

448

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Appendix

Below follow translated items (from Dutch to English) measuring mental incongruity in two domains: social status and social relations. For both domains, mental incongruity variables can be constructed by first converting the standard and cognition variables into Z-scores and, next, computing the difference between standard and corresponding cognition Z-scores.

All items are answered on four-point scales, but the labels are different. The labels of the cognition items are: 1 "not at all;" 2 "hardly;" 3 "applicable;" 4 "highly applicable." The labels of the standard items are: 1 "very important;" 2 "unimportant;" 3 "important;" 4 "very important."

Social status cognition

- I have the possibility to play an important part in society.
I have the possibility to achieve social status (prestige).
I have the possibility to make a career for myself.
I have the possibility to occupy a prominent position in society.

Social status standard

- I consider the possibility to play an important part in society:
I consider the possibility to achieve social status (prestige):
I consider the possibility to make a career for myself:
I consider the possibility to occupy a prominent position in society:

Social relations cognition

- I am on friendly terms with people in the neighborhood.
I get along well with others.
I have a lot of good friends.
I regularly go out with others.

Social relations standard

- I consider being on friendly terms with people in the neighborhood:
I consider getting along well with others:
I consider having many good friends:
I consider going out with others regularly:

448 AP

The acquisition, development and maintenance of lottery and scratchcard gambling in adolescence

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The U.K. National Lottery and instant scratchcards are now well established yet there is still little empirical research on the players. This study was an exploratory investigation of the psychosocial effects of these forms of gambling among adolescents (n=1195; aged 11- to 15-years-old). Using a questionnaire, it was shown that large numbers of adolescents were taking part in these activities. There was a significant link between parental and child gambling with most lottery tickets and scratchcards being bought for the adolescents by their parents. Results showed that many adolescents thought they would win lots of money on these activities and that these activities were in general not perceived to be forms of gambling. Six per cent of adolescents fulfilled the DSM-IV criteria for pathological gambling, the majority of which were males.

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Introduction

The U.K. National Lottery was introduced on 14 November 1994, and National Lottery Instantis (a type of scratchcard) were introduced on 21 March 1995. Since this time both the National Lottery and National Lottery Instantis have been phenomenally popular. In the first year alone, £3.3 billion pounds worth of lottery tickets were sold, and a further £1.1 billion was spent on scratchcards (Camelot, 1995; Kellner, 1995).

The psychosocial effects of the National Lottery and instant scratchcards in the U.K. have yet to be fully ascertained although there were signs even within the first year that gambling was being stimulated. For instance, Gamblers Anonymous reported a 17% increase in calls and there was a significant increase of trips from the U.K. to Las Vegas, the gambling capital of the world (e.g. increases of 20% and 44% were reported by Thomas Cook and British Airways, respectively [Griffiths, 1995a]). Further to this, newspapers have carried numerous reports of people developing associated gambling problems particularly among adolescents (e.g. Culf, 1995; Garner, 1995).

Officially, anyone under the age of 16-years-old is not allowed to play the National Lottery or instant scratchcards but initial press reports suggest that this is not the reality. For instance, Moran (1995) reported that 61% of a sample of 187 school children had successfully purchased lottery tickets. A survey by the children's charity Children's Express found that children aged 12- to 15-years-old were able to buy lottery tickets on two-thirds of occasions (MacDonald, 1995), and a similar study by The Sunday Mirror reported that three-quarters of the children in their survey aged 11- to 15-years-old did so similarly (Garner, 1995). Adolescent gambling may also be stimulated via television coverage. For instance, the Independent Television Commission (1995) reported that

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The *National Lottery Live* television programme was the second most popular television programme for 10- to 15-year-olds with 38% watching.

To what extent the National Lottery and scratchcards are affecting adolescents and children is not clear, and the structures to uncover and deal with adolescent gambling are not on the whole available. There has however been an increase in concern over the issue and a growing awareness that these activities may be widespread among young people, and that the effects may be far reaching. For some young people this may include problem gambling and involvement in criminal acts in order to finance these activities. For many more the influence whilst appearing less severe may be resulting in a significant change in their attitudes toward gambling.

Many studies have shown that fruit machine gambling amongst adolescents is a popular activity in the U.K. (see Griffiths, 1995b for a comprehensive overview). Accepting that for a minority of adolescents fruit machine gambling is a major problem, it could be the case that some adolescents will find these "new" forms of gambling (particularly scratchcards) equally problematic due to the similarity in structural characteristics. The two most similar characteristics concern "event frequency" and the "near miss." These are described in more detail below.

Event frequency of scratchcards

Scratchcards have been described as "paper fruit machines" (Griffiths, 1995c, 1997) and, like fruit machines, they have a short pay out interval (i.e. there is only a few seconds' interval between the initial gamble and the winning payment). Coupled with this, the rapid event frequency also means that the loss period is brief with little time given over to financial considerations and more importantly, winnings can be regambled almost immediately.

Three factors are inextricably linked with these characteristics. The first of these is the frequency of opportunities to gamble. Logistically, some gambling activities (e.g. The National Lottery, football pools) have small event frequencies (i.e. there is only one draw a week) making them "soft" forms of gambling. However, in the case of scratchcards there are few constraints on repeated gambling as limits are set only by how fast a person can scratch off the covering of the winning or losing symbols. The frequency of playing when linked with the two other factors—the result of the gamble (win or loss) and the actual time until winnings are received—exploit certain psychological principles of learning. This process, operant conditioning, conditions habits by rewarding people when they emit specific behaviour. Reinforcement occurs through presentation of a reward such as money. To produce high rates of response, those schedules which present rewards intermittently have been shown to be most effective (Skinner, 1953; Moran, 1987). Since scratchcards operate on such schedules it is unsurprising that high rates of response (i.e. excessive gambling) could occur. Promoters appear to acknowledge the need to pay out winnings as quickly as possible thus indicating that receiving winnings is seen by the gambling industry to act as an extrinsic reward for winners to continue gambling.

Scratchcards and the "near miss"

Another related aspect to operant conditioning is the "psychology of the near miss" which can act as an intermediate reinforcer. A number of psychologists (e.g. Reid, 1986;

Griffiths, 1991) have noted that near misses—that is failures that are close to being successful—appear to encourage future play inducing continued gambling, and that some commercial gambling activities (particularly fruit machines and scratchcards) are formulated to ensure a higher than chance frequency of near misses. The potential danger of the near miss element of scratchcards was first documented in the 1970s and they were termed "heartstoppers" because they gave the illusion of coming close to a big prize.

With their integrated mix of conditioning effects, rapid event frequency, short pay out intervals and psychological rewards coupled with the fact that scratchcards require no skill, are deceptively inexpensive, are highly accessible and are sold in respectable outlets, it is not hard to see how scratchcard gambling could become a repetitive habit.

The following study set out to examine the acquisition, development and maintenance of National Lottery and instant scratchcard gambling amongst adolescents. Other factors (e.g. adolescents' attitudes toward gambling, levels of problem gambling) were also examined. A more detailed account of aims and methodology is given in the next section.

Method

A questionnaire was devised to provide data on the frequencies of certain types of behaviour, from simple measures of gambling activity to cases of problem gambling. An adapted version of the American Psychiatric Association diagnostic criteria (DSM-IV; Fisher, 1993) was also incorporated into the questionnaire to identify possible problem gamblers. The scale asks questions relating to nine dimensions of problem gambling, i.e. (1) progression and preoccupation, (2) tolerance, (3) loss of control, (4) escapism, (5) chasing losses, (6) lies and deception, (7) illegal acts, (8) family and school disruption, and (9) financial bail-out. Fisher (1993) found the scale to be an effective measure when discriminating between children who gambled socially and pathologically on fruit machines.

A pilot study was conducted to test the working effectiveness of the questionnaire. This was administered to a sample of 100 participants from a comprehensive school in the East Midlands area. The revised questionnaire contained 55 questions, with a combination of five open and 50 closed questions, designed to generate both quantitative and qualitative data. Questions related to age and gender of participants, level of parental play, frequency of lottery/scratchcard play, money spent on these activities, who bought the tickets, perceptions of winning, links between other forms of gambling/gaming and participants' views on gambling in general.

The total sample consisted of 1195 adolescents aged 11- to 15-years-old (550 male, 641 female, 4 unspecified; mean age=13.3 years). The sample was derived from a postal request for participation sent out to 17 schools of which nine eventually took part. The personal and social education (PSE) teachers in the schools administered the questionnaire. Participants were not required to write their names, in order to maintain anonymity. Instructions were given at the top of the questionnaire, explaining how to complete it, and included a statement guaranteeing confidentiality to the participants.

Results

Time and money spent playing

Large numbers of adolescents had played the National Lottery (48%) or instant scratchcards (30%). Most of the adolescents played the lottery only occasionally (64%) although 16% played most weeks and 14% played every week. With regards to scratchcards, most played once a month (44%), 27% played a few times a month, 12% played once a week, 13% a few times a week and 4% played every day. There were no significant gender differences in frequency of play on either of these activities. A significant number of participants illegally bought their own National Lottery tickets (17%) or scratchcards (26%). There were no significant gender differences in illegal buying. The average amount that adolescents spent per week was £1.53 on the National Lottery and £1.40 on scratchcards. There were no gender differences in amounts of money spent.

Links with parental gambling

There was a strong correlation between parental and child participation on both the National Lottery ($r=0.26567, p<0.0005$) and scratchcards ($r=0.37838, p<0.0005$). Furthermore, of the participants who took part in these activities, most had their lottery tickets/scratchcards bought for them by their parents (National Lottery 71%; scratchcards 57%).

Attitudes toward National Lottery/scratchcard gambling

A large majority of the adolescents in this study reported that they thought gambling was a bad idea (72%). However, there is a significant gender difference with more male participants reporting that they were in favour of gambling compared to females (males 40%; females 18%). There was no gender difference when asked about their views on the acceptability of the National Lottery and scratchcards. The majority of the participants thought that the National Lottery (76%) and scratchcards (57%) were a good idea. Of the participants who said that gambling was a bad idea, almost half (49%) suggested that the National Lottery was a good idea and 33% suggested that scratchcards were a good idea. Again, there were no significant gender differences.

Perceptions of winning

A significant number of the participants reported that they thought they would win a lot of money on either the National Lottery (21%) or scratchcards (25%) (a lot of money was defined as over one million pounds by 67% of the participants). There was also a significant difference between male and female perceptions of winning the National Lottery ($r=0.17695, p<0.0005$) and scratchcards ($r=0.19801, p<0.005$). Further analysis revealed that the male participants were more optimistic than females about winning a lot of money on the National Lottery (males 21%; females 14%) and scratchcards (males 25%; females 19%). Female participants were more pessimistic about winning the National Lottery (males 27%; females 36%) and scratchcards (males 16%; females 30%).

Problem gambling

Levels of problem gambling were examined using the American Psychiatric Association addiction scale DSM-IV-J (Fisher, 1993). On the basis of answering "yes" to four or more questions on the scale, it was found that 6% of players might be problem gamblers on the

National Lottery (26 male, 11 female). For scratchcards the level was also 6% of players (18 male, 7 females). Aside from these possible problem gamblers, many more participants answered "yes" to less than four questions on the scale (see Table 1). For instance, the question "Do you often find yourself thinking about the National Lottery/scratchcards at odd times of the day/and or planning the next time you will play?" produced a comparatively high number of positive responses in reference to the National Lottery (32%) and scratchcards (16%). This was also true of the question "After spending money on the National Lottery/scratchcards do you play again to try and win your money back (more than half the time)?" which produced comparatively high numbers of "yes" responses (National Lottery 35%; scratchcards 29%). Again there were significant gender differences in response to these questions with more males answering "yes" to these questions compared to females. Furthermore, a large proportion of the participants answered that they were worried about how much they spent on the National Lottery and scratchcards (both 17%).

Discussion

This study suggests that large numbers of adolescents in the U.K. are taking part in the National Lottery and/or playing on instant scratchcards. This appears to be true for both male and female adolescents, who reported approximately equal level of play on both these activities. Whilst a significant number of adolescents appear to be buying their

Table 1 Percentages of players showing diagnostic criteria of DSM-IV-J

DSM-IV-J criterion	% male lottery	% female lottery	% total lottery	% male s/card	% female s/card	% total s/card
Think about lottery/scratchcards at odd times/planning next time	36	25	32*	18	13	16
Need to spend more on lottery/scratchcards	13	5	10**	15	7	12
Restless/tense when trying to cut down/stop playing	10	6	9*	7	6	7
Play to escape problems	10	5	9*	10	2	6**
Chase losses	40	26	35***	30	28	29
Lie to family and friends	6	3	5	7	4	6
Spend school dinner/bus money on lottery/scratchcards	7	5	6	8	5	6
Stole money from family for lottery/scratchcards	4	2	3	4	4	4
Stole from outside family/shoplifted	4	1	3*	8	2	5*
Argue with family/friends over lottery/scratchcards playing	3	4	4	7	4	6
Missed school (five times or more) to play lottery/scratchcards	3	2	3	6	2	4
Sought help for money worry because of lottery/scratchcards	2	1	2	3	2	2

* $p=0.05$; ** $p=0.005$; *** $p=0.005$ significance level of gender differences.

own National Lottery tickets and scratchcards illegally, a more worrying aspect may be the number of parents who are buying National Lottery tickets and scratchcards for their children. Studies of other forms of gambling have shown strong links between parental and child gambling, and have indicated that the earlier children begin to gamble, the more likely they are to become problem gamblers in the future (Ide-Smith and Lea, 1988; Fisher, 1993; Winters *et al.*, 1993; Griffiths, 1995b).

The willingness to buy National Lottery tickets and scratchcards by parents perhaps reflects their perceptions of these activities as non-gambling events. It is hard to imagine parents placing bets on horses on behalf of their children, as horse racing is clearly perceived to be a bona fide form of gambling. However, this does not appear to be the case for the National Lottery or scratchcards which appear to have been legitimized as socially acceptable to large sections of society. This acceptability appears to be due to a number of factors. For instance, the National Lottery and scratchcards are sanctioned by government, allowed to advertise widely and are available in a variety of public places such as Post Offices, supermarkets, petrol stations and newsagents. Furthermore the National Lottery has a twice weekly prime time television show *The National Lottery Live* incorporating well known celebrities and pop bands who, in effect, endorse the National Lottery product. *The National Lottery Live* television programme may in particular appeal to adolescents because of the "pop groups" who appear on the programme (e.g. The Spice Girls, Boyzone) who are hugely popular with those under 16 years of age.

The effects on adolescents may be considerable, as not only are they exposed to these products in a variety of public places, they also observe their parents taking part and who to a large extent encourage them by buying them National Lottery tickets or scratchcards. It should perhaps be noted at this point that the major weakness in this study is that all the data were self-report. For instance, all the parental gambling data relies on third-party assessment (i.e. the children's self-report). This of course may or may not be valid and the data should be treated with some caution.

Of the participants who said that gambling was a bad idea, almost half (49%) suggested that the National Lottery was a good idea and 33% suggested that scratchcards were a good idea. This would seem to indicate that these young people may not actually perceive the National Lottery and to a lesser extent scratchcards as a form of gambling. The National Lottery in particular was not seen as gambling by significantly more adolescents compared to scratchcards. This perhaps indicates a greater awareness of the negative effects of scratchcards due to adverse publicity regarding this product. It is not hard to recall news items referring to "scratchcard addiction" (e.g. Culf, 1995). Further to this, "scratchcard addiction" was a major storyline in the popular U.K. soap-opera *Brookside* with one of the characters (Rosie Banks) suffering from "scratchcard addiction." Such examples may suggest the effectiveness of the media to alter the general public's opinions toward gambling (albeit unintentionally), and highlights how sophisticated marketing techniques can be used to encourage adolescents to take part in these activities. This is not to say that the lottery operator directly encourages underage participation, but most marketers acknowledge that today's children are tomorrow's consumers—in this case gambling.

A further finding was the high percentage of adolescents who thought that they would win a lot of money on either the National Lottery and/or scratchcards. The adolescents who indicated that they thought they would win a lot of money on either the National

Lottery or scratchcards were predominantly male. This perhaps indicates that male adolescents are more optimistic than female adolescents in relation to gambling. Alternatively, female adolescents may be more realistic in their prediction of the outcome of these events.

It is clear that most adolescents have control over their gambling behaviour. However, it is interesting that the level of pathological gambling found in the present study is similar to the level found by Fisher (1993) in her investigation of fruit machine use amongst children of the same age group. Her research showed a level of 5.7% pathological gamblers and this study showed very similar levels on both the National Lottery (6% of players) and scratchcards (6% of players). Although there were no significant gender differences in participation on these activities, problem gambling was found to be a predominantly male phenomenon. The finding that problem gambling occurred on both the National Lottery and scratchcards was quite surprising as Griffiths (1997) has speculated that the National Lottery in its present form (i.e. a biweekly draw) was unlikely to be problematic due to the low event frequency (i.e. only twice a week to be rewarded). However, anecdotal evidence from our focus group research suggests that some adolescents are getting a "buzz" or a "high" when they successfully buy lottery tickets illegally. If the act of buying the ticket itself is physiologically and psychologically rewarding then it is not hard to see why some adolescents may develop gambling problems on the National Lottery.

The National Lottery and scratchcards appear to be promoted equally to both sexes, and they can be undertaken in fairly gender neutral environments (for example Post Offices and newsagents) as opposed to predominantly male arenas such as betting shops. The level of male problem gambling suggests that gambling for male adolescents may have a different meaning than for female adolescents. Indication of this was found during the study in relation to general gambling attitudes and perceptions of winning. The greater acceptance of general gambling by males may reflect the predominance of gambling as a largely male pursuit. Male adolescents may form some kind of legitimization through the observation of male role models (e.g. father, brother) and adhere to the basic tenets of social learning theory (Bandura, 1986). Alternatively, cognitive factors such as illusion of control (Langer, 1975) may be different between male and female adolescents or it could be that males may receive a more physiologically rewarding response to gambling than do females. More research is needed to determine the differing attitudes and perceptions of gambling between male and female adolescents, and arousal/excitement levels.

It is worth noting that many more adolescents reported some aspects of problem gambling. In particular there were high response levels to the question "Do you often find yourself thinking about the National Lottery/scratchcards at odd times of the day/and/or planning the next time you will play?" and "After spending money on the National Lottery/scratchcards do you play again to try and win your money back (more than half the time)?" There are two points to be made here. Firstly, these questions appear to highlight significant aspects of National Lottery and scratchcard participation. In particular the National Lottery appears to appeal to adolescents' imaginations and occupy everyday thoughts. Second, both the National Lottery and scratchcards seem to provoke high levels of chasing losses. Whilst this is significant in terms of the structural characteristics of these games, it poses questions about the validity of the DSM-IV-J criteria. Only four

affirmative answers are required for a diagnosis of pathological gambling. If large numbers of adolescents are answering "Yes" to two of the questions, it may not be working as an effective discriminator between "social" and problem gambling. Furthermore the scale does not allow for the severity of behaviour to be assessed (for example some adolescents may think about the National Lottery or scratchcards for most of the day, whilst others think of them only occasionally). The use of a Likert-type scale may in this respect help to demonstrate the severity of a person's thoughts and behaviours.

The full implications of the National Lottery and scratchcards on our society have yet to be determined. However the evidence from this study and previous studies of adolescent gambling (see Griffiths, 1995b for an overview) indicate that the National Lottery and scratchcards could contribute to a dramatic increase in problem gambling in the U.K. For many more adolescents, their views towards gambling may be radically altered. The Government sanctioning of these activities, the high level of advertising, links to "good causes" and *The National Lottery Live* television programme may all play a significant role in this process. Ideally future research should take the form of longitudinal studies to investigate the long-term effects of adolescent National Lottery and scratchcard gambling. Although such research is both time consuming and expensive and the results would not be available for many years when problems may have already developed, the long-term outcomes may override the short-term social impact.

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