INFLUENCE OF TEMPTATION

ON

CHEATING

by

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M.M.M.

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CHAPTER I

INTRODUCTION AND HISTORY

This thesis concerns itself with the investigation of cheating in 10 year old boys. In many ways it can be conceived as being a relatively narrow study: a set of limiting experimental variables were tested, the data statistically analyzed and the concrete conclusions drawn; all within the rigid limits of the scientific-methodological framework. However, the problem of cheating, an important one psychologically, was also used in this study as a vehicle to illustrate a more general methodological problem existing in studying children.

The first studies of children's behavior, nearly a hundred years ago, consisted in describing the child's behavior as seen by a parent: the era of anecdotes. Men like Preyer and Darwin observed their own children and wrote biographical sketches on what they thought went on. With the advent of the "scientific-method," serious doubts about such data concerned men who were more empirically oriented. Still, until comparatively recently, most of those who wrote about children's behavior and development were mainly concerned with speculative theories. The studies made by J. B. Watson, Gesell, Terman and others especially

those who were interested in the mental development movement, were greatly influential in turning attention toward more measurable, empirically based theories by their insistence on the objectivity of method and the minimizing of introspection. This objective approach has led in many different directions and from it has evolved a large mass of information, knowledge and some understanding of children. To undertake the tracing of all the trends evolving from these diverse methods and concepts would go beyond the purpose of this study and would necessitate a dissertation on the history of child psychology (1).

In an attempt to cross-cut the many problems and trends appearing in today's literature on experimental child psychology this discussion is limited to a brief description of one major methodological issue: genotypes versus phenotypes. The general history of this problem is not new but more recently Lewin (24) in his discussion of Aristotelian and Galilean modes of thought, has concentrated attention on the difference between these two methods as applied to psychological methodology and especially as related to the study of children. Mainly Lewin criticized the measurement of traits, emotions, intelligence, and such on the assumption that similarity in appearance denotes the data as being

distinct and discrete phenomena. In 1935 Lewin stated:

> "Present-day child psychology and affect psychology also exemplify clearly the Aristotelian habit of considering the abstractly defined classes as the essential nature of the particular object and hence as an explanation of its behavior. Whatever is common to children of a given age is set up as the fundamental character of that age. The fact that three-year-old children are quite often negative is considered evidence that negativism is inherent in the nature of three-year-olds, and the concept of a negativistic age or stage is then regarded as an explanation (though perhaps not a complete one) for the appearance of negativism in a given particular case... The statistical procedure, at least in its commonest application in psychology, is the most striking expression of this Aristotelian mode of thinking..." (24, P. 15).

The above manner of setting up and analyzing data Lewin labels phenotypical and he sharply contrasts it with his genotypical approach which is concerned with the "causal or antecedent phenomena." The two are further differentiated. In the statement, the apple is round, the "language of data" is used. It registers an experience which is expressed in the ordinary language of phenomena. This type of description is couched in phenotypic language and constitutes a phenotype. By a genotype is meant the underlying dynamic situation of which the phenotype is an individual expression. A forward child and a timid child represent two distinct phenotypes but both forms of behavior may spring from a common psychological mechanism; both may manifest

identically structured fields. Phenotypy is expressed in the language of data; genotypy, in the language of constructs, characterizing the dynamic elements common to many data which are logically connected. Hilgard sums up the distinction between the two: "...a genotypical explanation goes beneath the surface phenomena to detect an underlying dynamic explanation; a phenotypical explanation tends to stay with surface phenomena, treated statistically or actuarially." (20, P. 291). Lewin, Barker and Wright (4), and other workers concern themselves mainly with genotypical data. As Anderson comments: "...For Lewin the central problem of child psychology becomes the study of genotypes....it preserves the natural setting...the phenotype takes events out of their setting and puts them off by themselves..." (1, P. 10).

The issue presented above is concerned with the question of whether psychological phenomena are best studied phenotypically or genotypically: descriptions in terms of surface attributes versus explanatory accounts, seeking underlying motives and stresses. Distinguishing among phenomena this way is considered important as it provides a more flexible treatment of individuality. It indicates the possibility that the same cause, in the context of different "life-spaces",

may give rise to different effects instead of conformity. The problem of investigating cheating or honesty, appears to be intimately related to this methodological problem.

Historically there has been little experimentation on the psychology of cheating. A few articles are scattered throughout the literature; most of them follow the trends developed in the now classical character study made by Hartshorne and May in 1928 (17) and none have been of any further major consequence. The studies fall naturally into two types: (a) those measuring the amount of cheating, e.g., how much cheating is done in a classroom; and (b) those illustrating devices and techniques for detecting cheating, e.g., preparing an arithmetic test in such a manner that cheaters can be easily discovered. An excellent account of the early methods used to detect cheating and dishonesty is given in Hartshorne and May: Studies in Deception.

Before 1928, Healy's text (19) in 1910, was a monumental and insightful piece of work on honesty. At this early date he called attention to the notion that emotional poverty was a factor in children's delinquency. His work was primarily an observational case history approach but is historically significant since it was actually the first to consider cheating, even though in a quasi-systematic fashion. Healy's

individual-centered approach was somewhat ahead of its time and it was nearly 15 years before others were using his more dynamic concepts. In the area of cheating the first papers did not appear until 1921 when Voelker tested trustworthiness of children by an analysis of their behavior as seen if they cheated in marking their own papers (38). Tests for measuring deceptiveness for the purpose of predicting delinquency were presented by Cady in 1923 (6) and Raubenheimer in 1925 (33). Charters in 1927, writing on the types of situations leading to cheating in the classroom, considered honesty not from the view of maladjustment but from a situational-ethical standard. He was concerned with categorizing honest and dishonest responses (8). It was about this time that interest was being stimulated in studying character problems and in 1923 the Hartshorne and May group started their major work. A more detailed analysis of this study is made below. In 1928 their results and the University of Iowa's character studies were published. Slaght's study of untruthfulness in children is representative of the latter work (35). The general atmosphere and thinking underlying many of the studies during this period is examplified in Stiner's statement made in 1932:

> "...pupils who cheat develop undesirable behavior patterns and are training themselves for lives of deceit and dishonesty. Hence it is important to discover and eliminate cheating of all kinds..." (36, P. 372).

After 1928 much of the work dealt with very specific aspects of cheating. Bird (5), Winland (41), Dickenson (10), and others wrote on the advantages and disadvantages of one test device over another in uncovering cheating. But the studies appearing after Hartshorne and May, were more frequently attempts to discover the amount of cheating in different types of situations and to list group traits of children as being reflective of the individual child, (7), (11), (22), and (28). It is significant to note that invariably none of the above references consider cheating itself as a psychological phenomenon or even undertook to define the term. For example the following statement by Drake is somewhat typical of the admixture of the frames of reference usually employed: "...it is evident that cheating grows out of the competitive system...it points to acute need for marks in a situation that appears to the student to be featured by baffling examinations and by tyrannical pedagogues..." (11, P. 419). In connection with the question of competition, Sister Gross found in 1946 (16) that competition did not appear to increase

dishonesty and that there were many unexplained differences in the individual child's day by day performance. These findings are in agreement with the results frequently found in other investigations which can be summarized as follows: (a) there were many ways of minimizing and detecting cheating on tests by manipulating papers and questions; and (b) there was a wide variation in the cheating done among groups of children and by an individual child himself.

In all this work a conceptual framework was absent and emphasis was placed only on the concrete, functional aspects of cheating. Among the many tasks Piaget set for himself he included cheating in his study of the Moral Judgement of the Child (31). He was developmentally oriented and was interested in understanding the concept of justice as it appeared to children of different age levels. He asked such questions as: "Why should one not cheat at school?" and "Why should one not cheat at games?" Even though he defined cheating as a social problem, his method of directly questioning children brought into the picture the fact that it was a child doing the cheating and the possibility that there were cognitive differences among children. Still, it should be pointed out that the latter conception was not particularly included in

his final evaluation of the data. Instead his conclusions reflected overall developmental differences among his age groups: the desire for equality and cooperation increased as the children became older.

More recently Gesell and Ilg in their study of children between the ages of 5 and 10 have reported developmental differences in cheating (15). Their observational, central-tendency method resulted in listing traits or characteristics one would expect to find in an "average" child of a certain age group. For example, of the six-year-old it is said "...(the) child worries about his friends cheating..." and of the ten-year-old: "...he has a fairly critical sense of justice..." These writers have also proposed a "gradient of honesty" wherein the child develops from what apparently is compulsive cheating, at six years, to controlled concern about it by the age of ten. Since these writers were not primarily concerned with cheating and their remarks about it were limited to their discussion of the ethical sense in children, their results should not be criticized too severely and should be considered as tentative and suggestive for further experimentation, especially in a more dynamic, conceptual framework.

Earlier it had been pointed out that there have

been very few studies on cheating and that most of them were, in one form or another, variations on the ideas and methods established in the study of deception by Hartshorne and May (17). For this reason and because the problem and hypotheses of this paper were developed from it, we have delayed discussion of it until this time.

The Hartshorne and May study was an outgrowth of "an inquiry into character education with particular reference to religious education" under the overall supervision of E. L. Thorndike of Columbia University and was originally conceived by the Institute of Social and Religious Research. The funds were supplied by the latter group and the research project lasted from 1923 to 1928. The avowed purpose of the study was to "study the actual experiences of children which have moral and religious significance and the effects for periods of time of the moral and religious influence to which children, youth, and adults have been exposed." (P. vi). The authors considered many approaches to their problem and finally settled on what they called "methodology." This meant testing and measuring by means of a large body of highly standardised tests which their group of workers had developed.

Deception, although never precisely defined, was

frequently described as the "circumvention of social obstruction" where either the method and/or the end to be attained were frowned upon and it was thought of as a mode of adaptive behavior. A fundamental assumption was that "the amount and character of the deception are primarily functions of the situation." Their method of testing was very carefully planned and carried out within the tenets of "good" experimental design. They established ten criteria by which they evaluated each test procedure: e.g., a test situation was to be a natural one but at the same time a controlled one; equal opportunity was to be given to each subject to perform; the tests were to be clear and not ambiguous, etc. The various tests finally used (and usually the ones so often employed by the later investigators) were the following: 1. some form of paper and pencil method where discrepancies could be discovered by having carbon paper underneath, collecting papers and then returning them, saying they had not been graded when they had; 2. games and athletic contests which the subject's highest observed score was compared with the scores he turned in when he was not observed, or games in which the limits of attainment were known by the examiner and not the subject, where anything in excess would be deception; and 3. question-

naires, in which the subject's answers to questions about himself were compared with the actual situation concerning the particular question, e.g., a child who has cheated on another test was asked "did you ever cheat?"

The results of this investigation cannot be summarized tersely since there were many important and interesting findings. Before attempting to list several of the more general ones, it appears important to present the authors' opening statement to their chapter on conclusions:

> "From the onset we have insisted that these studies in deceit are of necessity fragmentary and incomplete, for the number of situations in which deception may be practiced and the number of ways of deceiving others are truly legion. A correct scientific procedure would be to collect from actual life a large number of such situations, tabulate them, note the frequency of their occurrence, and then build test situations around the most frequent." (17, P. 402).

The conclusions of their study were based on three types of deceptive behavior: cheating, lying, and stealing. Their entire battery consisted of 22 opportunities to cheat in the classroom, four in athletic contests, two in party games and one in school-work done at home. In the lying tests there were a total of 46 opportunities for false answers and in the stealing tests, there were three chances to steal, two of which involved money.

Their results were as follows:

1. Age: older pupils were somewhat more deceptive although variations existed among test situations and the groups themselves. 2. Sex: no difference, at times one or the other were more deceptive. 3. Intelligence: the higher the intelligence level the less was the deception. 4. Emotional Stability: those more unstable were more likely to deceive. 5. Physical Condition: was not related to deception. 6. Socio-economic Level: the more deprived the background the more was the deception. 7. Cultural Level: the less "culturized" children were more deceptive. 8. Home Atmosphere: unstable, inconsistent or otherwise poor home conditions were associated with more deception. 9. Nationality of Parents: more deception was found in children whose parents were born in South Europe; colored children were more deceptive than white. 10. Religion: no particular differences were found although not all the differences were accounted for. 11. Kinship: the results were uncertain. 12. Grade: no overall differences except in one test there was an increase in deception from grades six to eight. 13. Retardation: retarded children were more deceptive; this was considered as a problem of intelligence level. 14. Achievement: there was little relation between academic level and deception. 15. Deportment: usually the student with the higher grades deceived the least. 16. Friends: a high association existed among classmates and the amount of deception but there was little between friends. 17. Suggestibility: the more suggestible, the more the deception was shown. 18. Movies: those who attended less than once a week deceived less than those who went more frequently. 19. Teacher Influence: the healthier the influence the less the deception was evident. 20. Progressive Method and Morale: similar to 19, better morale made for less deception. 21. Sunday School Attendance: there was

> no particular relationship to deception. 22. Membership in Character Organizations: there was no particular relationship to deception. 23. Deceit as a Trait: deceit was not found to be a unified character trait, but thought of as "specific functions of life situations." 24. Motivation of Deceit: this was found to be complex and to be inherent in the situation.

There is little doubt about the high quality and sincerity of the Harthshorne and May study. However, as the enumerated results above indicate their conclusions are limited to a series of statements about individual, singular instances about deception which can not be readily related to one another to further an understanding of deceptive behavior. A tabulation of traits does not make up the individual. Since the approach was phenotypical, they were not able to interpret the significance of their many findings so as to obtain a unified picture of the deceptive child's personality. Their final conclusions reflect the difficulty encountered in this type of approach:

> "Our conclusion, then, is that an individual's honesty or dishonesty consists of a series of acts and attitudes to which these descriptive terms apply. The consistency with which he is honest or dishonest is a function of the situations in which he is placed in so far as (1) these situations have common elements, (2) he has learned to be honest or dishonest in them, and (3) he has become aware of their honest

or dishonest implications or consequences." (17, P. 380).

One of the more serious defects of these conclusions is that the person himself, especially in regards to his motives and cognition of the situation, is completely disregarded. Although attention is focussed on the organization of moral traits, they arrive at the view that moral behavior is situationally determined.

The inadequacy of this phenotypical approach is further illustrated when at one point Hartshorne and May stated that "...(regarding) the number of possible situations involving deception....there are 25,000 possible combinations..." The impracticality of investigating so many situations is quite obvious and the results would most likely yield several thousand more combinations. It is evident that to understand deception requires more than just listing situations in which it occurs. It appears necessary to know what factors the various situations have in common and what are the dynamic processes underlying such behavior: it requires using a genotypical approach.

This argument concerning phenotype or genotype is not developed further since there is no need for a polemic about the merits or disadvantages of one

or the other. Excellent discourses on this problem can be readily found in the contemporary literature (23) (27). However, before entering into a description of the experimental problem of this paper, there remains to be presented but one more general point of view. This is the belief that deception is situationally determined. The situation (or environment) referred to is the physical one: e.g., the classroom, the teacher, the home furnishings, and so forth. There are few psychologists today, who would consider this notion as adequate although not all would agree completely with Lewin when he wrote in 1933:

> "...the dynamics of environmental influences can be investigated only simultaneously with the determination of individual differences and with general psychological laws...(24, P. 73). Psychological environmental forces may be defined empirically and functionally, excluding all metaphysical problems, by their effect upon the behavior of the child. They are equally applicable to the momentary situation and to the permanent environment of the child..." (24, P. 79).

Many psychologists today agree that a differentiation between the physical and psychological environments has to be made when studying behavior. It is not sufficient merely to talk about the classroom environment or the home atmosphere. It is also necessary to denote how they are operating psychologically. The studies of Lewin, Lippett, and White, on

Experimentally Created Social Climates (25), have clearly demonstrated that "classroom-environments" are not psychologically the same and that they may have very different behavioral consequences.

This distinction between physical and psychological environments has not been clearly made in any of the reported studies on deception. All have accepted, at face value, the contention that deception is a function of the situation, where the limits of the latter terms were not adequately described or defined. It is felt that this failure to examine and to define the situation involved in deceptive behavior is a serious fault which has retarded our understanding of cheating behavior by giving doubtful evidence as to the psychological significance the environment may have on such behavior. It appears probable that by reexamining deception as a function of the psychological situation a better integration and understanding can be obtained and, perhaps, even help to unify some of the diverse antecedent results.

CHAPTER II

STATEMENT OF PROBLEM AND HYPOTHESES

In the previous section the studies on deception, especially the one conducted by Hartshorne and May, were criticized for: (a) being too phenotypical, (b) neglecting cognitive and motivational factors and, (c) treating the situation too ambiguously. The finding that honesty was not a consistent character trait of a given child but a set of specific habits formed in particular situations was considered to be of doubtful validity. It was suggested that since the studies did not take into consideration the psychological meaning of the various test situations, there remained some doubt concerning the meaning of the results and the basis of the conclusions. It was pointed out that there was no valid rationale for the investigators to assume that a given test had a fixed psychological value or that identical situations would have the same meaning for all children. Asch summarizes the problem:

> "In the interest of objectivity and exactness the investigators have selected a particular act which is the end result of a psychological process. Without regard to the source of the act in each individual's thinking and motives they have proceeded to identify all acts that

> are externally alike. They have short-circuited the questions of major psychological interest, namely, what did the situation mean to the given child and what forces determined his final action? It would have been permissible to proceed in this manner if prior investigation had established that the act investigated has the same psychological meaning for all" (2, P. 63).

The specific trait approach used in these studies resulted in ambiguous conclusions. This method implies the doctrine of specificity and this conception, as the literature indicates, is subject to many defects. Especially significant here are the following two: 1. it does not permit the discovering of higher units of organization in personality; and 2. its dependence on statistical methods to determine specific traits frequently obscures results, e.g., low correlations between habits of behavior may mean that different individuals are not all consistent in the same way but does not prove that the individual is not consistent with himself in his own way. Because of the nature of "traits" they are of necessity conceived of in phenotypical terms which is misleading. For example, a boy in a reformatory acts as a "good-boy" but may not be so; he may want such a favor from the staff and may be conforming merely for this purpose and not because he is developing the trait of "goodness." It is apparent

that a trait approach is not only limited by its specificity but also by the probability of error in inference and misjudgement coming from fixing attention solely upon appearance. To avoid such errors would mean to find the genotype that underlies the behavior in question.

The extent of the problem involved in studying deception has been briefly outlined. It had been pointed out that most of the previous studies although scientifically objective were not particularly meaningful psychologically and were limited in their contribution to furthering the understanding of deceptive behavior. Several ideas were presented to remedy this problem. The following three statements summarize them.

1. Methodologically a genotypical approach is more fruitful.
2. The situation should be considered as part of the child's phenomenal world.
3. The forces acting in a deceptive situation should be delineated and studied.

Ideally a study of deceptive behavior should include all three of the above. At first this was attempted but the experimental outline revealed that such a project was not practical as it involved many workers and possibly several years of time. Because of such limitations it was decided to narrow the problem. The third aspect was selected as the focus of this study, the general area of deception was

limited to cheating and a modified genotypical approach was devised.

An investigation into the situational aspect of cheating was selected primarily because it concerned the basic tenet of the Hartshorne and May study. It had been used to integrate diverse findings and unwisely many authors have accepted this situational aspect as a generalized conclusion to explain deceptive behavior. It was considered necessary to test this as a hypothesis instead of just assuming its validity as a unifying factor underlying deception.

Thus, the problem to be investigated in this study involved studying the psychological situation in relation to deception. Specifically it is: to study cheating as a function of temptation. According to Lewin's definition, (24, P. 76), the psychological situation includes properties which have effect on the individual and which determine the direction of behavior. In order to limit the problem to proportions appropriate for study, temptation was selected as an independent variable and it was defined in psychological terms.

Before enumerating the hypotheses it is essential to further define the terms present in the above stated experimental problem.

Cheating: This usually refers to the act of deceiving or defrauding. In this study it is considered as a very specific act and measured very much in the same manner as Hartshorne and May did in their study. Operationally it is defined as: the taking of a reward (or token), when this was prohibited because the reward was not earned. The specific mechanics of measuring cheating are given in the following Procedure section. Functionally cheating was considered as: the performance of a definitely prohibited act in a circumscribed situation.

Temptation: The dictionary defines this as: "that which is an inducement or which entices" (13). Warren's Dictionary of Psychology defines it: "a stimulus or motive which tends to change the direction of an individual's attention and activity from a well considered or dominant course of behavior to some incidental action" (39). For purposes of this study temptation was defined in terms of specific situational conditions. It was viewed as a particular but variable set of characteristics existing in a situation which induces an activity incidental to this situation. In this experiment the incidental activity was cheating.

The tempting situations were devised by elaborating

one of the conclusions found in several of the previous studies: cheating in children increased when the teacher was out of the room. This conclusion can be easily translated into terms of temptation. In formulating the conclusions in this way, it becomes possible to devise several different situations varying in the degree of temptations. The situation involved in the following variations: 1. an adult being in the room; 2. an adult being out of the room; and 3. an adult being in the room and the child being aware that his performance was being recorded so that any cheating could be easily detected. The exact characteristics of each situation are further explained in the Procedure section of this paper.

The rationale behind manipulating the situation in this way refers back to the general problem of testing the situational determinants of deception. From the evidence reported in the literature it can be logically assumed that if more cheating takes place when the teacher is out of the classroom than when she is in it, then even less should occur when she is in the room and when the child knows he can be caught. The differences among being in and out of the room, being in the room and knowing or not knowing about the possibility of

being caught, and being out of the room and in the room with knowing about the possibility of being caught, are assumed to produce differences in degrees of temptation. For example, it would appear that a child left alone would be more tempted to cheat than a child who is in the same room with an adult and, in turn, the latter would be more tempted to cheat than his friend who is in a room with an adult but who knows that if he cheats he will be found out.

It is evident then that temptation can be related to the possibility of being discovered cheating. This permits the formulation of an operational definition of temptation: a situation is more tempting when there is less chance of being discovered cheating.

The situations described so far deal adequately with the general problem of temptation and are sufficient to derive experimental hypotheses and questions. However, the phrase, the probability of being discovered cheating, must be further clarified since it refers to two aspects of the situation. First, the more conventional one. A person can be "discovered" cheating when he is observed taking something that does not belong to him; being discovered <u>in the process</u> of cheating. Second, the individual can be in a position where after his

cheating the results are made more or less obvious. Here it is not the actual act of cheating itself which is being considered, but rather the attainment of the results of the cheating. The results of cheating can be obtained in a more or less covert manner. The first "possibility of discovery" refers to being caught while cheating. It involves the individual with the decision: "will I get caught trying to do this?" The second does not refer to being caught while cheating but while taking the reward and involves a more subjective question: "am I getting away with it?" An example of the first is the situation in which an adult being in the same room with the child dissuades the child from cheating on a spelling test. An example of the second is the situation in which every time a child cheats in spelling his pen would scratch loudly or a buzzer would sound and only the child knew that he had already cheated.

In this experiment two possible conditions of discovery were used. The first, mentioned above, involved an adult being in the room and the child aware (or not aware), of the recording apparatus. The second was accomplished by arranging the situation so that the result of the cheating was obtained in a

more or less public manner. The conditions obtained for this were: a. public, where the child's taking of a non-earned token was publicly announced; and b. private, where the result of the cheating was not announced and the child was the only one aware of it.

A great deal of time has been devoted to defining and explaining the terms used in this study. The hypotheses to be tested have been generally alluded to in the preceding discussion. It was, however, considered essential to state first some of the underlying thinking as it concerned the formulation of the experiment before actually stating the exact experimental problem and the hypotheses.

From what has already been reported our problem has been to determine whether cheating is a function of temptation. Temptation is operationally defined in terms of the situation and varied in two distinct ways according to the probability of being discovered cheating: 1. While under three different degrees of adult supervision; 2. In two different degrees of overtness in taking an unearned reward. This results in six possible situation-combinations varying in their degree of temptation. Cheating has been defined simply as the taking of an undeserved reward.

In addition to our hypothesis, the following sub-hypotheses are proposed:

1. The probability of being discovered cheating is inversely related to the quantity of cheating. The more it appears possible to be caught, the less likely will cheating occur.

2. Obviousness in accepting the results derived from cheating is inversely related to the quantity of cheating. The more overtly a reward is taken the less likely will cheating occur.

From these hypotheses it is now possible to predict the quantitative relationships expected to exist among the six experimental situational-combinations. In order of the most tempting situation to the least, these predictions are:

1. Out of the room and unearned reward taken privately.
2. Out of the room and unearned reward taken publicly.
3. In the room and unearned reward taken privately.
4. In the room and unearned reward taken publicly.
5. In the room, aware of performance being recorded, and unearned reward taken privately.

6. In the room, aware of performance being recorded, and unearned reward taken publicly.

It should be noted that although the predictions are presented in this order it did not seem possible to predict whether number 3 would come before number 2. These two situations, therefore, were arbitrarily assigned to their respective positions.

CHAPTER III

EXPERIMENTAL PROCEDURES

The task confronting each subject was the same. He sat before an oblong box. The front of this contained four lights and a token lever. The subject held his hand above a telegraph key and when he saw a light go on he was supposed to press this key. If he was successful in doing this, pressing the key while the light was still on, he won and was then allowed to reward himself with a token. The exact procedures and construction of the equipment follows.

Apparatus:

The basic design of the apparatus utilized simple visual reaction time materials. Four different one inch diameter colored lights, red, amber, green and blue were mounted in a semicircle on the upper half of a board twenty-four by twenty inches in size. Each light was individually wired to four copper contact points which in turn rested on a copper plate of an electric kymograph. Mounted on the rollers of this kymograph was a 120 foot roll of very durable tracing cloth which had slots of varying length cut out of it. When the current was turned on the rollers in the kymograph turned at a constant rate of speed and pulled

this tracing cloth, placed between the contact points and the copper plate. Each time a slot appeared a contact point was free to touch the copper plate. This closed the electric circuit and activated the particular light which was wired to the contact point. The duration that a light would remain on, the selection of which light would go on and the time between the stimuli were all determined by how the slots were placed or cut out of the tracing cloth.

It was previously decided to have each boy respond to sixty-six test stimuli and to five pre-test or practice stimuli. Since the response-time range, the number of stimuli-slots needed, and the lengths required for each time duration were known, it only remained to determine the order of timing and the sequences of activating the lights. The latter was easily done by using random numbers since it was desirable to have the lights go on and off in a random manner. The order of timing involved the determination of whether a light duration of 0.35 seconds was to preceed one of 0.15 seconds and if one of 0.45 seconds was in turn to follow it. Because percentages of probable successes were available, it was decided to arrange the order of the timing so as to have different patterns of a series of failures and successes.

TABLE I

ORDER AND DURATION OF

PROBABLE SUCCESSES AND FAILURES

No.	Time	No.	Time	No.	Time	No.	Time	No.	Time
a	0.6	b	0.6	c	0.5	d	0.4	e	0.6
1	0.6	2	0.5	3	0.5	4	0.25	5	0.5
6	0.4	7	0.15	8	0.25	9	0.4	10	0.25
11	0.15	12	0.25	13	0.4	14	0.15	15	0.35
16	0.15	17	0.25	18	0.15	19	0.25	20	0.4
21	0.6	22	0.25	23	0.5	24	0.25	25	0.15
26	0.25	27	0.15	28	0.35	29	0.15	30	0.4
31	0.5	32	0.4	33	0.15	34	0.35	35	0.6
36	0.15	37	0.25	38	0.4	39	0.15	40	0.35
41	0.15	42	0.25	43	0.25	44	0.15	45	0.5
46	0.35	47	0.15	48	0.25	49	0.4	50	0.35
51	0.5	52	0.15	53	0.35	54	0.4	55	0.5
56	0.25	57	0.15	58	0.25	59	0.15	60	0.4
61	0.15	62	0.5	63	0.15	64	0.35	65	0.4
66	0.5								

Thus, a series of three probable failures (time duration from 0.15 to 0.25), was followed by two probable successes (time duration from 0.4 to 0.6). The sequences of these series were so arranged that it would be possible, if desired latter, to see the effect of failure and success on the boys' immediate performances. The actual order and time durations used are shown in Table I.

The distance allowed between one stimulus and the next was 18 inches of cloth or 9 seconds. This time period was selected because a pilot study revealed that within 9 seconds all the boys had recovered from their previous performance and were waiting for the next stimulus. The time to run the tracing cloth from beginning to end, was calculated by adding up the time used for the 71 stimuli plus the total time used between each stimulus. This turned out to be 11.5 minutes and was the total time needed to test each boy once the actual experiment was started.

Returning to the equipment, a slot approximately 2 x $\frac{1}{4}$ inches in size was cut about four inches below the exact center of the board containing the four colored lights. Fitted through this opening was a flat metal strip, about 7 inches long, 1 and 5/8 inches wide, and 1 inch thick. One end of this was attached to a

spring mounted on a platform behind the board; a fourth of the way down from this end a hole was cut, one inch in diameter and on the opposite end, was placed a large knob, painted bright red. This plunger was similar in design to the usual coin receiver found on the conventional pin-ball machine except that instead of having to put a coin in it, the process was reversed: by pulling it out a round metal washer, or token, was obtained. The washers were mounted in a 10 inch long metal pipe held vertically behind the board and so arranged that when the plunger was pulled out only one token at a time was delivered. An ordinary telegraph key, the kind most frequently seen in early day reaction time experiments, completed the actual equipment. It was placed about a foot in front of the board, resting on a table supporting all the equipment, and was attached to the electrical wiring system by means of a set of wires running from terminal points to under the board. The subject himself was seated in front of this board within easy reach of the telegraph key and somewhat below the colored lights.

The entire apparatus was electrically wired and completely automatic once started, even to the recording machine. This was used to record a boy's

entire performance, that of the reaction-time equipment, and was the source of the data: e.g., it recorded in sequence when a light went on, how long it stayed on, when the telegraph key was used and when the token-plunger was pulled out. This was done by wiring all the equipment through an Esterline-Angus millismeter recorder. This machine records changes in electrical potential by means of a moveable pen and time by means of a stationary one on a ruled paper roll moving at a constant rate of speed. The lights and the token-plunger were attached to the moveable pen and both recorded on the same side of the paper roll. The telegraph key was attached to the stationary pen and recorded on the opposite side of the roll. The lights and the telegraph key recordings were purposely separated so that they could be measured in relation to one another. For the token-plunger it was merely necessary to have some sort of indication of whether or not it had been used and could be attached to any pen. A sample record is presented in the appendix.

The recording equipment and all the necessary wiring, except for the leads from the telegraph key, were all stored behind the board housing the colored lights and the token-plunger. Attached perpendicularly

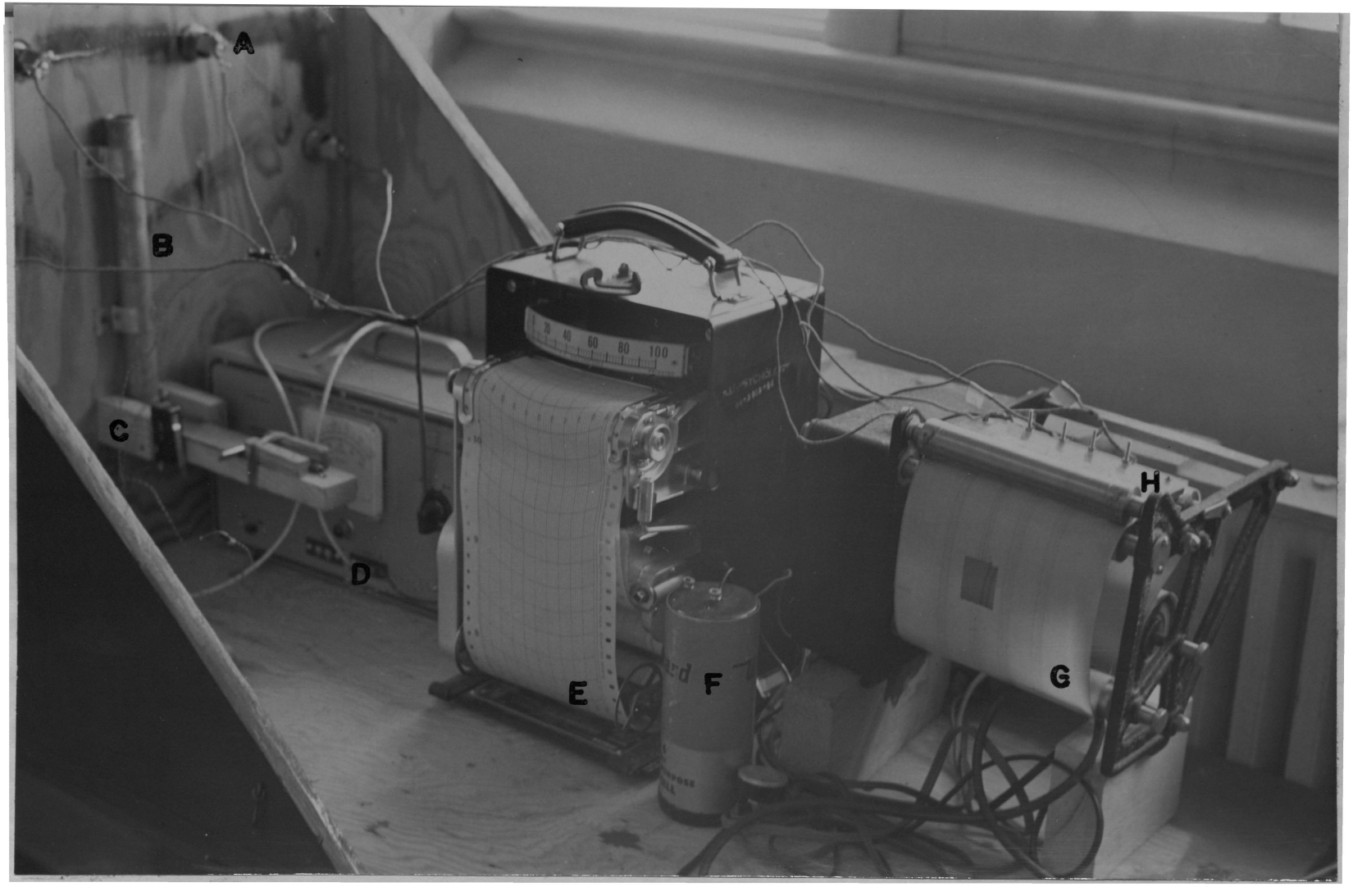
to the base of this front board was another one approximately 40 inches long. Another board triangularly shaped was fitted to connect the other two boards from the height of one to the length of the second. By making a duplicate of this box, without attaching lights or cutting a slot for the token-plunger, it was possible to cover the equipment so all that was visible to a subject was an oblong box with colored lights on one end and an electrical extention cord coming out of the other. The electric cord was presumably for purpose of the lights and the boys were not aware of the recording equipment, unless they were told that it was there. The box was painted grey except for the area containing the lights, which was green. And, as was mentioned, the knob of the token-plunger was a bright red. Pictures of the equipment are shown in Photograph I and II.

Subjects:

A total of sixty boys were used in this experiment. All of them were in the age range of 9 years 6 months to 10 years 6 months and attended the same regular elementary school in Lawrence, Kansas. From three 4th grade and one 5th grade classes a total of

PHOTOGRAPH I

Front view of equipment. Semi-circle of four different colored lights and token-knob on front board. Telegraph key in place before boy's seat.



PHOTOGRAPH II

A. Position of colored lights
B. Cylinder holding metal tokens
C Micro-switch connected to token delivering device
D. Voltage rectifier
E. Angus-Esterline Recording Machine
F. Battery connecting recorder with stimulus machine
G. Tracing cloth with stimulus slot showing
H Contact points for lights mounted on stimulus machine

65 boys were obtained. The extra 5 boys were also given the experiment so that all the boys in each class would have a chance to perform and thereby, it was hoped, lessening the extra problems created for the teachers. Each class was tested as a unit: only after all the boys in one particular class had individually "played the game", was another class brought into the experiment. The selection of boys was made this way so as to cause as little interference as possible with the regular school activities. This decision was made after a conference with the school principal and the teachers concerned. For each class a list of the boys' names was compiled and the subjects were randomly assigned from it to the experimental conditions.

The social environment of the boys was that of a university city of approximately 20,000 people. The school records showed that none of the boys were feebleminded, physically handicapped, or otherwise unusual. The I.Q. range of the group was from 85 to 138 and was considered, for purposes of this study, to be an adequate sampling of the general population. Most of the children were from homes of moderate means although a few were from either the lower or higher income groups. The occupations of the fathers varied

from laborer to that of college professor. Most of the mothers were housewives except for a few who had part-time or full time employment. In one or two instances one or the other parent was a student in the university. Several of the boys had only one parent and a few had none living and were staying with grandparents. All in all, the group of boys tested in this experiment can be considered to represent a fairly adequate cross-section of the general population of 10 year old boys.

Procedure:

The experiment was conducted in a room approximately 10 x 8 feet. It had windows on one side, was quiet and fairly pleasant. The apparatus was put on a table and remained in this room until all the boys were tested--about three weeks. When the examiner was not there the room was locked. Each boy arrived in the room by himself, was instructed in the task, performed, then returned to his class and sent up the next boy, selected previously by the teacher and usually alphabetically. The teachers and the principal were consulted earlier and briefed on the general outline of the experiment. They were told that it was an experiment in cheating, although

it was not the intent to see if one boy cheated more or less, was honest or not, but to see if differences in situations caused differences in cheating. It was essential to make this distinction since the teachers were concretely concerned about the honesty of their boys, and it was not the purpose of the study to give or to get any such information. The teachers were concerned about parts of the experimental procedure and especially in regard to what the children won. Originally it was planned to use candy in exchange for won tokens, but they objected to this, claiming the children were not allowed to have candy during school hours. Marbles were, therefore, used instead. In the pilot study it was found that candy did have a high motivational effect; the boys' desire to win candy was high and universal. Marbles were also tested and although they were not as effective as the candy, they too were desirable objects.

Ten boys were assigned to each of the experimental conditions. These were set up as follows.

The Public Condition:

Each time the plunger was pulled out it released a token which fell on top of a tin measuring cup and

made a loud noise.

The Private Condition:

Instead of the token falling on top of a cup, it fell on to plastic sandwich sacks which cushioned the fall so that no noticeable noise was made.

The Out Condition:

The examiner told the boy, after going over the "game" with him, that he had to go down to the office for supplies and would be gone at least ten minutes and that the boy should go ahead with the "game." After asking the boy if he had any questions, the worker left for the ten minutes and returned usually a minute before the end of the game.

The In Condition:

Here the instructions were given to the boy and the worker remained in the room. Usually he alternated between glancing at the boy and the machine and making believe he was preparing some material, as the marbles, for the next boy.

The Recorded Condition:

The boy was told about the equipment and also

shown how his performance would be recorded. He was informed that any time he made a mistake and took a token when he did not earn it, the worker would be able to find this out by looking at the record.

The procedure of running the experiment itself was the same for all conditions. The lights went on and off in the same sequence, the time to perform was constant, and so forth. As an extra precaution, for the Out, Public and Private and the In, Public and Private groups, the apparatus was covered and the boys not told about the recording devices. For the Public and Private Recorded groups, the top of the machine was removed exposing the equipment so the boys could easily see it. When a boy sat down in front of the machine, ready to perform, he was not able to see any of the equipment since he was then unable to see over the top of the front board.

Forty boys were selected first for the non-Recorded groups because it was thought that alternating the Recorded groups with the others would contaminate them; that it would not take too long before all the boys were aware that actually their work was being recorded, regardless of the situation they were in.

The task for each boy was to beat the light. This involved pressing the telegraph key while one of the colored lights was still on. As previously mentioned the lights went on and off automatically and independently of any of the other equipment. As each light flashed on the boy had to hit the key before it went off. If he was successful he won and was to pull out the red-knobbed plunger and obtain a token. If he hit the key after the light went off, or even before it went on, he did not win and had not earned a token. In each case it was left up to the boy to decide if he won or lost. He was also made aware, at the start of the game, that the plunger could be pulled out at any time and a token obtained, but that he was to do this only if he won. Explaining that the plunger worked independently of the telegraph key and the lights, left the way clearly open for the possibility of cheating: taking a token when it was not earned.

In a pilot study of reaction times of boys, of the age group studied in this paper, it was found that no child was able to perform the above task under 0.2 of a second and that by 0.6 of a second, all the boys were successful. See Table II for a distribution of

time and successful performances. Once this range of reaction times, needed for the successful performance of the task, was known, it became possible to control the stimuli so that it would be either completely impossible or possible to have a successful performance. This was accomplished by timing the rate of speed the tracing cloth traveled past the contact points and then calculating the distance the cloth would have to move to correspond to the time desired for a particular light-stimulus to remain on. For example: the movement of one inch of tracing cloth would allow a light to remain on 0.5 seconds. A summary of the six interpolations of distance into time, used in the experiment, is shown in Table III.

The experiment was presented to the boy as a new game which we wanted to see if boys of his age would like. He was also told that his school was one of the several being used in finding this out. He was then asked if he would like to participate. In this way every boy was given the choice of participating in the experiment. No boy refused. The actual instructions then given to each boy were as follows:

"This is a game I made and I
want to know if boys of your age would

TABLE II

REACTION-TIME AND

SUCCESS OF PERFORMANCES

Time in Seconds	Percentage of Boys Successful
0.1 to 0.19	None
0.20 to 0.29	20%
0.30 to 0.39	75%
0.40 to 0.49	95%
0.50 to 0.59	99%
0.60--------	100%

TABLE III

TRACING CLOTH APERTURE LENGTH AS

A FUNCTION OF TIME

Time in Seconds	Length of Aperture In Inches
0.15	5/16
0.25	1/2
0.35	11/16
0.40	13/16
0.50	1
0.60	1 3/16

like it. Would you like to try? It is called "Speed" and the whole idea is to be as fast as you can and to win as many tokens as you can. For every five tokens you win you get a marble which you can keep. Here's how the game works. These lights here go on and off one at a time and at different times. You may not know which light may come on next. As soon as you see one of them go on press this telegraph key. If you press it while the light is still on, you have won and therefore give yourself a token by pulling out this knob here. If you hit the key after the light is already out, you have lost and are not to take a token until the next time you win. The entire game is automatic, it goes on by itself and when it is over, it stops by itself. At the end we will count up your tokens and see how many marbles you have won. Do you have any questions? Now try it. That's the idea. Now let's start."

After receiving the instructions the boys were given an opportunity to try the game and to ask questions. If it looked as though there were any uncertainties about any aspect, further instruction was given. This insured having each boy equally experienced and aware of the details of the game before starting the actual experiment. Regardless of whether or not questions were asked each boy was asked to repeat the instructions before starting.

The data were obtained directly from the recording tape. It showed, on the left side, marks for every time

a light went on and when a token was taken and, on the right side, a mark every time the telegraph key was pressed. It was relatively easy to decide if a boy won or not by comparing the marks made by the light and the key. Since the length of the light-mark was as long as the light was on, a key-mark falling within the limits of the light-mark would mean that a boy hit the key while the light was still on and had won. If the key-mark fell outside the limits, then the key was hit either prematurely or after the light was off and the boy had lost. Since the time between one light going off and another going on was always constant, the same distance relationship always existed between any two light-marks. Therefore, any mark falling between, represented the taking of a token. If a token was taken when the key-mark was over the light-mark limits, then cheating occurred. In order to insure accuracy in measurement, the error in the alignment of the pens was taken into consideration. The key-pen was found to be set forward somewhat ahead of the other and as a result, it made some key-marks fall within the light-marks limits which gave a false representation of the wins. This error in measurement was calculated. A transparent plastic triangle with this correction factor marked on it made

it relatively simple to see if the key-mark fell within the proper limits or not.

At the end of the game all the tokens were counted and for every five a boy was allowed to pick a marble from any one of the five sacks of different colored ones laid out on a table. The tokens were counted in units of 5 and when less than 5 remained, the boy was credited for the extra tokens needed to make 5. After the counting was completed and before the marbles were selected, the boys were asked questions about the game, in keeping with the original idea about wanting to know if boys their age would like it. The questions were not intended to furnish any systematic data although they did give some interesting side-lights. They were asked the following questions:

1. What do you think of the game?
2. Do you think other fellows will like it?
3. Do you think the game should be changed? How?
4. What kind of games do you like to play best of all?
5. How did you feel when you missed one?
6. Did you have any way to help you decide whether you won or lost?
7. Did you make any mistakes?

8. Was it sometimes hard to decide if you won or lost?

9. What did you do when you were undecided?

CHAPTER IV

ANALYSIS OF DATA:

THE CHEAT SCORES

As previously mentioned in the Procedure section, the data taken from the kymograph records were entered on filing cards. Thus, there were ten cards for each of the six experimental conditions and one card for each of the 60 subjects. Entered on each card was the number of times a child won and took a token or did not take one; and the number of times a child lost, (did not beat the light), and took a token or did not take one. Examining these data soon made it apparent that there were several possible indices of cheating. The most obvious was to consider only the responses where a child lost and took a token as cheats. Although this method is appropriate, it was found after measuring the difference in distances between a light stimulus and a child's responses, that many responses were quite close and may easily have been "honest" mistakes, mis-perceptions. For this reason the responses were grouped and given ratings of either 1, 2, or 3, depending on their nearness to the stimuli. These distances were measured with a six inch plastic,

transparent ruler on which each inch was divided into 30 equal units and therefore each score could be referred to a concrete and arbitrary range of distance from the stimulus. A score of 1 indicated that the distance between stimulus and response was no more than three metric units; a score of 2, referred to a distance of between three and seven units; and a score of 3 was given to everything above seven units. By doing this four different cheating scores were obtained: (a) the type one cheats, the very close responses; (b) the type two responses; (c) type three responses; and (d) the total number of cheat responses or the sum of a, b, and c. Since there were so few type three responses, it was decided to combine types two and three. This left then, three possible ways of arriving at cheating scores. The total times a child took a token when he did not earn it; the very close type one response; and the more distant types, two and three responses. The actual cheating scores for each of the three types were the per cent of not-earned taken tokens divided by the total number of losses in that particular type. For example: if a child lost a total of 40 times and of these 20 times gave himself a token, his cheating score was 50 percent. The child that lost 35 times in type

one responses, and gave himself tokens 32 times was given a cheating score of 91 percent for this close type cheat criterion. In the distant type criterion, if a child lost 20 times and awarded himself a token 15 times he was given a cheating score of 75 percent for this combined two and three group. Hereafter the combined one, two, and three type of cheats will also be referred to as the total cheat criterion; the one type of cheats as the close cheat criterion; and the two and three types of cheats as the distant cheat criterion.

After obtaining the various percentages for each child a mean percentage for each experimental condition was computed. Plots of the individual scores on all measures of cheating revealed that the data were positively skewed. Non-normality was further indicated by the gross discrepancies between the means and the medians. This outcome left two possible courses of analysis: first, to normalize the distributions by means of some transformation technique; or second, to employ distribution-free methods (42) of statistical analysis. Because the task involved in transforming the many different scores did not seem to be practical, the decision was made to treat the data by non-parametric methods.

Two limitations of these methods should be mentioned. First, there is no provision for evaluating the significance of the interaction between the main effects. And second, the T-tests (see Table IV) are based only on the number of subjects in the two groups being tested while in more conventional and powerful techniques all of the subjects are employed to secure an error term.

Mood (30) has devised a non-parametric method for analysis of variance which assesses interaction. Use of this technique demands the assumption that the treatment groups have the same distribution of criterion scores. Inspection of the data reveals that this assumption can not be met.

TABLE IV

PERCENTAGE MEANS, MEDIANS,
AND RANGES FOR TOTAL NUMBER
OF CHEAT RESPONSES

	OUT		IN		REC	
	Priv	Pub	Priv	Pub	Priv	Pub
Means	30.5	55.7	35.7	56.5	31.2	27.2
Medians	28.3	33.8	25.0	59.0	23.7	7.3
Ranges	5-76	9-71	8-67	18-82	0-68	0-67

The data obtained for the first measure of cheating, the total number of cheat responses, is given in Table IV. The means do not follow any systematic pattern even though there do appear to be differences among them. A comparison of the medians and ranges indicates the need for the previously mentioned non-parametric statistical analysis in order to determine the significance of these differences.

Table V presents the results of a ranks analysis of variance (42) for the total number of cheat responses. In summarizing this table we may say: first, the Public-Private variable did not affect the total cheat responses; second, the Out-In-Recorded variable resulted in a significant effect.

TABLE V

RANKS ANALYSIS OF VARIANCE
FOR TOTAL NUMBER OF CHEAT RESPONSES

Source	T*	P
1. Public-Private	294.5	not sig.
2. Out-In-Recorded	232.0	.01

* Lower rank total

Since the means of the Public-Private groups are not reliably different, we may pool them and perform the non-parametric analogue to t-tests between the Out-In-Recorded groups, using a larger number of subjects. In Table VI, the pooled Out-In-Recorded groups are compared by Wilcoxon's T-Test for unpaired replicates (42).

TABLE VI

T-TESTS FOR POOLED OUT-IN-RECORDED GROUPS ON TOTAL CHEAT RESPONSES

	T	P
Out-In	369.0	not sig.
Out-Rec	337.0	.05
In-Rec	309.5	.01

The results of the pooled Out-In-Recorded groups show: (a) there is little difference in the mean percentage of total cheats between the Out and In groups; (b) there is a significant difference when both the Out and In groups are independently compared with the Recorded group. From this it is then evident that there was less cheating when the child was aware of the fact that his performance, and thereby any

cheating he may do, was recorded. Also, there was no appreciable change in the cheating when the adult was either in or out of the room.

The analysis of the data for the total number of cheat responses indicates there is little substantiation of the general hypothesis that the percentage-cheats varies directly with the degree of temptation. The temptation values, a priori determined, should follow this order:

Most tempting:

Out-Private
Out-Public
In-Private
In-Public
Recorded-Private
Recorded-Public

Least tempting:

The obtained results do not show this order, or for that matter, any other logical one. Although cheating occurred in all conditions, it was evident, on the basis of considering the total number of cheat responses that temptation does not have a consistent effect on cheating. From the large variabilities in the groups it is evident that the temptation values in each of the particular conditions varied widely among the children. Of the two main variables, Public-

Private and Out-In-Recorded, the former showed little effect on cheating and while the latter did influence the amount of cheating, further analysis indicated that this effect was mainly due to the lowest amount of cheating in the Recorded group. The over-all result indicates that temptation, created in various degrees by the experimental variables, has a minimal effect on the amount of cheating. Cheating decreases significantly, however, when the chances of being discovered are a certainty.

The results obtained in using the total number of cheat responses were not particularly revealing in regard to our hypothesis. It is possible that this is being caused by the effect of the very close cheat responses, which clouds the issue. Another possible explanation is that there are factors other than just the experimental variables influencing the results or that the proposed hypothesis is not valid, especially since there was some indication that the temptation of the situations did not mean the same thing for each child.

The next measure considered is the close cheat response type; the responses which were quite close to the stimuli and which may or may not have been honest misperceptions or errors. Table VII shows the means,

medians, and ranges obtained for this criterion.

TABLE VII

PERCENTAGE MEANS, MEDIANS, AND RANGES
FOR CLOSE TYPE ONE CHEAT RESPONSES

	OUT		IN		REC	
	Priv	Pub	Priv	Pub	Priv	Pub
Means	35.2	25.1	28.8	64.2	26.1	23.6
Medians	29.5	38.5	29.0	65.0	22.5	13.0
Ranges	7-79	0-67	9-79	26-91	0-73	0-76

The data presented in Table IV indicates that the mean scores, except for the Out-Public, follow closely the pattern previously found for the total number of cheat responses. The least cheating is seen in the Recorded and in the Private Out and In conditions. The most cheating is in the In-Public group. The apparent greatest change in the means is in the Public-Out, from one of the highest to that of one of the lowest cheating scores. The order of the scores again does not follow the stated hypothesis or appear to be systematized in any particular direction.

TABLE VIII shows the result of testing (a) the Public-Private conditions and (b) the Out-In-Recorded conditions. The Wilcoxon-non-parametric method is used again since the data does not fulfill

the normality requirement for other methods.

The results of the analysis of variance for the close cheat responses follow the identical pattern found for the total number of cheat responses, shown in Table V. No significant difference is evident between the Public-Private variables, but the difference found in the Out-In-Recorded grouping is significant on less than the .01 level. Again it is apparent that under the Recorded condition least cheating occurs.

TABLE VIII

RANKS ANALYSIS OF VARIANCE
FOR CLOSE CHEAT RESPONSES

Source	T	P
1. Public-Private	287.5	not sig.
2. Out-In-Recorded	249.5	.01

Recapitulating then, the result of combining variables for the close cheat responses indicates: cheating is just as likely to occur when it is done Publicly or Privately; and there is less cheating when there is a definite possibility of being discovered doing it.

The T-test analysis of the difference between the conditions is required only for the Out-In-Recorded variable since the other, Public-Private, was not significant. It is therefore both legitimate and desirable to consider the former variable with the Public-Private conditions pooled. As with the total cheat responses, this means obtaining the T-values for the Out-In, Out-Recorded, and In-Recorded comparisons. These are given in Table IX.

TABLE IX

T-TESTS FOR POOLED OUT-IN-RECORDED GROUPS ON CLOSE CHEAT RESPONSES

	T	P
Out-In	355.0	not sig.
Out-Recorded	360.5	not sig.
In-Recorded	318.5	.02

The results of the T-tests for the pooled Out-In-Recorded groups indicate: (a) There is little difference in the mean percentage cheats between the Out-In groups and the Out-Recorded groups; and (b) there is a significant difference between the In-Recorded groups. These results for the close (1) cheat responses in that the difference between

the Out-Recorded groups was not significant. To state this in another way: (a) the effect of an adult being out of the room was not very much different compared with either when he was in the room or when the child knew for certain his cheats were detectable; and (b) with an adult in the room there was appreciably less cheating when the child was definitely aware his cheating could be discovered. The effect of analyzing the close cheat responses seems to be reflected in the lessening of the differences in cheating between the conditions where the adult is out of the room and where he is in the room and the child is aware that his performance is being recorded.

The results obtained in using the close cheat responses also does not offer any confirmation of the general hypothesis set forth in this thesis. Although there were differences in cheating among the situational conditions, they did not reflect the premise: the more tempting the situation the more cheating. Again, as with the previous response measure, there was a wide variance within each of the treatment groups suggesting that the temptation values of the conditions were not constant for each of the children. The Public-Private factor did not noticeably affect

cheating and the degree of discovery did appear to affect it, as shown by the In-Recorded comparison. It would appear therefore, that many of the children's close cheat responses were determined by factors other than just the experimental variables. It is possible that errors in judgement, thinking they did win when they did not, were influencing the scores obtained under the close cheat criterion.

So far we have investigated the total number of cheat responses and the close type one cheat response criteria. There remains then the last index, the distant cheat responses; those which can be considered unequivocally as cheats. In this group all the doubtful close responses are eliminated and a somewhat "purer" cheating score is used. The results for this criterion are given in Table X. Eliminating the uncertain cheat responses results in an over-all lowering of the mean scores but the order of the cheating from most to least still is not consistent with the predictions. The Recorded groups still show the least cheating although there is now a somewhat larger difference between on the Private and Public variable. It is also clear that the distant cheat response scores are not normally distributed with

homogenous variances as suggested by the variation in the size of the ranges and the differences between the means and medians.

According to the procedure used in analyzing the two previous measures of cheating, the two major variables were pooled and tested by the Wilcoxon non-parametric procedure. The results of the ranks analysis of variance are given in Table XI while Table XII shows the results of the T-tests.

TABLE X

PERCENTAGE MEANS, MEDIANS, AND RANGES FOR DISTANT CHEAT RESPONSES

	OUT		IN		REC	
	Priv	Pub	Priv	Pub	Priv	Pub
Means	15.2	35.4	21.3	48.8	24.3	11.5
Medians	8.3	31.7	22.1	44.1	21.7	0.0
Ranges	0-50	0-86	0-67	10-77	0-100	0-50

While no significant difference exists between the total Public and total Private scores, there is a highly reliable difference among the differences found in the total Out, In, and Recorded groups. The results are very much the same as those found for the preceeding criteria. Therefore, following along from

what already has been written, it appears that in the cheat two and three responses neither of the two limited social conditions established in this experiment, Public or Private affected the cheating response more than the other one.

TABLE XI

RANKS ANALYSIS OF VARIANCE
FOR DISTANT CHEAT RESPONSES

Source	T	P
1. Public-Private	285	not sig.
2. Out-In-Recorded	252	.01

The results obtained from the T-test analysis of the distant cheat responses are very much the same as those found on the previous criterion, the close cheat responses. Both the pooled Out-In and the pooled Out-Recorded comparisons did not reveal any actual differences in cheating scores while the pooled In-Recorded comparison did show a reliable difference. The data indicate that cheating was neither more nor less when an adult was in or out of the cheating room; no more cheating occurred when the child was quite aware he could be found out than when he knew the adult was out

of the room for a definite period of time; with the adult in the room all the time, there was less cheating when the child knew he could be readily discovered cheating. The evidence points up the contention that there is less cheating when the child knows he can be discovered and the most cheating occurs when an adult is present who neither sanctions nor denies the child's work as he is doing it. The cheating occurring when the adult is not in the room falls between these two, showing no difference in cheating scores when compared individually with either of the other two groups. Although the differences were not significant it is reasonable to consider them as indicating a mid-point in the cheating scores range. It is likely that the Out condition was not too tempting to many of the children but instead was what might be a conflict situation wherein there was uncertainty, although desire, about taking a token. It is true the children were told that the adult would be out of the room and gone for a definite period of time, but still for some it is likely that they were not certain about this and their performance was handicapped by the lack of structure in the test situation. The results of the distant cheat response criterion does not follow the expected formulation set forth in this thesis.

TABLE XII

T-TESTS FOR POOLED OUT-IN-RECORDED GROUPS ON DISTANT CHEAT RESPONSES

	T	P
Out-In	351.5	not sig.
Out-Recorded	374.0	not sig.
In-Recorded	328.5	.05

The general hypothesis of this thesis states that the amount of cheating is a direct function of the degree of temptation in a situation. In an effort to study this, six experimental situations were devised. Each varied in the degree of possibility of being discovered as follows: (a) three ways while cheating and (b) two ways after cheating. The data were then evaluated under the following three criteria of cheating: (a) considering the total number of non-earned tokens taken, (b) counting only the number of very close and possibly error, non-earned tokens taken, and (c) counting only the number of the more distant and definitely non-earned tokens taken. All the scores were compared as percentages and the data required a non-parametric analysis since none of the

three cheating criteria met the requirement of normality necessary for the more usual methods. The results for each of the three measures were strikingly similar. In no instance was there any confirmation of the hypothesis. When the Out-In-Recorded and Public-Private variables were pooled and comparisons made, in all instances the latter did not show any differences in their effect on cheating, whereas the former did.

The other major difference was found in the T-test analysis for the pooled Out-In-Recorded responses. For both the close type one and the more distant type two and three responses only the In-Recorded comparison showed a reliable difference on the .05 level of better. Whereas the total cheat responses not only showed this but also the Out-Recorded comparison was significant on better than the .02 level.

The results would indicate then that in this experiment temptation was not particularly causally related to cheating. That, in general, the environmentally determined variables can not in themselves be considered to cause more or less cheating. Cheating is appreciably diminished when the limits of the cheating situation are more "structured" and the child is <u>definitely</u> aware that his performance can be detected.

There are several indications which suggest that factors other than the environmental determinants were involved in this experiment and that they may be either masking the relationship between cheating and temptation or otherwise related to cheating. It was noticed that there appeared to be a large variation among subjects in regards to the way they responded, e.g., some took all their won tokens and some took few. In this regard it should be mentioned that while the experiment recognizes that cognitive factors are extremely important in an individual's behavior, this aspect of the problem of cheating, as such, is not under consideration. It has been pointed out that: (a) environmental conditions do not in themselves affect cheating one way or another unless the conditions are so set up that all cheating can be discovered; and (b) there was some likelihood that other factors were operating in the experiment which might be affecting the cheating scores.

There appears to be a difference in the children's ability, or skill, to react to the experiment. No pre-tests of ability for the experimental groups were made since the subjects were selected at random and the stimuli were previously

standardized, in the pilot study, so that all the children would be able to win more than they lost and the least able child would win at least as much as he lost. A brief inspection of the ratios between wins and wins plus losses showed a high degree of variability suggesting that differences in skill could possibly be involved in this experiment. There appears to be another factor showing up in the data: inhibition. This refers to the condition previously mentioned where some children took all the tokens they won while some took very few of their winnings. From this it appears essential, therefore, to investigate further these two factors and to see if they are related to the cheating percentages and to one another.

CHAPTER V

ANALYSIS OF DATA: THE EFFECT OF SKILL AND INHIBITION ON CHEATING

The measurement of skill in this experiment is dependent upon visual motor response adequacy. The child was presented with 66 visual stimuli to which he was to respond by touching a telegraph key. The more times he did this, before the stimuli disappeared, the more skillful he was. Thus the skill score is: the total number of times a child won, divided by the sum of all wins and losses multiplied by 100. Since the degree of difficulty for each of the 66 stimuli was specifically determined before the experiment and held constant during it and children randomly assigned to the experimental conditions, we should anticipate only chance differences in skill among the groups. It is possible, however, that the conditions may induce skill differences. It is the purpose of this section to check on this possibility and to ascertain what relationship, if any, holds between cheating and skill.

Again non-parametric methods are employed to analyze the data since the skill scores are not

normally distributed although they do appear more normal than any of the previously described cheat distributions. The means, medians, and ranges of the skill scores for each of the six experimental conditions are shown in Table XIII. Here it is suggestive that the children differed in skill. This not only raises the usual question concerning the significance of the differences but also the problem of determining how skill relates to the dependent variable, cheating. If the differences are not significant, indicating that the variations in skill found among the children are primarily due to chance, then the problem of skill is simplified as it need not be further considered as a factor operating in the experiment. However, if the differences are reliable and skill does appear as an influence, it is necessary to appraise its effect on cheating.

TABLE XIII

THE MEANS, MEDIANS, AND RANGES OF SKILL SCORES

	OUT		IN		REC	
	Pub	Pri	Pub	Pri	Pub	Pri
Means	27.8	24.9	21.9	44.6	45.6	48.8
Medians	31.5	21.5	21.8	43.7	42.8	42.8
Ranges	11-55	4-56	2-35	22-68	0-66	7-89

The mean skill scores for the six groups follow the temptation pattern established in this thesis, more closely than any of the mean cheat scores. It is also evident that the medians here are closer to the means than in previous instances and that the Private groups tend to have a wider range of scores than the Public. When the Public and Private conditions are combined the ranges for the pooled Out, In, and Recorded groups appear to increase. The pattern appears to indicate that when there is least likelihood of the child's performance being discovered, then there is also the least amount of intra-group variability in skill. For example: for these pooled conditions, the narrowest range is seen in the Out group, it increases in the In group and is widest in the Recorded group. Although this in no way is conclusive evidence reflective of skill affecting cheating, it does suggest the possibility that different intra-skill consistency is induced by the effect of the variable pertaining to the probability of discovery. It is therefore not too improbable to think of the intra-group variations seen in the cheating scores as having this influence inbedded in them. This suggests the possibility that the cheating scores may be contaminated in this indirect way: e.g., skill

functions as a factor not directly influencing cheating itself but is related to the experimental conditions in such a way that indirectly it affects the cheating scores.

It is possible to examine the above idea: that skill differs within the experimental conditions but is not related to cheating. This requires examining first the six different experimental conditions to see if they actually differ in skill and second, to compare the skill scores with the three different indices of cheating. The statistical analysis is two-fold: (a) using the previously mentioned non-parametric Ranks Analysis of Variance and T-test methods and (b) investigating the degree and direction of relationship between skill and cheating by means of the usual Pearson product-moment correlation formula.

Tables XIV and XV show the results obtained in comparing the differences found in skill among the six conditions and Table XVI is a summary of the correlation coefficients for skill and each of the three cheating criterion.

TABLE XIV

RANKS ANALYSIS OF
VARIANCE FOR SKILL

Source	T	P
1. Public-Private	290	not sig.
2. Out-In-Recorded	251	.01

TABLE XV

T-TESTS FOR POOLED
OUT-IN-RECORDED CONDITIONS FOR SKILL

	T	P
Out-In	380.0	not sig.
Out-Recorded	315.0	.01
In-Recorded	343.5	not sig.

The results obtained from comparing the pooled means for each of the two experimental variables show that again, as for the previous three cheat criteria, there is no reliable difference in skill found between the Public and Private factors. The difference found among the probability of discovery factors, Out, In, and Recorded groups, are highly significant

and are not due to chance variations. It can be stated that the Public and Private conditions had no effect on the children's skill in responding to the stimuli; they were as skillful in one condition as on the other. The effect of the likelihood of discovery variable on skill, however, was evident. There are definite differences in skill when the probability of discovery is varied.

A breakdown of this variable into its three comparative groupings, seen in Table III, indicates: the condition of an adult being either In or Out of the room had no appreciable effect on the children's skill and the children who knew their work was being Recorded were more skillful than those who did not. It is further evident that: the most skillful children were in the Recorded group, the next were those who worked while the adult was in the room, and the least skillful were those who worked alone in the room. From this it can be said that, on the basis of the temptation variable, the probability of discovery: the more likely the child's work can be discovered and the less tempting the situation, then the more skillful is his performance.

In summary: the analysis of the effect of the

experimental conditions on the children's skill demonstrates that the pooled Public and Private conditions are not influential and that the pooled Out, In, and Recorded groups did differentially influence the children's skill to perform the experiment. The most skillful were those who were more highly aware of the probability of their work being seen or known. It is very likely therefore, that a child's skill increases when he is more certain of the limits of the situation within which he is working. Another way of stating this is that perhaps the recorded performance or the presence of the examiner represents an external force toward good performance.

It has been shown that the Out, In, and Recorded treatments did have different effects on the children's skill. It now remains to be seen if the obtained skill scores were related to cheating. Table XVI shows the correlation coefficients between the skill and the three cheat criteria scores. It is quite apparent that the best correlation obtained, of plus 0.21 between skill and the type two and three cheat scores, is in no way suggestive of a clear relationship between skill and the three measures of cheating.

Tests of intra-group correlation also do not show any significant relationships.

It can be concluded from these results that skillfulness of the children performing the experiment as such was not a factor influencing cheating. However, the experimental conditions themselves tended to foster differences in skill.

TABLE XVI

CORRELATION COEFFICIENTS
FOR SKILL AND CHEATING

Cheat Criteria	r_{xy}	P*
Total Cheats (1, 2, and 3)	$\neq$ 0.04	not sig.
Cheat (1)	$\neq$ 0.08	not sig.
Cheat (2 and 3)	$\neq$ 0.21	not sig.

* Table for values of correlation coefficient required for significance at the .05 and .01 levels for samples of various sizes is taken from Lundquist (26, P. 212).

Another factor also appeared to be involved in the children's performance in this experiment. It was noticed that in many instances a child did not take a token even though he had won it. This

failure to respond may be considered as a form of inhibition. The percentage score for inhibition was the taken wins divided by the total number of wins multiplied by 100. This inhibition score then, tells the percentage of wins on which a child did take a token and the higher the score then the lower the inhibition. To refresh the reader's memory it might be useful to contrast cheating and inhibition: cheating was the percent of times a non-earned token was taken and inhibition is the percent of times an earned token was not taken.

Since the children were selected at random for each of the six experimentals conditions, no reliable differences should be expected to exist between them. If this assumption is not substantiated, then it is possible that inhibition is a factor also to be reckoned with. It is evident that the inhibition scores are not normally distributed and again the non-parametric techniques of analysis must be used. The means, medians, and ranges of the inhibition scores for each of the six experimental conditions are given in Table XVII. An examination of this table shows that the groups are different and they follow the random pattern previously seen in the cheat criteria data. No relationship between temptation and inhibition is obvious.

TABLE XVII

THE MEANS, MEDIANS, AND
RANGES OF INHIBITION SCORES

	OUT		IN		REC	
	Pub	Pri	Pub	Pri	Pub	Pri
Means	53.0	65.8	81.2	68.3	46.8	58.8
Medians	43.8	53.6	86.4	72.6	37.0	56.0
Ranges	22-86	25-100	50-100	34-93	0-92	20-100

The question still remains, however, are the differences in the inhibition scores significant and, if so, what does this indicate? If the differences are unreliable and unrelated to cheating we can ignore this factor. If a relationship does exist between inhibition and cheating, then it is possible that the inhibition factor influences cheating and may be obscuring true relationship existing between temptation and cheating.

The results of comparing the rank totals for the pooled groups are shown in Table XVIII. The tests of the Out, In, and Recorded and the Public-Private group, indicate that the Public and Private group did not differ in regard to the degree of inhibition whereas the pooled Out, In, and Recorded variable did. These results show again, that the

variable of "discovery" differentiate the children's performance and this time in regard to their freedom in taking earned tokens.

TABLE XVIII

RANKS ANALYSIS OF VARIANCE
FOR INHIBITION

Source:	T	P
1. Public-Private	298	not sig.
2. Out-In-Recorded	264	.05

An inspection of Table XIX, the T-test analysis for the conditions in the "discovery" variable, shows that actually the three groups are not too different from one another, that the main difference is between the In and Recorded groups. The comparisons of Out with In and Out with Recorded do not show any reliable differences although the Out-In comparisons was strongly suggestive of a true difference. It can be concluded that the children's performances were equally as free when the adult was either in or out of the room, but that when he remained in the room their performance was more "inhibited" when they knew it was being

recorded than when they were not aware of this fact. From this it is evident, that over-all the factor of inhibition was a fairly constant influence, although it can be said that the children in the six experimental conditions were not equal in their readiness to take tokens, and there was a tendency towards less inhibition when a child was in a situation which was ambiguously structured.

TABLE XIX

INHIBITION T-TESTS FOR POOLED OUT-IN-RECORDED CONDITIONS

	T	P
Out-In	340	not sig. *
Out-Recorded	392	not sig.
In-Recorded	323	.02

* Close to .05 level (T .05 = 338)

Up to this point it has been demonstrated that inhibition as a factor operating in this experiment, was affected only to a limited degree by the experimental variables. It now must be determined if the inhibition scores are correlated with the cheating scores. A summary of the correlation

coefficients for inhibition with each of the three measures of cheating, found in Table XX, indicates that a significant positive relationship between inhibition and each of the three measures of cheating is present.

TABLE XX

CORRELATION COEFFICIENTS
FOR INHIBITION AND CHEATING

Cheat Criteria	r_{xy}	p *
Total Cheats (1, 2 and 3)	$\neq$ 0.25	.05
Cheat (1)	$\neq$ 0.75	.01
Cheats (2 and 3)	$\neq$ 0.37	.01

* Significance was determined by Lindquist's Table (26).

These results strongly support the contention therefore that the differences found among the experimental conditions in cheating are probably distorted due to the effect of the uncontrolled variation caused by inhibition. Since this is so, it is necessary to control this inhibition factor. Some means of equalizing all the groups on the basis of inhibition and thereby eliminating the distortion must be applied. After doing this it would then be possible to re-examine the experimental conditions

freed from the influence of inhibitions.

Before entering into the problem of adjusting the inhibition scores in order to control its influence on cheating, it should be mentioned that the correlation between the inhibition and skill scores was determined. The obtained Pearson r was 0.005. This is hardly significant and it is apparent that these two variables are not related. Therefore, since skill also did not appear to be affecting cheating it is possible, by holding the inhibition scores constant, to consider the obtained adjusted cheating scores as being more valid measures.

CHAPTER VI

ANALYSIS OF DATA: THE ADJUSTED CHEAT SCORES

The data obtained in this study were originally analyzed by means of non-parametric methods since the assumption needed for the usual statistical procedures were not met. The results of this analysis indicated that the obtained differences among the experimental conditions did not follow the general hypothesis and that they were apparently being influenced by other uncontrolled factors. Although differences in skill and in inhibition appeared to be involved, it was found that only the latter was affecting the cheating scores. Because of this confounding it is now essential to control inhibition and then to see if the differences found among the experimental groups follow the proposed hypothesis.

One method of controlling inhibition would be to use the analysis of covariance (12). This technique permits a direct comparison of the differences obtained in the scores for one variable when they have been adjusted for the variation found in a second variable. It has the advantage that none

of the data have to be discarded. Its disadvantage, for this study at least, is that the basic assumptions underlying it are: (a) a normal distribution of scores, (b) homogeneity of variances and (c) a linear relation between the two variables.

An attempt to solve the problem of "normality" was made by transforming all the individual cheat scores into logarithms. These transformed scores were then tested to see if they met the above assumptions. The transformed scores were not normally distributed although by inspection they exhibited a linear relationship to inhibition. In another attempt to meet the requirements for analysis of covariance the cheat scores were converted into reciprocals, but still the resulting scores were not normally distributed. At this point it was evident that further attempts to transform the scores, in an effort to approach normality, were not warranted and use of the analysis of covariance was abandoned.

Since it was not feasible to use the analysis of covariance as a means of controlling the inhibition factor other possibilities were considered even though they were less sensitive. A common but somewhat gross method is to use a percentile grouping. This involves

separating all the individual inhibition scores into percentiles or even quartiles, and then comparing the cheating scores in the experimental conditions for each grouping. Since there were only 10 subjects in each condition this method was not practical. Instead, the median for the inhibition scores was obtained and all the cheating scores were then separated into two groups of 30 subjects each, above or below the inhibition median. Only the pooled Out, In, and Recorded groups were analyzed since previously the results consistently indicated that there were no reliable differences between the scores obtained in the Public and Private groups. Also, this variable did not appear to be affected by inhibition.

As might be expected, separating the cheat scores into above and below the inhibition median resulted in unequal N's: above the median: Out-8, In-15, and Recorded-7; below the median: Out-12, In-5, and Recorded-13. The means for the Out, In, and Recorded groups and for each cheat criterion are shown in Table XXI. The table indicates that out of the six sets of means three followed the order predicted by the hypothesis of this thesis, two did not and one reversed the order. This alignment of the cheating

means, holding inhibition grossly constant, did not reflect any consistent picture from which definite conclusions concerning the role of temptation in cheating could be made. However, since three sets of means did follow the predicted order they should be further examined:

TABLE XXI

CHEAT CRITERIA FREQUENCY MEANS
ABOVE AND BELOW INHIBITION MEDIAN

Criterion	Above Median			Below Median		
	Total	Close	Distant	Total	Close	Distant
Out	49.3	50.4	43.9	21.6	23.6	12.7
In	49.1	56.3	44.7	18.6	21.4	14.4
Recorded	41.7	55.4	23.0	11.9	11.5	19.8
Chi-Square	0.65	----	----	2.96	4.60	1.78

The pooled experimental groups followed the expected pattern on the total cheat criterion in above the median and on the total and close criteria below the median. While on the distant criterion below the median, the groups followed a reverse pattern. Again confronting us was the fact that the data were not normally distributed and not amenable to the usual statistical procedures. It was possible,

however, to get an estimate concerning the probability of obtaining such frequency distributions of scores by using the simple chi-square technique. The hypothesis to be tested then would be: the frequency distribution of cheat scores is due to chance and no differences exist between the experimental conditions and the expected frequency scores. To test this the total frequency mean or grand frequency mean for the one criterion being examined was obtained: e.g. cheat criterion two and three, above the inhibition median. This was considered to represent the best expected frequency mean for the three experimental conditions within that criterion. This made it possible to compare the three obtained frequency means and see if they differed from what might be expected for the entire group (12). None of the obtained chi-squares, shown in Table XXI was significant. Thus, although a trend did appear to be indicated by three of the cheat criteria, when inhibition was held grossly constant, there was no conclusive evidence substantiating the hypothesis.

Although no confirmation of the hypothesis was evident, when the above method was used to hold inhibition constant, the correlation between inhibition and cheating was again revealed. In each case the mean

for the total cheat criterion above the median was considerably higher than its counterpart found below the median. Table XXII indicates the total mean for each criterion, above and below the inhibition median. From this evidence it is feasible to conclude that those boys who were less inhibited (higher inhibition scores), were generally the ones who cheated the most or conversely, the more inhibited boys cheated the least.

TABLE XXII

POOLED CHEAT CRITERIA MEANS
ABOVE AND BELOW INHIBITION MEDIAN

	Criteria		
	Total	Close	Distant
Above Median	54.5	39.4	47.4
Below Median	17.9	16.1	16.9

There is no question that the use of such techniques of distributing scores above and below a median is relatively insensitive to the more subtle aspects of what the data may indicate. It is desirable at this point not only to control the effects of inhibition, but also to transform the

cheating scores so that they are normally distributed.

The method used to normalize the cheat data was a chi transformation. The simple four fold table does not require that the data be normally distributed although the resulting chi itself is normally distributed. By converting the 180 cheat scores obtained for each of the three cheat criteria into a chi score, the resulting data then should be normally distributed. The actual process of doing this was to compute a chi for the number of wins and losses where a token was not taken with those where a token was taken. For each subject, then, there was made three 2 x 2 chi-square tables, one for each cheat criterion. The tables followed this form:

	Won	Lost
taken	31	7
not taken	5	20

Methodologically, the resulting chi was considered primarily as a score rather than a test of difference. Although the chi-scores thereby obtained reflected the relationship between taken and not taken tokens when a boy won or lost. In this regard, since the chi-scores were all positive, it was found that the boys generally tended to take tokens when they won and not take them

when they lost.

It should be mentioned that in obtaining the various chi-scores Fisher's exact method of analysis was used whenever the expected frequency was 5 or less. This necessitated changing the resulting p-value into a chi-square and obtaining the square root of the latter. In all other cases the correction for continuity was used.

By converting all the cheat scores into their corresponding chi-scores, new sets of data were obtained. They required further statistical treatment since it could not be assumed they followed the same trends as their derivatives. Again examination of the Public-Private variable did not reveal any promising trends. A comparison of the pooled Out, In, and Recorded chi-means was not made since it was considered that the uncontrolled variation from skill and inhibition was still involved within these chi-scores. Skill and inhibition were correlated first with the chi-scores obtained within each cheat criterion. The resulting Pearson's r's are given in Tables XXIII and XXIV.

Inspection of Tables XXIII and XXIV indicates transforming the cheat scores into chi-scores, tended in general to lower the size of the correlation

coefficients although the correlation for the skill and inhibition factors with the regular, unadjusted cheat criteria, were higher. Inhibition was found to be affecting the cheat scores only in one criterion, type one cheat instead of in all three criteria as previously found. With skill, under the total cheat criterion, the transformation showed it was affecting the cheat scores which is somewhat different from its complete lack of influence upon the earlier cheat scores (see tables XIV, XV, and XVI). One criterion, the close cheat responses, did appear to be uninfluenced by skill and could be directly analyzed.

TABLE XXIII

CORRELATION COEFFICIENTS BETWEEN SKILL AND CHI-SCORE CHEAT CRITERIA

Cheat Criteria	r_{xy}	P
Total	$\neq$ 0.33	.01
Close	$\neq$ 0.15	not sig.
Distant	$\neq$ 0.18	not sig.

The mean chi-scores for this criterion (two and three), for the pooled Out, In, and Recorded variable, were: Out-1.48, In-1.63, and Recorded-1.58.

It was obvious that the rank order of scores did not agree with the proposed hypothesis. It was also apparent that there was actually little difference between the means and the variability was great. On these bases it was safe to conclude that for the distant cheat criterion no evidence was obtained to substantiate the thesis that the amount of cheating done was a function of the temptation involved in the situation.

TABLE XXIV

CORRELATION COEFFICIENTS BETWEEN INHIBITION AND CHI-SCORE CHEAT CRITERIA

Cheat Criteria	r_{xy}	P
Total	$\not$ 0.27	not sig.
Close	$\not$ 0.33	.01
Distant	$\not$ 0.14	not sig.

The total cheats criterion was analyzed next. The uncontrolled variation due to the effect of skill was held constant by dividing the skill scores of all 60 subjects into two groups: those with scores either above or below the skill median. This resulted in two distinct sets of chi-score data. Although the

total number of subjects in each set was 30, the three conditions Out, In, and Recorded did not have equal N's.

The chi-score means obtained for the pooled Out, In, and Recorded variable for both above and below the skill median are presented in Table XXV. It is evident that the means for the data above the skill median did not follow the expected order. The means for the data below the skill median did. It is then possible, the chi-scores being normally distributed, to test the differences between the means in each set of data by using a simple analysis of variance. A factorial analysis would be preferred but because of the unequal N's this could not be done. The results of the analysis of variance made for both sets of data, after testing for the homogeneity of the variances by means of Bartlett's test are shown in Table XXV.

TABLE XXV

VARIANCE ANALYSIS OF TOTAL CHEATS CRITERION CHI-SCORES ABOVE AND BELOW SKILL MEDIAN

	Above			Below		
	Out	In	Rec	Out	In	Rec
Means	2.04	2.46	1.81	1.28	1.43	2.09
F		1.07			0.88	
P		Not sig.			Not sig.	

The evidence presented in Table XXV indicated that again the proposed hypothesis of this thesis was not verified. No significant differences were found to exist between the chi-score total criterion means for the pooled Out, In, and Recorded variable when the effect of skill was roughly held constant. Although the method of controlling the variation due to skill was gross, the results do follow the same trends previously found.

Up to this point it has been shown that the differences found in cheating among the pooled Out, In, and Recorded groups on the basis of the total and distant cheat criteria, are not significant when the cheat scores are normalized and factors of possible uncontrolled variation are held constant.

The close cheat criterion alone now remains to be analyzed. It was indicated that the chi-scores and inhibition were significantly correlated. Some means of removing the influence of inhibition had to be found before any conclusions could be made concerning this criterion. Again, this was accomplished by using the median as a cut-off point. The subjects were divided into two groups: one above and the other below

the median score of inhibition. Then, in each group the Out, In, and Recorded conditions were compared on the basis of the close cheats criterion chi-scores obtained for each subject in that group. Since the factor of inhibition appeared to influence the cheat scores in all the criteria before they were transformed into chi-scores, it was decided to compare the chi-scores obtained in the experimental conditions with inhibition held constant for all three cheat criteria.

TABLE XXVI

CHI-SCORE MEANS FOR POOLED OUT, IN, AND RECORDED VARIABLE ABOVE AND BELOW INHIBITION MEDIAN FOR ALL CHEAT CRITERIA

	Above Median			Below Median		
Criteria	Out	In	Rec	Out	In	Rec
(1,2, & 3)	2.15	1.90	2.09	1.15	1.87	1.79
(1)	1.98	1.96	1.26	1.02	1.18	1.70
(2 and 3)	1.62	1.74	2.34	1.39	1.31	1.19

Table XXVI gives a summary of the obtained chi-score means for the pooled Out, In, and Recorded conditions, both for above and below the inhibition median and for all three cheat criteria. A brief glance at

this table is all that is needed to see that the sets of means are distributed in every possible order: in some Out has the largest mean score, in others it has the smallest and the same lack of order is present in the other two conditions, In and Recorded. Except for the Recorded group on the close cheats criterion, all the above means scores were larger than those found below the median. Although it is particularly difficult, because of the complicated data being studied, to decide what these distributions indicate, two suggestive trends can be delineated. First, since there apparently was no internal consistency among the cheat criteria, it is quite likely that they did not measure the same aspects of cheating. This supports the contention stated earlier that several of the responses scored as cheats might have been "honest" cheats, i.e., might have been errors in perception. Second, by equating the scores for the factor of inhibition, the results reveal that generally the less inhibited boys were more inclined to take tokens, win or lose, than those boys who appeared to be more inhibited. It is as though an individual must first feel free to perform before he can cheat. This second trend has appeared repeatedly throughout this study and it is reasonably obvious that the factor of inhibition

can not be overlooked in further investigations of cheating.

It is possible to analyze the data presented in Table XXVI by seeing if there are any of significant differences between the means within each set of conditions. It is felt pertinent to do this in order to see which relationships were significantly different, even though the rank orders of the various means did not particularly follow the hypothesis under study. Again a factorial analysis was preferred but could not be used because of the unequal N's. Therefore the data were studied by means of a simple analysis of variance. In each case Bartlett's test of variance homogeneity was applied first and out of the six sets of data, the scores within five sets were found to be homogeneous. In one, the total cheat criterion above the median, the variances were heterogenous. For this last set of data, because of the heterogeniety, analysis of variance was not used. Instead chi-square was substituted on the basis that the best expected mean frequency score would be the mean frequency of all the scores within that set of data. Using this grand mean frequency as the best predicted mean, makes it possible to test the obtained frequency means for the Out, In, and Recorded variable. The results for the analyses of

variance, shown in Table XXVII make it quite clear that no reliable differences were obtained between the mean cheating scores of the Out, In, and Recorded conditions when: (a) the scores were normalized and (b) adjusted grossly for the group differences due to inhibition.

TABLE XXVII

ANALYSIS OF VARIANCE OF CHI-SCORE MEANS FOR POOLED OUT, IN, AND RECORDED VARIABLE ABOVE AND BELOW INHIBITION MEDIAN FOR ALL CHEAT CRITERIA

	Above Median			Below Median		
Criterion	Total	Close	Distant	Total	Close	Distant
F	0.104*	0.561	0.435	1.827	1.497	0.037

* Chi-square

Up to this point the possible effect of inhibition and skill were controlled by adjusting the cheat scores, manipulating the uncontrolled variable affecting these scores, and combining both of these methods. In all instances the results were nil and no evidence was obtained to substantiate the formulated hypothesis.

One final method of controlling skill and inhibition remains to be discussed: matched groups. Here, the uncontrolled factor is held constant by matching its scores, as closely as possible, for the

experimental conditions and then testing the scores of another variable found in these sets of matched data. In this approach the inhibition scores for each subject in the pooled Out, In, and Recorded conditions were matched, e.g., a score of 36.3 for the Out condition was matched with scores of 34.5 and 36.6 for the In and Recorded conditions respectively and so on through all subjects. Then, the cheating scores corresponding to the inhibition scores were compared. The main disadvantage in using this technique, and the reason why it was used last, is that only part of the data can be employed since in many instances a score on one condition might not have a matching score in the other condition. Of the obtained data only 50 percent could be used. The advantage of utilizing this technique, however, is that groups are more precisely equated on the formerly uncontrolled factor.

The matching of cheating scores on the basis of inhibition scores resulted in eliminating half of the subjects from each of the three experimental conditions. The original cheating scores for each condition were then compared by means of a matched group analysis of variance. This was done for each of the three cheat criteria. The error term used in this method was not the usual within group variance, but the residual variance obtained by subtracting from the total variance the sum of the between rows and columns variances. This error

term takes into account the fact that the scores are matched across rows as well as for columns and is dependent upon the correlation present between the columns scores. More concretely, the matched groups analysis of variance for each of the three cheat criteria were organized as follows: the columns were the Out, In, and Recorded conditions while the rows consisted of the 10 individual scores obtained in each of the three conditions. The error mean square was the variance remaining after the variance of all the scores, the sum of rows and the sum of columns were accounted for. It was the variance resulting from the effect of the interaction of the individual matched scores (rows), with the sum of the scores of the experimental conditions (columns).

TABLE XXVIII

MATCHED GROUPS ANALYSIS OF VARIANCE FOR EACH CHEAT CRITERION WITH GROUPINGS ON BASIS OF INHIBITION

	Between Rows	Between Columns
Total Cheats		
F	9.1	1.4
P	.01	not sig.
Cheat (1)		
F	3.9	0.01
P	.01	not sig.
Cheat (2 & 3)		
F	1.4	0.29
P	not sig.	not sig.

The F-test results are given in Table XXVIII. The F-ratios between columns, or between the experimental conditions, are of primary interest. In not one cheat criterion did the means of Out, In, and Recorded conditions show any reliable differences. So once again the evidence provides no substantiation of the hypothesis presented in this thesis. The significant F-tests obtained for between rows for the total cheats and close cheats criteria reflect the fact that there was a positive correlation between the inhibition scores of the subjects, originally the basis of matching them, and the particular cheat criterion scores used in the analysis.

Summary of Analysis of Data:

At this point it is advisable to recapitulate in outline form, the procedures utilized in analyzing the data. First, the means of the Out, In and Recorded and the Public-Private variables were compared, on each one of the cheat criterion. This led to ambiguous results because there appeared to be other factors influencing the cheat scores. The results indicated a rejection of the hypothesis given in this thesis but, at the same time, showed that the scores were probably affected by sources of variation other than those being studied. The second step was

to see what uncontrolled variables were involved. It was found that there were differences in skill and inhibition which seemed tobe determining the subjects' performances. These were individually correlated with each of the three cheat criteria. It was discovered that although skill was not directly correlated with the cheat scores, or influenced by the Public-Private conditions, it was influenced by the pooled Out, In, and Recorded conditions: the boys in one condition differed in skill from those in another condition. The Inhibition factor, when correlated with the cheat scores, did turn out to be a source of unaccounted for variation which needed to be adjusted before the cheat scores could be compared.

By this time it was clear that the Public-Private variable was not differentiated on the basis of cheating and most of the remaining analysis was made on the pooled Out, In, and Recorded groups.

The last problem was to reexamine the pooled Out, In and Recorded variable with the source of uncontrolled variation held constant--namely from inhibition. This was executed in several ways in an effort to get the most valid and reliable understanding of the data. Log and reciprocal transformations were performed to normalize the cheat scores

but these were not successful. The cheat scores were distributed according to whether their corresponding inhibition scores were above or below the inhibition median. This resulted in a trend appearing on three of the criteria, but upon testing it was not significant. The cheat scores were converted into chi-square scores and a complete analysis of the effect of skill and inhibition was then made on these scores but no conclusive results were obtained. Both skill and inhibition appeared to be influencing the chi-scores so the median method of controlling variation was applied to both and the results, tested by analysis of variance, again showed no reliable differences between the pooled Out, In and Recorded cheat scores. The final procedure, returning to the original cheat percentage score data, were matched on the basis of inhibition and compared by means of matched groups analysis of variance, also did not reveal any differences. In all instances the analysis of the data resulted in a failure to confirm the hypothesis being tested in the thesis.

CHAPTER VII

QUESTIONNAIRE DATA

The central problem of this thesis concerned examining the effect of temptation on the amount of cheating. Mainly, as described in the preceding data chapters, this involved a quantitative analysis of cheating. The results obtained satisfied the requirements established by the limits of this experiment. At this point, in an effort to further an understanding of cheating behavior, additional material is presented. This is the qualitative data derived from the nine questions asked of the boys after they had "played the game." The questions imply a more general, total approach to the problem of cheating and go somewhat beyond the more rigid limits of the actual experiment.

Originally the questions were asked to reinforce the notion that the experiment was a new game. It was thought, however, that a systematic tabulation and comparison of responses with cheating scores might lead to further insights into the problem of cheating behavior. The interpretation and system of scoring the first four questions was as follows.

Question 1: What did you think of the game?

This question, and the following three, was considered to reflect the child's attitude to the game and his interest and motivation to respond. All 60 boys replied in one form or another, that the game was "a lot of fun." A few were less enthusiastic in their replies but all agreed that they liked it. No scoring problems exist in this question. All of the responses were positive.

Question 2: Do you think other fellows will like it? Here it was thought that even if a boy did not like the game, and even if he previously said he did, his true feelings about it might come out when he was indirectly asked about it. Again there was no scoring problem since all the responses were positive. The boys were unanimous in their affirmative replies. The usual answer was a flat "yes" or "yeah."

Question 3: Do you think the game should be changed? How? This question not only attempted directly to further the idea that the experimenter was the trying out of a new game for boys, but also it attempted to sample the boys' true attitudes toward it by an even less direct method than in question 2. Here they were given permission to gripe, to express their frustration, and in general to criticize the task in a more acceptable manner than in any of the first two

questions. Of the 60 boys all but four stated that no change was needed. Of these four only one actually thought a change should be made while the remaining three merely commented about adding more to the game.

Question 4: What kind of games do you like to play best of all? It was thought that this question would reveal any dissatisfaction which might have been caused by playing the game through negative answers as: "any game but this" or "more interesting games." Surprisingly, the answers did not differ too much and no negativism was evident. Most of them were either running-ball-out door or in-door table games. Many of the boys were careful to include in their list the experimental game. A tabulation of the responses showed the following preferences: (a) active games forty boys, (b) passive games nine boys, and (c) both types eleven boys.

In order to test the differences between these three groups of boys each group was separated according to whether a boy's cheat score on criterion two and three was above or below the median of that criterion. The distant cheat response wasused in all the following comparisons since it was considered to measure definite cheating responses. The results of this separation gave

a 2 x 3 chi-square table where each cell indicated the number of boys. Table XXIX shows these distributions. An examination of this table immediately indicates that the groups were not differentiated on the basis of cheating.

TABLE XXIX

CHI-SQUARE DISTRIBUTION TABLE
PREFERRED TYPE OF GAMES COMPARED WITH
ABOVE OR BELOW THE DISTANT CHEAT CRITERION

	ACTIVE	PASSIVE	BOTH TYPES	TOTALS
Above Median	19	4	7	30
Below Median	21	5	4	30
Totals	40	9	11	60

From the results of the four questions reported so far it is possible to conclude that nearly all the subjects were motivated to perform. Their interest was high and generally their attitude was positive toward the task. No evidence was found to indicate that the questions were able to distinguish between cheaters and non-cheaters.

The statistical treatment used in dealing with the remaining five questions, listed below, is very similar to that used in question four. Each question was divided

into two or more groups on the basis of the answers and then each group was separated with regard to the number of boys above or below the distant cheat criterion median score. A chi-square analysis was then made of these frequencies. As with question 4, no significant chi-scores were obtained, indicating that these questions also did not differentiate the cheaters from the non-cheaters. Although the remaining questions do not particularly shed any further light on the problem of cheating, they are briefly presented so that the reader can obtain a fuller picture of how the boys responded.

Question 5: How did you feel when you missed one? This question turned the direction of the interview toward feelings and attitudes not just related to the game but to the more general area of losing and indirectly, to the frustration possibly associated with it. The feelings and attitudes tapped by this question fell into four groups: 1. eleven boys who were self critical; 2. thirteen who were disappointed; 3. twenty-four who were indifferent to their loss; and 4. twelve who were unable to express themselves.

Question 6: Did you have any way to help you decide whether you won or lost? Presumably this question was asked to see if the game gave any clues as to whether

or not a response was a winning or losing one; to see if the game itself had any defect which spoiled playing it. On the more psychological level, it referred to attempts at exerting control over cheating. The responses indicated: 1. a large majority of the boys, fifty-one, did not use or have any system of helping them to decide; and 2. of the nine who did, most of them used a system which actually had nothing to do with the game and it did not really help them.

Question 7: Did you make any mistakes? The boys were given the impression that this question was asked to see if the game precipitated errors; if any blind spots existed which the worker did not know about. Actually, the interest here was to see if the boys would say they cheated if it was considered as a mistake. The responses fell into three groups: 1. those, thirty-one, who thought they did make mistakes; 2. those, sixteen, who thought they did not; and 3. those, twelve, who did not know. In the first group, although they stated they made a mistake, they usually described it as being not fast enough in hitting the key, or missing it. If they did admit in taking a token, there was usually an excuse for doing so.

Question 8: Was it hard sometimes to decide if

you won or lost? This question was asked the boys as though the interest was centered on determining whether the game was too hard and needed more refining. The real purpose was an attempt to learn about some of the more cognitive aspects involved within the situation. Of the sixty boys, forty-seven replied that it was hard, eleven that it was not, and two did not know. Of the boys who felt it was not a hard game only a few actually said so. Most of them qualified their answers, e.g., "it was pretty close." It is interesting that although the bulk of the boys did seem to feel it was a hard game, their motivation to play it was not negatively affected.

Question 9: What did you do when you were undecided? This question was a follow-up of the previous one. Aside from the possible cognitive implications it was used as a means of seeing how the boys would verbalize their difficulties in winning tokens. The question was asked of all the boys, even of those who stated that it was not hard for them to decide. Of the group that did have trouble, thirty-one replied that when they were unable to decide they did not take a token and waited for the next chance. Of the eleven boys who did not have any difficulty all commented that they did not take any tokens except for one.

The responses to the questions certainly do not give any conclusive evidence to interpret cheating behavior. The main conclusion which may be drawn, in reference to this paper, is that the boys were all interested in the "game" and they were motivated to perform. Beyond this, only trends and questions about cheating are evident. The problems of individual motivation, frustration and losing, attempts at projecting control onto the environment or the situation, and how the child sees the cheating situation itself and himself in it appear to be integral components of cheating behavior. Perhaps, the exploration of these issues will require a more oblique attack such as the use of projective methods.

CHAPTER VIII

DISCUSSION, CONCLUSIONS AND SUGGESTIONS FOR FURTHER WORK

This thesis has investigated the problem of cheating within circumscribed limits purposively established in order to clarify earlier studies. The importance of understanding cheating goes beyond abstract psychological theory; it also has direct practical implications. For example, people have associated with this behavior moralistic attitudes which frequently have been so generalized that a child found cheating was often considered not only as a "bad-boy" but also as a delinquent, incorrigible child. Since the rate of juvenile delinquency has been on the increase in the past few years, it would seem that the understanding of cheating and its implications raises a very practical problem.

The question of whether cheating is an over-all character trait was originally examined by Hartshorne and May and, as mentioned in other sections of this paper, they reported it was not a general trait and that the situation itself was a major determiner of cheating behavior. Their results have gone unchallenged and the data about cheating obtained in other studies frequently depended upon and followed their

basic hypothesis concerning the situational nature of cheating. The more recent research in other areas of psychological interest has indicated that behavior, such as cheating, is more adequately understood when some form of genotypic explanation is employed. It appeared pertinent, then, to utilize this latter conceptual procedure to study cheating.

The basic hypotheses tested in this thesis were developed from the proposition that cheating was a function of certain basic aspects of the situation. It was thought that if this belief was tenable then quantitative differences in cheating should be readily evident if an experimental situation was varied in only one aspect; the degree of "temptation" to cheat. In doing this six experimental situations, presumably differing in their temptation values, were devised and compared. The key terms, temptation, situation, and cheating were all operationally defined.

The first examination of the data of this experiment indicated that the results in no way supported the hypothesis originally proposed: the amount of cheating was not found to be directly related to the degree of temptation in the situation. No clear cut association was found to exist between cheating and

(a) the probability of being discovered cheating, and (b) the public or private character of token-taking when it was unearned. It was noticed, however, in several of the statistical tests, that the subjects in the pooled Recorded condition usually did the least amount of cheating of any of the groups. Also, there were indications, in this first analysis of the data, that factors other than those being studied appeared to be influencing the cheating scores and perhaps giving spurious results. Two factors, skill and inhibition, were found to be so involved.

It was considered necessary to control these sources of uncontrolled variation before making any final conclusions. Skill was considered to be dependent upon visual-motor ability and was defined as: the number of wins divided by the sum of all wins and losses multiplied by 100. In studying the correlates of this variable, it was found to be unrelated to cheating, but significantly influenced by the pooled Out, In, and Recorded conditions. Although differences in skill were not in any way correlated with differences in cheating, the more skillful children were those who were placed in situations in which there was a greater probability that any of their cheating behavior would be discovered.

Since the experimental design did not include the study of skill and it was investigated incidentally to the more central problem, it was not warranted to make any further conclusive statements about its relationship to cheating. From the information obtained in this work some probable trends may be pointed out. Skill did not appear to affect cheating directly but was itself affected by the differences in the experimental situations. This suggests that skill was not a determinant and that its fluctuation may have been related to other factors, perhaps perceptual-cognitive or personality differences. If these statements are meaningful, then the following questions would be relevant to furthering an understanding of the relationship between skill and cheating. First: How does the way a child perceives a situation affect his skill? Second: How are the differences in skill which are not determined by the perception of the situation, related to differences in cheating?

The variable, inhibition, was described in terms of the number of times a child failed to award himself a token when he deserved it. The reason for considering this factor was that it was noticed during the experiment that several of the children appeared more timid about asking questions, in their curiosity, and

so forth. It was thought that a measure of inhibition might be derived from the data making it possible to study the relationship between inhibition and cheating. Again, as in skill, no appropriate intensive study was made and this discussion should be considered mainly as reflecting trends for future research.

When inhibition was correlated with the amount of cheating, it was found that there did exist a positive relationship and that in this experiment it had probably acted as an uncontrolled influence on the amount of cheating done by the children within each of the three probability of discovery conditions. In regard to the latter conditions, only one difference out of the three, that between the In and the Recorded groups, appeared as significant. There was too little information to draw any unequivocal conclusions about these results other than stating that inhibition did appear to be a distorting factor affecting the cheating scores. However, even though it was not possible to indicate conclusively the role of inhibition in cheating, definitive trends were indicated. Since inhibition is somehow related to the phenomenon of cheating, the latter certainly can not be solely situationally determined. Inhibition is likely to be an expression of internal or personality variables. Further research is

certainly necessary to answer such questions as: what is the effect of inhibition on the amount of cheating? On the kinds of cheating?

A further and final analysis of the cheating scores, made with inhibition and skill grossly held constant, revealed the same results found in the earlier analysis. Again no confirmation of our hypothesis was obtained. Cheating was not quantitatively related to the differences in the temptation situations established in the experiment. The Recorded groups still generally showed the least amount of cheating. The problem now remaining is: how can these results be best interpreted?

Several explanations of the results clearly present themselves. One of the most obvious concerns the basic construct in the study: temptation. Even though it was adequately and appropriately defined, it appears very likely that the situations may not have differed in this respect; that the children may not have even seen them as tempting. As mentioned previously, no consideration was taken of the children's phenomenal identification of the "different" situations and it is very possible that what was considered tempting to the worker was not to the children. Another factor, relating to the children's

phenomenal worlds and to temptation, is that of motivation. By means of the questionnaire it was found that all the boys were positively motivated to "play the game." Still, no measure of this motivation was made and it was not possible to compare it with the amount of cheating nor to equate the groups on this factor. It is evident, then, that in order to gain an understanding of cheating behavior in children, some account must be taken of the children's phenomenal worlds.

It is important to point out that on the basis of the findings of this dissertation it would be faulty reasoning to discount the possible effect of temptation on cheating. Although the findings showed that the hypothesis was not supported, it is not correct to state that temptation never affects cheating. This it seems, would be belying the observations made everyday by educators, parents, and others working with children. From the evidence seen in this work, especially in the relation of skill to the experimental situations, it would seem that temptation itself was not a constant factor but one which fluctuated in many ways.

Another explanation for the failure to obtain verification of the thesis is reflected in the findings

that inhibition was positively related to cheating. Attempts to control this factor were made but due to the nature of the data only gross approximations were possible. The evidence shows that inhibition must be considered and equated for when cheating is investigated. It seems likely that if this factor had been under better control, more definitive results might have been obtained. In any case, the presence of this factor suggests the possibility that cheating involves some aspects of the personality development of the child.

Looking at the more positive findings of this paper, it was mentioned that one group did, in several instances, show significantly less cheating then any of the others. The pooled Recorded group consisted of those boys who knew that all their "game" performances were permanently recorded. There does appear to be enough evidence to formulate some conclusions about this group's performance. What was unique for this group was the fact that no matter what a boy did it was definitely discoverable and he knew it. In the other instances there always was doubt. When the worker was out of the room, the boy never knew whether he would return in "10 minutes" or before. With the

worker in the room, the boys rarely knew when they were or were not being observed. It would seem that in the latter two situations, the "structure" was quite loose and it was left to each boy to define the situation. In the first instance, the structure was much less of a problem and the boy did not have to devote his time to setting limits for himself. Another way of viewing this is to consider it as a problem in inner versus outter control. For example: when the boy knows his cheating is discoverable perhaps he feels that he also is relieved of the problem of internally controlling his impulses, or temptation, to cheat and he is more apt to conform and accept the restrictions placed on him from the outside. For the other boys this remains as an unresolved conflict. They desire an object which at times they have not earned. Their control is in a continual state of flux, ambivalence dominates and conflict ensues. It is highly possible that the variations in the adjusted cheat scores, in the Out and In groups, actually reflect not temptation to cheat, but rather an <u>indecision</u> to cheat and a state of conflict.

In the opening chapters of this paper some mention was made concerning the methodological problems involved in studying cheating. It was pointed out that most

of the previous studies were limited in formulating general conclusions because the design of their work was too phenotypical. A modified genotypical approach was suggested and used in this paper. It is felt that some further discussion of this problem should be made.

The appearance of the inhibition and skill variables and the trends implied in the questionnaire data suggest what is considered to be a more appropriate manner of dealing with cheating. It has been proposed that a consideration of neither the situation alone nor the person alone can lead to an adequate understanding of cheating. Apparently it is when the situation is "right" and the person is "set" that cheating does occur. This statement has been more adequately formulated to Lewin in his rector and topological psychology: behavior is a function of the person and the psychological environment. In addition to placing cheating into this sort of conceptual framework, we must also view it in genotypic terms. In using a more dynamic approach isolated, descriptive bits of material can be more systematically and conceptually related. It is thought that only when this is done, that an adequate picture of cheating behavior can be developed. It is suggested that cheating, like other

forms of behavior, develops from a convergence of field forces (24). In studying cheating emphasis should be placed on the "present" dynamic balancing of the personality-environment forces and study made of the tension systems created therein.

Since so much has been said about using a dynamic conceptual approach to study cheating, it would be most proper to present one possible way of doing this. The following point of view does not cover all areas of the problem of cheating, e.g., what is the psychological significance of cheating oneself? Is that cheating? What is the effect of cheating on the one cheated? It represents only one conceptual point of view and as such is quite open to criticism. It is presented mainly to suggest how the problem might be developed. Since this paper has been concerned with cheating in children the following treatment will refer specifically to children.

In the realm of behavior it is possible to arbitrarily distinguish two kinds: overt and covert. Grossly, all behavior may be placed on one or the other of these two categories. In considering cheating we are dealing with covert behavior. The one who cheats hides it from the one he is cheating, at least while it is happening, even though others may be aware of what

is happening. The word "hides" implies that something, material or otherwise, is taken or moved. Cheating, then, may be considered as a form of getting something either forbidden, required, and/or for self-indulgence. Further, it is considered as a social process involving an interaction between two or more people. Whenever cheating occurs there must be someone to do the cheating and someone who is cheated. This also applies when the "someone" is a group of people or an institution representative of an individual or a group of people.

From what has been described so far, some leads for research in cheating become evident. By considering it as a process involving interpersonal relations, it would appear from the developmental aspect that children showing differences in their social development would also reveal differences in cheating. When studying children the following relationships might be examined: (a) child and peer, (b) child and sub-peer; and (c) child and authority figures, e.g., parents, teachers, and other adults.

These statements about cheating give the rudiments for an operational definition of cheating couched in psychological terms: cheating is a covert way of obtaining a particular goal in a social setting. However, this

hardly differentiates cheating from other kinds of goal directed behavior. It is, therefore, essential to specify the more necessary and sufficient conditions underlying it.

It is essential that there exist a goal toward which the individual must be motivated. This motivation need not be positive although the child must respond in the direction of the goal: he must move toward the goal region. An instance of this would be the taking of an examination even when the child does not want to. The potentiality of withdrawing, fixating, or leaving the field (or the psychological situation), must be exluded. If, for example, there is no need to attain the goal or if it can be avoided by doing something else, then there is no need to cheat. It is only when these avenues of escape are closed, there exists some form of interference or blocking of the path to the goal, and the individual must move into the area of the goal, that cheating can become more of a possibility.

The conditions must be narrowed still further and the social aspects considered in order to specify the particular conditions which characterize cheating alone. Specifically, norms, values, and judgments must be violated. (It should be noted here that it is in this area that the moralistic overtones are most usually heard.)

This means that the child must be cognizant of his behavior in a concretely structured situation. Stated more descriptively, a definite path to the goal must be clearly known to the person and then rejected. It is essential that this path be clearly marked; distinctly existing in the phenomenal world of the one doing the cheating. For example, if the child does not know the rules of the game and he plays it differently, he can not be accused of cheating.

It has been stated that both the path and the goal are psychologically relevant in cheating. The definition of cheating, presented above, mentioned that the individual must move into the goal region. To this can be added: it is necessary that the valence (or motivation or force) attributed to the activity of taking the cheating path or a prohibited goal be stronger than the prohibition against it.

These limits imposed by the definition, give rise to three alternative ways in which the goal and path may be involved in the cheating process. First: There are instances in which the phenomenal fields of the cheater and the one who is cheated, are the same. Here there exists a commonality in the social structure; both individuals accept the value structure of the path and the goal. This is similar to the situation in which both

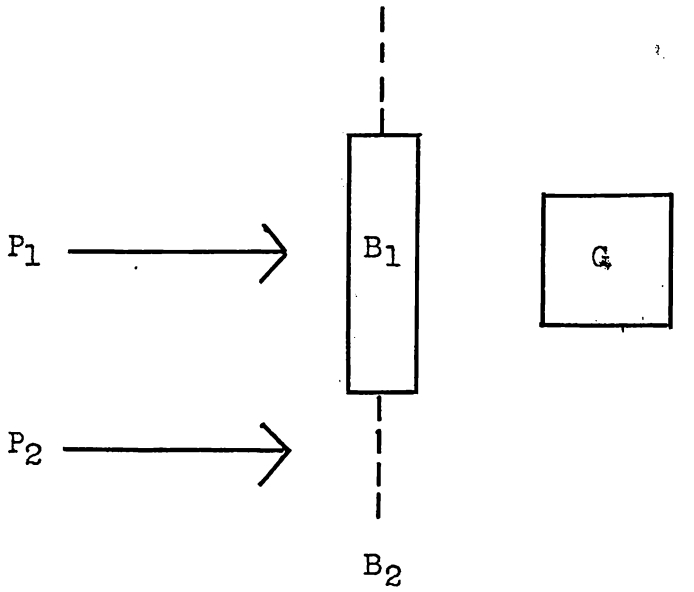
individuals accept the rules of the game and they agree to play it one way. Psychologically this involves the choice of a path to get an acceptable goal. Cheating occurs when the path taken is not the one previously agreed upon (Figure I).

Second: In some situations there is a correspondence between the phenomenal fields of the cheater and the one being cheated. Here the actual choice of the path is not the crucial issue. The individual aspires towards a prohibited goal. He is at a choice point between attaining a "cheated" goal or one more socially approved. The goal is forbidden and the force toward the goal is stronger than the opposing force away from the goal. This situation differs from the first in that here the path is of lesser importance than the mutual agreement that the "cheated" goal ought not be obtained. For example: a child is told he must not play in a sand box but work with paper. Although he agrees to this, he gradually moves closer and closer to the sand and finally is "accidently" playing with it. The approved goal is to work with the paper and the prohibited one is to play with the sand (Figure II).

Third: In this alternative the phenomenal fields for the one doing the cheating and the one being cheated

FIGURE I

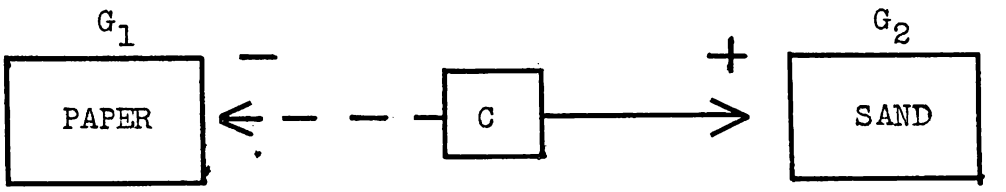
REPRESENTATION OF CHEATING WHEREIN VALUE STRUCTURE OF SITUATION IS ACCEPTED BUT NOT ADHERED TO AND A CHEATING PATH IS USED



P_1 is the agreed upon path to be used in order to obtain goal, G. A_2 is the path not agreed upon; not in the rules of the game. B_1 is the barrier to be overcome in order to reach G. B_2 is easier barrier to overcome, but also outside of the rules of the game. Cheating occurs when P_2 is used to attain G.

FIGURE II

REPRESENTATION OF CHEATING WHEREIN VALUE STRUCTURE OF SITUATION IS ACCEPTED BUT NOT ADHERED TO AND A CHEATED GOAL OBTAINED



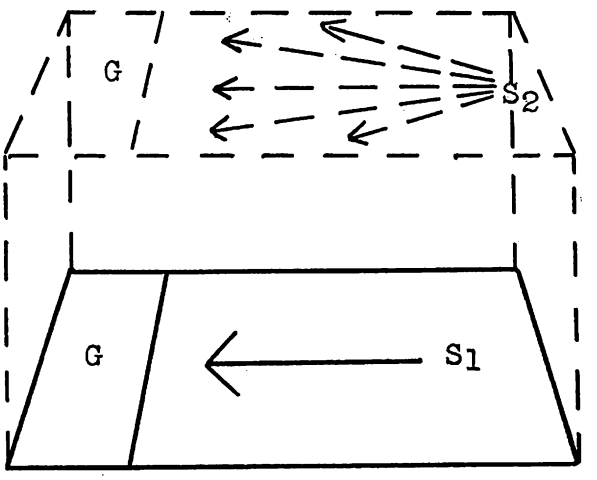
Child (C) agrees to play with paper (G_1) but there is a more positive valance (+) for him to play with the sand (G_2). Cheating occurs when he moves towards G_2 and away from G_1.

differ; a discrepancy exists. Here the individual does not accept the value structure and therefore also not the path. The situation is imposed upon him and he considers it as an ego-alien force. One which he is in but does not feel he is actually a part of it. He isolates the value organization in the situation as though it were not meant for him. This is frequently seen when a child feels that an unfair condition is placed on him, e.g., the test asked for material which he was told it would not be necessary to study. This is also frequently seen in adults, when they have to fill out their income-tax forms and they try to "get-away-with-it" with the notion that it is something they have to do but it has little to do with their beliefs about it and therefore it is not "really" a part of them. This sort of thinking is often seen in the process of rationalization (Figure III).

This general conceptual formulation of cheating can now be summarized. First, what is cheating? A covert violation of social norms in order to attain a required goal. Second, what is the necessary conditions for it to occur? The individual must move in the direction of the goal region and this is accomplished in either of the three following ways: (a) accepting the

FIGURE III

REPRESENTATION OF CHEATING WHEREIN
VALUE STRUCTURE OF SITUATION
IS NOT ACCEPTED



S_1 is the actual imposed situation which has rigid, defined boundaries and the way to perform is sharply delineated. S_2 is the child's transposed situation wherein the way to perform is undifferentiated. The goal (G) is the same for both situations. Cheating occurs when the child develops S_2 and in it he performs as though any path is permissible to attain G.

psychological value structure of a given situation but using a non-acceptable path; (b) accepting the psychological value structure of a given situation but choosing a disapproved goal; and (c) not accepting the psychological value structure of a given situation and isolating the imposed value organization.

The above conceptual outline is certainly not presented as a complete, systematic representation of cheating. Nor is it considered to be the "final word" in explaining cheating. It does allow, however, a chance to reexamine the experiment executed in this paper from a new point of view. We might now consider cheating not as a character problem but as a mode of dealing with psychological or physical barriers. In addition we might retain our original hypothesis, cheating is a function of temptation; defining temptation in terms of psychological processes. For example, the temptation values may be varied by adjusting the forces existing between the acceptable goal, the "cheated" goal, and the child. Or, temptation may differentially affect cheating when it is defined as being a part of the psychological value structure of a given situation. What is being pointed out is that there is no simple way of considering temptation. In our experiment we defined it in operational terms on the basis of prior phenomenologizing. It "seemed" that

our situations "should" differ in temptation value, though we had no way of testing temptation in individual cases.

There remains many questions which this paper has not dealt with. No doubt the above formulation and conceptual presentation of viewing cheating will not be acceptable to many. However, it is felt that the major contribution of this paper has been to point out that the problem of cheating was not a simple one and to high-light the need for studying it from a more psychological, conceptual frame-work.

CHAPTER IX

SUMMARY

The purpose of this thesis was two fold. Specifically, it set out to test cheating as a function of temptations. More generally, it attempted to demonstrate the inadequacy of using a phenotypical approach to study cheating. The experimental design included devising six experimental situations which presumably differed as to their temptations values. Cheating, situation, and temptation were operationally defined in terms of the experiment.

Sixty subjects, all 10 year-old boys, from the same elementary school were randomly placed in the six experimental situations. All the children were told that the experiment was a new game and they were all asked the same list of nine questions afterwards. This was done to perpetuate the notion that the experiment was a game. The "game" involved an electrically controlled reaction time device which automatically made a set of four different colored lights go on and off. By pressing a telegraph key, before a light went off, a child won the trial and was then allowed to take a token. After the game was over these were exchanged for marbles which the boys kept. Cheating occurred if

the child awarded himself a token when he did not "beat" the lights. The game recorded the exact performance of each child. This gave a continuous record upon which all cheats were easily identified. Cheats separated into three types: those which may have been legitimate errors; those which were unquestionably cheats; and both groups combined or the total cheats.

The experimental conditions were based on the probability of discovery: the more possible it was to be caught cheating the less tempting it would be to cheat. Two approaches were used. First, the situation was varied three ways: having the examiner at one time, out of the room; at another time in the room; and at still another time, the examiner in the room and the boy told his work was being recorded. Second each of the above three situations were varied two ways: by changing the receptacle into which a token fell: once it was a set of plastic bags which cushioned the token as it fell and no noise was made; and the other time the token fell onto a tin cup and loud noises resulted. A particular experimental condition consisted of one variation from <u>each</u> of the above two approaches to possibility of discovery. The six conditions resulting were as follows:

1. Out-Public
2. Out-Private
3. In-Public
4. In-Private
5. Recorded-Public
6. Recorded-Private

In each condition ten boys were used. The results showed a large variation in cheating. Even though several different statistical approaches were used no substantiation of the hypothesis, that cheating was a function of temptation, was found. No systematic differences in cheating were found to be related to situational differences. A trend was seen however: children cheated less when they were definitely aware that their performance was discoverable.

The six experimental conditions were pooled and just the Out, In, and Recorded groups and then just the Public and Private groups were separately studied. This also did not show up any significant results, outside of the pooled Recorded groups again showing the least cheating.

In the course of examining the data it was found that factors of skill and inhibition were involved in the experiment as sources of uncontrolled variation. The former did not directly affect cheating but was influenced by the variable: probability of discovery. The latter was found to be affecting the cheating scores. The effects of this uncontrolled variable were then

eliminated by means of various statistical treatments and the adjusted cheat scores reevaluated. There was no change in the conclusions indicated above. The final analysis of the data resulted in the following conclusions:

1. Although no evidence was found to substantiate the hypothesis, there was no conclusive contraindicative evidence.

2. Cognitive factors appeared to be involved with cheating and must be reckoned with when studying cheating.

3. In several instances the pooled Recorded condition showed significantly less cheating. It was suggested that this was reflective of a difference in outer and inner control among the children in the different experimental groups and that for the Out and In groups, the cheat scores may indicate indecisiveness and a state of conflict.

4. A further examination of cheating behavior would be most fruitful if a more dynamic, conceptual approach is used. One such approach was briefly outlined.

In discussing the conclusions it was especially pointed out that the factor of temptation as studied in this experiment, may not in actuality have been one of temptation. That is, what the experiment considered as tempting (and differences in tempting situations), may not have been phenomenally temptations to the boys who performed in each particular condition. Another

fact, that of motivation to perform, was considered and it was indicated that it was essential to equate the subjects on this before testing for differences in cheating. As a final statement it appears pertinent to indicate again that on the basis of the findings of this dissertation it would be faulty reasoning to totally discount temptation by saying it never affects cheating. Not only would this belie the observations of every day experience but also it would not be warranted on the basis of the data collected. The data suggested that temptation itself was not a constant factor but one which fluctuated in many ways.

APPENDIX

TABLE XXX

WIN RESPONSES

RAW DATA

	OUT-PUBLIC	
	TAKEN	NOT TAKEN
1.	4	14
2.	12	2
3.	6	1
4.	19	3
5.	16	8
6.	4	5
7.	12	16
8.	7	12
9.	5	11
10.	2	5

	OUT-PRIVATE	
	TAKEN	NOT TAKEN
1.	1	3
2.	8	6
3.	1	1
4.	9	9
5.	2	2
6.	4	5
7.	31	5
8.	20	2
9.	19	1
10.	4	0

	IN-PUBLIC	
	TAKEN	NOT TAKEN
1.	8	8
2.	13	9
3.	3	2
4.	3	1
5.	14	3
6.	19	2
7.	21	1
8.	4	0
9.	1	0
10.	12	0

	IN-PRIVATE	
	TAKEN	NOT TAKEN
1.	7	8
2.	8	12
3.	10	19
4.	13	1
5.	40	4
6.	22	2
7.	24	5
8.	35	6
9.	15	9
10.	9	7

	RECORDED-PUBLIC	
	TAKEN	NOT TAKEN
1.	4	17
2.	0	0
3.	9	25
4.	9	22
5.	11	19
6.	9	15
7.	8	9
8.	30	4
9.	35	3
10.	11	1

	RECORDED-PRIVATE	
	TAKEN	NOT TAKEN
1.	6	18
2.	7	28
3.	19	16
4.	12	11
5.	28	26
6.	11	8
7.	15	8
8.	31	14
9.	25	2
10.	2	0

TABLE XXXI

OUT-PUBLIC LOSS
RESPONSES RAW DATA

	TAKEN				NOT TAKEN			
	Cheat	Criteria		Other	Cheat	Criteria		Other
	1	2	3	Reply	1	2	3	Reply
1.	0	5	0	2	4	25	1	11
2.	9	14	4	8	8	2	1	6
3.	6	26	1	2	3	16	1	4
4.	9	3	0	1	13	10	0	8
5.	7	7	0	0	10	6	0	12
6.	4	12	0	3	5	23	0	10
7.	2	3	2	1	18	8	2	2
8.	7	0	0	3	30	7	0	0
9.	9	6	0	1	16	12	2	4
10.	3	2	0	0	11	36	3	4

TABLE XXXII

OUT-PRIVATE LOSS
RESPONSES RAW DATA

	TAKEN				NOT TAKEN			
	Cheat	Criteria		Other	Cheat	Criteria		Other
	1	2	3	Reply	1	2	3	Reply
1.	8	0	1	0	25	12	0	16
2.	17	0	0	1	18	10	0	6
3.	5	0	0	2	30	9	0	18
4.	2	0	0	1	28	4	0	13
5.	8	5	2	2	20	17	3	5
6.	10	0	0	3	23	1	0	20
7.	7	1	0	0	20	1	0	1
8.	23	2	0	0	6	2	0	11
9.	19	2	0	0	14	9	1	1
10.	8	1	0	0	13	8	1	31

NOTE: The column OTHER REPLY refers to the times a child did not hit the telegraph key or his performance otherwise did not fit the scoring criteria. This material was not analyzed since these data were too sparse.

TABLE XXXIII

IN-PUBLIC LOSS
RESPONSES RAW DATA

	TAKEN				NOT TAKEN			
	Cheat Criteria			Other	Cheat Criteria			Other
	1	2	3	Reply	1	2	3	Reply
1.	12	6	1	3	19	9	0	0
2.	8	3	0	0	6	23	0	4
3.	5	2	0	0	14	17	0	23
4.	12	8	0	6	5	12	0	19
5.	13	4	0	1	15	9	0	7
6.	13	12	0	1	9	5	0	5
7.	19	14	1	0	3	6	0	1
8.	19	28	1	1	2	8	1	2
9.	7	18	1	0	2	12	0	25
10.	32	8	0	1	3	10	0	0

TABLE XXIV

IN-PRIVATE LOSS
RESPONSES RAW DATA

	TAKEN				NOT TAKEN			
	Cheat Criteria			Other	Cheat Criteria			Other
	1	2	3	Reply	1	2	3	Reply
1.	3	0	0	0	17	14	0	17
2.	4	2	0	1	25	7	1	6
3.	2	1	0	0	20	12	0	2
4.	8	4	0	0	20	16	0	4
5.	11	3	0	0	3	4	0	1
6.	5	5	0	0	13	17	0	2
7.	10	2	0	1	13	2	0	9
8.	6	1	0	0	15	1	0	2
9.	9	3	1	1	18	2	0	8
10.	3	0	0	1	7	5	0	34

TABLE XXXV

RECORDED-PUBLIC LOSS
RESPONSES RAW DATA

	TAKEN				NOT TAKEN			
	Cheat	Criteria		Other	Cheat	Criteria		Other
	1	2	3	Reply	1	2	3	Reply
1.	0	1	1	0	38	2	0	3
2.	0	0	0	0	6	0	0	60
3.	2	0	0	0	24	0	2	4
4.	1	0	0	0	19	4	0	11
5.	5	0	1	0	24	5	0	1
6.	9	0	1	0	19	8	0	5
7.	3	0	0	1	30	7	0	8
8.	16	0	0	1	5	2	1	7
9.	9	0	2	1	7	2	0	7
10.	10	0	0	0	6	13	0	25

TABLE XXXVI

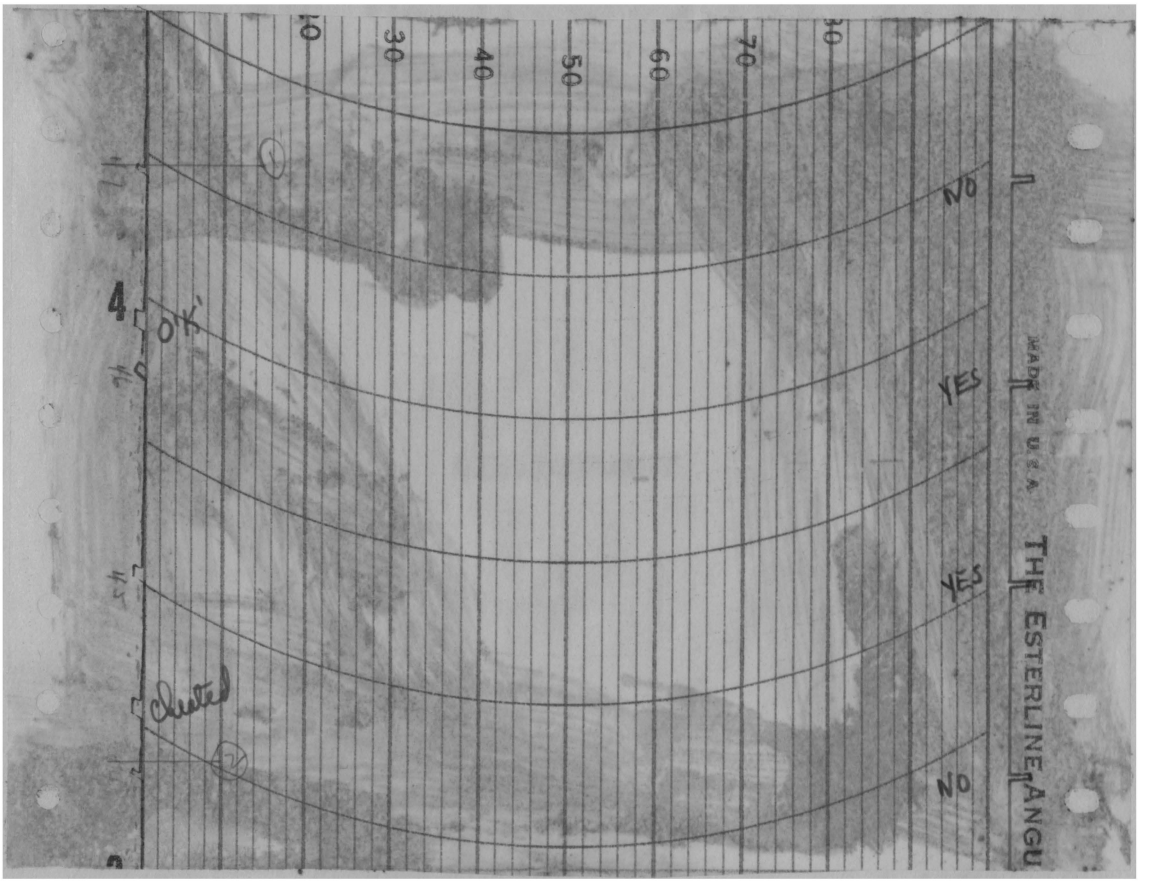
RECORDED-PRIVATE LOSS
RESPONSES RAW DATA

	TAKEN				NOT TAKEN			
	Cheat	Criteria		Other	Cheat	Criteria		Other
	1	2	3	Reply	1	2	3	Reply
1.	0	0	0	1	19	20	0	2
2.	1	2	1	0	19	7	0	1
3.	4	3	0	0	20	3	0	1
4.	5	0	0	0	13	19	0	6
5.	1	1	0	1	5	0	0	4
6.	4	0	0	1	33	8	0	1
7.	9	4	0	2	14	6	0	8
8.	7	0	0	1	10	1	0	2
9.	16	7	0	0	6	4	1	5
10.	4	2	0	0	6	11	2	39

FIGURE IV

SAMPLE OF

A RECORD



The left hand side shows when a light went on and its duration, as measured by the length of the mark. Also on this side is seen the mark made when a token was taken. On the right side are the marks made when the telegraph key was hit. A win occured when the latter mark fell within the range of the mark made by the light when it was on.

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