

Preschool Children's Self-Prudence and Other-Altruism in the Delay of Gratification Task

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Summary

In the present study we investigated preschool children's self-prudence and other-altruism in the delay of gratification paradigm. Twenty six children of four to five-year-old class participated in the modified version delay of gratification tasks: self-prudence, self-no prudence, other-altruism conditions. Main results were as follows: children's delay behavior were motivated toward future-oriented self-prudence and other-altruism whose principle may exhibit further evidence of integration of human higher mental relationship and social understanding. And the developmental mechanism between the theory of mind (role of perspective taking) and self-prudence and other-altruism inter relationship remained to be proofed as further research task to explore.

Keywords : prudence, altruism, delay of gratification, cognitive and affective regulation, preschool children

In the delay of gratification paradigm, children are posed in conflict situation whether they persist in waiting for the experimenter return and getting the desired two or more treats, or not in waiting but hitting bell immediately to bring the experimenter back and get only one treat. Children are required to become patient and control to wait for the sake of future rewards with inhibition of impulsive response for the immediate satisfaction (Mischel & Underwood, 1974; Mischel, et al., 1989).

As children grow older, it is necessary to control their action and feelings, overcoming the stimulus driven impulsive reactions to execute cognitive control intended to behaviors hard to achieve (Metcalf & Mischel, 1999).

In the theoretical approach, the appropriate framework for explanation of developmental mechanisms involved in self-regulatory processes as in the delay of gratification have ever been applied from several point of research views (Metcalf & Mischel, 1999): Freudian attempt by making the psychic determinants of human volition into unconscious motives; behaviorism explanation

both of external stimulus conditions and organism's reinforcement history; cognition-emotion interaction controversy about which system is primary, and about how each system is separated and controlled. Metcalf & Mischel (1999) provided hot/cool framework depicting the distinct interacting systems between the cool cognitive "know" system of complex spatiotemporal and episodic representation and thought and the hot emotional "go" system of affective processing and responding to the stimulus controlled.

On the contrary, following a series of empirical research in the delay of gratification paradigm, Mischel & Underwood (1974) showed that children's ability to delay immediate satisfaction for future rewards demonstrated spontaneous use of strategies which involve a combination of avoiding excessive frustrations by not focusing on actual rewards or by minimizing arousing qualities. And Shoda, Mischel & Peake (1990) executed very laborious and longitudinal research to testify and sustain the hypothesis on the coherent relevance between the seconds of delay time in self-imposed

regulation in preschool and their cognitive and academic competence and coping ability with frustration and stress in adolescence.

Recently there has been growing interest in the development of prosocial behavior and Theory of Mind in the research realm of preschool children's delay of gratification (Prencipe & Zelazo, 2005; Thompson, et al., 1997): the former is concerned with ability to consider future well-being aimed at benefits for the self "prudent" and for the others "altruistic", and the latter is concerned with different types of mental state understanding as desires and beliefs. Thompson, et al. (1997) proposed the hypothesis that the ability to deal with non current future desires of self (prudence) and other (altruism) in conflict situations (current reward or delayed one) follow a similar developmental course within preschool period. And they tested 3 to 5 years-old children by presenting four conditions of the choice tasks using modified version of delay of gratification paradigm focusing on three altruism tasks and one prudence task: at first task of altruism (1 sticker for self now or 1 each now), children given a choice of self-gratification vs shared-gratification with no cost to the child showed no age difference of higher score of altruism, secondary altruism task (2 stickers for self now or 1 each now), children required a choice of either self-gratification or shared-gratification with cost to him/her self suggested same result as in the first altruism task, thirdly children participated in standard delay of self-gratification task (1 sticker for self now or 2 for self later) showed significantly less future oriented prudence under 4 year-old children, and finally given a altruism task to choose between self-gratification now or shared gratification later (1 sticker for self now or 1 each later), less altruism for future oriented situation was confirmed under 4 years of age.

Prencipe and Zelazo (2005) interposed the research paradigm between the development of perspective taking and the development of executive function based on the cognitive control. They modified the delay of gratification paradigm in which 3 and 4 year-old children participated in either condition for the self (first-person perspective) or for the other (third-person perspective) to choose between a current reward of lower value and

a delayed reward of higher value. They hypothesized on the theoretical account by Barresi and Moore (1996) that as a child grows older consideration of a third-person perspective in the self condition make the choice of delayed rewards for other, on the contrary, considering a first-person perspective in the other condition make less choosing delayed ones for self. Prencipe and Zelazo's results showed that 3-year-olds performed worse than chance in the self condition but better in other condition, and that 4-year-olds didn't differ from chance in either condition. Compared with 3 year-olds, 4-year-olds performed better in self and worse in the other condition.

According to the Barresi and Moore's account of "intentional schema" in intentional relation between the self and the other, children are required to integrate first person information and third person information in spatiotemporal relations to objects. And these integration of two kinds of information into a single representation could be applied to the activities of self and other. In Prencipe and Zelazo's experiment, each participant attended either in self or other condition to the modified task of delay of gratification which made less clear children's ability to integrate self and other information which would lead to a single representation applied to reward choice. And neither condition has ever been ready for measuring children's role of perspective taking as in theory of mind independently.

So, in the present study we investigate

- (1) preschool children's development of affective decision making for self and other condition within factorial design in delay of gratification task and
- (2) developmental relationship between the degree of theory of mind (location false belief task) and degree of self other integration on affective decision making.

METHOD

Participants

Twenty six of preschool children participated in this study, 13 children in each age class, 4 years of age class (M=5:05) and 5 years of age class (M=6:02).

Experimental Design, Materials, and Procedure

This study was executed by 2(Age class : 4 years, 5 years) X 3(Condition : self prudent, self no prudent, other) mixed factorial design with one between factor of age class and one within factor of delay condition. All children performed every condition in a quiet room, by male (or female) experimenter using modified delay-of-gratification task (Thompson, et al., 1997; Prencipe and Zelazo, 2005). Children were allowed to sample stickers they want in two type of the self conditions (prudent, no prudent), and experimenter sampled stickers with children in the other condition (altruistic). Each condition was composed of three trial types of choices by repeated twice blocks design : one now vs. two later, one now vs. four later, one now vs. six later in a block session in prudent (self) and altruistic (other) condition ; one now vs. one later, three now vs. three later, five now vs. five later in a block session in no prudent (self) condition. For each trial each child chose one reward option in verbally and physically with putting the reward on either of paper board depicting "now (pink card)" or "later (blue card)". After the experimenter gave instruction how he/she think about choosing rewards for now or for later in the game like procedure in the self prudent or no prudent condition (and how he/she can help the experimenter choose for now or for later in the other altruistic condition) the experimenter posed a set of stickers in each trial, then children judged which one to choose.

Six test trials in three types of conditions were executed with randomized order. Each child's score was the number of times he or she chose to delay.

Theory of mind (location false belief) task was performed a few days before the term of delay of gratification task started. Location false belief task scenario was same as in Wimmer & Perner (1983). Two puppets (Each name was Gonta, a bear puppet and Mimi, a hare puppet) were introduced to the child. The story was as follows : one day Gonta went home with a cake presented by the aunt living next door, and he put the cake into the cupboard and soon went out to play with his friends. In a few minutes his girl friend Mimi came to play with Gonta, and found a cake in the cupboard and

removed it into the refrigerator and then went out looking for Gonta. Finally Gonta returned home, and tried to eat cake he was given. After the puppet play was over, each child was given a series of questions : Belief Q "where do you think Gonta will look for a cake?" ; Memory Q "Where was the cake first?" ; Reality Q "Where is the cake really?" ; Perceptual access Q "Did Gonta look actually at the cake removed from cupboard to refrigerator?" Theory of mind score was calculated on the Belief Q, Memory & Reality Q, and Perceptual Access Q in total 3 points.

RESULTS

We first examined the children's performance in whole delay conditions. After the each child's delay score was calculated in each condition with maximum scale of 6 points, 2 (age of class : 4 year-olds, 5 year-olds) x 3 (delay condition : self with no prudent, self with prudent, other altruistic) two way factorial mixed type analysis of variance (ANOVA) was conducted with delay condition (3) as within-group factor. Main effect was found for the condition as significant ($F(2, 48)=11.97, p < .001$). Post hoc multiple comparison tests revealed that the self prudent ($M=4.50$) and the other altruistic ($M=4.65$) conditions were highly explained than the self no prudent ($M=2.92$) condition.

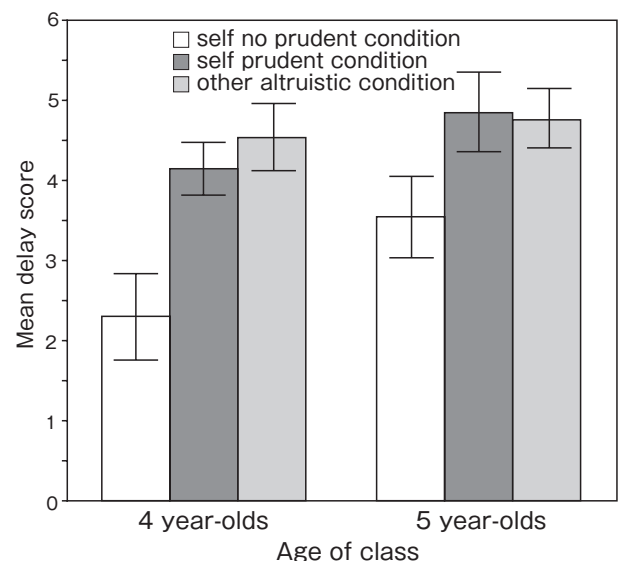


Figure 1 Mean delay score in each delay condition in each age class

The delay scores were repeated again to be compared within the self conditions and between the self and other conditions. As primary comparison within the self conditions 2 (age of class: 4 year-olds, 5 year-olds) x 2 (delay condition: self with no prudent, self with prudent) two way factorial mixed type analysis of variance (ANOVA) was conducted with delay condition (2) as within-group factor. Main effect was found for the delay condition as significant ($F(1, 24)=14.58, p < .001$). That is the self prudent condition was highly explained than the self with no prudent condition. And the age of class factor tended to produce sufficient difference ($F(1,24)=3.43, p < .10$) between 4 years class ($M=3.23$) and 5 years one ($M=4.19$).

And for the rest of comparison between the self prudent condition and the other altruistic one 2 (age of class: 4 year-olds, 5 year-olds) x 2 (delay condition: self with prudent, other altruistic) two way factorial mixed type analysis of variance (ANOVA) was conducted with delay condition (2) as within-group factor. Neither main effect nor interaction was significantly suggested.

In order to examine the relationships between future-oriented prudence (the self condition) and altruism (the other condition), correlations of several combination of conditions between the self and the other were calculated with the age of class effect collapsed. As with the delay conditions, there was only significant positive correlation ($r(24)=.145, p < .05$) between delay of self prudent-gratification and delay of other altruistic gratification. This result means that children who tended to choose future-oriented prudence would develop in accord with future-oriented altruism. Other combinations of delay conditions became found no significant: self prudent gratification not harmony with self no prudent gratification, and self no prudent gratification disengaged with other altruistic gratification. Finally correlation between theory of mind (location false belief) score and three types of delay scores were calculated, and it appeared that no correlation found between theory of mind and either condition of self/other future-orientation.

DISCUSSION

We are very concerned with preschool chil-

dren's future-oriented prudence and altruism. In the present study we primarily investigated preschool children's development of delay of gratification with comparison between self and other delay conditions, and secondarily examined the developmental relationship between the degree of theory of mind (location false belief) and degree of self other integration on affective regulations.

In a series of analyses executed by post hoc multiple comparison tests among the delay scores in the self and the other conditions, preschool children's delay of gratification behavior were found to be controlled either by future-oriented self-prudence or future-oriented other-altruism. In the delay of gratification paradigm, Barresi and Moore (1996)'s intentional schema in intentional relationship between the self and the other could be explained through dealing with the first person perception and imagination concerned with self prudence and third person information processing in terms of other altruism, and integration between first person's and third person's intentional schema could explain the development of cognitive and affective control which leads to future-oriented gratification (Prencipe & Zelazo, 2005).

Correlational analysis could not explain the developmental relationship between theory of mind (location false belief) and three types of delay of gratification conditions. Based on Barresi and Moore's essential idea, the difference of informational inputs both from self and other would make resultant representation applied. In the delay of gratification paradigm, intentional schema was composed of matched perceptual or emotional activity, on the contrary theory of mind as in location false belief situation would promote information acquisition based on conception and imagination that integrate to identify intentional and conscious ability behind the future-oriented behavior. So the difference of the kind of information concerned with intentional relationship caused lower correlation between theory of mind (matching conception and imagination) and self and other delay of gratification (matching action, perception, and emotion). Integration of these kinds of information would promote further account of young children's higher mental relationship and social understanding based on the growth of self-prudence and

other-altruism combining self-other future-oriented relationships.

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