

The Development of Future-Oriented Prudence and Altruism in Preschoolers

Carol Thompson, John Barresi, and Chris Moore
Dalhousie University

This research tested the hypothesis that prudence and altruism, in situations involving future desires, follow a similar developmental course between the ages of 3 and 5 years. Using a modified delay of gratification paradigm, 3- to 5-year-olds were tested on their ability to forgo a current opportunity to obtain some stickers in order to gratify their own future desires—or the current or future desires of a research assistant. Results showed that in choices involving current desires, altruistic behavior was unrelated to age. However, prudence and altruism involving future situations were correlated with one another and with age. Children under 4 years of age demonstrated significantly less future-oriented prudence than the older children ($F(1,49) = 15.75; p < .001$) and significantly less altruism involving future situations ($F(1,49) = 33.24; p < .001$). The data for the 3-year-olds, but not for the older children, also showed age-partialled correlations between the two future-oriented choice situations. These results suggest that between 3 and 4 years, children acquire the ability to deal with future-oriented situations through the development of some common mechanism which affects both future-oriented prudence and altruism.

As children grow they eventually find themselves in situations which offer opportunities for considering the future well-being of themselves and others where that may conflict with what is most desirable now. Behavior aimed at benefits for the self may be called “prudent.” Behavior which aims at benefiting others may be referred to as “altruistic.” Both prudent and altruistic behavior may be oriented toward current or future situations. This paper investigates the development of future-oriented prudent and altruistic behaviors in preschool children.

We wish to acknowledge the aid of Bradley Frankland in analyzing the data, Morgan Selig in conducting the experiment, and three preschools (South End Day Care Centre, Dalhousie University Children's Centre, and World of Little People Day Care) for providing participants for the study. We also thank the editor and referees of this journal for useful recommendations for revision of the initial manuscript. Preparation of the paper received partial support from the Social Sciences and Humanities Research Council of Canada by grant #410-95-1144 to the third author.

Direct all correspondence to: John Barresi at the Department of Psychology, Dalhousie University, Halifax, Nova Scotia, B3H 4J1, CANADA <jbarresi@is.dal.ca>.

In situations involving only current well-being, young children sometimes demonstrate altruistic behavior, acting in order to benefit another. It is known that by the age of two years children respond altruistically to another's expression of emotional distress, for example, by giving a favourite doll away to the distressed person (Hoffman, 1977; Zahn-Waxler, Radke-Yarrow & Wagner, 1992). Empirically it has also been shown that preschool children beyond the age of two years exhibit prosocial behavior when given the opportunity to help others (Murphy, 1937, cited in Hoffman, 1976; Severy & Davis, 1971). These studies provide evidence of altruistic behavior in preschool children in situations which involve responding to current emotional states, but social behavior frequently involves more than dealing with the here and now.

Effective social interaction often requires an ability to understand and deal with possible future situations. Children must learn that an act which seems desirable now (for example, giving away a favourite doll) may result in a situation which will not seem desirable ten minutes from now. Thus, one important aspect of furthering the well-being of self and/or other is an ability to consider the future and to deal with any conflict between current and future desires.

To date, there is no literature on the child's capacity for future-oriented altruism; however, the child's capacity for future-oriented prudence has been examined extensively under the rubric of "delay of gratification." Mischel (1974) developed a delay of gratification paradigm which places the child in a conflict situation in which he/she must choose between receiving a less desirable reward now or receiving a more desirable reward at a later time.

Mischel and his colleagues have studied two phases of delay behavior (Mischel, 1974): the initial choice for a delayed reward in preference to a current reward (Phase 1) and the child's ability to inhibit responding to the still available current reward during the delay period (Phase 2). Future-oriented choice preference has been studied in school children between 5 and 13 years old (Bandura & Mischel, 1965; Mischel & Gilligan, 1964; Mischel & Metzner, 1962; Mischel & Staub, 1965). Future-oriented self-control has been studied in preschoolers between 3(years);4(months) and 5;8 (Mischel & Baker, 1975; Mischel & Ebbesen, 1970; Mischel, Ebbesen & Zeiss, 1972; Moore & Mischel, 1976). Thus, the ability to delay gratification has been demonstrated in preschoolers, and it has been shown in school children that future-oriented choice preferences tend to increase with age (Melikan, 1959, cited in Klineberg, 1968; Mischel, 1966; Mischel & Metzner, 1962). To date, there is no strong evidence that future-oriented choice preference varies with age in the preschool period (Schwarz, Schrager & Lyons, 1983; Toner, Holstein & Hetherington, 1977).

While there is no direct evidence of the development of future-oriented prudence and altruism in the preschool years, the theoretical problem has a long history. William Hazlitt (1805; Barresi, 1995; Martin & Barresi, 1995) provides an example of early and still relevant theoretical work on the psychological mechanisms involved in future-oriented behavior which benefits self or other. Wrestling

with the question of whether human nature is more selfish or benevolent, Hazlitt theorized that young children consider the future "good" of self and other impartially. He believed that concern for the future welfare of both self and other must be learned, and that the acquisition of both of these concerns depended upon the same psychological mechanism. Hazlitt believed that the underlying common factor was imagination. Based on these beliefs, Hazlitt concluded that concerns for the future well-being of self and other follow a similar developmental course in very young children.

To the extent that future-oriented prudence and altruism both require an ability to imagine and deal with noncurrent desires in conflict situations, it seems plausible that they might follow a similar course in early development. Although little is known about the development of children's understanding of situations involving future desires, literature on the child's development of a Theory of Mind has provided theoretical and empirical research on the young child's understanding of noncurrent mental states in self and other.

There are several approaches to Theory of Mind which could be consistent with the notion that future-oriented prudence and altruism follow a similar developmental pattern during the preschool years. One claim is that, between the ages of 3 and 4, the child develops a conceptual system for representing mental states which is applied equally to understanding noncurrent mental states of both self and other (Gopnik, 1993; Perner, 1991). Alternatively, Harris (1991) has proposed that, during this "age-four transition", the child becomes more sophisticated in the ability to use self as a model in imagination. This enables the child to mentally simulate hypothetical situations involving various intentional states (e.g., desire) of self and others. He claims that 4-year-olds, but not 3-year-olds, have the ability to imagine various intentional states which may be directed towards noncurrent situations. Finally, Barresi and Moore (1996) have proposed a model that combines the advantages of both of these approaches. They suggest that the imaginative system uses representations that are based on the integration of first-person information about self and third-person information about others.

There is evidence that the onset of the ability to remember one's own past mental states occurs during the transition between the ages of 3 and 4 (Nelson, 1992; Perner, 1992). Studies comparing preschoolers' understanding of different types of mental states indicate that an understanding of desire may be acquired earlier than an understanding of belief. Gopnik and Slaughter (1991) found that 3-year-olds had great difficulty reporting past beliefs, but slightly less difficulty reporting past desires, while 4-year-olds could generally remember all types of past mental states, including beliefs and desires. Although this finding suggests that children may remember their own past desires prior to the age-four transition, one limitation of this study is the lack of a statistical test comparing preschoolers' abilities on the desire and belief tasks. Wellman and Woolley (1990) have found that children can reason with desires, but not false beliefs, before the age of 4 years; however, in their studies there was no conflict between the child's current desire and

the non-current desire. In fact, there is some evidence which demonstrates that, within a context of conflicting desires, preschoolers' ability to reason about others' desires may be as poor as their ability to reason about beliefs (Moore, Jarrold, Russell, Lumb, Sapp & MacCallum, 1995).

This article proposes that the ability to deal with noncurrent future desires of self and other in conflict situations develops during the age-four transition, hence, that future-oriented prudence and altruism follow a similar developmental course within this age range. The study was designed with the flexibility to test children in various conflict scenarios involving both self and other and both current and future desires. Using a modified delay of gratification paradigm, the experiment placed 3- to 5-year-olds in conflict situations in which they were tested on their ability to forgo current desires in order to gratify their own future desires or the current or future desires of another. The study's basic hypothesis was that future-oriented prudence and altruism are developmentally linked in this age range. Such a finding would indicate that they share a common underlying mechanism.

Children were tested in four tasks: three altruism tasks and one prudence task. Each task required the child to make a choice between two desirable alternatives. The involvement of a research assistant in some choice situations provided a target for the child's potential altruism, and presented the opportunity for the child to imagine future desires of another person.

In the first altruism task, children were given a choice between self-gratification (one item for self only) and shared gratification (one item for self and one item for other) in the current situation, with no quantitative cost to the child involved. It was expected that younger and older children would perform comparably because it is known that, as early as two years of age, children will benefit another in a current situation. This task was designated Shared Gratification Without Cost and was designed as a control for the following tasks.

In the second altruism task, children were given a choice between self-gratification now (two items for self now) and shared gratification now (one item for self now and one for other now). Sharing in this situation required that the child give up a more desirable reward in order to benefit the other. This introduced competition between egoistic and altruistic motives. No age relationship was expected for this condition, Shared Gratification With Cost, because it was tied to the current situation and didn't require the ability to deal with future desires. This condition also served as a control for the prudence task below.

Future-oriented prudence was defined as the ability to delay self-gratification, and was tested using a standard Delay of Self-Gratification task. Children were given a choice between one desirable item now and two desirable items later. It was expected that the younger children would choose the immediate reward, and that the older children would choose the larger delayed reward. The previous conditions, Shared Gratification Without Cost and Shared Gratification With Cost, served to demonstrate the motivational strength of two items versus one item.

In the third altruism task, Delay of Shared Gratification, children were given a choice between self-gratification now (one item for self only) and shared gratification later (one item for self later and one item for other later). It was expected that older children would choose delay of shared gratification, while younger children would choose self-gratification now, because the delay choice requires the ability to deal with future desires. The first task, Shared Gratification Without Cost, was a control for this condition because it was designed to show that, when personal cost is low, altruism is the preferred behavior in a current situation.

Method

Participants. Participants were 52 children (27 male and 25 female) between the ages of 3;1 and 5;8. For the purpose of comparisons with previous literature, this sample was divided, on the basis of age, into three groups: 18 3-year-olds between 3;1 and 3;11 ($M = 3;6$, $SD = 4$ months), 18 4-year-olds between 4;0 and 4;10 ($M = 4;5$, $SD = 4$ months) and 16 5-year-olds between 4;11 and 5;8 ($M = 5;2$, $SD = 2$ months). Children were recruited from three middle-class preschools in Halifax, Nova Scotia.

Apparatus. Apparatus consisted of 104 sticker books: 52 for participants and 52 for the research assistant (who began a new book with each child tested). Approximately 1000 stickers were used as stimuli in the trials. Two envelopes were available in which to place delayed-reward stickers (one envelope each for the child and for the research assistant).

Procedure. Using a modified delay of gratification paradigm, the experimenter presented to each child a series of choices to determine the recipient of the stickers, number of stickers received, and time of distribution. Four trial types were presented:

1. Shared Gratification Without Cost:
(A) 1 (sticker for) self now or (B) 1 each now
2. Shared Gratification With Cost:
(A) 2 self now or (B) 1 each now
3. Delay of Self-Gratification:
(A) 1 for self now or (B) 2 for self later
4. Delay of Shared Gratification:
(A) 1 for self now or (B) 1 each later

Each child received three blocks of questions, with each block containing one presentation of each of the four trial types. The order of presentation of trial types was randomized within each block, in a different order for each child, with no trial type repeated consecutively. To counterbalance the presentation of A/B alternatives, on all odd-numbered trials 20 children received the A alternative first and 20

received the B alternative first; while 6 children always received the A alternative first and 6 children always received the B alternative first.

Children were individually tested in a quiet room. Each child interacted with a 16-year-old female research assistant for about three minutes before testing began. Then the experimenter introduced the game, explaining that this game allowed the child to choose whether the child alone would receive a sticker or whether the research assistant would get stickers too. It was also explained that the child could choose how many stickers each person would get; and whether they would have their stickers right away to put into their sticker-books or whether they would wait and get their stickers at the end of the game. Envelopes for delayed-reward stickers were shown to the child and assurance was provided that, if delayed reward were chosen, the stickers would be placed in the envelopes and saved until the end of the game. It was also explained that, at the end of the game, all the stickers would be taken out of the envelopes and returned to the child and the research assistant so that they could put them into their sticker books and take them home. The experimenter then presented the 12 trials to the child. For example, choices were presented as follows:

Trial Type 4

[Child's Name, CN], here are two stickers. If you want to, you can have one sticker just for you right now; or, you can wait till the end of the game, and then you can have one sticker and [Research Assistant's Name, RA] can have one sticker. What will we do: give one sticker just to [CN] right now; or, wait till the end of the game and give one sticker to [CN] and one sticker to [RA]? (When delayed reward was chosen, the experimenter responded, "Okay, we'll put one sticker in this envelope to save for you, and one sticker in [RA's] envelope to save for her.")

According to the child's expressed preference, the stickers were either given to the recipient(s) to be placed in the sticker book(s) immediately or were placed in the envelope(s) and kept out of the child's sight till the end of the game. The research assistant responded in a uniform, mildly positive manner to any choice made by the child. Upon completion of the 12 trials, the delayed reward stickers were given to the recipient(s) to be placed in their sticker book(s).

Results

Each of the four trial types was presented three times to each child for a total of 12 presentations. Each presentation required the child to choose between A and B alternatives. For the subsequent analysis, A choices were coded numerically as 0, while B choices were coded as 1. For each child, the three responses within each trial type were summed. Four such sums were created for each child (one sum per trial type). Treating the number of times that the A alternative was presented first as a covariate did not produce significant changes in the results, so only the simpler analyses (i.e., no covariate) are reported. Results are depicted in Figure 1.

Although a mixed analysis of variance (ANOVA) treating the 4 trial types as a within-subjects variable was not appropriate because compound symmetry was

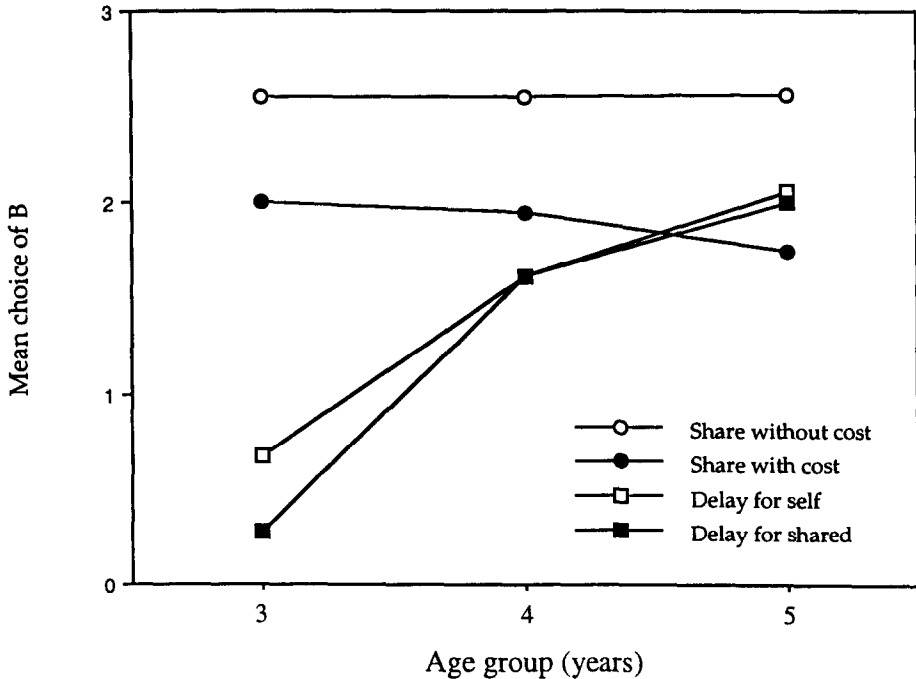


Figure 1. The Relation Between Trial Type and Age (age treated as a categorical variable)

not achieved, a multivariate analysis indicated an effect of age-group ($F(2,49) = 11.25$; $p < .001$), an effect of trial type ($F(3,47) = 23.37$; $p < .001$), and an interaction ($F(6,96) = 3.22$; $p < .01$). For the age-group variable, further univariate contrast analyses showed that the youngest group differed from the two older groups ($F(1,49) = 21.48$; $p < .001$) but the two older groups did not differ ($F(1,49) = 1.03$; ns). For the trial type variable, further univariate analyses showed significant differences between Shared Gratification Without Cost and Shared Gratification With Cost ($F(1,49) = 16.72$; $p < .001$), indicating that children shared less when a competing egoistic motive was introduced. Delay of Self-Gratification and Delay of Shared Gratification did not differ significantly from one another ($F(1,49) = 0.68$; ns). The mean of Shared Gratification Without Cost and Shared Gratification With Cost was different from the mean of Delay of Self-Gratification and Delay of Shared Gratification ($F(1,49) = 32.30$; $p < .001$).

To further analyse the significant interaction, a simple effects analysis was performed within each trial type. This was most easily achieved by performing an ANOVA on each question individually, with three levels of age as the single between-subjects factor. Because effects were expected to occur at the four-year boundary, two contrasts on the age effect were calculated: The first contrast com-

Table 1. Correlations between scores on Delay of Self-Gratification (prudence) and Delay of Shared Gratification (altruism) Trial Types for Three Age Groups

Age Group	n	Correlation	
		Simple	Age-partialled
Three-year-olds	18	.478*	.468*
Four-year-olds	18	.014	.088
Five-year-olds	16	.052	-.038

Note. * = $p < .05$

pared 3-year-olds with all the older children, and the second contrast compared the 4-year-olds with the 5-year-olds.

There were no effects of age for shared gratification involving current situations (Shared Gratification Without Cost ($F(2,49) = 0.00$; *ns*) and Shared Gratification With Cost ($F(2,49) = 0.23$; *ns*)). However, for Delay of Self-Gratification there were significant overall effects of age ($F(2,49) = 7.48$; $p < .001$) with the contrast analysis indicating that 3-year-olds were different from 4-year-olds and 5-year-olds ($F(1,49) = 13.49$; $p < .001$), but 4-year-olds were not different from 5-year-olds ($F(1,49) = 1.48$; *ns*). The same pattern was true for Delay of Shared Gratification. Age was significant ($F(2,49) = 17.41$; $p < .001$) and contrast 1 was significant ($F(1,49) = 33.24$; $p < .001$). Contrast 2 was not significant ($F(1,49) = 1.57$; *ns*). These effects can be seen in Figure 1 where age is treated as a categorical variable.

In order to examine the relationships between future-oriented prudence and altruism, age-partialled correlations between the two trial types involving delay were calculated for each age group separately. These statistics are shown in Table 1. For the 3-year-olds there was a significant positive correlation ($r(16) = .468$, $p < .05$) between Delay of Self-Gratification and Delay of Shared Gratification. This correlation shows that children who tended to delay in order to maximize their own reward also tended to delay in order to share the reward. However, it should be noted that eight of the 18 children in this group did not delay for either trial type and only three delayed for both trial types. The correlations between these two trial types were not significant for either the 4-year-olds or the 5-year-olds.

DISCUSSION

The results provide support for the hypothesis that future-oriented prudence and altruism, in situations involving future desires which conflict with current desires, are developmentally linked in 3- to 5-year-olds. The analysis of age effects showed that in current situations altruism was unrelated to age. However, in the

future-oriented situations, 3-year-olds demonstrated significantly less altruism and prudence than the 4- and 5-year-olds. Moreover, for 3-year-olds there was a correlation in individual responses involving future-oriented situations when age was partialled out of the correlation. The two older groups demonstrated greater preference for delayed reward in these future-oriented situations than did the younger group, and in the older group there was no correlation between responses to the two delay trial types. Taken together, these results suggest that there is an age-related change in the capacity to deal with future-oriented desires involving both prudence and altruism that develops during the fourth year. As such, the results provide partial support for Hazlitt's (1805) ideas and our elaboration of them in terms of recent research on the preschool child's development of a theory of mind.

Most children in our study, regardless of age, chose to share in situations involving current desires. This finding suggests that even the youngest children making these choices had some ability to perceive or imagine the other person's current desire for stickers. Since the child and the research assistant both had their sticker books open and waiting to be filled, perhaps the child simply generalized from his or her personal desire to the research assistant's desire. Barresi & Moore (1996; cf. Harris, 1991) characterize such generalization as a limited act of imagination. They suggest that such an act involves imagination of first person information about the other's mental state without having to imagine third person information about the other's situation. Based on a number of findings it is clear that 3-year-olds can perform such a limited act of imagination (Flavell, Flavell, Green & Moses, 1990; Harris, 1991; Wellman & Woolley, 1990). Hence, no difference would be expected between the choices of younger and older children in situations involving current desires, insofar as such choices require such limited use of capacities for social understanding.

The performance of the children in the current altruism situations also showed a relatively strong tendency for sharing even when the child was required to forgo a second sticker in order to share. Although children shared on fewer trials in this situation, most of the children, regardless of age, still chose to forgo personal material reward to share with the research assistant. It should be noted that the present experiment did not require that the child forgo all stickers for self on any trial. The research assistant, on the other hand, received no stickers in the future-oriented prudence trials, and was on every trial dependent upon the child's choices about the distribution of stickers. Given the context, sympathy for the research assistant is a possible explanation for the altruistic performance of both the younger and older children in this situation.

A more important finding is that the ability of 3-year-olds to act altruistically was impeded by the introduction of a situation in which they were required to imagine future desires which conflicted with their current desires. Within the context of choices presented in this study, 3-year-olds often chose to gratify their own current desires rather than to gratify their own or another's future desires. Four-year-olds,

on the other hand, were able to deal with these conflicts involving future desires of self and other and to delay self-gratification as well as shared gratification.

Comparing our delayed altruism condition with the current altruism condition involving no quantitative cost, it can be seen that in both conditions the child is asked to forgo one sticker for self in favour of one sticker each for self and other. The only difference between these situations is that the shared reward appears later in the delayed condition. Generally speaking we can assume that the child, regardless of age, would prefer to get a sticker immediately rather than to wait until later. The child, therefore, might see delay as a cost to sharing, and might experience more conflict about the choice presented in the delayed altruism condition. Nevertheless, in 4- and 5-year-olds, the desire to receive a sticker for self now is overridden by the desire to share. This shift in preference in the older children is, we hypothesize, due to developmental changes that also affect performance in the delay of self-gratification.

Although no strong evidence for future-oriented choice preference as a function of age has previously been reported for preschool children (Schwarz et al., 1983; Toner et al., 1977), evidence using the delay of gratification paradigm has demonstrated that young children have difficulty waiting for a greater reward later when they can receive a smaller one now (Mischel, 1974). In the present experiment's future-oriented prudence condition, children were given a choice between receiving for themselves one sticker now or two stickers later. The 4- and 5-year-old children, but not the 3-year-olds, were willing to delay gratification for the greater reward. One interpretation of this finding is that 3-year-olds do not prefer two stickers over one. However, the results of the Shared Gratification With Cost condition argue against this interpretation. When children were offered two stickers for self now or one each now, the 3-year-olds were just as likely to decrease sharing as the older children, in order to obtain the greater reward. Manipulation of the number of stickers resulted in no age differences.

The performance of the older children on the two choices involving delay might also be interpreted as random performance. Because performance was at approximately chance levels (i.e., a mean of close to 1.5 out of 3) and individual performance patterns were normally distributed around the mean as opposed to being bimodal, it could be argued that the 4- and 5-year-old children were simply guessing. However, this does not seem plausible. First, it is unlikely that random performance would be more common at the older ages than at the younger age. The 3-year-olds consistently chose the immediate alternative in preference to the delayed alternative on both the future altruism and future prudence choices. These children also consistently chose to share in the choices not involving delay. Thus, 3-year-olds understood the nature of the task and gave every indication of responding according to their own concerns. Secondly, that the older children grasped the task demands can be seen from the fact that they also were consistently above chance on the choices not involving delay. Thus it seems to us improbable that they were guessing on the delay choices. Preference to delay was

not overwhelming, but consistency in the current conditions argues against random choosing in the delay conditions.

We propose that the similar developmental pattern observed for the two delay choices, and the correlation between them, are the result of a common underlying mechanism. However, it could be argued that these results were obtained because of a change with age in the tendency of the children simply to delay their own reward. Such an age-related change could come about in two ways: a change in ability or a change in motivation. First, it may be that children acquire the ability to delay self-gratification and that this ability is then applied also to situations involving sharing. According to this account, one might predict that an individual child should not be able to delay for shared gratification before being able to delay for self-gratification. However, our results revealed no such pattern. In all age groups there were children who chose to share in the future even though they never chose to delay for themselves alone.

Second, the greater tendency for older children to choose the shared option in the delayed altruism condition may result solely from the preference of these children to keep some of their own reward for later as opposed to getting all their stickers immediately. The fact that the partner would also receive a sticker in the delay alternative would be functionally irrelevant. Two considerations make us doubt this interpretation. First, this alternative account would imply that even if children were to be presented with a simple choice between one sticker for self now or one sticker for self later, then they should tend to opt to delay on a significant proportion of trials (in fact, according to the alternative account, the delayed altruism trial type included here is effectively reduced to a choice between one for self now or one for self later). We find this an unlikely prediction. However, it is conceivable that the older children in this study wanted to conserve some rewards for later and thus were motivated to choose the delay alternatives on some trials independently of what the other was due to receive. If such a motivation was operating in our older children, then a second consideration becomes apparent. It would be reasonable to expect that this motivation to delay would manifest itself more commonly, perhaps twice as often, on those trials where a two-times-greater reward was to be gained by delaying; in other words, on the delayed prudence trials. However, this result was not obtained. The older children chose the delay option approximately equally across both delayed prudence and delayed altruism trials. This finding implies that the existence of a possible reward for the other did play some role in determining childrens' choices in the delayed altruism trials. In short, we believe that the similar developmental patterns observed in performance on the two delay trial types and the correlation between them in the younger group do evidence the development of a capacity to deal with future desires of both self and other.

We believe that such a capacity is best explained in terms of the development of the child's ability to simulate conflicting mental states in imagination (Barresi & Moore, 1996; Harris, 1991). In our study, the child would be required to imagine

a noncurrent situation and desires which conflicted with the child's current situation and desires. The child's simulated reality would have to overwrite the child's knowledge of the current situation and of his/her desires in that situation. Our results could be interpreted as providing support for the claim that 4-year-olds, but not 3-year-olds, have the ability to imagine various mental states which conflict with the child's own current states and involve a non-current situation. Such conflicting states involving non-current situations require what Barresi and Moore (1996) describe as a double imagination, and appear only in 4-year-olds. Although 3-year-olds can imagine other individuals with mental states different from their own when they are directed at the same situation, they are unable to imagine conflicting mental states directed at non-current objects.

Tasks which place the child in situations involving future desires require that these desires be imagined, as the child must make a decision by resolving a conflict between his or her current desires and the imagined desires of self or another directed at possible future states of affairs. Four-year-olds seem to possess the necessary imaginative capacity while 3-year-olds do not. The finding of similar age-related changes in performance on the tasks involving future-oriented situations indicates that double imagination may be a necessary, though not sufficient, condition underlying the development of both future-oriented prudence and altruism. The resolution of conflicts between current and future desires may involve other processes as well.

A second mechanism might also be involved in the developmental change in choices with delayed alternatives. In order to behave prudently or altruistically, the child must not only imagine future desires but must also make choices on the basis of that knowledge while in the grip of current conflicting desires. The child must inhibit a desired response to a current stimulus situation in favour of an alternative response to a more desirable imagined future stimulus situation. This could involve executive functioning or the inhibition of a prepotent response to salient information. The development of executive functioning has been proposed by Russell and his colleagues (Russell, Jarrod & Potel, 1994; Russell, Mauthner, Sharpe & Tidswell, 1991) as a partial explanation for changes which occur during the age-four transition. We do not think that it is necessary to suppose that such a mechanism be an alternative to the development of the child's increased capacity to represent mental states. Rather, it may be a concurrent development needed by the child in order to act in favour of more desirable imagined future states of affairs, that require inhibition of response to the current stimulus situation. This is consistent with the claim of Moore and his colleagues (Moore et al., 1995) that what develops during this age range is an ability to deal with the contents of noncurrent mental states which conflict with the contents of the child's own current mental state.

Clearly, further research is needed to look more closely at the processes involved in dealing with these kinds of conflicts during the age-four transition. However, with these results, we are closer to an articulation of how cognitive

development during the age-four transition may be implicated in the regulation of prudent and altruistic behaviors.

REFERENCES

- Bandura, A. & Mischel, W. (1965). Modification of self-imposed delay of reward through exposure to live and symbolic models. *Journal of Personality & Social Psychology*, 2(5), 698-705.
- Barresi, J. (1995). You can cheat people, but not nature! *Behavioral and Brain Sciences*, 18, 544-545.
- Barresi, J. & Moore, C. (1996). Intentional relations and social understanding. *Behavioral and Brain Sciences*, 19, 107-154.
- Flavell, J.H., Flavell, E.R., Green, F.L. & Moses, L.J. (1990). Young children's understanding of fact beliefs versus value beliefs. *Child Development*, 61, 915-928.
- Gopnik, A. (1993). How we know our minds: The illusion of first-person knowledge of intentionality. *Behavioral and Brain Sciences*, 16, 1-14.
- Gopnik, A. & Slaughter, V. (1991) Young children's understanding of changes in their mental states. *Child Development*, 62, 98-110.
- Harris, P.L. (1991). The work of the imagination. In A. Whiten (Ed.), *Natural theories of mind* (pp. 283-304). Cambridge, MA: Basil Blackwell, Inc.
- Hazlitt, W. (1805). *Essay on the principles of human action and some remarks on the systems of Hartley and Helvetius*. Reprinted, with an introduction, by J.R. Nabholz (1969). Gainesville, FL: Scholars' Facsimiles & Reprints.
- Hoffman, M.L. (1976). Empathy, role-taking, guilt, and development of altruistic motives. In T. Lickona (Ed.), *Moral development and behavior* (pp. 124-143). New York: Holt, Rinehart and Winston.
- Hoffman, M.L. (1977). Empathy, its development and prosocial implications. In C.B. Keasey (Ed.), *Nebraska symposium on motivation* (pp. 169-217). Lincoln, NB: Nebraska University Press.
- Klineberg, S.L. (1968). Future time perspective and the preference for delayed reward. *Journal of Personality and Social Psychology*, 8, 253-257.
- Martin, R. & Barresi, J. (1995). Hazlitt on the future of the self. *Journal of the History of Ideas*, 56, 463-481.
- Melikan, L. (1959). Preference for delayed reinforcement: An experimental study among Palestinian Arab refugee children, *Journal of Social Psychology*, 50, 81-86.
- Mischel, W. (1966). Theory and research on the antecedents of self-imposed delay of reward. In B.A. Maher (Ed.), *Progress in experimental personality research*, Vol. 3 (pp. 85-132). New York: Academic Press.
- Mischel, W. (1974). Processes in delay of gratification. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, Vol. 7 (pp. 249-292). New York: Academic Press.
- Mischel, W. & Baker, N. (1975). Cognitive appraisals and transformations in delay behavior. *Journal of Personality and Social Psychology*, 32, 254-261.
- Mischel, W. & Ebbesen, E. (1970). Attention in delay of gratification. *Journal of Personality and Social Psychology*, 16, 329-337.
- Mischel, W., Ebbesen, E. & Zeiss, A.R. (1972). Cognitive and attentional mechanisms in delay of gratification. *Journal of Personality and Social Psychology*, 21, 204-218.

- Mischel, W. & Gilligan, C. (1964). Delay of gratification, motivation for the prohibited gratification, and responses to temptation. *Journal of Abnormal and Social Psychology*, *69*, 411-417.
- Mischel, W. & Metzner, R. (1962). Preference for delayed reward as a function of age, intelligence, and length of delay interval. *Journal of Abnormal and Social Psychology*, *64*, 425-431.
- Mischel, W. & Staub, E. (1965). Effects of expectancy on working and waiting for larger rewards. *Journal of Personality and Social Psychology*, *2*, 625-633.
- Moore, B. & Mischel, W. (1976). Comparative effects of the reward stimulus and its cognitive representation in voluntary delay. *Journal of Personality and Social Psychology*, *34*, 419-424.
- Moore, C., Jarrold, C., Russell, J., Lumb, A., Sapp, F. & MacCallum, F. (1995). Conflicting desire and the child's theory of mind. *Cognitive Development*, *10*, 467-482.
- Murphy, L.B. (1937). *Social behavior and child personality*. New York: Columbia University Press.
- Nelson, K. (1992). Emergence of autobiographical memory at age 4. *Human Development*, *35*, 172-177.
- Perner, J. (1991). *Understanding the representational mind*. Cambridge, MA: MIT Press.
- Perner, J. (1992). Grasping the concept of representation: Its impact on 4-year-olds' theory of mind and beyond. *Human Development*, *35*, 146-155.
- Russell, J., Jarrold, C. & Potel, D. (1994). What makes strategic deception difficult for children—the deception or the strategy? *British Journal of Developmental Psychology*, *12*, 301-314.
- Russell, J., Mauthner, N., Sharpe, S. & Tidswell, T. (1991). The 'windows task' as a measure of strategic deception in preschoolers and autistic subjects. *British Journal of Developmental Psychology*, *9*, 331-349.
- Schwarz, J.C., Schrager, J.B. & Lyons, A.E. (1983). Delay of gratification by preschoolers: Evidence for the validity of the choice paradigm. *Child Development*, *54*, 620-625.
- Severy, L.J. & Davis, K.E. (1971). Helping behavior among normal and retarded children. *Child Development*, *42*, 1017-1031.
- Toner, I.J., Holstein, R.B. & Hetherington, E.M. (1977). Reflection-impulsivity and self-control in preschool children. *Child Development*, *48*, 239-245.
- Wellman, H. & Woolley, J. (1990). From simple desires to ordinary beliefs: the early development of everyday psychology. *Cognition*, *35*, 245-275.
- Zahn-Waxler, C., Radke-Yarrow, M. & Wagner, E. (1992). Development of concern for others. *Developmental Psychology*, *28*, 126-136.