47.13</td>
</tr>
<tr>
<td></td>
<td>N = 7</td>
<td>N = 5</td>
</tr>
</tbody>
</table>

This could indicate that the number of affective words used by subjects in this study may have been influenced by the interviewers. See Table 16 below for mean differences, t-scores and probability levels.
Table 15

Cell Means and Standard Deviations by Interviewer for the Number of Affective Words Spoken by Subjects Under Color Book and Interview Only Conditions and Behaviorally Disordered and Normal Classifications.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Interview Conditions</th>
<th>Behaviorally Disordered</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Color Book</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interviewer I</td>
<td>M = 4.00</td>
<td>M = 2.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S = 1.41</td>
<td>S = 2.83</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N = 2</td>
<td>N = 2</td>
</tr>
<tr>
<td></td>
<td>Interviewer II</td>
<td>M = 2.00</td>
<td>M = 6.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S = 2.65</td>
<td>S =</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N = 3</td>
<td>N = 1</td>
</tr>
<tr>
<td></td>
<td>Interviewer III</td>
<td>M = 0.40</td>
<td>M = 0.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S = 0.89</td>
<td>S = 0.38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N = 5</td>
<td>N = 7</td>
</tr>
<tr>
<td></td>
<td>Interview Only</td>
<td>M = 4.50</td>
<td>M = 3.00</td>
</tr>
<tr>
<td></td>
<td>Interviewer I</td>
<td>S = 3.54</td>
<td>S = 2.83</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N = 2</td>
<td>N = 2</td>
</tr>
<tr>
<td></td>
<td>Interviewer II</td>
<td>M = 1.00</td>
<td>M = 0.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S =</td>
<td>S = 0.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N = 1</td>
<td>N = 3</td>
</tr>
<tr>
<td></td>
<td>Interviewer III</td>
<td>M = 0.14</td>
<td>M = 0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S = 0.38</td>
<td>S = 0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N = 7</td>
<td>N = 5</td>
</tr>
</tbody>
</table>
Table 16

Mean Differences, t-Scores and Probability Levels for Cell Mean Comparisons Between Interviewers I and III for the Number of Affective Words Spoken by Subjects.

<table>
<thead>
<tr>
<th>Interview Conditions</th>
<th>Behaviorally Disordered</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Book</td>
<td>Mean Diff = 3.60</td>
<td>Mean Diff = 1.86</td>
</tr>
<tr>
<td></td>
<td>t = 4.24</td>
<td>t = 2.07</td>
</tr>
<tr>
<td></td>
<td>P &lt; 0.01</td>
<td>P &lt; 0.05</td>
</tr>
<tr>
<td>Interview Only</td>
<td>Mean Diff = 4.36</td>
<td>Mean Diff = 3.00</td>
</tr>
<tr>
<td></td>
<td>t = 3.93</td>
<td>t = 2.83</td>
</tr>
<tr>
<td></td>
<td>P &lt; 0.01</td>
<td>P &lt; 0.05</td>
</tr>
</tbody>
</table>
Several factors may have contributed to the finding of no difference in the subject variables between groups using The Color Book and groups using interview only. One possible explanation for no significant differences detected between groups using The Color Book and interview only may be the small sample size. Ten subjects per cell is a rather small sample which would necessitate large differences to be significant. There were some differences in the means of the groups that may have proved significant had the sample size been larger. One example is the difference in the number of affective words used by the subjects. When comparing the group using The Color Book with the interview only group, The Color Book group used more affective words (M = 1.35) than the interview only group (M = 0.95).

Other factors possibly influencing statistical testing of The Color Book were the length of the interview, the number of pictures used and which pictures were used. The length of the interview may have influenced how much verbal interaction the subject and the interviewer had. Some subjects had not completed coloring their picture when they were asked by the interviewer to color the second picture. This complied with the instructions the interviewer received. That is, they were told by the experimenter to have the subject color at least some on both pictures prior to terminating the interview. The interruption of the
coloring by a subject who was not finished likely had a constricting effect on the conversation taking place at that time.

In contrast to the subjects who did not finish coloring their pictures are those who completed both pictures before the interview was terminated. This presented no serious problems as the interviews simply continued without the use of art materials. Some explanations for the subjects completing the pictures early may have been variances in the speed with which the subjects colored, subjects purposely hurrying to finish coloring the pictures or disinterest in the coloring itself. For those subjects who completed the coloring rapidly another picture could have been provided, possibly leading to increased verbal interaction with the interviewer.

One way in which early completion of the coloring may have impacted the results of this experiment is that, in such cases, the effect of The Color Book may have been diluted. The interviewers were only given copies of two pictures and were given no specific instructions of what to do if the subject finished early. Transcripts of the remainder of these interviews often showed similarities to the transcripts of the interview only condition. This problem may have been eliminated by the interviewers having additional pictures to present to the subject as needed.

The question of which pictures to have a child color in an interview has many facets. The Color Book is a collection of 32 outlined drawings from which only two were
employed in this study. In actual employment of The Color Book in an interview by a therapist or diagnostician the child could be allowed to browse through the book, selecting the picture(s) to color. This could have advantages as an initial rapport building device. First of all, many children who color in commercial coloring books follow this procedure. They simply look through the book until they find a picture that catches their eye and begin coloring. In the unfamiliar surroundings of an interview room this routine could help the child relax and feel more comfortable.

Secondly, children may be more likely to talk about a picture they have selected than one presented to them. This could aid in the building of rapport between child and interviewer as well as helping the child to open up and talk with the adult. While the picture is being colored, the interviewer could encourage the child to talk about the picture from the child’s perspective of her/his own life experiences. This could further rapport building and provide the interviewer with relevant information about the child’s life situations.

The interviewer may wish to observe while the subject looks through The Color Book, noting which pictures were passed by and whether the pictures were casually overlooked or actively rejected. Any pictures initially rejected by the child may later be presented for coloring and discussion. Talking about these pictures could lead the
interviewer and the child to a more clear view of the child and his/her problems.

Although there were no significant differences in the subject variables between treatment groups, there was a significant difference in the number of times subjects used "I", "me", "my" or "mine" between classification groups. The behaviorally disordered subjects, both interview and Color Book conditions, referred to self more than the normal subjects. References to self by the interviewee may indicate a willingness to talk about personal matters with the therapist or diagnostician. Such self disclosure is often found to be beneficial in a therapy setting. An alternative explanation to the difference in self references in this study is that the behaviorally disordered subjects may be less willing to share in a conversation. These subjects may have done more "talking to" than "interacting with" the interviewer. This may indicate a lower degree of socialization in these children, perhaps an inability to see and respond to the position of the listener. If this hypothesis is correct, observing the number and type of self references may become a way of helping to identify behavioral disorders in school age children.

The one significant difference in the interviewer variables detected by analysis of variance was the MLU of the interviewer between classification groups. The MLU of the interviewer was significantly lower for the behaviorally disordered group than for the normal group. It appears that the interviewers tended to make shorter utterances as the
subjects increased the length of their utterances. Although not significant, the difference in subject MLU between classification groups indicates that the behaviorally disordered produced longer utterances than the normal subjects. This supports the notion mentioned above that the interviewers tend to talk less as the subjects talk more.

With the analysis of the subject variables by interviewer, it was suggested that interviewer variances may have a direct effect on the subjects' responses. This was found to be the case with cell-wise comparisons of subject's use of affective words between interviewers I and III. Some questions are raised by this finding.

First, does the training or experience of the interviewer influence how effective The Color Book may be in an interview situation? Although the interviewers had received training and experience in interviewing techniques, interviewer I was more experienced in working with children than interviewer III. This could account for the differences found in the comparisons by interviewers.

Secondly, does personal interview technique effect the outcome of an interview? It is quite likely that it does. It is also possible that the interviewers interpreted the instructions for interviews differently and therefore conducted different sorts of interviews with the subjects.

Finally, with such small numbers of subjects, inferences from comparisons by interviewer may be questionable. Further studies with larger numbers of subjects equally distributed across interviewers could add
credibility to such inferences. Also matching interviewers on training and experience levels and holding extended training sessions to practice the procedure for the experimental interviews may control for interviewer differences or at least help minimize their effects on the results of the experiments.

An interesting observation made while reading the transcripts was that The Color Book seemed to elicit projective responses from the subjects. Some of the subjects referred to the figures in the pictures as themselves or other people whom they knew. Others related what they said was happening in their picture to their own previous experiences. A count made by the experimenter showed that there were 18 occurrences of such projections in the 20 interviews accompanied by The Color Book.

One example is with an 11 year-old behaviorally disordered male's responses to a picture with a female in bed and a male standing beside the bed. In response to a question of what was happening in the picture the subject said "He's helping her feel better." When asked who the people in the picture might be, he indicated the one lying down was his sister and the other was himself. This illustrates how subjects project themselves and others into the pictures.

Later in the interview the subject was given another picture showing a woman standing by a door looking into a room with one hand raised palm forward and a boy lying on the floor farther into the room. The subject was prompted
by the interviewer with, "Let's talk about that one a little bit." The subject replied, "Ok, this one is a picture of me and that's my mother. She just got home from work." From here the door was opened for the subject to share with the interviewer his perceptions of his mother and their relationship. This example shows how The Color Book can be used in an interview to elicit relevant conversation from a child.

A similar response was given by a kindergarten age normal male. When asked what was happening in the first picture, he indicated the little girl was sick and her dad was helping her. Prompted further with "Tell me about it" the subject said "I was sick once. My dad...I was sick once and my dad let me lay where he was sitting." Again, this led to a discussion of the subject and his family.

Responses to the second picture were less revealing. When asked what was happening in the second picture, the subject replied "I don't know. I can't guess this one. This one will be too hard." The interview ended without the subject relating the picture to anybody he knew or any of his past experiences. This indicates that not every subject will respond to each picture suggesting, flexibility in presentation of the pictures is important.

Earlier in this chapter several points were discussed that may have contributed to the finding of no difference in the subject variables between interview and The Color Book conditions. As is shown above, The Color Book appears to work more successfully with some subjects than it does with
others. The fact there was no significant difference found between interview and Color Book conditions suggests The Color Book does not detract from the interview situation and is as effective as an interview alone in eliciting conversation, self references and emotion words and phrases.
Implications

One implication for future research centers around how The Color Book is used in an interview. Further experimentation may be indicated that would allow the interviewer freedom to control how much time would be spent on any one picture. As mentioned above, the amount of time required for any one picture depends upon several factors. Individual interest and experience in coloring are two examples. How the child relates to the picture and the interest the interviewer displays in coloring could also affect the time required.

Related to the concerns of time required to color a picture is the question of which picture(s) to color. Each child should not be expected to readily accept, color completely and talk freely about each picture. There are some child/picture combinations that will work better than others. Future research may be completed that will aid therapists and diagnosticians using The Color Book in determining how best to match child and picture.

Potential future studies with The Color Book ought to attempt to answer the general question of what is the most productive way to utilize The Color Book in a therapy or diagnostic session. Specifically, studies resembling more closely a therapy or diagnostic setting may be called for. Such studies should provide for flexibility in administration of the pictures and timing of the coloring. The question of whether the picture(s) should be child or
interviewer selected may be answered in these studies as well.

A second potential future direction for research is to test the utility of The Color Book as a projective instrument. The Color Book appears to elicit projections from the subject of self or important others into the pictures. Studies may be used to develop standardized administration procedures and guidelines for interpretation of the results. Other studies could test the utility of The Color Book in a psychological test battery.

Beyond use in a psychological test battery, The Color Book could be tested as an instrument to detect the occurrence of physical and/or sexual abuse of children. The Color Book may have potential for identifying children who have been abused as well be useful to a therapist working with an abused child. Considering the gravity of the impact of abuse on a child, this direction should be paramount for future studies.

The Color Book is a new and promising entity. As such it provides opportunities for utilization in a wide span of areas. As future research is completed, even more ideas for uses of The Color Book may come into being. It is hoped that this study has set this process in motion.
REFERENCES


APPENDICES
Appendix A

List of Affective Words

Afraid Like Being Alone
Alert Like Being Nice to Others
Angry Like Being With Others
Awful Like Caring About Others
Bad-tempered Like Everything Is Going Wrong
Bored Like Having Fun
Bothered Like Sharing With Others
Bugged Lonely
Calm Loving
Cheerful Low
Comfortable Mad
Down Mean
Droopy Miserable
Excited Nice
Fearless Playful
Friendly Pleased
Frightened Quiet
Full of Energy Relaxed
Glad Sad
Happy Safe
Helpless Scared
Jumpy Sick
Lazy Sleepy
Appendix B

Instructions for Interviewers

Interviews will be conducted with gradeschool age children. The purpose of these interviews is to find out as much as possible about the subject and her/his interactions with family and friends. The interviews will be tape recorded. Make sure the recorder is on before beginning the interview. Each subject will be accompanied to the interview room by the experimenter or an assistant and introduced to the interviewer.

Half of the interviews will include coloring two pictures from The Color Book. The remaining interviews will not involve the use of pictures, rather the interviewer will talk with the subject using the questions and prompts below. For interviews with The Color Book, the interviewer will say: "Hello, I am (name). I would like you to color some pictures for me today." The interviewers will provide the child with the picture and crayons and encourage the subject to begin coloring. While the subject is coloring the picture, the interviewer will talk with the subject being sure to include the questions below. For interviews without pictures, the interviewer will say: "Hello, I am (name). I would like to talk with you today." The interviewer will continue the interview incorporating the prompts and questions below. All interviews should last 30 minutes. At the end of this time, the interviewer will draw the interview and/or coloring to a close and thank the subject.
Questions for the interview with The Color Book.

What is happening in your picture?
Who might these people be?
Have you ever done anything like that? or
Has anything like that ever happened to you?
How does/did this turn out?

Questions for the interview only group.

Tell me about school.
What is the best thing about school?
What about that do you like so much?
What is the worst thing about school?
What about that don’t you like?

What is your family like?
How many are in your family?
How do you get along with your brothers and sisters?
What kinds of things do you do with your family for fun?

Tell me about your friends.
What kinds of things do you do you and your friends do?
Do you ever argue/fight with your friends?
About what kinds of things?

Note: If the subject makes a minimal response to any of the probes the interviewer may prompt the subject further by comments such as "Tell me more about that" or "How does that make you feel?"
Appendix C

Guidelines for Calculating Mean Length of Utterance.

1. Start with the subject's first utterance after the point marking the beginning of the timed 20 minute segment of the transcript. Count each utterance separately for both the subject and the interviewer.

2. If a subject stutters or repeats a word for reasons other than emphasis, count only the best production of the word. If the subject repeats a word for emphasis count each production of the word.

3. Fillers such as "um" or "uh" should not be counted. Words such as "yeah" and "no" should be counted. Also count as one morpheme "uh huh" and "uh uh" when it is clear that they are used as "yes" or "no".

4. Count as one morpheme compound words such as "birthday" and "night-night".

5. Irregular past tense of verbs such as "did", "got" and "saw" should be counted as one morpheme.

6. Count as one morpheme diminutives such as "daddy" and "puppy".

7. Count as separate morphemes auxiliaries such as "is", "can" and "would". Count also as separate morphemes inflections like possessive, plural, third person singular, regular past and progressive.

8. Write the number of morphemes in an utterance in the left margin adjacent to the utterance.

*Adapted from: Brown, R. (1973).