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Confirmation and Disconfirmation of Expectancies During Modeling

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CONFIRMATION AND DISCONFIRMATION OF EXPECTANCIES DURING MODELING

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Abstract

To determine the function of confirmation and disconfirmation of expectancy during modeling behavior, 60 primary school children were exposed to a training film (adult male model), and then to three conditions of expectancy confirmation (group C, 100%; group CNC, 50%; group NC, 0%) through a second experimental film. Ss' responses were observed under incentive and no-incentive conditions. Though expectancy was not significant, incentive was ($p < .01$). S responses which matched M's responses in the film showed that confirmation of expectancy did not affect imitative learning. While the perceptual definition of expectancy in this study had no effect, expectancy as a motivational condition and measured <u>during</u> actual observational learning (training film) was discussed as having an effect on number of matching responses in modeling.

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Chapter I

Introduction

Introduction to the Problem

The innovative modeling/vicarious learning experiments of Albert Bandura (1962, 1965b, 1969) are distinct among contemporary psychological research for their support of a stimulus-contiguity theory of observational learning. Whereas reinforcement theory (Miller and Dollard, 1941) and sensory feedback theory (Mowrer, 1960) have been put forth to explain what is variously called imitation or social learning, these theories have not been as extensively researched in their application to modeling as has Bandura's theory.

Modeling is the observational learning of matching responses when the observer does not perform the model's responses during the process of acquisition and no reinforcement is given to the model or the observer (Bandura, 1968). In an experiment in which children observed a film-mediated model exhibit a sequence of physical and verbal aggressive responses, Bandura (1965a) has shown that the acquisition of matching responses by the observer results primarily from stimulus contiguity and associated symbolic processes. In one treatment condition the model was severely punished following the display of aggressive behavior; in a second the model was rewarded with treats and praise; and in the third the model's responses had no consequences. A performance test after the film revealed that the reinforcement contingencies applied to the model's responses resulted in differential degrees of matching behavior. Those in the model-rewarded and no-consequences groups performed a significantly greater variety of matching responses than those in the model-punished group. Following the performance test, incentive conditions were introduced to all three groups for a second performance. Matching responses in all groups increased and the performance differences of the first test were eliminated, revealing equal amounts of learning in the model-punished, model-rewarded, and no-consequences groups.

Phillips (1968) supports Bandura in his finding that a subject who merely observes a nonreinforced model displays a significant increase in critical responses. In a replication of two verbal conditioning experiments in which Ss said words in turn with a tape-recorded voice, Phillips added a control group, which, unlike the experimental groups (one 30% vicarious reinforcement, one 60% vicarious reinforcement), did not hear the direct verbal reinforcement of E nor the vicarious reinforcement on tape. The conclusion was that the apparent learning due to vicarious reinforcement was in fact solely the result of imitation of the model. Thus, reinforcement consequences to the model or to the observer influence only the performance of responses, not the learning of responses.

Another study (Bandura and McDonald, 1963) tested the effects of modeling v. reinforcement in altering children's moral judgment responses. Children exhibiting subjective judgments were either (a) exposed to models who expressed objective judgments or (b) reinforced for objective judgments. Judgmental responses were more effectively altered by the model-exposed group than the merely-reinforced group.

From a Guthrian-contiguity point of view, reinforcement may be said to preserve an S-R sequence, that is, prevent unlearning. If this is the case, how is the observed S-R response sequence of the model preserved in the observer without reinforcement, as Bandura maintains? Bandura (1965a, p. 590) theorizes that:

> when an observer witnesses a model exhibit a sequence of responses the observer acquires, through contiguous association of sensory events, perceptual and symbolic responses possessing cue properties that are capable of eliciting, at some time after a demonstration, overt responses corresponding to those that have been modeled.

Bandura's research on this mediational/contiguity theory, even when considering attentional and motivational processes, has not provided, prior to observer performance, a measurable terminating point at which the experimenter can say learning has taken place.

Perhaps it is not what comes after the response that is crucial (as in reinforcement theory), but what comes before. This which "comes before" is proposed to be a mediational-cognitive process of expectation, which occurs in a modeling situation before the observer makes any overt responses. As a cognitive process, expectation has an on-going nature, which is its quality of preserving an S-R sequence. At the same time, as a mediational process, it has an overt measurable nature in the verbal reports of the observer (experimental subject).

Review of Literature

Because of its cognitive nature, Bandura's theory is not necessarily antagonistic to an expectancy construct. A large block of Bandura's work is concerned with the therapeutic use of modeling in modifying anxiety disorders. The first study in a series on what Bandura terms "vicarious extinction" dealt with reducing dog avoidance behavior in children (Bandura, Grusec, and Menlove, 1967). The four treatment conditions were: model in positive context; model in neutral context; dog in positive context; and positive context only. The children in the model groups observed a peer model exhibit progressively more fear-provoking behavior with the dog from session to session. The post-test measure of dog-avoidance behavior (after completion of the treatment and again a month later) revealed that the two model groups showed significantly greater approach behavior both toward the experimental and an unfamiliar animal (modeling effects had generalized) than did children in the dog and control groups.

In later experiments, Bandura tested the effects of single model v. multiple models (Bandura and Menlove, 1968) and found little difference; compared live modeling with participation to symbolic modeling and to desensitization (Bandura, 1969) and found live modeling most effective, and symbolic modeling more effective than desensitization; and compared symbolic modeling with relaxation to symbolic modeling without relaxation (Bandura, 1969) and found little difference.

This research is relevant for its support of a cognitive theory of learning, that is, one involving "symbolic coding and central organization of modeling stimuli, their representation in memory, in verbal and imaginal codes, and their subsequent transformation from symbolic forms to motor equivalents" (Bandura, 1969, p. 127). It seems feasible to theorize that the basis for either forming symbols or transforming these symbols (verbal and imaginal) into performance is expectancy. Bandura says " . . . selection and performance of matching responses is mainly governed by anticipated outcomes based on previous consequences that were directly encountered, vicariously experienced, or self-administered" (1969, p. 132).

Expectancy may be a motivational construct tied to modeling stimuli. As such, it is not easy to test its effect, unless its confirmation or disconfirmation during the observational process of modeling can be shown to affect subsequent performance under incentive (learning measure).

Expectation as part of cognitive theory has been non-aligned with most S-R learning theories. It is appropriate to consider the relationship of this cognitive concept to the learning concept of modeling. A primary connection theoretically between expectation and modeling is the dependence of both on sequential and/or meaningful sensory feedback. Feedback is a necessary but not adequate element of observational learning. Depending upon what his expectations are, an observer in a modeling situation must be continually recomposing what Bandura (1969) terms his "imaginal/verbal representational system." Such cognitive symbolization facilitates modeling or "vicarious learning" as Bandura (1965b) has shown in a study in which children observe a film-mediated model exhibit a sequence of novel responses under three conditions: facilitative symbolization (Ss verbalized the modeling stimuli); passive observation (Ss simply observed the film); or competing symbolization (Ss counted rapidly while observing the film). Incentive/set children were told that following the movie they would be asked to reproduce the model's responses and given candy if correct; no-incentive/set children were just told they would return to their school room. All Ss counted out loud between the end of the movie and reproduction so their activity would be held constant. All Ss were offered candy reinforcement and social rewards for matching responses correctly performed. The results showed that the facilitative group performed significantly more matching responses than the passive and the passive more than the competing group. Incentive set had no influence on observational learning. Verbal symbolization thus seems to have a "stamping in" effect.

Representational mediators acquired in modeling through contiguity learning are based on continual feedback, hence, are sequentially associated. The very "contiguousness," or patterning of an S-R sequence confirms an expectation, since the logicalness, the going-to-fruition of expectation is not novel to the observer but is part of his behavioral, albeit cognitive repertoire of responses. The model's response is the cue that the observed situation is over (in the cognitive world of any individual subject). This response is the cue for confirmation or disconfirmation of what the observer was expecting. The covert, self-reinforcing quality of expectancy confirmation or disconfirmation through sensory feedback preserves the S-R sequence. With the expectancy confirmed or disconfirmed, that is, now that the individual as an observer is cognitively out of the situation, he does not need overt or even vicarious reinforcement (to the model) in order to learn, though, as Bandura (1969) revealed, he may need incentive to increase his performance of the model's responses (i.e., to show the "learning" that has taken place).

According to this theory, in a proposed experimental grouping in which expectancies are confirmed (C), or not confirmed (NC), there would be no difference between groups since both confirmation and disconfirmation serve to take the individual out of the S-R situation and prevent unlearning.

The introduction into this design of a third group in which expectancies are alternately confirmed and not confirmed (CNC) adds a dimension similar to McDavid's (1964) paradigm of typical processes outside the laboratory. This third expectancy condition may serve to distinguish interaction between confirmation and disconfirmation.

The issue revolves around whether or not there is a behavioral difference between a confirmed and disconfirmed expectancy, that is, in terms of a learning effect. Let us take the case for confirmed expectancy first. Suppose an observer watches a model in a film make responses, and at various times in the film makes six predictions based on what he is expecting the model to do next. One may question: does the observer have six different expectations or an overall expectation (film length)?

According to the orderliness/logicalness principle of stimulus sequence stated earlier, one might be tempted to predict that those in group C, in which expectancies are always confirmed, that is, the orderly thing happens, will show more matching responses than those in group NC, in which expectations are always disconfirmed, that is, the disorderly, illogical thing happens. Or, confirmation of expectancy, like verbal symbolization, may have a facilitory, "stamping in" effect on the learning of observed responses, whereas, disconfirmation may have a competing effect.

However, one might more readily predict that the NC group will perform more matching responses than the C group. Crandall (1967) reported that ratings of stimuli with high confirmation value never differed significantly from ratings of unfamiliar stimuli. His theory that expectancy enhances stimulus preference seems to be in accord with Singer's (1968) consistency theory that an individual seeks consistency on the basis of selective stimulus processing, or schemata that help the person to screen and hypothesize about a stimulus array. The crucial point of Crandall's research for the confirmation v. disconfirmation issue is his finding that arousal (predictive) stimuli were preferred over confirmation stimuli. Confirmation seems to end an S-R sequence less fixedly than disconfirmation because the person whose expectation is disconfirmed has more adjustment to make. Considering this greater adjustment, activation theory would also predict a higher probability of matching responses in the high dissonance or NC group (Peak, 1968).

This expectancy disconfirmation, or cognitive dissonance as Festinger (1957) has termed it, may also have stronger motivational properties than the confirmation condition.

Cognitive dissonance has been described by Aronson (1968, p. 5) as a "negative drive state which occurs whenever an individual simultaneously holds two cognitions (ideas, beliefs, opinions) which are psychologically inconsistent."

Disconfirmation of expectancy does not seem to fall into the modeling/variable categories of model attributes, stimuli characteristics, or subject characteristics, but rather into the category of motivation, and thus may operate to: (a) increase desire to perform the model's responses, that is "go along with" the unexpected response; or (b) alter the perceptual threshhold, so that the observed act is "put out of mind," since it is inconsistent with the held expectation.

Whereas dissonance seems to have a negative effect, a disconfirmation of expectancy can be conceived of as a negative stimulus. Senf and Miller (1967), in applying the Pavlovian principle of positive induction to discriminatory learning, theorize that a negative stimulus (-S) has an inductive effect of strengthening the excitability of focus of a positive stimulus (+S) on the cortex. It is harder to extinguish a response to a +S by nonreinforced trials if the presentation of +S is alternated with -S than if there is only a succession of +S. The -S has an excitatory effect, increasing resistance to extinction of nonreinforced +S, rather than an inhibitory effect, as the Hull-Spence theorist would say.

This principle of positive induction relates to expectancy and the measure of it (by stopping a film and asking expectations) in this way: the presence of a -S (expectation disconfirmed) alternately with nonreinforced +S (expectation confirmed) may increase the learning of the +S. The absence of -S with only a succession of +S would theoretically have less "focusing," hence, less learning facilitation. On this basis, one can hypothesize that an experimental group in which expectancy is alternately confirmed and disconfirmed (CNC) would produce a higher number of matching responses than a group in which all expectations would be confirmed (C).

McDavid (1964), however, gives little credence to this hypothesis in his study on ambiguity of cues in learning color discrimination. In this imitation experiment, the conditions of training affected levels of performance significantly. Under the condition of 100% consistency in color/cue association, there was the most imitation. The condition of 67% partial-but-incomplete association produced the least imitation, less than the 33% random association. Considering the 100% condition as analogous to the C group (+S) and the 67% condition as analogous to the NC group (-S), this study supports the hypothesis that C would have signifcantly more matching responses than NC.

The problem of the role of expectancy in modeling behavior should deal with expectancy as a mediational construct in a way different from Bandura's concept of stimulus contiguity. That is, expectancy will be thought of as the cognitive process between the antecedent conditions of the model's behavior in the film prior to the point at which the experimenter asks the subject his expectation and the no-consequence condition of the model's responses.

Assuming expectancy to be a mediator, Bandura would probably ask: Does expectancy have to do with response acquisition or response selection? Or, does expectancy have to do with learning itself or only with performance and information processing? According to Bandura's experimental design in the model-consequences study (1965a), if expectancy is a factor in observational learning, then any group differences (confirmation v. disconfirmation) in the first trial will not be wiped out by incentive in a second trial. This experiment was set up to test only the conditions of expectancy. A no-difference result between groups would not confirm expectancy's function in stimulus/contiguity learning. It may be that expectancy will only affect acceptance of information (Flanders, 1968).

Indeed, one may not be able practically to separate expectancy and stimulus/contiguity for differences of effect on learning, although Reynolds (1967) in a paired-associate learning experiment found that contiguous presentation of items is as effective as confirmation of anticipation. The anticipation items consisted of a stimulus followed by an S-R pair as confirmation (S----S-R). The contiguity items were simply the S-R pair followed by a pause. Reynold's separation of anticipation (expectation) and contiguity may only be an operational one and only for a simple association task, but its simple, perceptual basis is not incongruent with Bandura's theory (see page 3).

Statement of Hypotheses

There is theory and evidence to show that disconfirmation of expectancy will produce more learning through greater motivational effects which increase the desire to perform the model's responses; through effects of contrast and positive induction; or through effects of arousal.

There is also theory and evidence to show that confirmation of expectancy will produce more learning through a facilitatory, "stamping in" effect; through self-reinforcing sensory feedback; through motivational effects altering threshold perception; and through promotion of response extinction. In discussing Tolman's principle of confirmation, Hilgard and Bower (1966) point out that if an expectancy is not confirmed, its probability value is decreased, that is, it undergoes extinction. If this is true, then the NC group should be less likely to produce those responses predicted but not confirmed, or, in other words, group C should match more responses of the film model than NC. There is also evidence to the contrary, such as Lester's study (1967) which indicated that the disconfirmation of expectancy has no significant effect on resistance to extinction for children whose task was to guess whether or not candy was in a box. Instead, the child was influenced by his own expectation of reward rather than rewards received or number of disconfirmations. In other words, resistance to extinction of a response (a certain guess) was greater if based on expected rather than actual reward pattern (such as N, N, R).

In view of the lack of research directly relating to expectancy/modeling, it is feasible to make several hypotheses, all of which are consonant in attempting to relegate cognitive-expectancy theory to learning-modeling theory.

A statement of six hypotheses will serve to summarize the divergent research and theory reviewed: (a) stimulus contiguity: if there are differences between groups, incentive conditions will erase such differences, indicating that expectancy is not a functional part of the learning process in modeling; (b) contrast, focus: The partial disconfirmation group (CNC) will perform more matching responses than group C (+S) or group NC (-S), based on the principle of positive induction; (c) cognitive dissonance: NC group will perform more matching responses on the basis of stronger motivation through arousal and activation of negative drive; (d) sequence/orderliness; group C will learn more matching responses on the basis of positive self-reinforcement through sensory feedback; (e) response extinction: group C will produce more matching responses since NC responses are supposed to extinguish on the basis that disconfirmed expectancies decrease in probability value; and (f) facilitory: confirmation of expectancy in group C "stamps in" model's responses, whereas ambiguity of cues in CNC group has an interference effect.

The purpose of this study is to determine the effect that expectancy conditions of confirmation and disconfirmation have during the observational process in modeling behavior. The "wide open stance" taken with the use of several hypotheses is not a feeble attempt to be able to "prove _anything_" but rather is an effort to break some new joint paths of study in two interesting areas of psychology, the cognitive and the behavioral, whose rapprochement is overdue.

Chapter II

Method

Subjects

Subjects (Ss) were 60 primary school children, 30 from each of two public elementary schools in Pittsburg, Kansas. Age range was from 4.3 to 6.5 years with a mean age of 70 months.

Each experimental group contained 20 Ss, 10 males and 10 females, assigned in a random order to a predetermined grouping sequence of fifteen (fifteen males, fifteen females for each school) thusly: C, NC, CNC; CNC, NC, C; NC, C, CNC; C, NC, CNC; NC, CNC, C. Incentive order, i.e., whether the incentive phase was first or the no-incentive phase was first, was randomly assigned to this grouping sequence. Boys in one kindergarten population were selected and ordered in the grouping sequence by drawing numbers from a hat: the boy getting number one would be assigned to group C and the corresponding incentive phase, the second boy to group NC, and so forth until all boys had been ordered. The girls were selected and ordered the same way. Of the 15 boys so ordered and assigned at one school, boys number (1), (6), and (10) might be in group C; however, boy number (1) might be the first subject tested, boy number (6) the tenth subject tested, and boy number (10) the nineteenth boy tested, because boys and girls were tested in the same session, alternately.

Treatment

There were two experimental variables: expectancy and incentive. Expectancy was a prediction of what the S thought would happen next in the film. Confirmation of expectancy occurred when S's prediction happened in the film; disconfirmation of expectancy occurred when S's prediction did not happen in the film. The nature of the three groups was determined by expectancy conditions: in group C at all six choice points, the film-mediated model (M) gave the "generally expected" response (M's responses in Film A); in group NC at all six choice points, the M gave "unexpected responses" (M's responses in Film B); and in group CNC at three alternate choice points, M gave expected responses and at three alternate choice points, M gave unexpected responses (M's responses in Film C). The three groups were then split equally on performance and learning measures (no-incentive and incentive phases), one half of each group responding under incentive conditions and then under no-incentive conditions; the other half of each group first responding under no-incentive and then under incentive conditions. Thus, degree of confirmation or disconfirmation of expectancy defined the experimental groups, whereas incentive conditions were used for learning/performance distinctions (See Table 1), that is, if group differences existed in the no-incentive phase, did these differences also exist in the incentive phase.

TABLE 1

Experimental Group Design

Group C 20Ss (Films A-A)	Group NC 20Ss (Films A-B)	Group CNC 20Ss (Films A-C)
1. Training Film (A)	Training Film (A)	Training Film (A)
2. Film A	Film B	Film C
(E stops film at six choice points and asks S expectancy)		
3. Incentive, No-Incentive 10Ss	Incentive, No-Incentive, 10Ss	Incentive, No-Incentive, 10Ss
No-Incentive, Incentive 10Ss	No-Incentive, Incentive 10Ss	No-Incentive, Incentive 10Ss

The Subject Answer Form (Appendix A) was used by the Experimenter to determine S expectancies during the showing of the experimental film. The mean number of expectations matching the model's response in the training film (the responses to questions about what M would do at the six choice points) were as follows: group C, 4.35; group NC, 4.25; and group CNC, 4.35; this small amount of difference seems to indicate that the groups were relatively equal in expectation. Keeping in mind that determination of experimental grouping was by the showing of a second (experimental film A, B, or C) and that confirmation of expectancy occurred when S's prediction happened in the film, the groups may be described in terms of percent of mean expectancies confirmed or disconfirmed: group C's expectations were 72% confirmed, 28% disconfirmed; group NC's expectations were nearly 0% confirmed, nearly 100% disconfirmed; and group CNC's expectations were 36% confirmed, 64% disconfirmed. Thus, while the groups were substantially equal in what they expected M to do, one group was more than two-thirds confirmed in its expectations, one group was more than one-third confirmed, and one group was not confirmed.

Apparatus

Ss at one school were exposed to a viewing room devoid of furnishings except for a projector and two chairs, and a trial room with a one-way mirror. In the room was a table with those objects viewed in the film. Conditions at the second school prohibited use of one-way mirrors. At this school S played on the lighted side of the room at a table with a table-length mirror such as used by speech therapists and the two observers (Os) watched S through colored plastic windows from inside a tent on the darkened side of the room 15 feet away from the S. Only one S actually walked out of the enclosure across the room, peered into the tent and asked the Os what they were doing. His responses were deleted. The responses of two other Ss at this school were not used because of a procedural change: these Ss (the first at this school) were inside the tent with the Os outside looking in. Ss refused to respond freely in the no-incentive phase, so the procedure was changed to that described above.

In each film described below, M enters a room containing a table. On the table are the following: a teddy bear, about two-and-one-half feet long; a life-size milk bottle; toy construction hat; wooden mallet and a child's toy pounding board with pegs. Also on the table in the trial room but not in the film were a toy car, nerf ball (four inch diameter foam ball), a ring stackum, and a toy telephone. The films are 16 mm, black and white, no sound, and 2-3 minutes in length. The films were cued so that E could consistently stop at the same point to question S. M in all films was an adult male in his middle twenties dressed in a suit jacket and tie.

In the film descriptions below, the numerals in parentheses indicate the choice points at which E asked S for his prediction of M's behavior (S's expectation).

<u>Film</u> <u>A</u> (Training film). M picks up the bear in both arms and looks at it (1), then hugs it lovingly. Still holding the bear, he then picks up the milk bottle, posing it as if he may pretend to feed the bear (2), then he does place the bottle to the bear's mouth and rocks him while feeding. After a few seconds of this, M places the bear on his shoulder and raises his hand as if to burp the bear (3). M pats the bear's back to burp him. M next picks up the wooden mallet and places it in the bear's hand as if the bear were going to strike the pegs in the pounding board (4). M guides bear's hand as it pounds the pegs in the pounding board (4-5 times). Putting the mallet down and holding the bear in one arm, M now picks up the toy construction hat and looks at it and then at the bear and then back to the hat, raising it up as if he might put it on the bear's head (5). He places the hat on the bear's head and smiles approvingly. M now makes the bear seem to knock the hat off its own head. M scolds the bear, pointing his finger and shaking his head in disapproval. M then turns the bear on its belly and raises his hand as if to spank the bear (6). He then swats the bear's bottom three

times and then scolds it some more.

Film B. Films B and C differ from Film A only in the response M gives at the six choice points, so only these differences will be described.

For Film B, at choice point (1), M hits the bear once, twice to the table and then picks it up and shakes it. At (2) he drinks from the bottle himself instead of feeding the bear. At (3) he throws the bear over his shoulder instead of burping it. At (4) he takes the mallet in his own hand and hits the bear on the head three times. At (5) he puts his hand in the hat and raises it high above his head. At (6), hand raised to spank the bear, he scratches his head letting the bear drop to the floor.

Film C. At choice point (1) M hugs the bear as in Film A. At (2) he drinks the milk himself as in Film B. At (3) he burps the bear as in Film A. At (4) he hits the bear with the mallet as in Film B. At (5) he puts hat on the bear's head as in Film A. At (6) he scratches his head as in Film B.

Procedure

No-incentive, incentive sequence. S was led to the viewing room where a 16 mm projector was already set up with the training film (Film A) ready to be shown. S was told by E:

"We're going to watch a film about a man and a teddy bear. It's called 'Mike and the Bear.' Are you ready?" The film was shown without comment by E. E rewound the film and loaded the appropriate experimental film for showing (Film A for group C, Film B for group NC, and Film C for group CNC). E: "Now we will watch the film again, only this time I will stop the film and ask you some questions about what you think is going to happen next. Be ready to answer when I stop. Are you ready?" At the cued points, E stopped the film and asked S: "What do you think the man will do next," or "What will he do with the bear (or mallet, or hat)?" and recorded S's answer without comment. After the film has been shown, E asked S to wait in a room with a one-way mirror (or at the table with the long mirror for the second school), the room already having in it the objects seen in the film and the other toys not associated with M's responses. "Please wait here for a few minutes until I come back to get you. I'm going to get you some more toys to play with. You may play with anything you want." As E closed the door, or left the room, E began timing the no-incentive phase (5 minutes) while the two Os recorded all of S's responses on the check form in terms of predetermined responses categories (See Appendix B). After the trial period, E reentered the trial room and said, "Now, ________ (calls by name), do you remember what Mike did in the film? I want you to try to do as many things as you can that you saw Mike do in the film. For everything that you do that Mike did I'll give you a sticker picture, like this. And if you get the pictures all in a little circle, I'll give you a toy animal (or toy baseball player) to keep. Okay, show me what Mike did." S was given a sticker picture immediately following each response that matched M in either film viewed--responses that corresponded to the choice points, such as feeding the bear with the milk bottle. Verbal reinforcement ("Right" or "Good") was given for matching component responses, such as picking up the milk bottle. If S stopped after performing a response and receiving reward, E said, "Show me something else Mike did," and so on until S volunteered he could remember no more.

The procedure for the incentive, no-incentive sequence was the reverse of no-incentive, incentive sequence.

Response measure. The response measure for both the incentive and no-incentive phases was the type and frequency of responses matching the model in Film A (training film). The observers recorded all of S's responses on the Check Form for E Observer (Appendix B). Since they had not seen the films and did not know the purpose of the experiment, the Os could not know which responses were matching responses. Four untrained female observers recorded responses: two scored the same children in any one session, the other two taking the next session. The four scored five children independently in one session for an estimate of interscorer reliability and on the major choice point responses (the number of different imitative responses produced) agreed 80%.

Chapter III

Results

Table 2 summarizes the analysis of variance of matching responses to the training film under incentive and expectancy conditions. The training or first film in the two-film sequence was viewed by all Ss. The findings show that the expectancy condition (Film A, B, or C) had no effect on matching model responses in the training film, either under incentive or no-incentive conditions ($p > .10$). Expectancy and incentive did not interact ($p > .05$). The incentive condition had a significant effect on the number of matching responses produced ($p < .05$). The Summary Table (Table 3) for the training film shows this effect to be in the expected positive direction, that is, that more responses were produced under incentive than under no-incentive conditions. Table 3 shows that group C and CNC provided the differences between incentive and no-incentive conditions, while for group NC the effect of incentive was in a slightly negative direction, that is, group NC was the only group in which more responses were produced under no-incentive than under incentive conditions.

TABLE 2

Analysis of Variance: Matching Responses to Training Film (First Film)

Source	df	MS	F
Between Ss	59		
Expectancy (A)	2	8.175	.354
Ss within groups	57	23.087	
Within Ss	60		
Incentive (B)	1	90.133	5.426*
A X B	2	41.009	2.469
B X Ss within grps.	57	16.611	

*$p < .05$

TABLE 3

Summary Table: Matching Responses to Training Film (First Film)

	Incentive	No-Incentive	Total
Group C	180	145	325
Group NC	149	155	304
Group CNC	182	107	289
Total	511	407	918

Since for half the Ss the incentive phase of incentive/ no-incentive was first, and for half the incentive phase was second, the effects of varying the sequence should be shown. Table 4 is a summary table of incentive order. It may be noted that when incentive was second, there were more matching responses (262) than when incentive was first (249), following the expected increase in a no-incentive, incentive sequence (226 to 262) similar to Bandura (1965a). However, when incentive was first, that is, in the incentive, no-incentive sequence, there was a decrease in matching responses (249 to 181), the absolute difference in this sequence between incentive and no-incentive being more than twice the difference in the Bandurian sequence (no-incentive, incentive). Overall, those who had incentive first started at a higher plane and tailed off in the no-incentive phase, while those who had the no-incentive phase first started at a correspondingly lower plane and increased slightly in the incentive phase, indicating that a major reason for the significance of incentive as shown by the analysis of variance may be the suppression of response on a no-incentive phase immediately following an incentive phase (See Figure 1).

Whereas Table 2 summarizes an analysis of variance of matching responses to the training film, Table 5 summarizes

TABLE 4

Summary Table: Incentive Order (Training Film)

	First	Second	Total
Incentive	249	262	511
No-Incentive	226	181	407
Total	475	443	918

an analysis of variance of matching responses to the second, or experimental film. The significant F for expectancy ($p < .01$) is considered spurious, because a t test (df, 38; $p < .05$) indicated that the difference lay between group C and the other two groups, NC and CNC, not between NC and CNC. According to the film sequence, group C was the only group who saw the same film twice, and the difference, therefore, might be attributed to a practice effect, although this difference is not noted in Table 2. Furthermore, the data for Table 5 seems contrived, since each S had only one response measure and one cannot determine which of the responses performed by those in group C, for example, were matching the first film or the second film. Responses on the first and second films are not additive because of the

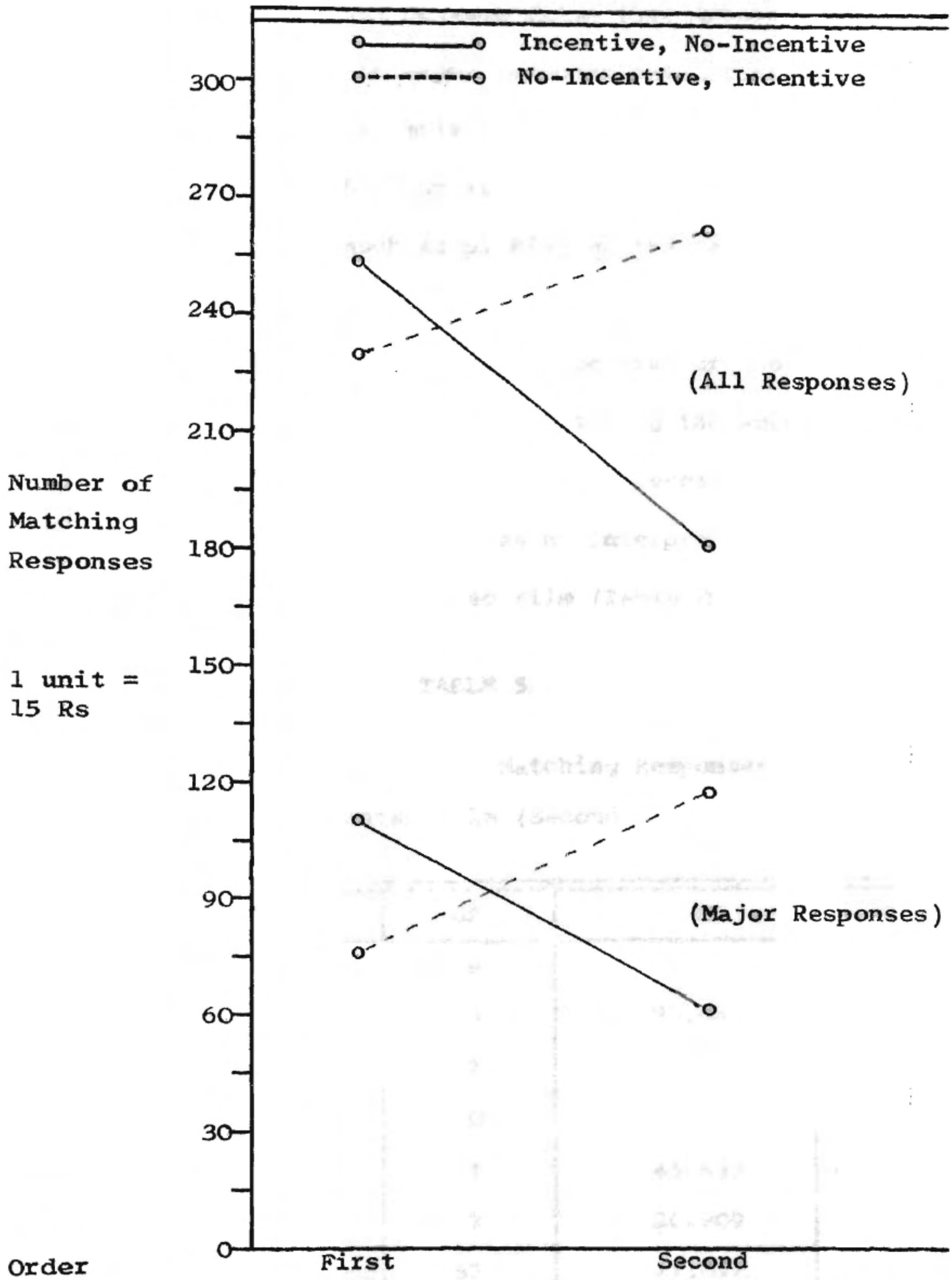

Figure 1. Incentive Order: Matching Responses to Training Film (First Film)

overlapping of responses between films (See Appendix B). The three films do differ in major response categories (Table 6), such as feeding the bear milk (Film A) v. drinking from the bottle himself (Film B), but are similar in the various component responses, such as picking up the bear and the milk bottle (both Films A and B). It is not practical to divide the single response measure into categories of those matching the first film and those matching the second film since there is no clear differentiation, even in groups NC and CNC. Therefore, for purposes of interpreting data, responses matching the training film (Table 2) will be used.

TABLE 5

Analysis of Variance: Matching Responses to Experimental Film (Second Film)

Source	df	MS	F
Between Ss	59		
Expectancy (A)	2	95.025	7.769**
Ss within groups	57	12.232	
Within Ss	60		
Incentive (B)	1	45.633	4.138*
A X B	2	20.909	1.896
B X Ss within groups	57	11.027	1.896

*p < .05 **p < .01

Table 7 is a summary of an analysis of variance of major responses matching Film A (training film). Such analysis emphasizes the film differences (See Table 6 for summary of major response categories). The major responses are those characteristic of the experimental groupings and were also the responses rewarded by E in the incentive condition. Results, however, were not different than an analysis of variance of all matching responses, major and component (Table 2), indicating significance only for the incentive condition ($p < .01$), and not for expectancy.

TABLE 6

Film Summary of Major Model Responses

Film A	Film B	Film C
1. Hugs bear	Hits bear	Hugs bear
2. Gives bear baby bottle	Drinks from bottle himself	Drinks from bottle himself
3. Burps bear	Throws bear over shoulder	Burps bear
4. Helps bear pound pegs	Hits bear's head with mallet	Hits bear's head with mallet
5. Puts hat on bear	Puts hat on hand	Puts hat on bear
6. Spanks bear	Does not spank	Does not spank

TABLE 7

Analysis of Variance: Major Matching Responses, Training Film

Source	df	MS	F
Between Ss	59		
Expectancy (A)	2	5.475	.741
Ss within groups	57	7.384	
Within Ss	60		
Incentive (B)	1	57.408	12.404*
A X B	2	8.659	1.871
B X Ss within groups	57	4.628	

*$p < .01$

Chapter IV

Discussion

Since there were no significant differences due to the expectancy treatment, all of the six proposed hypotheses must be rejected. One cannot even accept hypothesis (a), which states that "if there are differences between groups, incentive conditions will erase such differences, indicating that expectation is not a functional part of the learning process in modeling," since this hypothesis is prefaced on group differences. The results indirectly support the last part of the hypothesis, and hence, Bandura's stimulus contiguity theory. That is, the learning of the model's responses in the first film did not depend on confirmation or disconfirmation of expectancy through a second film. Bandura might argue that a certain amount of learning took place during the training (first) film so that the expectancy condition (second film) would not have an effect so much on observational learning as on subsequent performance.

However, whether expectation has to do with learning or performance depends on the learning/performance distinction used. Each experimenter may operationalize his own distinction. For example, Bandura (1965a) has assumed a relatively accurate index of learning to be performance under positive incentive conditions. Assuming response measures are accurate, application of Bandura's index to this study shows that group NC (Table 3) performed fewer responses under the incentive than under the no-incentive condition and thus apparently did not learn. This is of course preposterous and only reminds us that in the measure of learning under incentive (as opposed to the measure of performance under no-incentive), much can have intervened between the initial observational learning and the learning performance, for instance, other observational learning.

It is obvious that future research attempting to relate expectancy to imitative learning must insure that the expectancy condition and the observational learning condition occur in the same situation, that is, simultaneously (assuming these <u>are</u> separate constructs).

Besides the lack of contemporaneity of the expectancy variable and observational learning during the first film, another criticism that may account for the lack of effect of the expectancy condition is that expectancy apparently was not a "felt" condition, was not strongly held. For instance, it seems unlikely that a subject in the NC group experienced dissonance at a motivating level, though there is perhaps slight indication of inhibition of responses under incentive conditions when compared with groups C and CNC. Or it might be that Ss in group NC felt punished by the experimental treatment (Film B) and in an effort to "make up" with the adult authority (E), responded more during the uncertainty of the no-incentive phase, so that when the incentive phase came second (and more certainty or security), fewer responses resulted.

As defined by the use of a second film in which what S expected at six choice points was confirmed (group C), disconfirmed (group NC), or alternately confirmed and disconfirmed (group CNC), expectancy was largely perceptual instead of "felt." It was thought that defining expectancy this way would give more weight to findings in regard to adding to or revising Bandura's stimulus/contiguity theory, which states that perceptual and symbolic responses acquired during observational learning cue or elicit overt responses which match those modeled.

Thus, besides measuring expectancy during the initial observational process, a second recommendation for future research would be to define the expectancy condition such that the subject feels strong dissonance at its disconfirmation. It may be that the extent to which expectancy is important during modeling is a function of the consequences that accrue around its confirmation or disconfirmation. Contrast disconfirmation of expectancy in this experiment and its effect on imitative behavior with other possible, more motivationally-tinted disconfirmations. For instance, consider a subject who sees a model do things in a film, predicts on this basis, finds all predictions were wrong, and then is asked to imitate the model; contrast this with a subject who is promised $20.00 to view a model in a film, told he cannot be paid after all, and then is asked to imitate the model. The question becomes: Does expectancy play a part in learning or motivation (incentive)? Or, are the two recommendations (i.e., to measure expectancy during observational learning and to make expectancy a "felt" condition) compatible?

Related to the validity of the expectancy condition are the believability of the film as related to age level and the length of time between films. The mean age of children in this study was 70 months as compared to the mean age of 51 months in Bandura's model-consequences study (1965a). The amount of imitativeness at various age levels was not of interest in this experiment and it was assumed that the films are believable (imitative) for this age group (4 to 6 years).

The expectancy treatment (second film) immediately followed the training film. A longer time interval between films might have been conducive to greater matching of responses modeled in the second film but would also have removed the confirmation or disconfirmation of expectancy even farther from the observational process.

It was noted in the Results section in reporting analysis of variance of matching responses to the second film that group C might be expected to produce more matching responses due to practice effects since those Ss saw the same film twice. However, in the Summary Table of matching responses to the first film (Table 3), this difference is not evident: group CNC without practice performed more matching responses under incentive conditions and group NC more under no-incentive conditions, though neither were significantly different. This seems to indicate that practice did not have a significant effect, but rather that the reasons for the contrived differences in matching responses on the second film (Table 5) are lack of differentiation between first and second film responses, especially between the various component responses, and that Ss simply matched those responses in the training (first) film and not in the experimental (second) film.

This study seemed to have more relevance for incentive condition (incentive v. no-incentive) and possibly incentive order (first v. second) than for expectancy. Incentive order merits inclusion in further incentive v. no-incentive treatments of imitation, especially as incentive purports to differentiate learning and performance. As indicated in the Results section, the main reason for the significance of the incentive condition in this study was not so much the increase of responses after a no-incentive phase but the decrease of responses after an incentive phase. The use of an incentive, no-incentive sequence and its consequent suppression of response in the second phase does not invalidate the Bandurian no-incentive, incentive sequence, but one wonders whether or not a reversed incentive sequence in Bandura's model-consequences experiment (1965a) would have "wiped out" reward/punishment differences. Incentive order seems to involve a different kind of expectancy--expectancy of reward. There is little likelihood S would expect reward in a no-incentive following an incentive phase because in this procedure E, the giver of reward, was absent in the no-incentive phase. Except for group NC, this incentive, no-incentive sequence seems to point to a common subject Attitude of "I've pleased E, got my rewards, now I can do what I want."

There are several procedural questions. (a) Was the training film necessary? Since its purpose was to provide a common background for the Ss, to build relatively same expectancies, the training film could also have included the confirmation or disconfirmation of the second film, if it were carefully made. This would have the advantage of measuring expectancy during the initial observational process. (b) Did the "character" of the films have a special effect? One doubts that receipt of reward was the only reason for incentive, no-incentive differences, since group NC showed very small differences while groups C and CNC were responsible for the significant difference ($p < .05$). The expectancy condition for NC (total disconfirmation) did not interact with incentive, so one speculates as to what did. It was perhaps the character of the films: group C's film (A) shows M as loving and helpful; group NC's film (B) shows M as selfish and hostile; and group CNC's film (C) shows M as both loving and hostile. The character of the films may have affected certain attentional aspects of observational learning or elicited emotional responses which could affect performance. Epstein (1962) has theorized that the use of an aggressive M in film may result in S identifying with the aggressor as a defense mechanism to avoid anxiety. (c) One wonders about the use of a film projector with its stoppages (at the choice points to ask S his expectation) as opposed to the rather incidental viewing of a television screen in Bandura's experiment (1965a). Are such stoppages and question-asking facilitative or inhibitory to the process of expectancy? (d) Do several disconfirmed expectancies have a building effect similar to the Asch conformity situation (1952)? Unlike the conformer in the Asch experiment, the conformer distraught at having expectation disconfirmed has no majority opinion in which to take refuge (only the opposites of what he expects). (e) Is expectancy as a cognitive process to be measured in terms of total or general responses, such as associated with each choice point (See Table 6), or numerous component responses? Since E rewarded S with sticker pictures only for the major responses, was the number of responses in the incentive trials artificially restricted, that is, not equally likely to occur as those in the no-incentive phase? Because of the nature of giving reward and because of individual differences, the incentive phase tended to be less than the 5-minute no-incentive phase length.

Determining the effect of confirmation and disconfirmation of expectancy during the observational process of imitative learning may only be, like so many measurement problems in psychology, a procedural problem.

Chapter V

Summary

The purpose of this study was to determine the effects of confirmation and disconfirmation of expectancy during modeling behavior, or imitative learning. Very little research has been done relating the learning concept of modeling to the cognitive concept of expectancy, so several hypotheses were made based on finding differences between the three groups, defined by conditions of expectancy confirmation: group C, 100% confirmed; group CNC, 50% confirmed; and group NC, 0% confirmed. All Ss (60 primary school children) were exposed to a training film in which an adult male performed a novel repertoire of responses, to an experimental film which confirmed or disconfirmed S's verbal expectancies and then were observed under incentive and no-incentive conditions.

Analysis of variance of the response measure (S's responses matching M's responses in the training film) showed that the expectancy treatment was not significant, but the incentive treatment was significant at the .01 level.

Results were interpreted to mean that the simple, perceptual definition of confirmation of expectancy--S seeing what he had said M would do next in the film--was not found to be important for its effect on modeling behavior. It was thus hypothesized that expectancy as a "felt" motivational condition (e.g., expectancy has an emotional effect, such as expecting $20.00 and not getting it) and measured during actual observational learning, that is, during the training film, would have a greater effect on learning M's responses than merely expecting something to occur in a film.

The significance of the incentive treatment was in the expected positive direction, that, more matching responses were performed under incentive than under no-incentive. Incentive order (Incentive, No-incentive v. No-incentive, Incentive) may be an important design flaw in other published experiments in which the primary differentiation between performance and learning is positive incentive conditions.

Appendix

Appendix A

SUBJECT ANSWER FORM FOR USE BY EXPERIMENTER

Subject________________

Group________________

Film________________

<u>Choice Point</u>	<u>Responses</u>
1.	____ hugs bear
	____ hits bear
	____ - - - - - - - - - - - -
2.	____ feeds bear milk
	____ drinks from bottle himself
	____ - - - - - - - - - - - -
3.	____ burps bear
	____ throws bear over shoulder
	____ - - - - - - - - - - - -
4.	____ hits pegs in pounding board
	____ hits bear with mallet
	____ - - - - - - - - - - - -
5.	____ puts hat on bear's head
	____ puts hat on own head
	____ holds hat on hand up high
	____ - - - - - - - - - - - -
6.	____ spanks the bear
	____ scratches his head
	____ - - - - - - - - - - - -

Appendix B

Subject________ Group____ CHECK FORM FOR E OBSERVER Observer Name______________

1.	BEAR	2.
__	picks up bear	__
__	hugs bear	__
__	hits bear	__
__	puts bear on shoulder	__
__	pats bear's back (burps bear)	__
__	scolds bear (shakes finger and head at bear)	__
__	turns bear on belly	__
__	spanks bear's bottom	__
__	scratches own head, drops bear	__
__	________	__
__	________	__

1.	MILK BOTTLE	2.
__	picks up milk bottle	__
__	feeds bear with bottle	__
__	drinks from bottle himself	__
__	________	__

1.	CAR	2.
__	pushes car around	__
__	picks up car	__
__	crashes car into another toy	__
__	lets bear push car	__
__	________	__

1.	NERF BALL	2.
__	throws ball up and catches	__
__	rolls ball on table	__
__	________	__

1.	OTHER	2.
__	________	__
__	________	__

1.	PEGBOARD/MALLET	2.
__	picks up mallet	__
__	puts mallet in bear's paw and pounds peg	__
__	pounds peg himself	__
__	hits bear's head with mallet	__
__	________	__
__	________	__

1.	RING STACKING	2.
__	takes rings off peg	__
__	stacks rings up	__
__	________	__

1.	RANDOM	2.
__	stands around not playing w/toys	__
__	walks around not playing w/toys	__
__	________	__
__	________	__

1.	HAT	2.
__	picks up hat	__
__	puts hat on bear's head	__
__	puts hat on own head	__
__	puts hat on hand and raises up high	__
__	makes bear seem to knock hat off its own head	__
__	________	__
__	________	__

1.	TELEPHONE	2.
__	pretends to call	__
__	pretends to let bear talk	__
__	________	__

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