Children's Cognitive Perceptions of 6/49 Lottery Tickets

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Recent studies have shown the high prevalence of youth gambling behavior. In particular, lottery ticket purchases among children and adolescents appear to be a highly preferred activity. Despite this fact, most research has focused on the underlying erroneous cognitions used by adults when selecting lottery tickets. This study examines the cognitive perceptions of children while engaged in selecting 6/49 lottery tickets. One hundred sixty-seven children (61 females; 106 males) from grades 3, 5, and 7 were asked to rank pre-selected 6/49 lottery tickets which were classified into a) long series, b) specific patterns, c) non equilibrated numbers, or d) perceived random selections. Children verbalized their rationale for selecting each ticket and were permitted to change the numbers on the lottery tickets they liked least in order to make them to more likely to be the winning ticket. Findings, in general, revealed small developmental differences in the types of underlying cognitive heuristics used by the children. The use of cognitive heuristics underlying the concept of randomness and the use of significant and meaningful numbers was observed to increase as children got older. Children between 9 and 11 were found to have employed the cluster heuristic more frequently than older children, ages 12–13. The results are interpreted in terms of the cognitive developmental changes in children's perceptions and the potential implication for gambling prevention programs are provided.

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Lottery playing has proven to be a popular form of gambling for elementary and high school aged children even though the legal age for lottery ticket purchases and other forms of gambling in the United States and Canada, in general, is a minimum of 18 years of age (Gupta & Derevensky, in press; Ladouceur, Dubé & Bujold, 1994; The Wager, 1996; Winters, Stinchfield, & Kim, 1995; Wynne, Smith & Jacobs, 1996). In a study examining the prevalence of gambling among primary school students Ladouceur et al. (1994) found that 61% of children had purchased lottery tickets, 56% had played bingo, and 53% had wagered money on cards. Moreover, the percentage of children who reported gambling increased from 81% in grade 4 to 92% in grade 6. A survey of sixth to twelfth grade students in Quincy, Massachusetts revealed that 25% of the adolescents questioned had purchased a lottery ticket in the 30 days prior to the survey (The Wager, 1997). In a recent study of 817 Montreal high school students (grades 7–11), Gupta and Derevensky (in press) found that 52.3% of the students reported having purchased lottery tickets in the past 12 months, with 10.2% doing so once a week or more. While the legal age of purchasing lottery tickets is 16 in the U.K., Moran (1995) reported that 61% of school age children successfully purchased lottery tickets. Wood and Griffiths (1998) has reported a similar link between parental and child gambling with most lottery and scratchcards being bought for adolescents by their parents.

While purchasing lottery tickets by minors is illegal in most jurisdictions, penalties for the retailer and enforcement of state or provincial laws remains a serious problem. As well, several studies have reported that most parents view this behavior as innocuous and readily purchase tickets for their children (Gupta & Derevensky, 1997a; Winters et al., 1995). Given the popularity of the lottery amongst children and adolescents, researchers need to address issues surrounding the onset and maintenance of this form of gambling behavior. Whether their selection is based upon their perception that the successful selection of winning lottery tickets is skill driven or merely a game of chance may influence their playing behavior. Recent data from several studies indicates that while children and adolescents perceive gambling to be related to high degrees of luck, they nevertheless perceive that there is a considerable element of skill involved (Baboushkin,

Hardoon, Derevensky, & Gupta, 1998; Derevensky, Gupta & Della-Cioppa, 1996; Gupta & Derevensky, in press). Understanding children's cognitive perceptions may prove to be useful in the development of youth prevention and treatment endeavors.

In one of the few studies investigating cognitions of lottery ticket purchasers, Ladouceur, Dubé, Giroux, Legendre, and Gaudet (1996) employed a methodological approach in which adults were asked to rank pre-selected lottery 6/49 tickets (selecting 6 numbers from a possible 49). Tickets were characterized in one of four ways: long sequences (e.g. 2-3-4-5-6-47), patterns (e.g. 10-20-25-30-40-), non-equilibrated numbers (e.g. 3-5-9-12-15-17), and pseudo-random numbers (e.g. 11-14-20-29-37-43). Their results indicated that adults preferred the pseudo-random category followed by patterns, non-equilibrated series, and long sequences. Adults were more likely to select the "most random" perceived combinations, although in reality each ticket was as likely to win as the others. Ladouceur and his colleagues concluded that this tendency to prefer pseudo-random numbers over alternative choices resulted from their erroneous beliefs linking mutually exclusive events. Participants reportedly refrained from selecting tickets with long sequences because they did not perceive these tickets to be randomly generated. Individuals failed to recognize that each number on a ticket is independent of the others, possibly due to the propensity to link events in close physical proximity. Since adults incorrectly perceived the chance outcomes to be rule governed (i.e. patterns are less likely to be chosen because they are perceived to be less random), their responses are considered irrational (Ladouceur et al., 1996; Ladouceur & Walker, 1996).

The belief of the interdependence between mutually exclusive events is one of the most prominent erroneous perceptions held by adults who purchase lottery tickets. Other inaccurate cognitions include the notion of randomness and a perceived illusion of control. The notion of "apparent randomness" prevents some lottery players from selecting consecutive numbers or numbers that occur within a narrow range. Kahneman and Tversky (1972) have characterized apparent randomness as the absence of systematic patterns and the existence of local representativeness. This expectancy is based upon the law of small numbers which falsely assumes that small samples are representative of the populations from which they are drawn. In his discussion on randomness, Chapanais (1953) found that participants, when

instructed to create random sequences of numbers, avoided repetitive pairs and triplets as well as increasing sequences of numbers.

The illusion of control is another false perception that has been shown to strengthen the maintenance of gambling behavior (Frank & Smith, 1989). This construct presupposes that an individual's expectation for personal success is greater than the laws of probability would predict (Langer, 1975). Langer asserts that factors in a chance situation which are typically associated with skill situations (such as choice, competition, and passive or active involvement) causes an individual to believe they have control over a situation that is completely governed by chance. Ladouceur et al. (1996) found that individuals who selected their own lottery ticket requested a larger sum of money in order to relinquish or sell back their ticket than those individuals who were randomly given a ticket (machine generated numbers). They concluded that participants who were able to select their own lottery ticket perceived their ticket as having a greater chance of winning and, as a result, assigned a higher monetary value to the ticket than individuals in the no-choice condition. Individuals selecting favorite or significant numbers on their lottery tickets, rather than machine generated tickets exhibit behaviors indicative of an illusion of control.

According to Piaget's (1950) theory of cognitive development, at approximately 11–12 years of age children enter the formal operational stage of cognitive development. This stage is marked by the individual's capacity to generate hypotheses, use deductive reasoning, form abstract representations, and is the culmination of previous stages of intellectual reasoning. Such cognitive reasoning is representative of adult logic. As a result, it is could be expected that the cognitions of older children may more closely resemble those of adults, whereas the cognitions of the younger children in pre-formal operational stages are qualitatively different than adult type reasoning and logic. Understanding the cognitive reasoning behavior at different developmental stages may necessitate the development of alternative prevention techniques as well as providing valuable information as to the ideal age of intervention.

While Winters, Stinchfield, and Fulkerson (1990) failed to find significant gender differences with respect to lottery purchases, Huxley and Carol (1992) reported males purchase more tickets, more frequently than females. In a recent study of adolescents, Gupta and Derevensky (in press) found that playing the lottery was the most popular form of gambling for girls, with 47.4% purchasing tickets occasionally and 8.8% purchasing tickets once a week or more. While playing cards for money was the most popular form of gambling for males, 37.2% purchased tickets occasionally and 11.5% play once per week or more.

The apparent high prevalence of lottery ticket purchases amongst children and adolescents and their ease of accessibility remains worrisome. An increased understanding of the cognitions and the types of heuristics children employ when purchasing a lottery ticket may provide valuable insight into their perceptions concerning gambling. The use of a similar methodology has previously been successful in identifying erroneous beliefs commonly held by adult gamblers (Hardoon, Baboushkin, Gupta, Powell, & Derevensky, 1997; Ladouceur et al., 1996; Ladouceur & Walker, 1996). The question as to when children's gambling behavior resembles that of adults is equally important from a developmental perspective. By gaining an understanding of the inaccurate beliefs of children at different cognitive developmental stages, more effective prevention programs may be tailored to specific age groups. Educational programs informing children about the irrationality of adopting these erroneous, yet common, cognitions may be essential in modifying their behaviors.

The principal aim of this research is to determine the underlying cognitions and heuristics used by children at different developmental stages when selecting lottery tickets. It is believed that by understanding children's developmental thinking processes with respect to lottery ticket selection a greater insight into the development of more effective measures for gambling prevention may be realized.

METHOD

Participants

One hundred sixty-seven children (61 females; 106 males) from grades 3 (N = 69), 5 (N = 50), and 7 (N = 48), ranging in age from 7 to 14, participated in the study. The children were selected from lower and middle socio-economic class, English speaking elementary schools and summer camps in the Montreal area. Children voluntarily agreed to participate in this study and those whose parent or legal

guardian signed a consent form were included. No child refused to participate and all were familiar with lottery tickets.

Stimuli

Sixteen original, validated 6/49 lottery tickets were presented to each child who ranked the tickets in descending order of preference. The tickets were assigned into one of four categories based upon their sequence of numbers. The tickets were further divided into two equal sets, by category, representing two trials of eight tickets each. Two presentations were necessary as pilot research had indicated that the younger children experienced difficulty retaining the information in the 16 tickets simultaneously. The numbers on the lottery tickets were arranged into the following four categories:

1. *Long series*: a series of five or six consecutive numbers, e.g. 2-3-4-5-6-47; 23-24-25-26-27-28
2. *Pattern:* a series of numbers in a pseudo-logical order, e.g. 10-20-25-30-40-45; 16-21-26-31-36-41
3. *Non-equilibrated:* six numbers between 1–24 or 25–49, e.g. 3-5-9-12-15-17; 34-36-39-41-45-48
4. *Random:* no apparent ordering or sequence of numbers, e.g. 11-14-20-29-37-43; 13-17-24-33-40-45

Procedure

A graduate student administered the lottery task to each child individually, requiring approximately 15 minutes to complete. Prior to presenting the task, each child was given a brief explanation of the features of the lottery 6/49 ticket. After this overview, instructions concerning the specific selection of the lottery tickets was provided. The paradigm implemented in the current study was modified from that used by Ladouceur et al. (1996). The 8 tickets were presented simultaneously and placed in a random order in front of each child. This was done in order to ensure that they would be able to easily scan each ticket and remember the salient sequence and numbers. The inclusion of two presentations permitted an analysis of the consistency of children's performance between both trials.

The "think aloud" method, previously used by Griffiths (1994),

Ladouceur, Garboury, Lachance, and Tremblay (1991), and Waganaar (1988) was used to ascertain each child's cognitions. This procedure has been successfully employed as a method of ascertaining children's cognitions (Derevensky & Gupta, 1997). Participants were given the following instructions:

> *Say everything that goes through your mind. Do not censor intentions, ideas, or images. Do not try to judge whether it is interesting or not. Speak as normally as possible even if your ideas are not well structured or even if you repeat yourself. Do not worry about speaking in complete sentences. Do not try to justify your thoughts.*

While the instructions were adapted from the think aloud methodology used for adults, further explanations were provided for the children when necessary.

Each child completed the task under two trials and were presented with the following standard instructions:

> *Here are eight 6/49 tickets. Look at each ticket carefully. If you were to choose the winning ticket in Wednesday night's draw, which ticket would you pick?*

The children were prompted for information as to the reason they selected a particular ticket if they did not voluntarily provide the information. In addition, many of the participants were asked probing questions in order to help clarify their statements. After the participant selected a lottery ticket, the research assistant continued:

> *There are seven tickets left. Of these remaining tickets, which one would you choose?*

This last instruction was repeated until the first six tickets had been selected. The research assistant then responded:

> *There are now two tickets left. I understand that you probably do not like these tickets because you saved them for last. However, I would like you to choose the ticket you like best and then make any changes so that it would become a winning ticket.*

After the child made changes or informed the experimenter that he/she did not want to change the ticket, the experimenter continued:

> *What changes would you make to the final ticket in order to make it a winning ticket?*

The order in which the tickets were selected was recorded, the entire interaction was audio-taped, transcribed, and the verbalizations

were coded. The verbalizations were separated according to whether the ticket had been ranked (first six selections) or if it had been both ranked and changed (final two selections). All verbalizations were categorized into several distinct cognitive heuristics based upon their verbal protocols and previous research by Griffiths (1994), Ladouceur et al. (1991), and Waganaar (1988). The cognitive heuristics are defined and examples of each are provided in Table 1. Two graduate students independently coded 6% of the participants' statements in order to insure reliability. Inter-rater reliability and agreement was measured as percent of agreement between raters and was found to be 86.8%.

RESULTS

Selection of Lottery Tickets

Overall, *random* tickets were perceived to be the type of lottery ticket most likely to win as they were more frequently chosen during the first six ticket selections. Tickets exhibiting a *pattern* were the second most frequently chosen tickets while *long sequence* and *non-equilibrated* tickets were typically not chosen until the last two selections (see Figure 1).

Developmental and Gender Differences

The older children (grade 7) were more consistent in their choices of the types of tickets selected (41.5%) between trials, than both the grade 3 (28.4%) and grade 5 (27.3%) children. Moreover, concordance rates (similarities within and between trials for the first four selections) revealed that grade 7 children were the most consistent in their selection of tickets exhibiting a perceived random set of numbers. These tickets were selected by 50.5% of the grade 7 children during the first two picks, long sequence tickets were typically left until the final two selections (43.8%). Tickets having clusters of numbers were less often selected by older children while the selection of random tickets increased in a linear manner with the age of the child (see Figure 2).

The differences in the selections of the grade 3 children were less pronounced. Each type of ticket was selected by approximately 25% of the third graders for both the first two and the last two selections.

Table 1
Summary of Cognitive Heuristics Used by Children Involved in a Lottery 6/49 Task

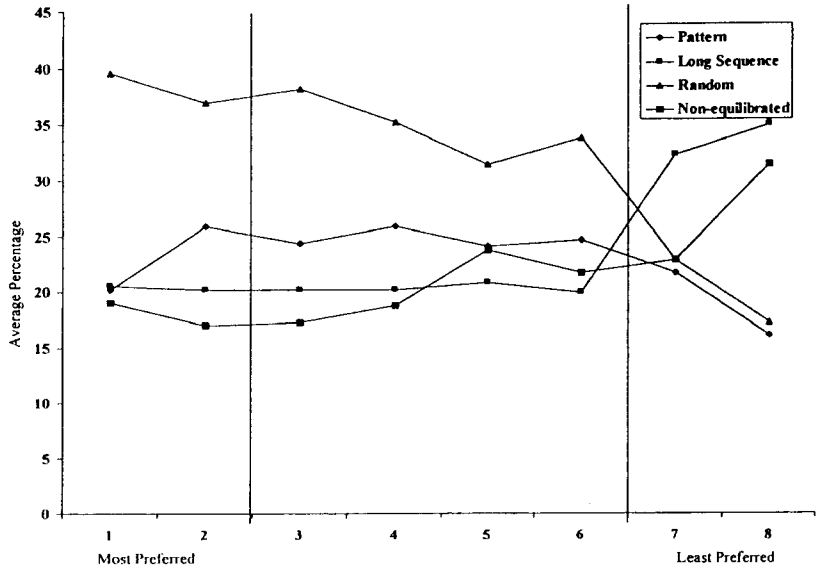
Heuristic	*Brief Definition and Example*
Ranked Tickets	
Cluster	Rationalizations which refer to a grouping of numbers (with no significance). (e.g. I chose this ticket because it has groups of high and low numbers).
Random	Any rationalization which refers to the numbers being spread out over the entire set of numbers from 1 to 49 (e.g. It has high, middle, and low numbers).
Significant Numbers	Any rationalization which makes reference to a favorite, lucky, or important number (e.g. I like 17 because when I am 17 I get to go to the prom).
Past Experience	Any rationalization which makes reference to previous lottery draws or previous gambling experiences (e.g. Sometimes there are small numbers chosen and the number 10 is chosen a lot and big numbers are usually chosen).
No Reason	Statements that can not be considered a rationalization for the participant's choice (e.g. I just picked it).
Mathematical Computation	Any rationalization where the participant uses a mathematical operation or manipulation to determine if s/he will choose the ticket (e.g. Three times four is twelve and three times five is fifteen. I like the way the first two add together).
Pattern	Rationalizations which refers to a specific pattern of numbers (e.g. They are all going by five's).
Sequence	Any rationalization which refers to the consecutive ordering numbers on the ticket (e.g. I like the order of the numbers).

Table 1 (*Continued*)

Heuristic	*Brief Definition and Example*
Miscellaneous	Statements which do not fit into any of the above categories (e.g. Ten is an even number).
Changed Tickets	
Random	Statements referring to the partieipant's increasing the space between the numbers or eliminating any patterns or sequences from the ticket (e.g. I wanted to add a higher number and also a lower number).
Significant Numbers	Any rationalization which makes reference to a favorite, lucky, or important number (e.g. Thirty because it is my favorite number).
Past Experience	Rationalizations which makes reference to previous lottery draws or previous gambling experiences (e.g. Cause those are some of the numbers I see on channel 34 and people win).
Misc./No reason	Any statement that cannot be considered a rationalization for a participant's choice or any statement that cannot be placed into any other category (e.g. Just picked them off the top of my head).
Sequence	Statements referring to the consecutive ordering of the numbers on the ticket (e.g. I would put them in order).
Mathematical Computation	Any rationaliztion where the participant uses a mathematical or manipulation to determine if s/he will choose the ticket (e.g. I'm reversing the numbers unless I can't flip them over).

These results may be an indication that the grade 7 children were implementing a "strategy" whereas grade 3 children did not appear to reflect a strategic methodology, often varying the reasons for their selections. Ironically, since selecting winning lottery tickets are purely based on luck, it seems that the younger children exhibited more rational behavior than the older children. With respect to gender, overall, there were no apparent difference in the consistency of choices made by males (32.04%) and females (30.94%) or in the types of tickets preferred over the two trials.

Figure 1
Order of Ticket Selections Averaged Across Trials 1 and 2

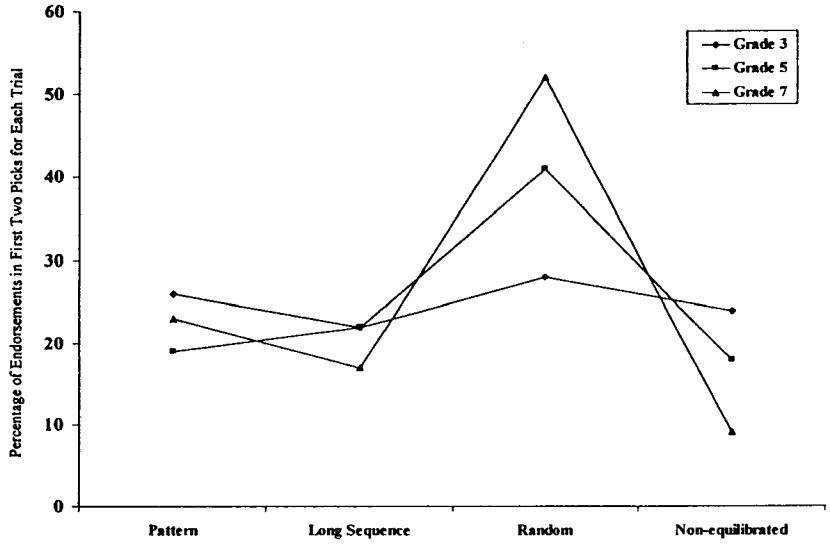


Cognitive Heuristics

A code of 1 was used for a particular heuristic if it was endorsed one or more times and a score of zero if the heuristic was not endorsed. The results reported in this section depict the percentage of children who used a particular heuristic.

The inclusion of *Significant Numbers* was the most frequently reported reason for ticket selection with 73.1% of the children using this heuristic in order to rank the tickets and 61.1% employing this heuristic when changing the tickets. The use of this cognitive heuristic for

Figure 2
Developmental Differences in Lottery Ticket Preferences



ranked tickets increased from 72.5% of children in grade 3 to 80% in grade 5, but decreased in grade 7 (66.7%). In contrast, when the children were asked to change their lottery ticket, 70.8% of older children employed this strategy. While a shift appears to occur between grade 5 and 7, this was not found to be statistically significant [grade 3 (59.4%); grade 5 (54%); grade 7 (70.8%)]. Females reported using *Significant Numbers* more frequently than males when ranking the tickets (83.6% of females vs. 67% of males).

Verbalizations emphasizing *Cluster* and *Random* conceptualizations were the third and fourth most common heuristics used by participants in order to rank the pre-selected lottery tickets. These heuristics were utilized by 53.5% and 51.5% of the children, respectively. Statements referring to the randomness of the lottery tickets showed a linear increase with 46.4% of grade 3, 52% of grade 5, and 58.3% of grade 7 children endorsing this heuristic. The percentage of children who changed a lottery ticket so as to make it appear more random increased significantly across grade levels [17.4% in grade 3, 36% in

grade 5, and 37.5% in grade 7 ($\chi^2 = 7.42$, $p < .024$)]. Moreover, the percent of children who referred to *Clusters* of numbers in their verbalizations significantly decreased from 62.3% in grade 3 to 31.3% in grade 7 ($\chi^2 = 13.15$, $p < .001$). Similarly, the use of *Mathematical Computations* heuristic decreased in a linear fashion (although not statistically significant) from grade 3 (13%), to grade 5 (10%), and to grade 7 (6.3%). While not statistically significant, seventh grade children (37.5%) selected tickets with *Patterns* less often than both third grade (42%) and fifth grade (44%) children. In addition, none of the seventh graders changed the numbers on the lottery tickets in order to create a sequence while 5.8% of the third grade and 4% of the fifth grade children attempted to complete or create tickets having a sequence of numbers. The use of a reliance on past experience occurred for 16.4% of females and 19.8% of males. The strategy incorporating some mathematical reasoning occurred for 15.8% of females and 7.5% of males.

DISCUSSION

The use of two trials permitted an analysis of the agreement of children's responses across trials. This was an important methodological procedure as children who are inconsistent may have been responding on a whim or randomly selecting tickets, rather than employing a specific strategy (cognitive heuristic). Overall, the children in this study selected and preferred lottery ticket numbers that appeared to be presented in a *perceived* random fashion and disliked long sequences of numbers (e.g. 9-10-11-12-13-14). These results are consistent with the findings of Ladouceur et al. (1996) who found that adults least preferred long sequences, more frequently selected random tickets, and disliked tickets exhibiting distinct patterns of numbers. In the present study, older children were found to be more consistent between trials in their selections of lottery tickets with randomly perceived numbers than the younger children. Moreover, the older children tended to use the Cluster heuristic, incorporating groups of numbers, less often than the younger children. These trends are important as they reflect differences in the children's cognitive development.

According to Piaget (1950), children enter the final stage of cog-

nitive development, formal operational thought, at approximately 11–12 years of age. It is during this period of development that children's thought processes begin to parallel those of adults. Research has shown that adults perceive "random" numbered lottery tickets to have a significantly better chance of being selected as the winning ticket (Ladouceur et al., 1996). Their perceptions of "random numbers" on a lottery ticket is synonymous with representative numbers being spread out across the entire spectrum of potentially available numbers, for example from 1 to 49 in a 6/49 lottery ticket. This belief was found to be more evident in the older children. Examples of children's verbalizations serve to further illustrate this point. Statements such as "they go from low numbers to high numbers," "there is a big range and it has a better chance of winning," and "there are both low and high numbers" are illustrative of children's conceptions of randomness. Like adults, their perceptions are such that random numbers increases their chances of winning. In contrast, the younger children do not appear to be implementing a specific strategy, with several indicating that independent of the numbers, each ticket has an equal chance of winning.

The findings also suggest that as children get older they are more specific in their beliefs that certain types of tickets are more likely to win than others and they endorse a deliberate strategy for selecting winning tickets. This use of a specific strategy may reflect a belief that the selection of winning lottery tickets is governed, to some degree, by predictable rules as opposed to a chance event. It may seem contradictory that the appearance of a *significant number(s)* was the most frequently stated reason for selecting a particular lottery ticket by all the children. Choosing a ticket because of a favorite or significant number may appear to suggest that luck, rather than skill, is involved in the selection of a winning lottery ticket. Of importance was the finding that the selection of significant numbers and the application of a "randomness law" frequently occurred simultaneously. An individual may have chosen a significant number (i.e. lucky number, birth date, etc.) and then surrounded this pre-selected number with a wide range of other numbers in order to promote the appearance of randomness. For example, a child selected "17" because she was born on the seventeenth of November and then proceeded to add the numbers 4-10-25-37-49. As a result, the ticket now has the appearance of having random numbers, evenly spaced out across the entire range of

available numbers. The protocols of many individuals reflected this thought process.

Kahneman and Tversky (1972) have suggested that individuals conceptually believe a sample is representative when its characteristics are similar to the population and no feature is too regular. Thus, it is not surprising that long sequence tickets were the most frequently changed tickets, followed by non-equilibrated tickets. These results are consistent with the notion of apparent, perceived randomness and the erroneous belief linking mutually exclusive events. The older children changed the 6/49 tickets in order to make them appear more random, or more dispersed, so that the sample of six numbers better represented the population of numbers from 1–49. Furthermore, the older children, age 12–14, failed to realize that each number on the lottery ticket is independent of the next.

The older children seemed to follow a specific set of rules while engaged in the 6/49 lottery task. Ladouceur et al. (1996) reported similar findings in their study with adults. They contend that the formation of an illusion of control results from the belief that rules govern games of chance. More specifically, they concluded that adults may believe they can successfully predict events in a gambling task given their knowledge of the rules enables them to exert control over the predictability of the outcome. As the younger children in this study were less consistent in their rationalizations and they reported the lottery to be based on luck and not on skill, it seems that these children behaved more 'rationally' than the older children.

The finding that younger children appear more rationale, in that they do not perceive lottery ticket selection to be skill-driven, has direct implications for intervention and prevention programs with regard to the appropriate age of implementation. These findings are also consistent with the developmental findings of Derevensky et al. (1996) and Derevensky and Gupta (1997) who reported that younger children believed that while successful performance in blackjack, roulette, and slots has some skill element, a considerable portion of the outcome is related to luck. In contrast, older children reported that greater levels of skill, and less luck, is related to success in these same games of chance. Intervention programs may well capitalize upon younger children's cognitive beliefs concerning the lack of controllability of the outcomes of games of chance. Efforts should be directed at maintaining this realistic perspective. During middle school or ju-

nior high school, the illusions of control become firmly ingrained such that the outcome of games of chance are perceived to be firmly based more upon skill rather than luck. Whereas successful performance is clearly believed to be a result of their skillful playing, they nevertheless attribute some of the outcome to chance factors. As a result, unsuccessful performance is promulgated upon a streak of bad luck (a good example of cognitive dissonance). The fact that many compulsive gamblers, both youth and adults, report beginning about the ages of 10 and 11 (Gupta & Derevensky, 1997b; Wynne, Smith & Jacobs, 1996) further supports the need for early prevention.

Despite the potential importance of these results with regard to the development and implementation of prevention programs, the differences between the older and younger children's use of heuristics were not striking. Caution must be taken in the interpretation of these results as younger children may have been unable or reluctant to verbalize their underlying reasons. Nevertheless, modifying erroneous cognitions through relevant school curriculum (e.g. the Harvard University math and science curriculum) may be one focus of problem gambling prevention programs.

The area of cognitive restructuring of erroneous beliefs is important but represents only one promising area of study in the prevention of youth gambling problems. If gambling or gaming is viewed merely as entertainment, then teaching children self-control, moderation, and issues related to understanding the laws of probability need to be addressed. However, other empirical and clinical work (e.g., Derevensky & Gupta, 1997; Gupta & Derevensky, in press; 1997b) suggests that many youth problem gamblers suffer from depression and low self-esteem. These problems manifest themselves in poor coping skills, with gambling becoming an escape from daily stressors. Programs aimed at modifying children's cognitions alone may not be sufficient to curb youth gambling problems.

The generalizability of the present findings may be limited. While there is some evidence to suggest that children's cognitive perceptions of lotteries are generalizable to other forms of gambling (e.g. roulette, blackjack, and slots) (Baboushkin et al., 1998), additional research efforts to understand children's cognitions of other forms of gambling are needed. The altering of children's erroneous cognitions may be an important step in modifying and curbing gambling behavior among youth. However, additional research examining the underlying risk

factors associated with youth problem gambling and addressing these issues are fundamental to the development of effective prevention programs.

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