

DOCUMENT RESUME

ED 119 817

PS 008 364

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TITLE Children's Reactions to Television Advertising for Toys.  
PUB DATE [74]  
NOTE 24p.; Occasional light print  
EDRS PRICE MF-\$0.83 HC-\$1.67 Plus Postage  
DESCRIPTORS Changing Attitudes; \*Elementary Education; \*Elementary School Students; \*Expectation; \*Motivation; Persistence; Personality Theories; Personal Values; \*Television Commercials; Toys  
IDENTIFIERS \*Dissonance Theory

ABSTRACT

This study investigated both the effects of expectancy and TV commercials using an expectancy-value model. In a 3 x 5 factorial design, eight- to ten-year-old boys (N=133) were presented with low, moderate or high expectancies of winning a toy, followed by exposure to 0, 1 or 3 repetitions of a TV commercial for the toy. High expectancy led to both more favorable attitudes toward the toy and increased persistence at an insoluble task to win the toy, suggesting that in some situations dissonance theory may be more appropriate than achievement motivation theory in understanding how expectancy affects attitudes and motivated behavior. Compared to 0 commercials, one commercial produced a more favorable attitude and increased persistence at the task. There was no significant difference between the effects of 1 and 3 commercials. Lack of interaction suggested that expectancy and value may be additive rather than multiplicative. (Author/GO)

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Children's Reactions to Television

Advertising for Toys

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PS008364

### Abstract

This study investigated both the effects of expectancy and TV commercials using an expectancy-value model. In a 3 x 3 factorial design, eight to ten year old boys (N = 133) were presented with low, moderate or high expectancies of winning a toy, followed by exposure to 0, 1 or 3 repetitions of a TV commercial for the toy. High expectancy led to both more favorable attitudes toward the toy and increased persistence at an insoluble task to win the toy, suggesting that in some situations dissonance theory may be more appropriate than achievement motivation theory in understanding how expectancy affects attitudes and motivated behavior. Compared to 0 commercials, one commercial produced a more favorable attitude and increased persistence at the task. There was no significant difference between the effects of 1 and 3 commercials. Lack of interaction suggested that expectancy and value may be additive rather than multiplicative.

The effects of television on both adults and children has been a matter of general concern for over a decade (eg. Klapper, 1960; Mayer, 1972; Morris, 1971; Schramm, Lyle & Parker, 1961; Steiner, 1963).

Much of the concern with regard to children has focused on the specific effects of TV violence, (as reviewed by Liebert, 1972). Of late, effects of TV commercials on children has generated considerable research (Wells, 1965; Berey and Pollay, 1968; Ward and Robertson, 1970; Ward, Robertson and Wackman, 1971; Ward and Wackman, 1972). Most of these studies of commercial effects have been non-experimental in nature and have tended to stress investigation of the characteristics of the commercials themselves and the way children process the information contained in these commercials. By contrast, few if any studies have employed an experimental paradigm, nor have any focused on the purposive, or motivated behavior of children.

Motivated behavior has been an area of interest for numerous researchers (McDougall, 1908; Tolman, 1932; Lewin, 1935; Bindra, 1959; Atkinson, 1960). It includes (1) the individual's selection of one path of action among a set of alternatives and (2) the amplitude or vigor of the action tendency once it is initiated, and its tendency to persist for a time in a given direction. To predict motivated behavior several theoreticians have used variations of the expectancy-value conceptual framework (Lewin et al., 1944; Tolman, 1955; Rotter, 1954; Edwards, 1954, 1955; Atkinson, 1957; Feather, 1961). The model postulates a behavioral tendency (B) towards a goal object as a maximized combination of

(1) an expectancy (E) or subjective probability of attaining the goal object through some action towards the object and (2) the value, or valence (V) of the goal object.

Motivated behavior is frequently defined operationally in terms of persistence. In a typical persistence situation, a person is confronted with an essentially insoluble task which he can work at for as long as he wishes. A reward is associated with the successful completion of the task. Unsuccessful at the task, he may stop whenever he likes. Persistence is measured by the amount of time he works at the task before stopping. Expectancy is manipulated by altering the real or perceived difficulty of the task. Two values may be involved in the situation: (1) the extrinsic value associated with the reward or goal object, the primary concern of this study, and (2) the intrinsic value associated with achieving at the task, the primary concern of achievement motivation studies (Atkinson, 1957; Feather, 1961).

Expectancy and value are postulated by some to be inversely related (Lewin et al., 1944; Atkinson, 1957). In other words, the harder a reward is to attain, the more highly valued it is perceived. Others consider the two to be independent (Rottér, 1954; Edwards, 1954, 1955). The nature of this relationship appears to be determined by the relative importance of the extrinsic and intrinsic values as motivating forces in the situation. In the achievement-oriented experimental situation where the intrinsic value of the task is the main motivator, researchers have found expectancy to be inversely related to the perceived value of the

reward (Atkinson, 1957; Feather, 1961); where a reward is paired with a difficult task (low E) it is more highly valued than where it is associated with an easy task (high E). It is the contention here, that by contrast, where the extrinsic reward is the main motivating factor rather than the task itself, expectancy will be positively related to the perceived value of the reward. Under these circumstances a large reward will be more highly valued the more easily it can be attained.

Research suggests that the relationship between expectancy and motivated behavior in the achievement oriented situation is either inverse (Feather, 1961) or curvilinear (Atkinson, 1957). In other words, S's persist longer under conditions of low or moderate expectancy. By contrast, it is argued here that where the extrinsic reward is the primary motivator, S's will persist longer where the task is easier. As Feather (1961) suggests, with high expectancy it takes a greater amount of negative feedback to lower the S's expectancy to the point where he will quit the task; so expectancy and motivated behavior tend to be positively related.

The value of a goal object may well be influenced by factors other than the expectancy or subjective probability of attaining it. Repeated exposure to a stimulus tends to enhance the value of the object. (Johnson, Thomson, and Frincke, 1960; Harrison, 1968; Matlin, 1970; Zajonc, 1968; Zajonc, Shaver, Tavis, Kreveld, 1972). The nature of this relationship appears to be logarithmic (Zajonc, 1968), with largest effects obtained early in the exposure series and

diminishing effects with subsequent exposures. Maddi (1961, 1968) argues, however, that the exposure effect is curvilinear and that beyond an optimum number of exposures affect tends to decline. Novelty, meaningfulness, and discriminability of the stimulus are suggested as factors determining the nature of the relationship (Maddi, 1968; Berlyne, 1970; Zajonc, 1972; Shaver, Tavis and Kreveld, 1972).

Repetition of commercial messages also tends to enhance the value of the product advertised. In his review of the literature, Sawyer (1972) points out that such effects are contingent upon the nature of the subject population, the product, the advertisement and the length of time between commercial repetitions. The primary effect of such repetition is upon the amount of information learned, then affect and least of all behavior. As with other stimuli, successive exposure to a commercial message frequently tends to result in smaller and smaller increments in affect (Grass, 1968; Grass and Wallace, 1968). By contrast, an inverted U-shaped function is postulated for exposure and both attention and the amount of information learned. This decrease in attention and learning may be responsible for the diminishing attitudinal effects at high levels of exposure.

As an explanation of this satiation effect Krugman (1972) suggests that first exposure to a commercial message produces a mainly cognitive response of attempting to comprehend a novel stimulus. The response to the second exposure is predominantly evaluative with the person determining the personal relevance of the message, and with the third exposure he begins

to disengage from what is perceived as a completed task.

The attempt in the present experiment is to manipulate the value of the object through the use of varying numbers of commercials as well as varying levels of expectancy. Three levels of commercial exposure (0, 1, and 3 commercials) and three levels of expectancy (low, moderate and high) are used as independent variables. Children's attitudes and behavior are then investigated as a function of their level of expectancy of receiving a particular product and the number of times they are exposed to the same commercial.



## Method

### Subjects

One hundred and thirty-three eight to ten year old boys from an English speaking upper-middle class suburb of Montreal served as subjects.

### Procedure

The Ss were very briefly shown a new toy called Cool Cast (CC), not yet on the market nor advertised. A bare, two sentence description of the toy was provided. A second toy Hot Wheels (HW), was also introduced in the same manner.

Baseline measures of affect towards the 2 toys were obtained for each toy on a 5 point bipolar scale with a higher score indicating a more favorable evaluation of the toy. On another 5 point bipolar scale, the S specified which of the two toys he would rather get: Cool Cast or the set of two Hot Wheels (CC vs HW). A high score indicated a preference for CC.

Expectancy was then manipulated by telling the children that the experimenter had only 1 (low expectancy), 8 (moderate expectancy) or 14 (high expectancy) CC for the 15 boys run in each group.<sup>2</sup> To win the toy the children were told they would later have to solve a puzzle. If they were the 1st boy (low expectancy group), or among the first 8 boys (moderate expectancy group), or first 14

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<sup>2</sup>It is important to note that expectancy is manipulated before the children see the program in order to mirror what goes on in real life where children come to the television situation with varying levels of expectancy of receiving products they might see on television.

boys (high expectancy group) to solve the puzzle they would win the toy. They were also told that if they decided to quit the task before the 1, (8 or 14) boy(s) in their group solved the puzzle they would receive 2 HW. However, if they were still working on the puzzle after 1, (8 or 14) boy(s) solved the puzzle they would win nothing.

The task was thus structured so that the boys were motivated to solve the puzzle to win the soon to be advertised CC and motivated to quit by the HW. As a check on the expectancy manipulation the children were then asked for their perceived chances of winning CC on a 5 point scale ranging from "win for sure" (1) to "lose for sure" (5).

The children were subsequently shown a Flintstone program on video tape with either 0, 1 or 3 commercials for the Cool Cast inserted.<sup>3</sup> After the program the children indicated their attitudes toward the Flintstone program on a 5 point scale ranging from "very boring" (1) to "very interesting" (5). The pre-measures of affect regarding each toy, as well as the comparative affect question (CC vs HW) were then repeated. To ascertain any possible changes in the children's expectancies of receiving the toy due to the program and/or commercials the measure of the perceived probability of winning CC was also repeated. (Given the complex nature of the

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<sup>3</sup> Actual commercials prepared by an advertising agency were used. Commercial and program were edited onto the same tape by a local television station, all to ensure that the programs the children saw would be as technically perfect as those they were accustomed to seeing on their TV sets at home.

task, it was considered necessary to repeat the instructions as to how the toys would be won. Subsequently a third check of the expectancy manipulation was made).

The children were then directed to individual cubicles where they could neither see nor hear any of the other children. There they worked on the essentially insoluble experimental puzzle, a metal maze from which a looped cord had to be extracted. When a child decided to stop he left the cubicle. The experimenter noted the time he worked on the puzzle.

Next, Ss were asked for their interest in the task and its difficulty on two five point scales: "boring"(1) -- "interesting"(5) and "easy"(1) -- "difficult"(5). Finally they were given 2 HW, as a prize for participating in the experiment.

## Results

### Effectiveness of the Manipulations and Stimuli

The manipulation of expectancy was successful in that the check following the program revealed a significant main effect.

( $F = 5.08$ ,  $df = 2,113$ ,  $p < .01$ ).

The perceived chances of winning the CC were greater in the high expectancy group when compared to either moderate ( $q = 3.99$ ,  $df = 2,113$ ,  $p < .01$ ) or low levels of expectancy ( $q = 3.53$ ,  $df = 3,113$ ,  $p < .05$ ). These results were virtually identical to scores obtained following the remanipulation. Although the means were in the same direction following the initial manipulation there were no significant differences at that time. Apparently, the program or the immediacy of the task to win the toy crystallized, to some extent, subject awareness of their probabilities of winning the advertised toy. This held equally true for the groups seeing 0, as well as 1 or 3 commercials and so cannot be attributed to the commercials.

Prior to exposure to the commercials CC and HW were seen as approximately equally attractive on the question comparing the two (CC vs HW;  $\bar{x} = 3.12$ ). The Flintstone program was perceived as sufficiently interesting to hold the children's attention ( $\bar{x} = 3.60$ ). The experimental puzzle was perceived as very hard ( $\bar{x} = 1.50$ ) and fairly interesting ( $\bar{x} = 3.75$ ).

### Dependent Measures

Several two-way analyses of variance were performed on both attitudinal and behavioral data to determine both the effects

of expectancy and commercial exposure. In analyzing the amount of time subjects worked at the experimental task, it was found that approximately one subject in each experimental condition was actually able to solve the task. Since their persistence at the task as a function of the independent variables could not be ascertained, these 11 winners were eliminated and the analyses were performed on the remaining 122 subjects. Since the distribution of responses for time worked at the task was skewed, a logarithmic transformation was performed to normalize the data, thus meeting a requirement for analysis of variance. The two-way analyses of variance on the 122 subjects are presented in Table 1.

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Insert Table 1 about here  
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The mean responses on the various dependent measures both for the three levels of expectancy and the three exposure conditions are presented in Table 2. Since there were no significant interactions in the analyses of variance (Table 1), none of the cell means for the various treatment combinations are reported.

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Insert Table 2 about here  
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Analyses of variance on the attitudinal data were performed after a covariance analysis eliminated variance in the post-program ratings that might be attributable to pre-program differences.<sup>4</sup>

Expectancy effects. There was a significant main effect of expectancy on attitude toward the CC and on the comparative question, CC vs HW (Table 1). In both cases, the only significant mean difference occurred between subjects in the high expectancy and moderate expectancy groups (CC,  $q = 3.83$ ,  $df = 3,113$ ,  $p < .05$ ; CC vs HW,  $q = 3.95$ ,  $df = 3,113$ ,  $p < .05$ ). Thus the probabilities that a child had of winning the CC affected his attitude towards the toy, in that a higher expectancy of receiving the toy seemed to enhance the value of the goal object in comparison to when the expectancy level was only moderate.

Level of expectancy also significantly affected the amount of time the children worked on the experimental puzzle (Table 1). The mean values for log time worked (Table 2) increased with increasing levels of expectancy and a significant linear trend was obtained ( $F = 19.61$ ,  $df = 1,113$ ,  $p < .01$ ). The pattern of these results is similar when time spent on the experimental task is expressed in minutes rather than in logarithmic units, as can be seen in Table 2. A Newman-Keuls test revealed that subjects in the high expectancy group worked significantly longer than those in the low expectancy group ( $q = 4.43$ ,  $df = 3,113$ ,  $p < .01$ ) with moderate expectancy in

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<sup>4</sup>The covariance analysis was essential since there were significant or close to significant initial mean differences before the program on attitude toward the advertised toy, CC, and on the comparative question (CC vs HW) even though subjects were randomly assigned to each treatment combination.

the middle but not significantly different from either low expectancy ( $q = 1.84$ ,  $df = 2,113$ ,  $p < .05$ ) or high expectancy ( $q = 2.59$ ,  $df = 2,113$ ,  $p > .05$ ).

Commercial effects. There was a significant exposure effect on the comparative measure, (CC vs HW) but not on the direct measure of attitude towards the CC (Table 1). This result might have been expected given the increased sensitivity of a comparative measure. Moreover asking the child which toy he would rather get links the question more specifically to the experimental situation in which the child actually tries to get the toy and ought to be a more valid indicator of the children's attitudes (Fishbein, 1972).

Analysis of the commercial effect on this measure resulted in a significant increase from the 0 exposure condition to both the 1 commercial and 3 commercial conditions ( $q = 3.81$ ,  $df = 2,113$ ,  $p < .01$ , and  $q = 5.63$ ,  $df = 2,113$ ,  $p < .01$ , respectively). There was no difference between the means in the 3 exposure and 1 exposure groups ( $q = 1.88$ ,  $df = 2,113$ ,  $p > .05$ ). Thus both 1 and 3 commercials produce a similar increase in affect relative to a program without commercials.

Number of commercials also significantly affected log time worked at the task to win the CC. The investigation of this effect revealed only a significant mean difference between subjects who saw one commercial and those who saw no commercials ( $q = 4.20$ ,  $df = 3,113$ ,  $p < .05$ ), with 1 commercial increasing time worked at the task. Three

commercial<sup>5</sup> tended to have no appreciably different effect than one commercial ( $q = 1.55$ ,  $df = 2,113$ ,  $p > .05$ ).<sup>5</sup> However, the time worked in the three commercial condition decreased just enough so that the difference between the 0 and 3 commercial conditions was just below the 5 per cent level of significance ( $q = 2.65$ ,  $df = 2,113$ ,  $p > .05$ ).

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<sup>5</sup>When 3 commercials did not significantly change attitude or behavior, one cell in this condition with 14/15 expectancy was replicated. The results were virtually identical to those obtained with the original subjects.



### Discussion

The results of the present experiment show that both level of expectancy and number of commercial exposures affect attitude and behavior. There appears to be some consistency between attitude and behavior, as children who saw 1 commercial evaluated the advertised toy more favorably relative to the unadvertised toy and worked longer at the experimental task than those who saw the program without any commercials. Increasing the number of commercial exposures from one to three did not significantly change either attitude or behavior.

This is consistent with the related empirical and theoretical discussions of satiation effects mentioned in the introduction (Grass, 1968, Krugman, 1972).

The effects of expectancy on attitude and behavior reflect the effectiveness of the expectancy manipulation. There were no differences between low and moderate expectancy groups in perceived chances of winning the toy, in attitude, or in behavior.

The high expectancy group perceived their chances of winning the toy as significantly better than the other two groups, had the most favorable attitudes and worked longest to win the advertised toy. The association of the psychological enhancement of the reward (CC) with high expectancy may be explained by dissonance theory. In a decision-making situation, selection of an alternative often results in the increased relative attractiveness of that

alternative. (Brehm, 1956, 1959; Cohen and Goldberg, 1970).

This study suggests that just as Ss tend to enhance objects they have already received, they may also tend to enhance objects they are more likely to receive in the future. These findings are in sharp contrast with those of achievement motivation studies (Atkinson, 1960) which suggest an inverse relationship between expectancy and value. In other words, S's do not consider successful completion of an easy task as personally rewarding as successful completion of a difficult task. As stated earlier, the distinguishing feature between the achievement motivation experiments and the present study appears to be the salience of the extrinsic reward (the CC) relative to the value of accomplishing the task itself. With the extrinsic reward made most salient, the prediction that high expectancy would also be associated with increased persistence at the task was confirmed. High expectancy may have influenced motivated behavior in at least two ways: (1) by increasing the value of the goal object and (2) as suggested in the introduction, by requiring more negative feedback before the S decided to quit the task.

Thus the results pertaining to behavior in this experiment also contrast with those of the achievement motivation situation where the task is perceived as a reflection of the Ss abilities and where Ss with high expectancies persist least.

The lack of interaction between expectancy and commercials in this particular research raises interesting theoretical and

practical questions. While most researchers have combined expectancy and value in a multiplicative fashion, (Lewin et al., 1944; Edwards, 1954, 1955; Atkinson, 1957; Feather, 1961), this research suggests that at least in some situations expectancy and value may be additive.

Without a significant interaction other plausible hypotheses do not receive much support. For example, children who approached the TV viewing situation with no more than a moderate level of expectancy did not screen out the toy commercial. Screening out commercials would have eliminated exposure effects for these lower expectancy groups and resulted in a significant commercial by expectancy interaction. This did not occur. Thus children with less of a chance of getting a toy are still affected by commercials.

An interaction effect would also have resulted had commercials created enough desire for the toy to eliminate the differential effects of level of expectancy. But, even those seeing as many as 3 commercials are not carried away by these messages. They do recognize the constraints of their situation (expectancies).

In summary the attitudes and behavior of 8-10 year olds are affected by commercial exposure. Seeing a single commercial for a valued toy produces more favorable reactions to the toy and increases motivated behavior to obtain it; but further exposure to commercials does not increase these effects. Another significant independent factor is their chance of getting what they see advertised on the commercial. Approaching the TV viewing situation with high expectancies results in more favorable attitudes towards the toy and greater efforts to win it.

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TABLE 1

F Ratio. for Post-Program Dependent Measures

	df	Log time at task	Cool Cast attitude	Cool Cast versus Hot Wheels attitude
Expectancy	2	4.94*	3.89*	3.61*
Commercials	2	4.45**	.88	8.08***
Exposure X Expectancy	4	1.04	.49	1.16
Error <sup>a</sup>	113	1.24	1.63	1.33

<sup>a</sup> mean square instead of F

\*p < .05

\*\*p < .01

\*\*\*p < .001

TABLE 2

Mean Values of Post Program Dependent Measures  
For Level of Expectancy and Number of Commercial Exposures

Independent Variable	Dependent variable			
	Persistence		Attitude	
	Time <sup>a</sup> worked at task	Log time worked at task	Cool Cast <sup>b</sup> (CC)	Cool Cast <sup>b</sup> versus Hot Wheels (CC vs HW)
1/15	14.79	2.01	2.83	3.80
Expectancy: 8/15	18.91	2.33	2.52	3.33
14/15	23.59	2.78	3.31	4.03
0	13.89	1.98	2.68	3.15
Commercials: 1	24.11	2.71	3.05	3.84
3	19.29	2.44	2.52	4.17

<sup>a</sup>Values reported in minutes and hundredths of minutes.

<sup>b</sup>Adjusted cell means from the covariance analysis.

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