PLACEBO RESPONSE AS A FUNCTION OF MOTHER-CHILD INTERACTION

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CHAPTER I

STATEMENT OF THE PROBLEM

The belated recognition given to the crucial role of the mother-child relationship can be partially attributed to Freud's theory of personality. He was one of the first to stress the influence of early childhood experiences and maternal treatment on later personality formation, placing his emphasis on specific childrearing practices. The maternal parent obviously provides most of the routine ruturant care, emotional support and discipline and is so perceived by the child. For this reason she is more frequently the preferred parent, especially in time of stress and occupies the central position in the child's image of the family (Ausubel, 1958). By virtue of her position as the child's most valued and continuing model, the mother represents the most significant adult in his life and thus she furnishes the patterns which he imitates.

Escalona (1953) and Brody (1956) indicate that the mother's negative or positive feelings and the degree of sensitivity she possesses in handling the child's needs, her consistency, and her freedom from anxiety had measurable effects upon the child's inner tension and subsequent development and behavior. Hagman (1932) found in a study of the relationship of the fears of children and those of their mothers, that children tended to express the same fears as their mothers.

Sears et al. (1957) report that from two years old on, much of what a child learns occurs through imitation and identification with the parent and that the main caretaker, usually the mother, is the identificand. Through identification the child thinks, feels and behaves as though the characteristics of the mother belonged to him. To be identified with a strong, successful model brings the child feelings of competance and adequacy, and for a young child security. However, when the child identifies with an inadequate model, he feels less secure and more anxious, because he feels he has the undesirable attributes of the model. Often the roles are reversed and the mother identifies with the child. The mother may feel and behave as though what happens to her child happens to her, with these feelings being based on events that have affected her child (Mussen, Conger and Kagan, 1963).

Rosenthal (1959) sees childhood emotional problems as a manifestation of an inadequate mother-child relationship, in which the mother's attitudes have directly caused the child's deviance. On the other hand, Verville (1967) views emotional instability in a child as a reaction to mutual mother-child problems. In this view the child's difficulty is partially a cause of the mother's problems which in turn aggravate the child's difficulties.

There appears to be a mutual identification between mother and child. When a child is emotionally disturbed, the mother is aware of her role in the etiology of the disturbance and consequently she experiences anxiety and guilt over her perceived failure. A deficiency or defect in the child, either physically or psychologically is a defect in herself and a failure of her childrearing (Verville, 1967; Ausubel, 1959; and Cummings et al., 1966).

Cummings, Bayley and Rie (1966) have found that mothers of emotionally distrubed children are relatively high is psychological defensiveness, manifesting intense psychic pain. They further state that these women have a strong tendency to exclude this pain and its sources from consciousness and an inclination to externalize blame. Thus, these mothers whose children are diagnosed as psychologically deviant, feel threatened and the diagnosis serves to augment their guilt and anxiety. The opportunity to be effective caretakers through management of the child's medical regimen helps the mother relieve her own symptoms by alleviating those of her child.

Since the mother-child relationship is so intimate and of such significance in the child's life, treating him without treating his mother may be an inadequate and ineffectual method of handling the problem. Rostas (1960) feels it more important to treat the mother in behalf of her child than to treat the child alone. Wertheim (1959) expresses a preference for joint mother-child treatment which enables the clinician to directly view the mother-child interaction and their individual responses to this interaction. She feels also that the mother's willingness to participate in the sessions when only the child is defined as a patient, reflects her desire to serve her child and through the child herself, for whatever relief therapy brings the child is brought too to the mother.

Kraft (1968) states that the child's reaction to drugs prescribed in a clinical setting is largely a reflection of the mother's own experiences and reactions to drugs. Since the use of psychopharmacology with children involves three persons: the child, a parent and the physician, drug-taking by the child is much influenced and experienced

by the mother. It can be said then, that in psychopharmacological treatment of the emotionally disturbed child the physician is treating both mother and child.

The present consensus appears to be that attitudes of patients and physicians toward drug use are among the determining factors of clinical drug response. A patient's response to medication is due not only to the purely pharmacological properties of the drug itself but rather is a complex function of the interaction between three classes of variables: drug, situation, and person.

The most convenient method of studying the effect of the latter two factors in a drug-taking situation is by using placebo, a pharmacologically inert substance. Approximately one-third of all patients given placebos react positively (Beecher, 1959). Studies of the placebo effect indicate "reactivity" to the placebo to be highly associated with the person's personality structure, his convictions that he is taking an active drug, and his previous experiences with drugs (Kraft, 1968; Liberman, 1959; and Glick, 1968). Sharp (1965) and Hovland and Janis (1959) state that individuals tending to be anxious and having feelings of inadequacy tend to be placebo reactors. These persons also tend to be vunerable to suggestion from authority figures and inclined to be persuaded into doing what the authority figure desires.

The present study is an effort to examine mother-child interaction in a "drug-taking" situation when the child has been diagnosed as emotionally disturbed. It was designed to examine the mutual identification of mothers and children in the results of "drug-taking" experiences by both. Would mothers perceive the same overall effects in their children that they felt in themselves after treatment with placebo?

The expectation was that the children's responses to the placebo (as reported by the mothers) would reflect the mothers' reactions to their own "medication" and their identification with their children.

The following hypotheses are presented:

1. Mothers of emotionally disturbed children would tend to report similar effects for themselves and their children after both received "medication" for three weeks.

2. There would be no significant difference in the agreement of effects between mothers and children receiving the same color placebos and those mothers and children receiving different color placebos.

3. Mothers receiving pink nortriptyline hydrochloride would not report more improvement in themselves than would those mothers receiving pink placebo.

4. Mothers' and children's reactions to "medication" would be perceived similarly by the psychiatrist and the mothers.

5. After placebo treatment for three weeks, children's activity levels would move closer to the mean.

CHAPTER II

REVIEW OF THE LITERATURE

Mother-Child Interaction

Although there is substantial agreement that the mother-child relationship is a major contributor to the personality development of the child, the highly complex nature of the interaction presents numerous methodological barriers to definitive research. It is widely recognized that most methods of investigating this relationship (interview and direct observation) do affect the results obtained. However, the numerous replications of certain basic findings lend validity to a great deal of the results reported in the literature. One of these very basic findings is that a high positive correlation exists between a child's adjustment and the mother's character structure and maternal role even though no significant relationships prevail between adjustment and specific rearing practices (Ausubel, 1958).

In examining this type of correlation, Peterson et al. (1959) found that the mothers of children who displayed adjustment difficulties were judged to be less well adjusted and sociable, less democratic and to experience more disciplinary contention than mothers of children with no manifest problems. They also reported that conduct problems were associated with general maladjustment among mothers. Schulman, Shoemaker and Moelis (1962) report finding in a playroom situation that the mothers of conduct problem children exhibited significantly more

hostile behavior toward their children than did the mothers of non-conduct problem children. These mothers also rejected their children more than did mothers of nonconduct problem children. McCord, McCord and Howard (1961) in a study of aggression found that "aggressive", "assertive", and "nonaggressive" boys emerged from radically different environments. Generally "aggressive" boys were most likely to have been raised by parents who: a) treated him in a rejecting, punitive fashion; b) failed to impose direct controls on his behavior; c) offered him an example of deviance; and d) were often involved in intense conflict. "Nonaggressive" and "assertive" boys came from strikingly contrasting environments. Results achieved by Sears, Maccoby, and Levin (1957) in their investigation of childhood aggression basically resemble these findings. Sears et al. (1957) found that aggression in childhood was associated with the use of physical punishment, low-esteem of the mother for the father, a high degree of permissiveness for the expression of aggression, disagreement between the parents, and dissatisfaction on the mother's part with her role in life.

Not only conduct and aggression problems, but also a wide range of other difficulties are associated with maternal behavior and attitudes. For instance, Hurley (1965) has described a substantial inverse relationship between the I.Q. scores of third grade children and their mothers' responses on three measures of acceptance-rejection. In a study by Medinnus (1961), parental attitudes and behavior were found related to early school adjustment in children. In addition maternal rejection was found to be a primary factor in the etiology of the stuttering symptom in an analysis of a study by Kinstler (1961). His data indicated that mothers of young male stutterers rejected their

children covertly far more but overtly far less than did mothers of normal speakers. Also mothers of stutterers rejected their children more than they accepted them (exactly the opposite of the mothers of normal speakers).

A major contributor in the area of mother-child interation was an investigation of the predictability of the subsequent behavior of the child from early observations of maternal behavior. In separate longitudinal analyses of maternal behavior and child behavior, Schaefer and Bayley (1963) provided a basis for the analysis of the mother-child interaction. Their evidence suggested the probability of changing patterns of mother-child interaction through time. Their data on child behavior through adolescence permitted an exploration of the extent to which a child's subsequent development was predictable from early mother-child interaction. Results indicated high positive correlations between expressions of maternal affection, equalitarianism, and positive evaluation of the child with the child's friendliness, cooperativeness, attentiveness and facility. On the other hand, ignoring, irritability, punitiveness, and perceiving the child as a burden had the highest negative correlations with these social and task-oriented behaviors. Some suggestive evidence was found that maternal rejection correlated more with daughters' extroverted and control with introverted, maladjusted behaviors. Factor analyses of the correlation matrices for both the observations during infancy and the interviews at preadolescence revealed two rotated factors that were labeled Love vs. Hostility and Autonomy vs. Control. Concerning the Love-Hostility dimension, the data indicated that accompanying the mother's feeling for the child was a related perception of the child. Hostile mothers perceived more

faults in the child while loving mothers perceived the more positive characteristics of the child. Maternal hostility, also correlated with low marital happiness, suggesting to the authors that maternal hostility toward the child was highly related to the woman's emotional maladjustment, to poor relationships both with the husband and others, and to enrivronmental stress and strain. According to Schaefer and Bayley (1963, p. 96),

> an analysis of progressive changes in the parent-child correlation suggests that the child's social, emotional and task-oriented behaviors are to some extent, a reaction to the parental behaviors he has received throughout the period of childhood.

Just as maternal attitudes and practices affect a child's behavior, so too can they affect his attitudes. The attitudes which a child holds toward himself, especially those dealing with self-esteem and self-worth, play an important role in his personality development. The extent to which a child develops a positive self-concept depends crucially upon the extent to which he is accepted by the "significant others" (particularly his mother) in the early years (Medinnus and Floyd, 1963). An examination of this relationship indicated a highly significant relation between maternal self-acceptance and child acceptance in a non-clinical group of mothers of young children (Medinnus, 1963). These results support the concept that a person's ability to accept others is directly related to his ability to accept himself, thus maternal self-acceptance, to a great extent, determines the child's self-acceptance.

There is a need for more precise and better validated information about the significance of mother-child relationships on the emotional development of the child. Rosenthal (1959) reasoned that if it was true that certain kinds of mothers tended to produce or perpetuate certain

kinds of problems in their children, a statistical check of cases should reveal that the individual problems were not randomly distributed among a variety of mother-child relationships, i.e., that the personality of the mother should make a considerable difference. A given type of mother might be expected to foster one or many, but not any and all types of emotional problems in her children. Subjects in the study were disturbed, school age children and their mothers. Rosenthal's analysis of maternal interaction with the disturbed child yielded 18 different types of mother-child relationships and 29 types of problems (each with more than 20 cases in the group). Significant associations (at least .05 level) were found in 84 of 551 instances with 14 of these at the .001 level. These findings constitute overwhelming evidence corroborating the familiar proposition that mother-child relationships are intimately associated with emotional problems in children. Furthermore, the findings strongly indicate that the association extends to the more overt aspects of the mother-child relationship.

Rosenthal's data was broken down into two large groups of pathologically mother-child relationship syndromes: 1) five syndromes characterized by autoplastic, neurotic, inhibitory, not anti-social, passive and dependent behavior; and 2) 11 syndromes characterized by alloplastic, anti-social, aggressive, directly hostile, and acting-out behavior. Of this first group, Symonds (1939) feels these problems to be a consequence of overprotective mothering and the second group the consequence of a rejective type of mothering. In general, these findings may be considered to be consistent with the prevalent belief that most emotional disorders of children are usually caused or perpetuated by defective mother-child relationships.

From a defective mother-child relationship comes unsatisfactory emotional development in the child, symptomatized by the following: 1) stealing; 2) aggressive behavior; 3) excessively withdrawn behavior; 4) fear of going to school; 5) disabilities in academic learning; 6) tantrums; 7) truancy; 8) speech problems; 9) enuresis and nervousness (D'Evelyn, 1957). Such problems of emotional development seem to be encountered anywhere from age six to twelve, with the same general range of problems likely to occur at any point during that period. However, there is a sex factor involved in childhood emotional problems, for behavior problems do occur in males from three to five times as frequently as in females (Haring, 1962).

When such problems do occur, regardless of the child's sex, the mother too is affected, for "the psychological life space of most parents is profoundly affected by the attributes of their children" (Cummings, Bayley, and Rie, 1966). The impact of the child's deficiency on the mother is psychologically aversive. It is infrequently recognized, and extremely difficult to measure, yet, the effect upon the neurotic child's mother of experiencing (either independently or through a diagnostician) her child as a defined psychological deviant has widespread consequences. Deviations in the physical, intellectual, and psychological characteristics of her child influence the mother's perceptions of her own worth and her evaluations of other persons and events as well. This relationship is dramatically demonstrated in clinical observations of mothers of children having deficiencies or handicapping conditions limiting their adaptive functioning. Having a deficient child can be a highly stressful state of affairs for the mother as indicated by evidence of anxiety, loss and depression, less

satisfactory modes of social relating, and frequent reduction in maternal caretaking competence (Cummings, 1966; and Verville, 1967).

Verville (1967) believes that few adults confronted with a child who behaves ineffectually, or obstreperously can identify accurately the reasons for his actions, nor do they know how to revise them. After numerous efforts to punish or reason with the child, a mother may resign herself to an inevitable permanence of the deviant behavior along with feelings of anger or guilt. The anger which the mother feels toward the child reflects her conviction that she has failed as a parent, a conviction which has grown out of hundreds of unpleasant encounters.

Cummings et al. (1966) in an effort to examine these convictions of inadequacy and failure in mothers of deviant children, gave a battery of five tests to 240 mothers (four groups of 60 each) of healthy, neurotic, mentally retarded and chronically ill children to assess: 1) general feeling of self-esteem; 2) esteem related to maternal role; 3) concern about the child's health status; 4) discomfort in caring for the child; 5) trends in child-rearing orientation; and 6) interpersonal satisfaction derived from relating to the child, other family members, and neighbors. Results indicated that the mothers of mentally retarded and neurotic children had higher levels of expressed depressive effect and that the mothers of the neurotic group had lower general self-esteem and lower maternal role esteem. Only the mothers of neurotic children differed from the control group by having lower levels of enjoyment of relationships with others. In relation to the control group, those mothers of the chronically ill were least deviant and the mothers of the neurotic most deviant with the mentally retarded group falling into a middle position. In general the pattern for the mothers of neurotic

children was deviant with indications of lower satisfaction, lower self-esteem and maternal role functioning and higher depression than the other three groups of mothers. Cummings concludes that in order to conserve maternal caretaking competence it is necessary to prevent the development of these personality features and above all else necessary to maintain the mother's self-esteem.

From the research to date, it cannot be said whether mother-child interactions are determined primarily by the behavior tendencies of the mother or of the child, however, it is known that in order to study and treat emotionally disturbed children, it is essential to undertake parallel procedures with the mothers, i.e., evaluate and modify pathogenic elements of the children's daily environments (Ackerman, 1958).

Joint Treatment of Mother and Child

A given environmental background or a consistent kind of rearing will produce certain behavior deviations in one child, other deviations in another child and no unusual behavior at all in a third child. From his earliest days the child learns that his actions affect those of his mother and from her actions he draws conclusions about her attitudes toward him, conclusions which may or may not be correct, but nevertheless upon which some of his behavior is based. What he learns from his mother's actions and from his own in hundreds of different situations becomes stabilized into habitual, enduring ways of behaving. Maternal behavior toward the child also stabilizes rapidly. Mothers reporting difficulty in rearing a child discover when they observe themselves carefully, that the never speak to him except to criticize or that inevitably they grant every wish the child expresses. Their actions are

consistent and predictable to the child, but they themselves have never noticed that their behavior toward him is automatic, rather than thoughtful and adaptive (Verville, 1967). This is consistent with the many investigations of the past 20 years, supporting the theory that many behavior problems arise because of the habitual manner in which mothers and children respond to each other.

In the revision of a child's behavior, the mother, by virtue of her position as the child's most valued and most continued model must furnish the pattern for him to imitate (Verville, 1967; Ausubel, 1958). This is why most child guidance clinics work with both the mother and the child either individually or jointly.

Rostas (1960) reports case situations in which the major direct therapeutic work was done with the mothers. The children who ranged in age from latency to late adolescence, were seen only in the process of diagnostic exploration or in some instances, not at all. The successful treatment of the mothers resulted in the alleviation of the children's problems.

In all instances the mothers sought help in behalf of their children who presented a wide variety of behavioral and somatic symptoms. Although the mothers all had two or more children, the difficulty usually was with only one child. In Rostas' opinion, the mother in each case seemed to act out her neurosis through only one child with whom she recreated the same type of hostile, negative identification that she had with her own mother. The diagnostic study of these families showed that these children's symptom manifestations were reactive to the mothers' neurosis and that the mothers' awareness that the children's symptoms were the result of their own handling had prompted them to apply to the

agency on their own initiative. As the children's symptoms had increased the mothers' neurotic suffering and guilt motivated them to seek help, so that they might undo the damage they had done to their children. They all had some awareness of the psychogenic factor in their symptoms and in those of their children; however, they emphasized that they wanted help primarily with their handling of the disturbed child. Hope was expressed that their own condition (somatic symptoms) would be alleviated if they learned to cope with the child. In each of these cases the treatment of the mothers themselves provided sufficient help to the children to make direct treatment of the children unnecessary.

In contrast to the individual interview technique described by Rostas, Wertheim (1959) describes a joint mother-child interview, one which gives

> . . . the opportunity to observe directly the interaction between mother and child. . . . enables the clinician to assess more accurately the nature of the mother-child relationship in both its affective and cognitive aspects in regard to the distribution and degree of control.

She feels that the degree of consistency in emotional reactions is particularly important as it can give clues to the interaction between the pathology of the mother and that of the child and to the child's response to shifts in maternal effect.

The joint interview dramatically exposes the limited and frequently distorted perceptions mother and child have of each other. In fact, in some instances the protective presence of the clinician presents them with their first opportunity to face each other squarely and to realize what they feel and how they influence each other's behavior. In less severe cases an experience of perceptual correction, thus achieved,

removes the previous block in communication and may be all that is necessary to free mother and child for a healthier interaction through which they can solve their own problems.

Whatever the mother's motives in bringing the child to the clinic, her act of doing so represents an admission of her own inadequacy in managing him. Thus, in the mother's view, one aspect of the clinician's role is that of a judge who has the power to pronounce the verdict of "guilty" or "not guilty." To openly expose her handling of her child to the clinician's scrutiny is distressing to most mothers. However, her response to such stress and the ease with which she adapts to the clinical situation and the changes in her behavior as she feels more comfortable are valuable diagnostic indices of her own functioning.

Wertheim (1959) mentions many different aspects of the joint interview technique which make it a more valuable diagnostic tool than the individual interview. In the individual interviews in which the child is a patient and the mother is not, many mothers are often unable to endure the weekly probing of their own motives or the mystery of their child's play therapy sessions, so they soon terminate contact with the agency. In her opinion, the joint interview seems to be less stressful for the mother.

Placebo Research

Schapiro (1964) defines a placebo as

> Any therapeutic procedure (or component of any therapeutic procedure) which is given (1) deliberately to have an effect or (2) unknowingly and has an effect on a symptom, syndrome, disease, or patient but which is <u>without specific activity for the condition being treated</u>. The therapeutic procedure may be done with or without knowledge that it is a placebo, may be inert or active, may be any form of medication, and includes all mechanical, surgical, therapeutic, and psychotherapeutic techniques.

Gammer and Allen (1966) in referring to the placebo effect mention the fact that a pharmacologically inert substance often produces a significant behavioral change which apparently is attributed to the subject's cognitions and expectations, i.e., the belief that he has received an active drug having a known effect. It should be recognized, however, that a strong negative placebo effect may often occur. For example, an active drug may have little or no effect on behavior, if the subject is convinced that he did not really receive a drug. In an experiment by Gammer and Allen (1966), 64 subjects were tested under two conditions: 1) receiving capsules of 100 mg. phenobarbital with a lactose base; and 2) lactose placebo. Their results showed that neither the drug nor the placebo affected emotional states as measured by self-report mood scales administered over a three hour period. Post-experimental questionnaires revealed that subjects were skeptical, believing that the experimenter had administered placebo in both conditions. In the drug condition 75 percent of the subjects thought they had gotten sugar, aspirin or nothing while 72 percent of the placebo condition subjects thought the capsules they had gotten were placebo. Since non-medical personnel administered these capsules, subjects were led to believe no active agent was being administered. Through indirect suggestion, the effects of an active drug were rendered ineffective.

In defense of the placebo Barr (1955) has argued,

> . . . it may be useful to the patient that his physician know when not to treat as when to treat, and that the use of potentially dangerous agents for trivial or inconsequential complaints may not be justifiable. Only by such discipline and understanding may we as physicians avoid doing unnecessary harm and minimize the price we and our patients pay for modern management of disease.

Placebo effects are probably the most relied upon aspects of pharmacotherapy today, however unintentional they may be on the part of the physician.

Rosenthal (1956) feels that the placebo effect cannot be dismissed as superficial or transient, because it often involves an increased sense of well-being in the patient and is manifested primarily be relief from the particular symptomatic distress for which the patient expects and receives treatment. Thus, in his opinion, the relief of any particular complaint by a given medication is not sufficient evidence for the specific effect of the medicine on this complaint unless it can be shown that the relief was not obtained as a placebo effect. Many studies have been done which support the importance of the placebo effect in patient's cures by active agents.

Diehl (1933) found that placebos were as effective as cold vaccines in stopping colds. In a later study (1940), he and his colleagues investigated the ability of a vaccine to prevent colds. They found a reduction in the number of yearly colds of 55 percent among those given vaccine and 61 percent among a control group who received placebo injections (isotonic sodium chloride solution). Finally in a study of the effects of vitamins (Cowan, Diehl and Baker, 1942), he observed, "results reported by many persons who received placebos would serve as splendid testimonials . . . for the prevention of colds." In a careful study of inhibition of the cough reflex, Hillis (1952) obtained an effect with placebos as great as that observed with 0.03 gm. of codeine. Leslie (1954) reported that in morphine addicts, saline was eventually substituted for the drug without withdrawal symptoms appearing until saline injections were stopped.

Beecher (1960) presented experimental findings that placebos relieved pathological pain more effectively than they did experimental pain. He found that the mean percentage of effectiveness of placebos in relieving pathological pain was over 10 times that found with experimental pain. In Beecher's study 173 subjects had experimental pain of which 3.2 ± 1.8 percent were relieved by placebo. Of the 831 subjects with pathological pain (postoperative wound to headache) 34.6 ± 2.9 percent were relieved by placebo. He concluded that when the psychological component of a situation was important, the placebo had a correspondingly greater opportunity to produce an effect.

Wolf and Pinsky (1954) demonstrated the relative effectiveness of an active drug and a lactose placebo in patients with anxiety and tension as prominant complaints. They reported that these symptoms were improved in approximately 30 percent of the placebo patients. Interestingly, the improvement rate was greater on the subjective side than it was when objective signs of anxiety such as tremulousness, sweating and tachycardia were considered.

Placebo effects are potent when there is strong motivation on the part of the patient toward recovery. This inference corresponds well with a point made by Beecher (1956) that the greater the subject's stress, the greater the effect of the placebo. In the work of Gliedman (1957), it was implied that the intensity of the patient's perceptions plus that of his reaction to the situation of suffering set up a central excitatory state which facilitated the action of a placebo. More simply stated, the greater the patient's need for help, the more likely a positive response from the placebo would be.

The importance of realizing that placebo effects are not imaginary, nor necessarily suggestive in the usual sense of the word is pointed out by Wolf (1950). He mentions that changes in circulating eosinophiles have been induced, either during the discussion of meaningful topics or following the administration of placebos. Eosinophilia, a phenomenon of which the patient may have no knowledge whatever, could obviously not be achieved by suggestion. He feels that sweating, hives or similar disturbances could be elicited by suggestion, but hardly eosinophilis. Cleghorn et al. (1950) were able to significantly activate adrenocortical activity by the hypodermic injection of sterile saline. These responses indicated to the authors that the responsible mechanisms were connected with circuits in the cerebral cortex. Thus, for placebo, a variety of modes of action became possible, including suggestion and conditioning.

Inverse relationships between attitude toward medication and pretreatment symptom measures were found (Gorham, 1961) to be statistically significant (.001 level) for these symptoms: paranoid projection; perceptual disorganization; paranoid belligerance, and resistiveness. This cluster of factors which approximates the paranoid syndromes of symptomatology suggests that the more paranoid the patient, the less faith he has he might be helped by medication. If this is true, then the more faith a patient has, the greater the opportunity for the placebo effect.

An example of the difference "faith" in a medication can have was reported in a study by Gleidman et al. (1957) in which two groups of patients with bleeding ulcers were treated with placebos. One group was told by the physicians that a new medicine would be given them which would undoubtedly produce relief. The other group was told by a nurse

that an experimental medicine would be administered, the effects of which were more or less unknown. In both instances placebo was used. In the first group, 70 percent of the patients had excellent results, while only 25 percent of the second group showed a favorable response.

In 1953 Gaddum said ". . . a placebo is something which is intended to act through a psychological mechanism. It is an aid to therapeutic suggestion, but the effect which it produces may be either psychological or physical." It must not be supposed that the action of placebo is limited to psychological responses, for there are many examples of physiological or objective change produced by placebos. Data on this was compiled by Beecher (1955) in an effort to assess the importance of the placebo effect to experimental studies as well as to sound clinical judgment. This was illustrated by 15 studies chosen at random involving 1,082 patients. His major finding was that placebos had an average significant effectiveness of 35.2 ± 2.2 percent, a degree not widely recognized. Thus, this great power of placebo as shown in Beecher's report provides one of the strongest supports for the view that drugs that are capable of altering subjective responses and symptoms do so to an important degree through their effect on the reaction component of suffering.

Since placebos have an average high effectiveness of 35 percent in a variety of conditions, an experimenter must consider this when assessing the effect of an active drug, for the total drug effect equals its "active effect" plus its "placebo effect." Beecher (1955) reports a study in which 75 percent of a group in severe postoperative pain were satisfactorily relieved by a large dose of morphine (15 mg. of the salt per 70 kg. of body weight), but placebo brought relief to 35 percent of a group of similar patients.

No studies of the limits of duration of the placebo effect per se have been made, however, in a rigorously controlled drug study by Loranger, Prout and While (1961), 53 percent to 80 percent of their placebo treated patients were helped by placebos for an average of 2.6 to 4.9 weeks of the six week treatment period. Hampson, Rosenthal, and Frank (1954) found the greatest decrease in distress following placebos was experienced during the first two week period. After that, a slight but statistically significant rise in distress occurred.

Toxic Reactions

Although the favorable responses of placebo studies have received the greatest stress, the occurrence of toxic reactions must be reported, as they constitute a very real problem in placebo research. Rickels and Downing (1967) note that patients reported more side effects when not deriving benefit from a given agent and reported fewer or no toxic reactions if benefiting from an agent, be it active drug or placebo. The occurrence of toxic reactions is of special interest but not surprising. Since widespread and profound tissue response may occur following placebo administration, it is to be expected that certain unfavorable changes may occur that would be classified as toxic.

Of interest in this area are the studies of Tucker (1954) in which observations on the toxic effects of streptomycin given to prevent complications of thoracoplasty were controlled by placebo administration. Sixty-one percent of the patients receiving placebo showed one or more of the symptoms of streptomycin toxicity. Further confirmation of the "toxicity" of placebo administration was found in Diehl's (1933) studies of treatment of the common cold. He reported that in some of the subjects receiving lactose placebos nausea, faintness, and diarrhea

developed. Wolf and Pinsky (1954) noted in a placebo controlled drug study that complaints such as lightheadedness, drowsiness, and anorexia developed in many patients. However, there was no definite predominance of these symptoms with either the drug or the placebo groups. In fatigued subjects, Wolf (1959) reported that hallucinations sometimes followed the administration of placebos.

Placebo Reactors

Trouton (1947) in a review of the research involving placebo and their use, indicated a serious lack of studies concerned with the personality of placebo reactors, however, almost all physicians do agree that one necessary trait of placebo reactors is "suggestibility."

Hovland (1959) feels placebo reactivity to be the result of internal mediating processes that are fed by the therapeutic stimuli and the predispositional factors of the individual. According to Liberman (1959) placebo reactivity reflects individual predispositions that are bound to specific therapeutic stimuli, and is a potential tendency in all persons, only requiring the right circumstances to become manifest.

Some common predisposing characteristics of placebo reactors have been discovered by researchers in this area. Lasagna (1955) has described the placebo reactor as a recognizable type, but only in the sense that interview and psychological testing can differentiate him from a non-reactor. Through the use of the interview and the Rorschach results in comparing placebo reactors to non-reactors, he has concluded: 1) reactors had two years less formal education; 2) reactors were more cooperative but slightly more concerned about themselves; 3) reactors were generally less critical individuals; 4) two-thirds of the reactors said they had a tendency to develop somatic symptoms under stress;

5) reactors were more "weepers" and "talkers"; 6) reactors attended church more regularly. Rorschach responses indicated reactors to be 1) more anxious and less hostile; 2) immature and more dependent on outside stimulation; and 3) more volatile than were the non-reactors. This study did strongly support the notion that there are personality characteristics and habits of mind which predispose a person to respond to a placebo.

Tibbits and Hawkings (1956) observed that youth is positively related to placebo reactivity, but found no relationship between reactivity and sex, intelligence, work record, presence of environmental problems or severity of illness. Tentatively they suggested that 1) placebo reactivity may be cyclical in character; 2) there is more tendency toward placebo reactivity in younger patients; and 3) the type of control exercised by the personality structure is related to placebo reactivity.

Some of what Tibbits and Hawkings (1956) have reported is in opposition to Beecher's (1955) statement that there is no difference in sex ratios or in intelligence between reactors and non-reactors. Beecher does, however, recognize significant differences in attitudes, habits, educational background and personality structure between consistent reactors and non-reactors. Liberman (1959) tends too to view people as consistent reactors or non-reactors to placebo. He also observed: 1) placebo reactors to be significantly less confident and less dominant in personal relationships than non-reactors; 2) placebo reactors to be far more rigid and emotionally controlled than the average for their age and background; and 3) the general predispositions toward placebo reactivity to be much the same as those toward persuasibility and acquiescence.

Sharp (1965) in a study of placebo reactors found reactors to be those individuals who were subject to anxiety; who felt they were insufficient in most situations; who seemed dominated by other individuals; who were overly concerned about most situations; who were fearful and easily persuaded into doing that which the other person desired.

Berkowitz and Lundy (1956) are of the opinion that persons who tend to possess uncritical respect for authorities in general may be susceptible to the induction of placebo effects by "authority-type" physicians.

Hovland and Janis (1956) suggest that the culturally determined sex role for boys is less definitive in prescribing reactions to persuasive influences than it is for girls, therefore, males are less susceptible to persuasion than females. Since the culture demands of the female more acquiescence in relation to her social role, she is more easily persuaded. Because she feels less able than the male to act out feelings of rebellion, suggestions from high pressure sources (peers or authority figures) are more accepted by the female than the male. This hypothesis was supported by the results of a study by Sharp (1965) in identifying placebo reactors.

The opportunities afforded by the placebo are unique, for it cannot possibly enter into any process by virtue of its chemical composition. It does not matter in the least what the placebo is made of or how much is used so long as it is not detected as a placebo by the subject (Beecher, 1955). Inherent factors in psychiatry maximize the potentialities of the placebo effect and it is here that the important role of the power and the properties of the placebo has been developed, thus gaining for the placebo a more dignified place in the therapeutic situation.

Nortriptyline Hydrochloride

What has awaken the interest of psychiatrists today in the affective disorders is the results of recent developments in psychopharmacology. Much is known of the neuropharmacology of anti-depressants, their effect upon the brain and its neurohormones, but little has been learned of their psychopharmacology, the ways they change not only behavior but also mood, attitude, motivation, and thought in the susceptible patient.

Bonime (1960) found it difficult to help an angry, thwarting patient and concluded that depression is one of the most effective forms of resistance. This implies that a depressed patient might well be a "negative" placebo reactor, showing a higher than expected incidence of adverse effects, taking longer to improve and having a lower improvement rate (and a poorer quality of remission) than the anxious patient. Therefore, any drug which would show results in such a group of patients rather resistant to therapy would be a significant medication.

From the pharmacologic data, it has been demonstrated that Nortriptyline has more of an anticholinergic effect, both centerally and peripherally, than either amitriplyline or imiproamine, the two drugs to proceed it in research (Bennett, 1963).

Bennett in 1962 evaluated nortriptyline in 75 patients representing both outpatients and hospitalized groups and including psychotic, psychoneurotic, geriatric, neurologic, and psychosomatic cases between eight and 95 years of age. The dosage level approximated 75 to 100 mg. daily (varying with the patient). After one week of treatment, the patient was allowed to explain without any cues from the interviewer, how he felt and what he thought the medicine was doing for him. No formal psychotherapy was attempted during the six months of treatment.

Resulting data indicated 38 of the 75 patients (51 percent) complained of a total of 72 side effects of varying degrees of discomfort. Seventy-seven percent) showed some degree of improvement, 15 percent remained unchanged and eight percent were made worse. When patients were classified according to the presenting symptom, namely depression, hostility or anxiety, it became possible to detect some trends. The 70 percent improvement rate for hostile patients, 74 percent for anxious patients and 82 percent for depressed patients would appear to predict the general usefulness of nortriptyline hydrochloride in patients exhibiting these symptoms alone or in combination. Bennett feels that this study has shown nortriptyline hydrochloride to be a safe and effective antidepressant with a few mild side effects.

Summary

In summary, it would appear that the literature supports the mutual identification of mothers and children. Numerous studies have been cited indicating that emotional disturbance in the child is positively related to such disturbances in the mother.

Placebo research almost universally shows effects that are psychologically rather than physiologically founded. Literature has also been cited on the consistency and predictability of placebo reactors and their predominant personality characteristics.

It then follows that the acquiescence or placebo "reactivity" of a mother would affect her child's response to "drug-taking" and that this response would be a function of mutual mother-child identification.

CHAPTER III

METHOD

Subjects

Fifty-two pairs of mothers and children in a large southern city served as subjects for the study. The child subjects (25 female and 27 male) who had been brought to a children's psychiatric center because of their severe behavior problems ranged in age from six to thirteen. None of the mothers were under psychiatric treatment. See Table I for the distribution of age and diagnostic classifications of child subjects.

Subjects were divided into two experimental groups, the clinical group of 28 (14 males and 14 females) and the Activity Room group of 24 (13 males and 11 females).

Materials and Apparatus

Medication

There were three sets of capsules used in this study. The two placebo capsules, one pink and one green, contained lactose. The third set, which was also pink, contained 10 mg. nortriptyline hydrochloride (an anti-depressant). All three sets of capsules were exactly the same size and shape.

TABLE I

DISTRIBUTION OF AGE AND DIAGNOSTIC CLASSIFICATIONS

		Mean Age of Children in Years	Reaction Disorder and Anti-social	Minimal Brain Damage	Neurotic Separation Anxiety and Schizoid	Healthy	Passive-Aggressive
Activity Room Group (N = 24)	Group 1 (N = 8)	9.27	3	2	2	-	1
	Group 2 (N = 7)	7.57	2	2	2	-	1
	Group 3 (N = 9)	8.22	2	1	5	-	1
Clinic Group (N = 28)	Group 1 (N = 9)	8.88	2	2	3	-	2
	Group 2 (N = 8)	9.25	2	1	-	4	1
	Group 3 (N = 11)	9.45	1	4	2	1	3
	Totals (N = 52)	8.82	12	12	14	5	9

Activity Room

The room (see Figure 1), 15 x 15 feet with a carpeted floor and acoustically treated ceiling, contained the following toys:

a) an electric train layout, surrounded by plexiglass walls, occupied one corner of the room. Protruding from the front side of the layout was a crank, which when turned caused the train to move on its tracks at a speed proportional to the rate of the crank turning up to a preset maximum.

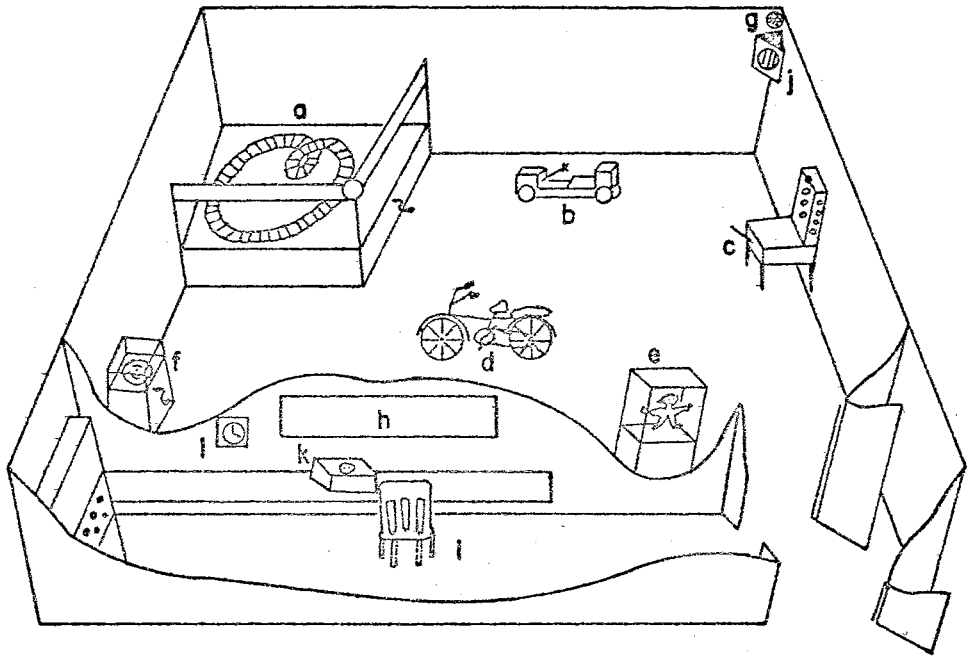
b) a pedal car, mounted on blocks was designed so that rotation of the pedals caused one of its rear wheels to turn and lights on its dashboard to flash.

c) ten light bulbs in five colors were mounted in two adjacent columns on a stimulus panel which was attached to a small table. A bright red wooden lever protruded from the table and each depression of the lever caused one of the bulbs to turn off and the succeeding one to turn on.

d) a Spyder bicycle was mounted on blocks in the center of the room. Turning the pedals caused the rear wheel to turn and a plastic card touching the spokes to emit a loud motor-type noise.

e) a marionette, suspended by its strings was enclosed in a plexiglass case from which a crank protruded. Turning the crank caused the puppet to "dance."

f) a mock phonograph turntable in a plexiglass case had a crank protruding from it. When the crank was turned the turntable revolved and music was emitted. The action stopped as soon as the child quit turning the crank.



a. TRAIN
b. CAR
c. LIGHTS
d. BICYCLE
e. PUPPET
f. PHONOGRAPH
g. ULTRASONIC MOTION DETECTOR
h. ONE-WAY WINDOW
i. CONTROL ROOM
j. SPEAKER
k. CONTROL UNIT
l. TIMER

Figure 1. Activity Room

Also in the room was an Ultrasonic Motion Detector which recorded body movements of the child while he was in the room.

Adjoining the activity room was a control room with a one-way window through which the experimenter observed the child and recorded his behavior by means of a telephone dial. Each of the above toys was assigned a number on the dial. The number 1 was reserved for time periods during which the observed child was not playing with any of the toys in the room.

Procedure

The procedure was slightly different for the clinic group and the activity room group.

Clinic Procedure

When each subject pair arrived at the clinic for their evaluative interview, an office assistant explained to the mother that certain forms must be completed prior to the psychiatric interview. These forms consisted of general information questionnaires concerning health, school, family and social history. When the forms had been completed, the mother and child were shown into the psychiatrist's office. Each mother-child pair was interviewed by the psychiatrist for approximately forty minutes. At the end of the interview, two bottles of medication, one for the child and one for the mother, were given to the mother with this explanation: "I hope these capsules will help the emotional difficulties in both of you. I will see you again in three weeks."

No information beyond this was given to the mother about the way in which the capsules were to help. The psychiatrist further instructed the mother that she was to telephone the office once a week to report

the effects of the "medication" on herself and her child. Each mother was given an appointment card stating the clinic's telephone number and the date and time of their next appointment.

When the mother called in to the office at the specified times, the office assistant asked her, "what has happened since you started taking the capsules?" The mother's comments were then recorded verbatim.

At the end of the three week period both the mother and the child returned for a follow-up interview with the psychiatrist, at which time he again made a clinical evaluation of the mother and the child. The psychiatrist then compared his initial evaluation with his second evaluation, noting whether either or both of the subject pair showed improvement, no change or aggravation of presenting symptoms.

Treatment Conditions

Prior to the initial interview, these mother-child pairs had been randomly assigned to one of three treatment groups.

Group 1 (N = 17): Mother and child were given identical pink lactose placebo capsules both to be taken one in the morning and two at bedtime.

Group 2 (N = 15): The mother was given nortriptyline hydrochloride (appearing identical to the pink placebo) of 10 mg. strength. All children received pink lactose placebo capsules. Both the nortriptyline hydrochloride and the placebo were to be taken one in the morning and two at bedtime.

Group 3 (N = 20): The mother was given green lactose placebo capsules and her child pink lactose placebo capsules, both capsules to be taken one in the morning and two at bedtime.

None of the mothers or children were informed that they were subjects for an experiment or were being treated in any special manner. The psychiatrist was supposed to be unaware of the treatment group to which each patient had been assigned. However, this was only successful for groups one and two, since the green capsules automatically revealed the treatment condition of group three subjects.

Activity Room Procedure

The procedure was essentially the same for the activity room group with the exception that this group was given five minute individual pre- and post-"medication" experiences in the Children's Activity Room. The pre-"medication" trial was given while the mother was completing the general information questionnaires. During the five minutes of the post-"medication" activity room trial, the mother remained in the waiting room until the child finished. Each child was away from his mother for approximately seven minutes. Upon returning to the waiting room, he either waited for his mother to complete the forms or went with her directly into the psychiatrist's office, where they were interviewed by the psychiatrist.

Activity Room Experience

The child accompanied the experimenter to the activity room (see Appendix A) where he was left to play "for a few minutes." The experimenter closed the activity room door and went into the adjoining control room. The timer on the wall was set for five minutes and the test switch turned to "on." The experimenter then dialed 1 on the dial on top of the control unit, indicating that the child was not yet playing with any toy. As soon as the child began to play with a toy the

experimenter dialed in the code number that corresponded to that particular toy. When the child ceased playing with a given toy, a 1 was again dialed until another toy was selected, at which time the code number of the new toy was dialed. This procedure continued until the timer buzz signified that the five minute test was completed. At that time the experimenter took the child back to his mother.

During the entire five minute period the Ultrasonic Motion Detector was activated and was recording the total activity of the child.

The following information was recorded on tape during each activity room experience:

1) The accumulated time for each code dialed. Time accumulations were recorded for each dialing of a given code separately (see Appendix B for an example).

2) The amount of motion as measured by the Ultrasonic Motion Detector was recorded.

3) The readings from the various microswitches and sensors located in each toy indicating the number of lever presses, crank turns and pedal rotations was recorded.

Scoring of Mother's and Psychiatrist's Reports

The psychiatrist's evaluations and the combined telephone reports by the mother concerning the effects of the "medication" on both her and her child were scored on a three point scale:

1) Positive Change

2) No Change

3) Negative Change

Forty-six of the mothers made direct statements that one or both of them were either better, worse, or had not changed after taking the

capsules. In the five instances in which the mother reported a balance of positive and negative effects of the "medication," the statements were evaluated by three judges. For these five reports the judges scored, there was unanimous agreement.

Treatment of Activity Room Data

Pre- and post-"medication" activity room scores for each of the 24 children tested were converted to weighted Z scores (see Appendix B) with a mean of 50.00 and a standard deviation of 10.00. When the resulting Z score was lower than the mean of 50.00 it indicated hypo-activity and when higher hyperactivity was indicated. Comparison of these pre- and post-"medication" activity room Z scores would reflect a change in a child's general activity level over the three week treatment with placebo.

CHAPTER IV

RESULTS

Major analyses of the data by Chi Square is presented in three parts: Activity Room group comparisons; Clinic group analyses; and analyses of the combined Activity Room and Clinic groups in the three treatment conditions.

All Chi Square analyses with N less than 100 were adjusted by Yates Correction as suggested in Walker and Lev (1953, p. 106).

Activity Room Group

A Chi Square test of significance on agreement and disagreement on the change-no change variable between mother and child was not significant (X^2_y = .411 1df).

The three Chi Square tests between mothers' and the psychiatrist agreement or disagreement on the change-no change variable were significant (see Table II). Values obtained were: for mother and child together (X^2_y = 15.843); for children alone (X^2_y = 9.409); and for mothers alone (X^2_y = 4.266). It is important to note that these significant interactions were agreement on no change and disagreement on change.

Activity scores for the group of 24 children consisted of converting the measures of their activity levels into Z scores, corrected to have a mean of 50 and a standard deviation of 10 (see Appendix B). Since the absolute deviation from the mean of 50 was of primary importance, 50 was subtracted from each child's pre- and post-"medication"

TABLE II

CHI SQUARE VALUES

	Chi Square Value (1df)
I. Clinic Group	
A. Mother's and Psychiatrist's Evaluations	
1. Agreement on Mother and Child Together	2.149
2. Agreement on Mothers	1.368
3. Agreement on Children	.179
B. Mother-Child Agreement on Change--No Change Variable	2.683
II. Activity Room Group	
A. Mother's and Psychiatrist's Evaluations	
1. Agreement on Mother and Child Together	15.843**
2. Agreement on Mothers	4.266*
3. Agreement on Children	9.409**
B. Mother-Child Agreement on Change	.411
III. Combined Clinic and Activity Room Groups	
A. Mother's and Psychiatrist's Evaluations	
1. Agreement on Mother and Child Together	13.746**
2. Agreement on Mothers	5.679*
3. Agreement on Children	4.926*
B. Mother-Child Agreement on Change	9.353**
IV. Agreement and Disagreement on Change--No Change Pink Placebo and Green Placebo Groups Together	3.551
V. Mother-Child Agreement-Disagreement	
A. Pink Placebo and Green Placebo	.023
B. Males and Females	.071
VI. Mother's Improvement (Pink Placebo and Pink Nortriptyline Hydrochloride)	.111
VII. Change--No Change for Placebo and Nortriptyline Hydrochloride	3.498

*Significant ($P < .05$)

**Highly Significant ($P < .005$)

Z score, yielding the absolute difference from the mean. It was hypothesized that the mean of the absolute differences on the pre-"medication" trial would be significantly greater than the mean of the absolute differences on the post-"medication" trial, thus indicating a significant reduction in the deviations from the mean after "medication."

A t test of significance between the means of differences from 50 of the two trials yielded t = 1.488 (23df) which was not sufficient to support the hypothesis (see Table III, Appendix C). Thus, there was no significant difference between the means of these two sets of difference scores, meaning the children's activity levels were not significantly altered by three weeks of placebo treatment.

Clinic Group

Chi Square analysis of agreement and disagreement between mothers and children for change or no change produced by "medication" resulted in $X^2_y = 2.683$ (1df), a value not sufficient for significance. None of the three following Chi Square tests of the mothers' and psychiatrist's evaluations were significant: for both mother and child together ($X^2_y = 2.149$); for children ($X^2_y = .178$); and for mothers ($X^2_y = 1.368$).

Combined Subject Groups

To test the hypothesis that mothers of emotionally disturbed children would tend to report similar effects for themselves and for their children after both received "medication" for three weeks, a Chi Square analysis of all 52 mother-child pairs was performed and yielded $X^2_y = 9.353$ (1df) which was highly significant ($P < .005$). When this same comparison was made for only the two placebo groups, the resulting value was $X^2_y = 3.553$, just short of the value needed for significance.

A Chi Square test of significance was used to determine whether mothers and children taking the same color placebo had significantly more agreement of response than the mothers and children in the treatment group in which the mothers received green placebo and the children pink placebo. Results were $X^2_y = .023$ (1df) which was not significant, indicating no color effect. Agreement or disagreement between mother and child appears to be independent of the color of their "medication."

To determine whether there would be significant differences in reported improvement between mothers taking pink nortriptyline hydrochloride and mothers taking identical pink placebo, the data was tested for significance by Chi Square. This hypothesis was supported since the $X^2_y = 1.625$ (1df) did not indicate a difference between these two groups. In fact, the frequencies do not even indicate a trend toward any difference between the active and inert agents.

Analysis by Chi Square of the mothers' evaluations of herself and her child compared to those evaluations by the psychiatrist for all 104 persons treated yielded $X^2 = 13.746$, a highly significant value ($P < .001$). Similarly, the individual analyses of the mothers' ratings of the children compared to those by the psychiatrist and of the mothers ratings of themselves compared to the psychiatrist's ratings of the mothers were of importance. Comparison of the ratings of the children by the mothers and by the psychiatrist indicated a value of $X^2_y = 4.925$ (1df), significant at the .05 level. Even more significant ($P < .02$) was the $X^2_y = 5.679$ (1df) found for the mothers by comparing their self ratings to those by the psychiatrist. These three significant findings are sufficient support for the hypothesis that mothers' and children's reactions to "medication" would be similarly perceived by the psychiatrist and the mothers.

Summary

Of the five hypothesis tested, four were supported by these data.

The hypothesis that mothers of emotionally disturbed children would tend to report similar effects for themselves and for their children after both received "medication" for three weeks was supported by these analyses and highly significant at the .005 level. These data also supported the hypothesis that mothers and the psychiatrist would tend to perceive similar reactions in the mothers and their children. As predicted, no color effect was evident and no significant difference was noted between mothers receiving pink nortriptyline hydrochloride and pink placebo.

CHAPTER V

DISCUSSION

Results of the analysis support the primary hypothesis that mothers of emotionally disturbed children would tend to report similar effects for themselves and for their children after both received "medication" for three weeks. The level of significance indicated a definite effect of mother-child interaction and identification in the psychopharmacotherapy of emotionally disturbed children. It is important to note that the 78.9 percent agreement between mothers and children on the direction of change produced by placebo and a mild anti-depressant (30 mg daily compared to the normal dosage of 75-100 mg daily) is sufficient evidence of operational factors other than pure placebo "reactivity" or response to a mild drug which the child did not receive. Since mothers who did not respond either positively or negatively to the "drug-taking" experience tended not to agree with their children, interaction and mutual mother-child identification are determining factors of response for those mothers reacting to "medication."

The support found for similar perceptions of response by mothers and the psychiatrist suggest that in comparison to an expert opinion (the psychiatrist in this case) mothers tend to perceive quite accurately change or no change in their children's behavior. Excluding the possibility of extensive actual behavioral changes in response to placebo, these mothers were most likely perceiving specific effects in

their children as a result of their own increased sensitivity to the children and their own expectations of "drug-effect." It is worthwhile noting here that mothers of those children given an activity room experience agreed significantly less with the psychiatrist than did the Clinic group of mothers. Possibly this is due to an increased sense of involvement in and identification with their child's therapy (and therapist) by those mothers who participated in every aspect of the therapy and were never separated from their child.

Since neither the color of the capsule, its chemical composition, the sex of the child, nor the activity room experience appeared to affect mother-child agreement of response to "medication," it appears that the mother-child relationship, as predicted, determined in a large part, "reactivity," direction of "reaction," and agreement or disagreement between mother and child in a "drug-taking" situation.

From these significant findings come implications for revision of the design for future joint mother-child placebo research involving more variables and more objective measures. The following revisions would have been interesting changes or additions to this study:

1) increasing the N from 52 pairs to approximately 150 to 200 pairs of mothers and children, thereby magnifying the differences and increasing the likelihood of obtaining statistical significance in some of the areas where these results merely indicated trends;

2) eliminating separate Activity Room and Clinic groups by giving every child the Clinic procedure and an activity room experience, which would provide an objective measure of activity level and attention span for each child subject;

3) giving each mother the Minnesota Multiphasic Personality Inventory and the Bass Social Acquiescence Scale to allow for some prediction of placebo "reactivity" and the direction of that "reactivity" in the mothers;

4) increasing the number of psychiatrists evaluating the pairs from one to at least three (using tape or film) and pooling their findings in a double-blind situation in which neither the psychiatrist nor the subject is aware of the subject's treatment condition.

Even in the absence of the above revisions and any previous research in the area of joint mother-child placebo studies, these results do demonstrate the importance of the mother-child mutual identification in a "drug-taking" situation with this relationship appearing to be the most important factor in the reported responses. If nothing more, they point out the need for more extensive research in this neglected aspect of the mother-child relationship.

CHAPTER VI

SUMMARY

Fifty-two mother-child pairs divided into two experimental groups and three treatment conditions were administered placebos or a mild anti-depressant to study the effect of the mother-child interaction in a "drug-taking" situation. There were two major predictions: 1) mothers of emotionally disturbed children would perceive similar reactions in themselves and in their children after both received "medication"; and 2) mothers' and children's reactions would be similarly perceived by the mothers and the psychiatrist.

The fifty-two mother-child pairs were divided into an Activity Room group of 24 and a Clinic group of 27. Except for activity room experiences given the child subjects in the former group, the procedure for the two was identical. Each pair was assigned to one of three treatment conditions which consisted of giving 1) both mother and child pink placebo; 2) mother pink nortriptyline hydrochloride and the child pink placebo; and 3) mother green placebo and the child pink placebo. Given pre- and post-"medication" evaluative psychiatric interviews, the subject pairs were rated during the second interview on a three point scale: 1) positive change; 2) no change; or 3) negative change, depending upon the psychiatrist's estimation of their response to the "drug-taking" experience. These evaluations and the mothers' subjective reports of response (rated on the same three point scale) were tested for significant interactions.

Since the results do not appear to be affected by capsule color, chemical composition or the child's activity room experience, data from both experimental groups were combined for analysis by Chi Square with the combined data supporting both major predictions.

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APPENDIX A

PROCEDURE FOR TESTING A CHILD IN THE ACTIVITY ROOM

PROCEDURE FOR TESTING A CHILD IN THE ACTIVITY ROOM

The activity room should be unlocked before the technician meets the child. After the entrance door is unlocked the light switch just inside the door on the left wall should be turned on. Next the light switch just inside the control room door on the right wall should be turned on and the light level in the control room should be adjusted by the circular dial on the right of the one-way mirror. The lights in the activity room are then turned on by turning on the switch marked "white" found under the timer clock. The room is now ready for the child to be brought in. When leaving the room to get the child, be sure the activity room door is open and the control room door is closed.

The technician meets the child in the waiting room and says: "I would like for you to come with me and play with some toys." The technition takes the child to the activity room and says: "These are the toys. I am going to leave you alone to play with them for a few minutes; and when I come back, I want you to tell me which toy you liked the best."

The technician now leaves the child in the activity room, closes the activity room door and goes into the adjoining control room. On entering the control room the technician immediately turns on the "pre-test" switch on the control unit which is located on the table in front of the one way mirror. The timer on the wall is set for five minutes by setting both clock hands on the number 5, the child's name is written on the auxiliary paper roll on the extreme left and on the

control table. The "test" switch on the control unit can now be turned on and the testing begins. As soon as the "test" switch is turned on, the technician dials 1 on the dial on top of the control unit. As soon as the child begins to play on a toy, the technician dials in the code number that corresponds to that particular toy. Each toy's name is taped opposite its code number on the dial. For example, if the child starts playing with the train, the technician dials 2. As soon as the child ceases to play with a given toy a 1 is dialed in until another toy is activated. At this time the code number of the selected toy is dialed in. This procedure continues until the timer buzz signifies that the 5 minute test is complete.

When the buzzer signals the end of testing, the "test" switch is turned off and then the "pre-test" switch is turned off. The technician tears off the child's test results from the paper roll to his right and above his head and returns to the activity room to get the child, being sure the control room door is closed before the activity room door is opened. Upon entering the activity room the technician asks the child the following: "Did you have a good time? Which toy did you like best? Good, now let's go back upstairs."

APPENDIX B

ANALYSIS OF ACTIVITY ROOM DATA

ANALYSIS OF ACTIVITY ROOM DATA

The paper recording for the activity room measurements consists of seven columns of digits. The first two columns represent the count for the general activity measure; the third column represents the toy the child is on; the fourth and fifth columns represent the time to tenths of a second that the child is engaged in activity; the sixth and seventh columns represent the number of counts, i.e., the number of handle or pedal revolutions on the toy. Example:

	Columns						
	1	2	3	4	5	6	7
Puppet	1	7	7	4	7	0	2
No	0	2	1	1	6	0	1
Activity	9	7	1	0	5	0	0
Lights	9	6	5	5	5	0	4
No Activity	7	8	1	3	5	0	0
	6	0	5	2	0	0	6
Lights	4	6	5	9	9	2	9
	1	3	5	9	8	1	9

The key for the third column representing the toy the child is on is as follows: 1 = no directed activity; 2 = train; 3 = bike; 4 = phonograph; 5 = lights; 6 = car; 7 = puppet.

The first step in analyzing the data is to get the rate of activity for each toy. This is done by adding up the total number of counts for each toy (in the example this would be 19 + 29 + 06 + 04 = 58 for the lights) and dividing it by the total number of seconds (for the lights this would be 9.8 + 9.9 + 2.0 + 5.5 = 27.2 and the rate of activity would equal 58/27.2 = 2.13).

Second, in order to equate the activity expended on one toy with that on another, i.e., three turns of the train handle may be equal in activity to one revolution of the bicycle pedal, the rate of each toy is converted to a z-score. The formulas for converting the z-scores are:

Z -- train = 21.28 X rate of train + 27.44

Z -- bike = 16.95 X rate + 40.17

Z -- lights = 26.32 X rate + 35.00

Z -- puppet = 24.39 X rate + 34.88

Z -- phonograph = 21.28 X rate + 31.06

Z -- car = 21.74 X rate + 37.61

The basic formula is $X_z = (10/\sigma)\ x - [(10/\sigma)\ M_i - 50]$, correcting the z-scores to have a mean of 50 and a standard deviation of 10. Twenty children were used to standardize the scores.

Third, the amount of time the child spends on a given toy is divided by the total time his activity is directed upon all of the toys, giving the percent of directed activity for that toy. This percentage is obtained for each toy and multiplied by the toy's z-score, thus giving a weighted z-score. The weighted z-scores of the six toys are then added to give a "total weighted z-score"; when this score is lower than the mean of 50 it points in the direction of hypo-activity, and when it is higher than the mean, points in the direction of hyper-activity.

Example of a complete record:

Toy #	Counts/time	Rate	z-score	% DA time	Weighted z-score
2	124/192.1	(.64)	41.06	.70	28.74
3	15/ 19.8	(.75)	52.88	.07	3.70
4	33/ 22.3	(1.47)	62.34	.08	4.98
5	60/ 28.8	(2.08)	89.75	.10	8.98
6	4/ 3.8	(1.05)	60.44	.01	.60
7	2/ 4.7	(.42)	45.12	.01	.45
					47.45

Another important measure is the "percent of directed activity." This is obtained by dividing the total amount of time the child directs his activity upon the toys, i.e., is not moving from one toy to another or just looking at the toys, by the total amount of time he is in the room, which in recent experiments is 5 minutes or 300 seconds.

Example: DA = 271.5/300 = 90.50%

Also a measurement of the child's "general activity" is acquired by dividing the number of general activity counts (columns one and two) by the number of seconds. This may be done for the periods a child spends on a particular toy, or, for the times he is walking or standing in the room, not directing his activity upon a toy.

Example: GA = 154/32.7 = 4.70

And lastly, the "number of changes" the child makes from toy to toy may be obtained from the paper recording. In the example given at the beginning of this paper, a change from the lights to the puppet is shown.

APPENDIX C

TABLES OF RESULTS

TABLE III

ACTIVITY ROOM GROUP DATA

	Percentage of Activity Room Scores to Indicate Improvement	Percentage of Children Rated Improved by the Mothers	Percentage of Children Rated Improved by the Psychiatrist	Mean of Trial 1 Difference Scores (Absolute)	Mean of Trial 2 Difference Scores (Absolute)
Group 1 (N = 8)	75.0%	58.8%	12.5%	5.91	3.76
Group 2 (N = 7)	57.1%	66.6%	14.3%	6.04	3.49
Group 3 (N = 9)	44.4%	45.0%	11.1%	5.29	5.07
Total	58.3%	56.8%	12.6%	5.72	4.18

TABLE IV

CLINIC GROUP DATA

	Percentage of Children Rated Improved by the Mothers	Percentage of Children Rated Improved by the Psychiatrist
Group 1 (N = 9)	77.7%	44.4%
Group 2 (N = 8)	75.0%	62.5%
Group 3 (N = 11)	54.5%	54.5%
Total	69.0%	53.8%

TABLE V

PSYCHIATRIST AND MOTHERS' EVALUATIONS OF THE MOTHERS AND CHILDREN

	Percentage of Mother-Psychiatrist Agreement for the Mother	Percentage of Mother-Psychiatrist Agreement for the Child	Mean Percentage of Mother-Psychiatrist Agreement
Group 1 (N = 17)	52.9%	64.7%	58.8%
Group 2 (N = 15)	53.3%	53.3%	53.3%
Group 3 (N = 20)	60.0%	60.0%	60.0%

TABLE VI

MOTHERS' EVALUATIONS OF THEMSELVES AND THEIR CHILDREN

	Percentage of Children Changed	Percentage of Mothers Changed	Positive Change in Both Mother and Child	No Change in Both Mother and Child	Negative Change in Both Mother and Child	Percentage of Agreement of Mother-Child Reaction	Ratio of Positive to Negative Changes in Children	Ratio of Positive to Negative Changes in Mothers
Group 1 (N = 17)	70.5%	70.5%	5	2	1	53.3%	10:2	7:5
Group 2 (N = 15)	80.0%	93.3%	6	2	2	66.6%	10:2	8:6
Group 3 (N = 20)	65.0%	70.0%	6	-	2	40.0%	9:4	10:4

APPENDIX D

FREQUENCIES OF SIGNIFICANT CHI SQUARE VALUES

FREQUENCIES OF SIGNIFICANT CHI SQUARE VALUES

Activity Room Group: Mothers' and Psychiatrist's Evaluations

1. Mother and Child Together

Psychiatrist's Evaluations	Mothers' Evaluations: Change	Mothers' Evaluations: No Change	
Agree	9	15	24
Disagree	23	1	24
	32	16	48

$X^2_y = 15.843$ $(P < .001)$

2. For Mother (Alone)

Psychiatrist's Evaluations	Mothers' Evaluations: Change	Mothers' Evaluations: No Change	
Agree	5	6	11
Disagree	12	1	13
	17	7	24

$X^2_y = 4.26$ $(P < .05)$

3. For Child (Alone)

Psychiatrist's Evaluations	Mothers' Evaluations: Change	Mothers' Evaluations: No Change	
Agree	4	9	13
Disagree	11	0	11
	15	9	24

$X^2_y = 9.409$ $(P < .005)$

Combined Subject Groups: Mothers' and Psychiatrist's Evaluations and Mothers' Evaluations of Herself and Her Child

1. Mother and Child Together

Psychiatrist's Evaluations \ Mothers' Evaluations	Change	No Change	
Agree	37	24	61
Disagree	40	3	43
	77	27	104

$X^2_y = 13.746$ $(P < .001)$

2. For Mother (Alone)

Psychiatrist's Evaluations \ Mothers' Evaluations	Change	No Change	
Agree	19	11	30
Disagree	21	1	22
	40	12	52

$X^2_y = 5.679$ $(P < .02)$

3. For Child (Alone)

Psychiatrist's Evaluations \ Mothers' Evaluations	Change	No Change	
Agree	18	13	31
Disagree	19	2	21
	37	15	52

$X^2_y = 4.926$ $(P < .05)$

4. Mothers' Evaluations of Herself and Child

Mothers \ Children	Change	No Change	
Agree	30	4	34
Disagree	8	10	18
	38	14	52

$X^2_y = 9.353$ $(P < .005)$

VITA

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