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Choosing Problem-Solving Rewards and Halloween Prizes: Delay of Gratification and Preference for Symbolic Reward as a Function of Development, Motivation, and Personal Investment

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Three experiments were conducted to generate and cross-validate a developmental account of reward preferences in the lifelike condition in which available rewards differ on both the immediate-delayed and material-symbolic dimensions. Children within a broad range of developmental levels selected from arrays in which immediate-material, immediate-symbolic, delayed-material, and delayed-symbolic items were available. In each experiment more mature subjects delayed gratification to maximize reward magnitude and chose rewards symbolic of success more often than did less mature subjects. Analyses indicated that the two reward dimensions were both highly salient in children's thinking and that developmental effects on the two dimensions could be neatly integrated within a 3-stage developmental scale. Developmental effects on this scale and on the separate dimensions persisted across changes in the particular reward items available and changes in location from school testing room to more naturalistic Halloween settings. The findings indicated that preference for symbolic rewards tends to be more pronounced among the mentally retarded than the nonretarded, but cast doubt upon previous interpretations of that group difference. Finally, children's Halloween prize choices suggested that preference for symbolic reward is a function of one's developmental level, the achievement being rewarded, and the extent of one's personal investment in that achievement.

During the past two decades, psychologists have devoted considerable experimental and theoretical effort to explaining the dynamics of voluntary delay of gratification (see Mischel, 1974). In scores of experiments in this domain, subjects have been asked to choose between an immediate reward and a delayed reward of greater magnitude. Another, quite separate line of investigation has concerned preference for symbolic rewards as distinguished from those having primarily material value (e.g., Byck, 1968; Harter & Zigler, 1974). Experimenters in this domain typically ask children to choose between two types of rewards—one explicitly symbolic of successful task performance (e.g., a "good player" certificate) and the other an entertaining or physically useful object with no explicit symbolic properties (e.g., candy or a toy).

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Although investigators have succeeded in devising experimental situations in which the material-symbolic and immediate-delayed reward dimensions are divorced, the ecological validity of such situations is clearly suspect, since most naturally occurring opportunities for reward choice involve the material-symbolic dimension *in combination with* the dimension of reward immediacy (and magnitude). Consider, for example, a decision to drop out of school, which Robbins (Note 1) and Mischel (1974) have discussed as a social problem resulting from unwillingness to delay gratification. It seems probable that for many individuals a decision either to remain in or drop out of the formal educational stream also involves weighing the symbolic value of a high school diploma or college degree against the material benefits of available employment.

The investigation reported below is a series of three developmental experiments designed to illuminate choice behavior in such lifelike situations—those in which opportunities for reward vary along the symbolic-material dimension as well as the dimension of reward immediacy (and magnitude). The first two experiments generated findings within laboratory-type settings, while the third experiment was a cross-validation and extension of these findings in more naturalistic settings. In each experiment, subjects selected one item from an array in which four types of rewards were available: smaller, immediate, material; smaller, immediate, symbolic; larger, delayed, material; and larger, delayed, symbolic; thus, in order to receive one of the larger items it was necessary to opt for delay.[1]

Since this is evidently the first study of reward choices involving both the material-symbolic and immediacy dimensions, an initial objective was to assess the effects of two basic variables of long-standing importance to developmentalists—developmental level and IQ. Developmental level was operationally defined as mental age (MA) in Experiments 1 and 2 and as chronological age (CA) in Experiment 3. In studies employing a broad range of developmental levels, delay of gratification has been positively related to development (Mischel & Metzner, 1962; Nisan, 1974; Walls, 1973). Likewise, where material and symbolic reward choices have been offered to young subjects within a broad range of developmental levels (e.g., Harter, 1967; Harter & Zigler, 1974), increasing development has been associated with increasingly frequent preference for rewards having symbolic value.

Mischel and others (see Mischel, 1974) have argued that the positive relation between developmental level and delay of gratification may be mediated by a number of personal characteristics known to change with cognitive development—characteristics such as planfulness, "ego-control," breadth of time perspective, and previous experience (direct and vicarious) with delayed outcomes. The positive relation between developmental level and preference for symbolic over material rewards has been attributed by Harter (1967) to a developmental strengthening of the motive to be correct, one aspect of which is increasing attractiveness of rewards symbolizing correctness. The validity of these theoretical accounts would be extended by a finding that preference for both delayed (vs. immediate) and symbolic (vs. material) rewards increases with development in choice situations requiring attention to both dimensions concurrently. Experiment 1 was designed to test for developmental effects on both reward dimensions and to reveal whether such effects, if they appeared, might be integrated within a single developmental scale.

A second purpose was to examine reward preferences as a function of IQ level. One might interpret Harter's (1967) argument that the motive to be correct prompts the choice of symbolic rewards, as an indication that retarded children, since they are relatively deprived of academic success (cf. Zigler, 1971), would value symbolic rewards more highly than would nonretarded chil-

[1] This confounding of reward magnitude and immediacy reflects the assumption (common to most studies of delay of gratification) that among children of this culture (a) reward items of greater magnitude are generally more desirable than those of lesser magnitude and (b) it is more desirable to receive a given reward sooner rather than later. Children's spontaneous comments during the reward selection process in all three studies supported the validity of both assumptions.

dren. Yet, Zigler (1971) has argued that familially retarded children tend to place material rewards above "being correct" in their "reinforcer hierarchies." The key to the Harter–Zigler formulation may lie in the distinction between institutionalized and noninstitutionalized retarded children. Noninstitutionalized retarded children may value symbolic rewards because they are part of a public school setting in which academic achievement, and symbols thereof, are generally valued. At the same time, such retarded children are apt to have ample opportunity to observe that their school performance, in terms of the difficulty level of the academic material they are able to master, is inferior to the performance of their nonretarded schoolmates of similar CA.

Thus, to the extent that retarded children make comparisons between their own school performance and that of their nonretarded peers, their expectancy of success should be low; consequently, for such retarded children, the subjective value that attaches to success, and symbols thereof, may be relatively high. Harter and Zigler (1974) found that, overall, a sample of noninstitutionalized familially retarded children averaging about 7 years in MA, were less likely to choose a symbolic reward ("good player award") than were nonretarded children of similar MA. Yet, more than 70% of both groups chose the symbolic reward over the material alternative (bag of M&Ms), and when the retarded and nonretarded samples were divided into high- and low-MA groups, it was revealed that high-MA retarded subjects (mean MA = 8.2 years) chose the symbolic reward more often than any other group (94%). Harter and Zigler explained the latter finding as evidence that noninstitutionalized familially retarded children at this MA level are especially eager to achieve success and consequently place a high value on rewards that indicate personal competence. Overall, the Harter–Zigler findings suggest the need for further comparisons of groups differing in IQ and the requirement that such comparisons involve groups matched for MA at more than one MA level. Experiments 1 and 2 were designed in harmony with this requirement.

Experiment 1

Method

Experimental design and subjects. Subjects first participated in a learning experiment involving blank trial discrimination problems (Weisz & Achenbach, 1975). The $3 \times 2 \times 2$ factorial design included three levels of MA (approximately 5½, 7½, and 9½ years), two levels of IQ (68 and 100), and two levels of problem difficulty (i.e., problems having either two or four stimulus dimensions). Analyses of hypothesis behavior (Weisz & Achenbach, 1975) indicated that four-dimension problems were considerably more difficult than two-dimension problems. Thus, the contrast between these two types of learning task provided an opportunity to check for effects of task difficulty on reward choice; while the question was thought to be an important one, no specific prediction was advanced because earlier theoretical and empirical literature provided no firm basis for one.

The 156 urban public school subjects, ranging in CA from 53 to 241 months, were assigned to experimental cells on the basis of Stanford-Binet Intelligence Scale (Short-Form) scores obtained 3 to 5 weeks before the experiment. IQ's ranged from 48 to 81 for the retarded and 90 to 125 for the nonretarded. There were no significant subgroup differences in mean MA within any MA level or in mean IQ within either IQ level. School records were examined to rule out retarded children with signs of organic impairment. The retarded children, while involved with the schools' special education programs, also generally had some classwork with nonretarded children (this was apparently the result of school policy). Over the full sample, MA and IQ were uncorrelated, $r = .06$. Each cell at the low-MA level contained seven boys and six girls; each cell at the two higher MA levels contained eight boys and five girls. All subjects were white except for four black children at the low-MA level, eight at the middle-MA level, and four at the high-MA level. Mean Hollingshead (Note 2) socioeconomic status (SES) was 6.0 for retarded and 5.4 for nonretarded children (7 = lowest status). Approximately half the subjects were administered the Stanford-Binet Intelligence Scale, the learning task, and the reward choice procedure by a male, and half by a female experimenter.

Reward-choice procedure. After each child completed the learning task, the experimenter praised him/her, announced that s/he had won a chance to choose a prize, and opened a 75 cm × 60 cm × 7½ cm red box with interior partitions forming four identical cells. The experimenter said:

> Let me show you what your choices are. Here [pointing to one cell] we have some pens and some puzzles—you could choose one pen or one puzzle as your prize. Here [pointing to a second cell] we have a set of two pens or two puzzles—you could choose two pens or two puzzles as your prize. Here [pointing to a third cell] we have a Good Player Award [7½ cm

× 12½ cm yellow card with green ribbon, gold seal, and "Good Player" inscription; cf. Harter, 1967]—I could write your name on it and the name of your school, and you could have it to show how well you did on all these things we've done today. And here [pointing to a fourth cell] is a big Good Player Award (28 cm × 35 cm version with larger ribbon). I could put your name on it in big letters and the name of your school. You could take it home and put it on your wall to show how well you did on all these things we did today. Now these prizes [indicating two pens, two puzzles, big certificate] in this part of the box are a little better than those prizes [pointing to remainder], but the problem is I only have one of each of these [pointing] with me today; so if you choose one of these [pointing to better prizes] you can't take it with you right now. You'll have to wait until I come back to school next week. Then I'll bring it to you. If you choose one of these prizes [pointing to smaller prizes] you won't have to wait—you can take the prize with you right now. . . . So those are the choices you have to make. Which prize do you choose?

Each choice yielded scores on two bivalued dimensions—immediate versus delayed and material versus symbolic.

Results

Preliminary analyses. To check for experimenter effects, pairs of subjects were formed with members of each pair, matched for race, sex, IQ level, problem type, and MA, but differing as to the experimenter they saw. To assess sex effects, pairs were matched on all relevant variables except sex. Chi-square tests revealed no significant sex or experimenter effects on the immediate versus delayed or material versus symbolic variables. In addition, correlations of the two reward variables with SES and with type of learning problem were nonsignificant. Thus, the experimenter, sex, problem type, and SES variables were excluded from further analyses. On the learning problems, feedback was prearranged for each trial so that all children within each problem type had ostensibly identical levels of success. However, within-groups correlational analyses were undertaken in an effort to determine whether any of the measures of children's hypothesis behavior (see Weisz & Achenbach, 1975) were correlated with reward choices on either reward dimension. The few significant correlations that did obtain were reduced to nonsignificance when MA was partialed out (for rationale see Achenbach & Weisz, 1975; Weisz, O'Neill, & O'Neill, 1975).

Reward choice dimensions. The effects of IQ and MA on the two dimensions of reward choice were analyzed via partitioned chi-square analyses (cf. Winer, 1971). A 3 (MA Level) × 2 (IQ Level) × 2 (Immediate vs. Delayed) analysis revealed that the increase with MA in preference for delayed, larger rewards (as opposed to the immediate smaller rewards), which is apparent in Table 1, was statistically significant, $\chi^2(2) = 25.11$, $p < .005$. Preference for symbolic rewards (over material rewards) also increased with MA, $\chi^2(2) = 16.50$, $p < .005$; however, as is shown in Table 1, even at the highest MA level material options were still preferred by a slight majority. The IQ × MA interaction did not approach significance with respect to either reward dimension.

Correlational analyses indicated that MA was a stronger developmental correlate of reward preferences than was CA. The point-biserial correlation between MA and scores on the immediate-delayed reward dimension was .407, $p < .001$, while that reward dimension was correlated .045, $p > .20$, with CA. The point-biserial correlation between MA and scores on the material-symbolic reward dimension was .346, $p < .001$, while that dimension was correlated .242, $p < .001$, with CA. The difference between the correlation of MA with the immediate-delayed dimension (.407) and the correlation of MA with the material-symbolic dimension (.346) was not statistically significant, $t(153) < 1$.

An a posteriori developmental scale was constructed in which Level 1 represents immediate-material reward choices, Level 2 immediate symbolic or delayed material, and Level 3 delayed symbolic. A 3-point, rather than a 4-point scale, was constructed because the use of 3 points provided for a more conservative integration of the findings with the theoretical work of Mischel and Harter and Zigler. Their work suggests that immediate-material items (Level 1 in the scale) should reflect the lowest level of maturity and delayed-symbolic items (Level 3) the highest. Immediate-symbolic (Level

Table 1: Number of Subjects Choosing Each Type of Reward in Experiment 1

	Reward type			
Subject	Immediate material (1)[a]	Immediate symbolic (2)	Delayed material (2)	Delayed symbolic (3)
MA = 5½				
Normal	17	2	7	0
Retarded	15	4	6	1
MA = 7½				
Normal	13	1	8	4
Retarded	10	6	5	5
MA = 9½				
Normal	3	1	14	8
Retarded	3	6	7	10

Note. MA = Mental age.
[a] Numbers in parentheses represent score on the developmental scale for reward preferences.

2) and delayed-material (Level 2) items are seen as midpoints between lowest and highest maturity, but there is no theoretical basis for classifying one as higher developmentally than the other. As can be seen in Table 1, there was a highly significant relationship between subjects' MA level and their level within this 3-point scale, $\chi^2(4) = 34.83, p < .005$.[2]

The partitioned chi-square analyses revealed one other significant effect. Retarded subjects chose rewards symbolizing success more often than did the nonretarded, $\chi^2(1) = 5.97, p < .025$.

Discussion

Earlier findings and theorizing concerning the development of delay of gratification (see Mischel, 1974) and preference for symbolic rewards (e.g., Harter & Zigler, 1974) were supported and extended in Experiment 1. In harmony with both lines of research and theory, increasing MA was associated with an increasingly strong inclination both to delay receipt of a reward in order to maximize its magnitude and to choose a reward symbolizing success instead of one with primarily material value. Earlier theory and findings were extended in that the developmental effects occurred with a complex reward matrix designed as an analog to lifelike choices in which the material-symbolic and the reward-immediacy dimensions were both relevant and orthogonal.

In addition, developmental findings on both reward dimensions were brought together within a developmental scale integrating the work of Mischel (1974) and Harter and Zigler (1974). Mischel's work suggests that choosing a delayed, larger reward reflects greater maturity than choosing an immediate, smaller item; the work of Harter and Zigler suggests that choosing a symbolic reward reflects greater maturity than choosing a material item. Consistent with both lines of work, the developmental scale classified immediate-material reward choices as the lowest level of maturity; delayed-symbolic choices were classified as reflecting the highest level of maturity; and the two remaining types of reward (immediate symbolic and delayed material), both reflecting something less than consistent maturity as defined by Mischel and Harter and Zigler, were designated an intermediate level of maturity. Although the MA effect on this developmental scale was highly significant, the scale was derived a posteriori and requires cross-validation (see Experiments 2 and 3).

The finding that retarded subjects were more likely to choose symbolic rewards than were their nonretarded MA peers seems to support the reasoning of Harter and Zigler (1974) that the retarded child has experienced frequent failure and consequently

[2] If a 4-point developmental scale were to be constructed, the data of Table 1 suggest that the most logical arrangement would be one in which Level 1 represents immediate-material choices, Level 2 immediate symbolic, Level 3 delayed material, and Level 4 delayed symbolic. Scores on this scale, like those on the 3-point scale discussed above, were significantly related to MA, $\chi^2(6) = 31.70, p < .005$.

places high value on symbols of success. However, to further test the notion that the value placed on symbolic rewards is a function of one's prior history of success, Experiment 2 included three levels of IQ rather than two. Retarded average, and exceptionally bright children appear to have the lowest, middle, and highest levels of expectancy of success, respectively (cf. Weisz & Zigler, Note 3). Consequently, the expectancy of success hypothesis would lead to the prediction that retarded children would be most likely, and exceptionally bright children least likely, to choose symbolic rewards.

In Experiment 1 both the MA and IQ effects on preference for symbolic rewards may have been partly dependent on the range of reward items available. For example, if the drawing pens and the puzzles were not as attractive to the more mature subjects as to the less mature, the former might have frequently chosen the symbolic reward items by default. In addition, since taste in material reward items may be partly a function of chronological age, the same argument might account for the retarded subjects' tendency to choose symbolic rewards more often than their younger, nonretarded MA peers. To deal with this problem, coin purses, small model airplane kits, and decks of bridge cards—all pilot tested for popularity with older children—were offered to children in Experiment 2, together with the material items of Experiment 1. In addition, to mitigate possible problems with age appropriateness of the good player certificate for younger subjects, good player name tags in clear plastic jackets—pilot tested for popularity with younger children—were included with the symbolic rewards used in Experiment 1.

Since any one reward choice in the present format partakes of both reward dimensions, Experiment 1 did not yield direct information on the salience of the separate dimensions in subjects' thinking. To generate such information, subjects in Experiment 2 were asked to choose a reward item from one of the four cells, then a second item from the remaining three cells. The two-choice patterns were then analyzed for degree of consistency within either reward dimension and within each reward type.

Experiment 2

Method

Experimental design and subjects. All subjects first took part in a learning experiment similar to that which preceded the reward choice in Experiment 1. The learning experiment (Weisz, 1977) entailed a 3 × 3 × 2 factorial design in which three levels of MA (approximately 5½, 7½, and 9½ years) were crossed with three levels of IQ (approximately 70, 100, and 130). The third factor was mode of presentation of the learning stimuli (i.e., stationary or rotating on a turntable). Analyses (see Weisz, 1977) indicated that the rotating procedure was more difficult to learn. Thus, the contrast between these two types of learning tasks provided a means of cross-validating the finding of Experiment 1 that task difficulty did not affect choice behavior with respect to either reward dimension.

The 180 peri-urban public school pupils ranging in CA from 46 to 233 months, were assigned to cells of the design on the basis of sex (5 boys and 5 girls per cell) and Stanford-Binet Short-Form scores obtained by a male experimenter 4 to 6 weeks before the experiment. There were no significant subgroup differences in mean MA within any MA level or in mean IQ within any IQ level. Over the full sample MA and IQ were uncorrelated, $r < .08$. IQs ranged from 49 to 83 in the retarded group, 89 to 112 in the average group, and 118 to 145 in the bright group. Mean Hollingshead (Note 2) SES scores were 5.4 for retarded, 4.7 for average, and 3.0 for bright subjects. All subjects were white except for four black children, two in the low-MA retarded group, one in the middle-MA average group, and one in the high-MA retarded group. As in Experiment 1, the retarded children, while involved with their schools' special education programs, also had some classwork with nonretarded children. Also, as in Experiment 1, school records were examined to rule out retarded children with signs of organic impairment.

Reward-choice procedure. After each child completed the learning task, the experimenter praised him/her, announced that s/he had won a chance to choose a prize, opened the partitioned box used in Experiment 1, and introduced the reward items in the manner described for Experiment 1 except that (a) the list of specific reward items was changed somewhat as indicated above and (b) each child was questioned before s/he selected a reward to insure understanding of the fact that larger reward items would be delayed.

After the subject chose a reward, s/he was assured of receiving it but was asked to pretend, after the cell from which s/he had chosen, was covered with a masonite rectangle, that only rewards in the remaining three cells were available. The rule about delaying receipt of larger items was reaffirmed, and the child was asked to indicate a preference from among the remaining choices.

Results

Preliminary analyses like those of Experiment 1 revealed no significant effects of sex, SES, or means of stimulus presentation (stationary vs. rotating learning stimuli) on either reward dimension. Thus, the sex, SES, and means of stimulus presentation variables were excluded from further analyses. As in Experiment 1, trial-by-trial feedback on the learning problems was prearranged so that all children had ostensibly identical levels of success. However, correlations between measures of hypothesis behavior (see Weisz, 1977) and the two reward dimensions were calculated. None of these correlations was significant when MA was partialed out.

Assessing MA and IQ effects. A 3 (MA Level) × 3 (IQ Level) × 2 (Immediate vs. Delayed) partitioned chi-square analysis of subjects' initial reward choices revealed that as in Experiment 1, increasing MA was associated with an increasing tendency to delay gratification, $\chi^2(2) = 48.91, p < .005$ (see Table 2). A similar analysis revealed an MA-related increase in preference for symbolic rewards, $\chi^2(2) = 31.69, p < .005$; however, as is shown in Table 2, even at the highest MA level material items were preferred by a slight majority. The IQ × MA interaction did not approach significance with respect to either reward dimension. The developmental scale constructed in Experiment 1 was tested by assessing the relation between the scale level of children's choices and the children's MA level; the relationship was highly significant, $\chi^2(4) = 50.62, p < .005$.

As in Experiment 1, correlational analyses indicated that MA was a stronger developmental correlate of reward preferences than was CA. The point-biserial correlation between MA and scores on the immediate-delayed reward dimension was .512, $p < .001$, while that reward dimension was correlated .244, $p < .001$, with CA. The point-biserial correlation between MA and scores on the material-symbolic reward dimension was .426, $p < .001$, while that dimension was correlated .377, $p < .001$, with CA. The difference between the correlation of MA with the immediate-delayed dimension (.512) and the correlation of MA with the material-symbolic dimension (.426) was not significant, $t(117) < 1.2$.

Inspection of Table 2 reveals that retarded subjects chose symbolic rewards somewhat more often than average and bright subjects; however, the overall IQ effect was nonsignificant with respect to both the material-symbolic, $p = .11$, and the immediate-delayed, $p > .40$, reward dimensions. It is also evident from Table 2 that preference for symbolic rewards did not decline steadily from the lowest IQ level to the highest, a pattern which would have seemed most consistent with the expectancy of success hypothesis. Because special interest attached to the relation between IQ and the material-symbolic reward dimension, each of the three possible comparisons involving the bright, average, and retarded groups was subjected to a chi-square test. The retarded group were more likely than the average

Table 2: Number of Subjects Selecting Each Type of Reward in Experiment 2

	Reward type			
Subject	Immediate material (1)[a]	Immediate symbolic (2)	Delayed material (2)	Delayed symbolic (3)
MA = 5½				
Bright	15	0	5	0
Average	19	0	1	0
Retarded	18	1	1	0
MA = 7½				
Bright	13	0	5	2
Average	9	1	10	0
Retarded	7	3	6	4
MA = 9½				
Bright	6	2	5	7
Average	0	1	12	7
Retarded	3	2	7	8

Note. MA = Mental age.
[a] Numbers in parentheses represent score on the developmental scale for reward preferences.

Table 3: Number of Children Showing Each Type of Pattern on Two Successive Reward Choices

Mental age	Consistent two-choice patterns				Inconsistent patterns
	Material	Symbolic	Immediate	Delayed	
5½ years	26	0	33	1	0
7½ years	22	2	13	16	7
9½ years	16	9	6	22	7

group to choose symbolic rewards at a borderline level of significance, $\chi^2(1) = 3.06, p < .10$; the bright-retarded and bright-average group differences did not attain even borderline significance, both $\chi^2 < 1.65$.

Salience of reward dimensions. The next analysis was concerned with the question of whether subjects might have selected reward items capriciously without regard to reward dimensions prominent in the investigator's thinking. The answer to this question is to be found in the data on subjects' first and second choices. Using the four-cell reward box as described in the *Method* section permits 12 possible combinations of first and second choice. Of the 12, 4 combinations show consistency within the immediate-delayed dimension (e.g., an immediate-material choice, then an immediate-symbolic item), 4 show consistency within the material-symbolic dimension (e.g., immediate symbolic, then delayed symbolic), and 4 show dimensional inconsistency (e.g., immediate symbolic, then delayed material). If subjects were simply choosing capriciously, the chance expectancy would be an equal distribution of subjects in each of the three categories (two consistent, one inconsistent). Yet, of the 180 subjects, 91 showed consistency within the immediate-delayed dimension, 75 showed consistency within the material-symbolic dimension, and only 14 showed inconsistent patterns. The disparity was highly significant, $\chi^2(2) = 53.35, p < .005$. Both types of dimensional consistency occurred more frequently than did inconsistency, both ps $< .005$, but the difference in frequencies between the material-symbolic and the immediate-delayed categories was not significant, $p > .20$.

Developmental changes with regard to dimensional consistency are evident in Table 3, which reveals a highly significant contingency between MA level and type of two-choice pattern, $\chi^2(8) = 55.45, p < .005$. At the lowest MA level, all two-choice patterns showed dimensional consistency with about half of the children consistently choosing a material item and half choosing an immediate item twice. But consistent choices of immediate and material items both declined with MA, while consistent choices of delayed and symbolic items showed progressive increases. The disparity in frequency among types of consistent choices was highly significant at the lowest MA level, $\chi^2(3) = 57.73, p < .005$, and moderately significant, but quite different in pattern, at the highest MA level, $\chi^2(3) = 11.134, p < .05$. When Table 3 is collapsed to only two columns, dimensional consistency and inconsistency, the resulting table reveals a significant increase in the likelihood of inconsistent patterns as MA changes from the 5½-year level to higher levels, $\chi^2(2) = 7.59, p < .05$.[3]

Discussion

Experiment 2 provided cross-validation for the developmental increases in preference for delayed and for symbolic rewards, reported in the first experiment. The utility of the three-step developmental scale integrating the two reward dimensions was supported by the finding that the developmental effect on scale scores was again powerful. The findings also indicated that developmental effects are not confined to one specific set of reward items, since subjects in Experiment 2 were offered a broader array of material and symbolic items than were subjects in Experiment 1.

Analysis of children's two-choice patterns indicated that the children, in general, did not choose capriciously, but instead at-

[3] Significance values are corrected for number of chi-square values calculated.

tended to the material-symbolic or immediate-delayed dimension. Rather striking differences in specific type of dimensional consistency were found as a function of MA level; and the tendency to choose one aspect of one dimension consistently was significantly stronger at the 5½-year MA level than at the two higher levels, perhaps reflecting less mature subjects' difficulty in decentering.

In Experiment 2 the findings bearing on the relation between IQ level and the material-symbolic reward dimension suggest the need to reexamine the expectancy of success hypothesis advanced by Harter and Zigler (1974). In one respect the results were partially consistent with the Harter–Zigler position. That is, the overall pattern was similar to that of Experiment 1 in that retarded children were somewhat more likely to choose symbolic rewards than were the two nonretarded groups, $p = 11$; and separate two-group comparisons showed that the retarded children were somewhat more prone to choose symbolic rewards than either the children of average IQ, $p < .10$, or the bright group, *ns*. However, the expectancy of success hypothesis is called into question as one compares the reward choices of the average and bright groups. This hypothesis, in combination with the notion that children of high IQ experience success more frequently, and consequently have higher success expectancies, than do children of average IQ (see Weisz & Zigler, Note 3), generates the prediction that children in the bright group will be less likely than those in the average group to choose symbolic rewards. Contrary to this prediction, the two groups were highly similar in their reward preferences (with a slight difference in the *opposite* direction from that predicted). This would seem to indicate that some factor(s) other than expectancy of success may mediate differences between retarded and nonretarded groups.

As one possible means of identifying such a factor, let us consider the nature of the symbolic awards offered in both studies. It is clear, first of all, that these rewards were not only symbols of success, but that they were potentially lasting representations of the adult experimenter's approval as well. The introduction of these rewards followed enthusiastic praise by the experimenter, and instructions stressed the fact that the symbolic rewards (alone) would be personalized (with the child's name and school) by the experimenter himself/herself. Furthermore, the symbolic awards, compared to material items, appeared to evoke considerably more overt displays of approval from the teachers as the children returned to class from the experimental sessions, and children who had not yet participated often witnessed these displays. So, for many of the children the prize choice may have pitted a desire for material gratification against a need for adult approval. There is considerable evidence (reviewed in Zigler, 1971) indicating that the need for approval is particularly pronounced in retarded children, while there is little evidence to suggest that children of average IQ differ from those of high IQ in this respect. Thus, the IQ group patterns of Experiments 1 and 2 would appear to be more consistent with a need-for-approval interpretation than with the expectancy of success hypothesis. Some additional support for the role of need for approval comes from a recent study by Harter (1975) in which children who scored high on the Children's Social Desirability Scale (Crandall, Crandall, & Katkovsky, 1965) chose a symbolic "Good Player Award" significantly more often than did low scorers. High scores on social desirability scales have often been interpreted as reflecting need for approval (cf. Crandall et al., 1965; Crowne & Marlowe, 1964; Harter, 1975). However, directly assessing the relative impact of need for approval and expectancy of success must remain an objective for future research employing an appropriately dimensionalized selection of reward alternatives.

A limitation of both Experiments 1 and 2 is their "laboratory" format. When children are taken rather unexpectedly from their classroom, asked to attempt an unfamiliar learning task, then offered a reward, it is uncertain what expectancies or cognitive set may influence their choice. In addition, reward choice might be influenced by enjoyment of or perceived success on the tasks themselves. Consequently, patterns of choice which emerge from these somewhat artificial circumstances can be credited with greater reliability if they are replicated in more naturally occurring circumstances where children's expectancies are better understood. Experiment 3 was conducted in the Halloween season. Children presumably expecting to choose a "treat" were offered choices differing along the material-symbolic and immediate-delayed dimensions. Thus, the developmental effects on both dimensions, apparent in Experiments 1 and 2, could be cross-validated in more naturalistic circumstances. In addition, the wording on symbolic rewards referred to Halloween costumes, and material rewards were somewhat different from those of Experiments 1 and 2 because of changes in the merchandise available in local retail stores. So, Experiment 3 also provided further cross-validation of developmental effects on the two reward dimensions in the face of further changes in the set of specific reward items offered. A replication of the MA effect on both reward dimensions and on the developmental scale was predicted.

Another limitation of Experiments 1 and 2 was that they provided no means of assessing the extent to which children were personally invested in the accomplishment for which they were being rewarded. Except for their possible value as symbols of adult approval, rewards symbolizing an achievement would seem likely to have less value for children who had little interest in the achievement to begin with than for children whose personal investment in the achievement was high. In Experiment 3 children were rewarded for their Halloween costumes, and degree of personal investment was operationally defined in terms of whether the children had played a significant role in the design of their costume. It was predicted that children who had played a significant design role would be more likely to choose a symbolic "Great Costume Award" than would subjects who had not been involved in the creation of their costumes.

Experiment 3

Method

Subjects. Three experimenters (two female, one male) offered subjects reward choices in two settings: (a) a children's Halloween costume party, held the night before Halloween in the downtown section of a small city—here, the reward choice procedure was individually administered in a booth, advertised by a sign saying "Free Prizes," and (b) houses in three separate neighborhoods of the same city, where "trick-or-treaters" were individually administered the reward choice procedure as they arrived. These efforts yielded 73 subjects, 17 of whom were from the costume party. There were 41 girls and 32 boys, and the age range was 2 years, 6 months to 13 years, 3 months. The impracticality of administering IQ tests to trick-or-treaters in motion necessitated the use of chronological age as the index of developmental level.

Reward choice procedure. The experimenter first noted whether the child wore a retail-store costume or a custom-made one. Children with custom-made costumes were asked whose idea the costume had been and which people had had a hand in making it. The experimenter then told each child that his/her costume was so good that the child could choose a special prize, and opened the reward box.[4] Subsequent procedure was similar to that of Experiment 2, except that the material items included bead and alphabet puzzles, party horns, marking pens, and decks of bridge cards, while symbolic awards were pumpkin-colored certificates and name tags (same size as corresponding items in Experiment 2) with the wording, "Halloween Great Costume Award." Delayed, larger items were introduced with the (truthful) stipulation that the experimenter would mail (or "send" for younger subjects) them the following day; each subject's understanding of the delay provision was checked before a choice was requested. In each setting an attempt was made to keep the interaction between subject and experimenter out of other children's view and to delay actually handing a subject his/her reward until all children in the immediate vicinity had made their choices.

Results

Matched-pairs analyses similar to the preliminary analyses of Experiments 1 and 2 revealed no significant effects of setting, experimenter, or sex of subject. To assess developmental effects, the sample was divided into two age groups: 7 years, 6 months and older ($N = 37$), and below 7 years, 6 months ($N = 36$). As predicted, subjects in the older group, compared to those in the younger group, were significantly more likely to choose delayed, larger rewards, $z = 2.52$, p (one-tailed) $< .01$, and significantly more likely to choose symbolic rewards, $z = 1.94$, p (one-tailed) $< .05$. As in Experiments 1

[4] Edible items were not offered because (a) such items might have been selected because they seemed socially appropriate for Halloween and (b) there was no control over whether subjects' evening meals preceded or followed reward selection.

and 2, a slight majority of the more mature group chose material items. Also, as predicted, children in the older group tended to occupy higher levels in the developmental scale than children in the younger group, $\chi^2(2) = 10.42, p < .01$.

The next analysis tested the prediction that subjects with greater personal investment in the design of their costumes would choose symbolic rewards more often than subjects with less personal investment. Subjects whose costumes were obviously purchased ready-made were paired with others whose costumes were custom-made and who reported their own participation in either thinking of or making the costume; members of each pair were matched for age (within 6 months). Because of the broad age range and because several of the costumes could not be readily classified into either the custom- or ready-made category, not all children sampled could be used in this analysis; however, it was possible to match 34 subjects in the preceding manner. As predicted, subjects who had helped to design or make their costume chose symbolic rewards more often than those who wore ready-made costumes, $z = 2.07$, p (one-tailed) $< .025$. Among subjects wearing retail-store costumes, 13 chose material rewards and 4 chose symbolic rewards. Among subjects wearing custom-made costumes that they had helped to design or make, 6 chose material rewards and 11 chose symbolic rewards.

Discussion

When children from a broad developmental range (preschool through early adolescence) choose from reward arrays varying along both the immediate-delayed and material-symbolic dimensions, developmental effects on both dimensions are likely. Three experiments demonstrated that more mature subjects are more apt to defer gratification to maximize their reward and more apt to choose rewards symbolizing a positive accomplishment than are subjects of lower developmental level. These trends persisted across changes in the specific reward options available and in the settings within which rewards were selected. The findings also indicated that children do make their choices systematically on the basis of one aspect of one of the two dimensions (e.g., material rewards in the material-symbolic dimension), that two-choice patterns reflecting dimensional inconsistency are quite unlikely, particularly at the 5½-year MA level, and that the two reward dimensions do not appear to differ greatly in their salience for children. The latter finding was further supported by consistent correlational evidence: MA was significantly correlated with both reward dimensions, and, while its correlation with the immediate-delayed dimension was somewhat higher than its correlation with the material-symbolic dimension in both experiments involving MA, in neither experiment did the difference in magnitude approach significance. Developmental effects on the *combined* dimensions were neatly accounted for in all three experiments by a three-stage developmental scale. These findings represent both an extension and an integration of the previously separate lines of research on delay of gratification (cf. Mischel, 1974) and on preference for symbolic rewards (cf. Harter & Zigler, 1974). In addition, by combining the two reward dimensions in one array, and by replicating findings in a naturally occurring reward-choice setting (Halloween festivities) the present investigation bolsters the ecological validity of those developmental findings obtained in "laboratory" format and with an artificial insularity imposed upon the two reward dimensions.

The evidence discussed above provides the basis for a preliminary model around which further research on the subjective value of reward stimuli might be fashioned. The model begins with the lifelike situation in which available rewards vary along two dimensions—immediate delayed and material symbolic. Presented with such a situation, young children (MA = 5 years in the present study) tend to focus their attention upon one aspect of one particular reward dimension (e.g., immediacy) to the exclusion of other features of the reward stimuli. Once they have focused upon the one aspect it is difficult (the present evidence would not contradict the term "impossible") for them to reconstrue immediately subsequent reward choice opportunities in ways that make alternate aspects salient. This problem, viewed from a Piagetian perspective, can be seen as a manifestation of centration in preoperational children. With the development of concrete operations, the children's capacity for decentration is reflected in their capacity to shift attention from one reward aspect to the other across successive choices.

With regard to the separate reward dimensions, the model carries more substantial implications for children's choices along the material-symbolic dimension than for their choices along the immediate-delayed dimension. The findings consistently supported the position of several theorists (see Mischel, 1974) that the capacity to delay gratification increases with development; no evidence was generated to undermine their view that this developmental change reflects increases in planfulness, self-control, breadth of time perspective, previous experience with delayed outcomes, and other factors which accompany cognitive development.

To explain the process by which subjective value attaches to reward stimuli along the material-symbolic dimension, the model includes two motives, either or both of which may stimulate preference for symbolic reward dispensed by another person. One of these might be labeled *intrinsic achievement motivation* (i.e., the motive to achieve for the sake of achievement or be correct for the sake of correctness) rather than for instrumental gain. This motive should stimulate a desire for rewards that make specific reference to that achievement and can serve as durable reminders of it. The tendency to value achievement independently of its instrumental properties should increase with development, thus provoking a developmental increase in preference for symbolic reward. In addition, however, the inclination to value an achievement for its own sake should depend to some extent upon the level of one's personal investment in that achievement; consequently, the value that one attaches to symbolic reward should be in part a function of the *particular* achievement being rewarded and his/her level of personal investment in that achievement. Thus, *generalized* intrinsic achievement motivation and *situation-specific* level of personal investment should interact to determine the subjective value of symbolic rewards for any given individual.

This picture is further complicated by the introduction of another motive that can also be gratified by symbolic rewards administered by another person, the *motive for social approval*. In individuals whose need for approval is pronounced (e.g., mentally retarded children) this motive may add further increments to the subjective value of symbolic rewards, over and above the impact of generalized intrinsic achievement motivation and situation-specific personal investment.

This model and the findings from which it derives have both practical and theoretical utility. With regard to the former, in planning educational programs or therapeutic interventions in which "incentives" are to be employed, they point up the importance of recognizing that the incentive potency of a given reward item is likely to vary as a function of rather subtle factors in the rewarded person and in the reward situation. The present findings help to elucidate some of the specific ways this variation in incentive values can operate. Theoretically, the findings and the model represent a step toward a broader model of *subjective stimulus values*, one of the five basic "person" variables which Mischel (1973) argues should undergird a theoretical account of personality. It is toward such an account that further research on determinants of reward preference—one of the most concrete expressions of subjective stimulus value—should be directed.

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