Social Influences Involved in Children's Gambling Behavior

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Children ($N = 130$) in grades 4 and 6 from various schools in the Greater Montreal Region completed a questionnaire concerning their gambling behavior and played a computer-simulated roulette game individually (baseline trial & post-test trial) and in groups (same and mixed gender dyads or triads: group trial). The purpose of this design was to measure children's betting behavior (via average wagers) and to determine if any changes in betting occur as a result of playing in groups of two, three, same and/or different gender peers. Results of repeated measures analyses reveal that during individual and group play, males consistently exhibit higher average wagers than females. Average wagers of females and mixed gender groupings appear to be most affected by the group condition. Females were found to increase their average wagers when playing with females and males. Female dyads' wagers increase significantly during group play, indicating they are dramatically affected by the group game. Most changes resulting from group play were generally maintained over a relatively short period of time in the post-test condition. Results are interpreted with respect to the importance of the influence of the peer group on children's gambling behavior. Future directions for research are suggested.

KEY WORDS: gambling; children; modeling; social learning; group effects.

INTRODUCTION

In recent years, there has been growing concern over the increasing occurrence of youth gambling problems. This is likely the result of a widespread growth in the availability and accessibility of legalized gambling. Gambling is legal in 48 out of 50 states, in all Canadian provinces, and in approximately 90 countries worldwide (Lesieur & Rosenthal, 1991; Stinchfield & Winters, 1998). Moreover, there is evidence that gambling causes personal and financial difficulties in at least 1%–2% of the adult population (Ladouceur & Walker, 1996) and is a significant burden on society (Ladouceur, Boisvert, Pepin, Loranger, & Sylvain, 1994; Lesieur, 1998; National Opinion Research Center Report, 1999).

Current prevalence rates of adolescent pathological gambling (more than double adult gambling rates, see Gupta & Derevensky, 1998; Lesieur, Cross, Frank, Welch, White, Rubenstein, Moseley, & Mark, 1991) indicate that between 4% and 8% adolescents exhibit compulsive or pathological patterns of gambling activity (Fisher, 1993; Gupta & Derevensky, 1998; Shaffer & Hall, 1996; Shaffer, LaBrie, Scanlan, & Cummings, 1994; Winters, Stinchfield, & Fulkerson, 1993; Wynne, Smith, & Jacobs, 1996). Furthermore, 9.9% and 14.2% of adolescents are at risk of developing or returning to serious gambling problems (Shaffer & Hall, 1996). These findings are extremely worrisome given the widespread availability of legalized gambling venues.

Gambling also appears to be prevalent in primary school. Among 4th, 5th, and 6th grade Canadian students, 86% had wagered money and 40% reported gambling once a week or more (Ladouceur, Dubé, & Bujold, 1994b). Thus, gambling behavior appears to be established early and to begin at the same time or earlier than other illicit behaviors (e.g., tobacco, alcohol, and other drug use). Retrospective studies reveal that adolescent probable pathological gamblers report having begun gambling at 9 or 10 years of age (Gupta & Derevensky, 1998; Wynne, Smith, & Jacobs, 1996). Unfortunately, given that there are few observable signs of gambling dependence among children, these problems have gone unnoticed compared to other addictions (e.g., alcohol or substance abuse) (Arcuri, Lester & Smith, 1985; Lesieur & Klein, 1987).

Social Acceptance of Gambling

Gambling is largely advertised, readily available to youth and often found in places which are glamorized, providing opportunities for pleasant socializing (Stinchfield & Winters, 1998). Although betting in casinos, on electronic gaming machines, and lotteries, in general, are illegal for adolescents, the enforcement of these laws, as with underage drinking, can be difficult (Moore & Ohtsuka, 1997).

Family and Peer Influences. Contact with gambling begins at an early age. Thus, it is not surprising that several authors have placed an emphasis on the relationship between gambling behaviors and gambling in the family (Custer, 1982; Dell, Rozicka & Palisi, 1981; Derevensky & Gupta, 1996; Gupta & Derevensky, 1997). Results of several studies, in a number of countries, have indicated that the majority of youth gamble with their family (40%–68%) and friends (55%–82%) (Gupta & Derevensky, 1997; Derevensky, Gupta, & Émond, 1995; Huxley & Carroll, 1992; Ladouceur & Mireault, 1988; Moore & Ohtsuka, 1997). Furthermore, parents appear to show little concern over their children's gambling behavior. Between 80% and 90% of parents readily acknowledge that their children gamble, 84% do not object (Arcuri et al., 1985; Ladouceur & Mireault, 1988), while 78% of children gamble in their own homes (Derevensky et al., 1995; Gupta & Derevensky, 1997).

Parents often serve as role models for gambling. There is ample evidence that 20% to 25% of adult gambler's children gamble themselves and/or exhibit various addictions (Lesieur & Klein, 1987; Lorenz & Shuttlesworth, 1983; Winters, Bengston, Door, & Stinchfield, 1998; Winters et al., 1993) and that 25% to 40% of adult pathological gamblers' parents were problem gamblers (Custer, 1982; Jacobs, Marston, & Singer, 1985).

Family and peer models have been suggested as important etiological factors in the development of high-risk behavior including drug and alcohol use (Santrock, 1990), and now with gambling behavior as well. Griffiths (1990) reported that 44% of adolescents initiated gambling behavior because their friends were engaging in similar practices. While a large proportion of children's gambling activities occur with and around family members, as they get older they tend to gamble with friends at their friends homes (Derevensky et al., 1995;

Gupta & Derevensky, 1996; 1997; Ide-Smith & Lea, 1988), reinforcing the fact that for many youth gambling is perceived as a socially accepted and entertaining pastime. These findings indicate that there may be a relationship between gambling and other addictions as well as a strong social learning component involved in the acquisition of such behaviors (Derevensky, Gupta, & Della-Cioppa, 1996; Gupta & Derevensky, 1997).

Social Learning Perspective of Gambling Behavior

Social Learning Theory and Gambling Behavior. Bandura (1977), among other social learning theorists, has indicated that observational learning and modeling play an important role in shaping individual behaviors. Further, children are more likely to imitate significant and powerful role models such as parents, siblings, and peers. Given that modeling has been shown to have a strong learning component for school age children in a number of areas (Bandura, 1973; 1977, Bandura, Ross, & Ross, 1963; Rushton, 1980; Staub, 1978), it is likely that it would be a strong component involved in the acquisition and maintenance of gambling behavior.

It is well known that gambling activities are reinforcing, in and of themselves, as they produce excitement, arousal, and enjoyment. However, gambling activities have social reinforcements as well; gambling behaviors can be encouraged and strengthened by peers depending on the individual's developmental level and social status (Gupta, 1994). From a social learning theory perspective individuals learn, acquire, and persevere with behaviors that are attractive and reinforcing. A social learning model of gambling behavior provides an explanation for why many youth are attracted to the gambling environment (Gupta, 1994). For example, being known as a gambler or risk-taker leads to social recognition and often to a higher status among peers (Opie & Opie, 1969; Smith & Abt, 1984). Further, gambling venues have been found to be a social space for adolescents. Fisher (1995) surveyed adolescents who visited Amusement Arcades in the U.K. (commercial sites for the playing of coin operated fruit/gambling machines and video games). She discovered that the primary motivation of frequenting the arcades was to "hang out or meet friends." Additionally, she found that regular arcade visitors differed sufficiently from casual visitors, suggesting a distinct social group (Fisher, 1995).

Kearney and Drabman (1992) have demonstrated that even preschool children will engage in a gambling-like situation longer and initiate more risks when exposed to an appropriate "big win" model. This study demonstrated that modeling could enhance risk-taking/ gambling-like behavior in young children. These findings support modeling antecedents as viable links resulting in increased risk-taking and parallels contemporary theories of compulsive gambling in adults.

Gender Differences in Gambling Behavior

Despite some inconsistent findings, much of the gambling literature suggests that gambling is more popular amongst males than females (Derevensky & Gupta, in press; Fisher, 1993; Ide-Smith & Lea, 1988; Ladouceur, Dubé & Bujold, 1994a; 1994b; Lesieur et al., 1991; Rosenstein & Reutter, 1980; Stinchfield & Winters, 1998). Pathological gambling is twice as prevalent for males than females (Lesieur & Klein, 1987; Lesieur et al., 1991; Moore & Ohtsuka, 1997; Stinchfield & Winters, 1998; Volberg, 1994; Volberg & Steadman, 1988). Males have been found to make higher gross wagers and exhibit greater risk-taking behavior (Derevensky et al., 1995). It appears as though parents encourage gambling in their sons (Ladouceur et al., 1994a; 1994b) and that gambling is much more a part of the male culture (Huxley & Carroll, 1992). Griffiths (1989) speculates that gambling allows boys to display their masculinity in a social environment by exhibiting "courage and bravery" and thus may be more popular with them.

The principal goal of the present study was to examine the social influences involved in children's gambling behavior via interactive play. Given that modeling has been shown to be a strong learning component in school age children, it is likely that it is also instrumental in the acquisition and maintenance of gambling behavior. The fact that gambling has many reinforcing qualities, especially those that are social in nature, makes gambling a very rewarding pastime. With the increase in child and adolescent gambling activities these notions are worrisome.

The hypotheses of the present study were: (1) that peers serve as models for gambling behavior, such that children playing together in a group will have an influence on each others' betting patterns; (2) larger groups will have a greater effect on gambling behavior, as larger groups are believed to elicit more competition; (3) males will be more

influential in gambling activities, given that they are socialized early to gamble; and (4) males will wager more than females as they are greater risk-takers by nature.

METHOD

Participants

The sample included 130 children (69 males, 61 females) in grades 4 ($n = 64$) and 6 ($n = 66$) from three elementary schools and one summer camp in the Greater Montreal region. The participants were between 9 and 13 years of age ($M = 10.68$, $SD = 1.18$). All students volunteered to participate and obtained parental consent.

Groups. The children were randomly assigned into one of seven groups by age, which consisted of either same gender or mixed gender dyads and triads. The groups included the following: (1) male dyads (male, male) (n = 20); (2) female dyads (female, female) (n = 16); (3) mixed gender dyads (male, female; female, male) (n = 16); (4) male triads (male, male, male) (n = 21); female triads (5) (female, female, female) (n = 18); (6) mixed gender triads (male, male, female) (n = 21), and (7) (female, female, male) (n = 18). It is important to note that while children were randomly assigned into their respective groupings, the sample sizes are unequal. This is due to the fact that there were more boys whose parents had consented to their participation in the study. As such, there were a greater number of male dyads and triads. Once the groupings were made, the children were randomly placed in the order in which they played in the baseline and group and post game play. These groups were selected to determine whether any gender and/or size differences existed with respect to influence during game playing. It is important to note that every effort was made to counterbalance these groups. However, with respect to the mixed gender triads, the order of the groups was kept consistent (male, male, female; female, female, male) as there would have been too many possible combinations (i.e., male, female, male; female, male, male, etc.). Given the principal scope of the present study, this triad was not counterbalanced with respect to all possible gender combinations.

Instruments

Gambling Activities Questionnaire. (GAQ) (Derevensky et al., 1996), is a brief questionnaire designed to ascertain the frequency and type of gambling activities as well as with whom individuals gamble.

Gambling Activities. Caesar's Palace for Windows (Masteller & Masteller, 1993), a computer simulated game of American Roulette was included in order to observe participants' playing behavior. An IBM compatible laptop was used in order to render the game as realistic as possible. Roulette, although a game involving chance, involves active choices and provides participants with an element of perceived control. In order to keep the game as simple as possible, the children were only permitted to bet on either black, red, even, and/or odd or any possible combinations thereof. No individual numbers, boxing, zeros, etc. were permitted. The minimum bet permitted was $2 while the maximum was whatever the child had in their bankroll.

Procedure

After each child was administered the GAQ, all participants played the computer task individually (7 minutes) in order to provide a baseline of playing behavior. Following the individual game, participants played the group game in either dyads (12 minutes) or triads (14 minutes). Immediately following the group game, the children played individually (post game: 7 minutes) in order to ascertain whether any possible change in their playing behavior was maintained. The average number of spins played was 13, 11, and 15 for the baseline, group, and post games respectively.

With the use of Grand Vision Pro software, the roulette game on the computer screen was recorded onto a VHS cassette. The videotapes were then played back; information including the amount bet, type of bet, outcome, and end balance was recorded for each spin of the wheel and transcribed onto sheets for each player.

Due to ethical constraints, children did not play with real money but were given a bankroll of $500 on the computer. Incentives were provided to the children in order to approximate a real playing situation. At the conclusion of the game, the children were given monopoly money equivalent to their winnings over the initial $500 supplied, which was placed into a draw for prizes at a local restaurant and movie

theatre. This type of incentive has previously proven successful with children (Derevensky et al., 1996; Gupta & Derevensky, 1996) and adults (Powell, Hardoon, Derevensky, & Gupta, 1999). Further, money appears to not hold as great a value with children as does other incentives, such as candy, toys, and movie certificates. In fact, the verbalizations of the children suggested that they wanted to increase their bankroll in order to have a greater chance of winning one of the prizes.

Standardized instructions and demonstrations were given to each child before they began to play roulette to ensure that each child would have an equivalent understanding of the task (please see Appendix A). A research assistant was present at all times in order to answer any questions and to ensure an understanding of the task.

RESULTS

Average Amount Bet

For each game (baseline, group, and post), the average amount bet was calculated by summing the participants' bets for each spin and dividing the total by number of spins. It is important to note that the present distribution is highly skewed. Although the sample was randomly distributed and assigned into their respective groupings, there was large variability in the average bets placed by participants, especially by the males at the baseline. It is also important to note that the mixed gender dyads (MF & FM) were collapsed into one group as preliminary analyses indicated that there were no statistically significant differences between these two groups.

In order to determine whether the participants' playing behavior (i.e., risk) resulted from their success (i.e., winnings) in the task, several analyses were performed on the participants' final bankrolls for each condition (see Table 1).

Results of an analysis of variance indicated that there were no significant differences for the final bankrolls of any of the groups in all the trials. Further, paired samples t-tests indicated that the final balances of the various groupings did not significantly change over time.

Total Sample. Results from the repeated measures analysis revealed that a significant main effect was found for the average amount

Table 1
Final Balances for the Different Groups Across Trials

	Final Balances ($)					
	Baseline Trial		Group Trial		Post Trial	
Group	Mean	SD	Mean	SD	Mean	SD
MM	587.80	726.43	351.65	294.07	560.75	565.84
MMM	474.14	239.50	458.48	293.70	400.57	301.91
FF	499.44	147.87	465.69	150.14	357.94	253.06
FFF	425.22	133.44	439.61	168.79	459.39	170.97
MF & FM	428.69	200.88	471.12	212.84	422.06	246.97
MMF	444.57	193.58	432.14	219.80	498.52	241.65
FFM	543.11	142.26	426.72	276.81	428.56	234.14

bet across the baseline, group, and post games, $F(2, 109) = 4.34$, $p < .01$. More specifically, multivariate analyses indicated a significant difference between average bets placed in the baseline, ($M = \$51.34$, $SE = 7.80$) and the group ($M = \$65.84$, $SE = 7.55$) conditions, $F(1, 110) = 4.08$, $p < .05$. However, no significant differences in average wagers were found between the group ($M = \$65.84$, $SE = 7.55$) and post conditions ($M = \$66.39$, $SE = 6.38$). It can be assumed that there is a significant difference in average bets between the baseline and the post games and since there were no significant differences between the group and post conditions it appears as though the change in betting behavior was maintained (Table 2).

Table 2
Average Amount Bet and Mean Differences Across Trials

	Average Amount Bet ($)			
Trials	Mean	SE	Mean Difference	
Baseline	51.34	7.80	Baseline to group	14.50 (+)
Group	65.84	7.55	Group to post	0.56 (+)
Post	66.40	6.38	Baseline to post	15.06 (+)

Group Differences: Size and Gender. Groupings were based upon both size (dyad and triad) and gender (same sex and mixed sex) differences. However, it remains difficult to separate the two factors since they are integrated in the group category. As a result, both group size and gender differences will be presented together.

With respect to overall gender differences, the data presented in Table 3 clearly demonstrates that males' average bets are higher during all 3 trials. It should be noted that females largely increased their bets from the baseline to the group trial, and decreased them slightly from the group to the post trial, while males increased their bets slightly across the 3 trials.

Planned comparisons indicated that males and females differ significantly from each other in their betting behavior during the baseline, $F(1, 110) = 10.23$, $p < .002$, group, $F(1, 110) = 5.55$, $p < .020$, and post-test, $F(1, 110) = 10.94$, $p < .001$ conditions. More specifically, males bet significantly more than females in all three trials for both grades 4, $F(1, 110) = 6.63$, $p < .011$ and 6, $F(1, 110) = 5.35$, $p < .023$. These overall differences are depicted in Figure 1.

Furthermore, results indicated that females differed significantly in their average bets placed across time, $F(2, 109) = 3.70$, $p < .028$. Bonferroni-corrected planned comparisons indicated that females' average bets increased significantly from the baseline ($M = \$26.38$, $SE = 11.07$) to the post condition ($M = \$45.30$, $SE = 9.05$). No significant differences in average bets across time were obtained for males.

In order to determine if overall group differences existed, a multivariate analysis was performed. Results revealed that there were significant group differences in the baseline, $F(6, 110) = 3.80$, $p < .002$;

Table 3
Average Amount Bet by Males and Females Across Trials

Trials	Females ($)		Males ($)	
	Mean	SD	Mean	SD
Baseline	28.25	29.65	82.79	109.30
Group	51.01	86.13	90.69	76.58
Post	42.97	45.38	92.42	86.19

Figure 1
Average Bets Placed by Males and Females Across Trials
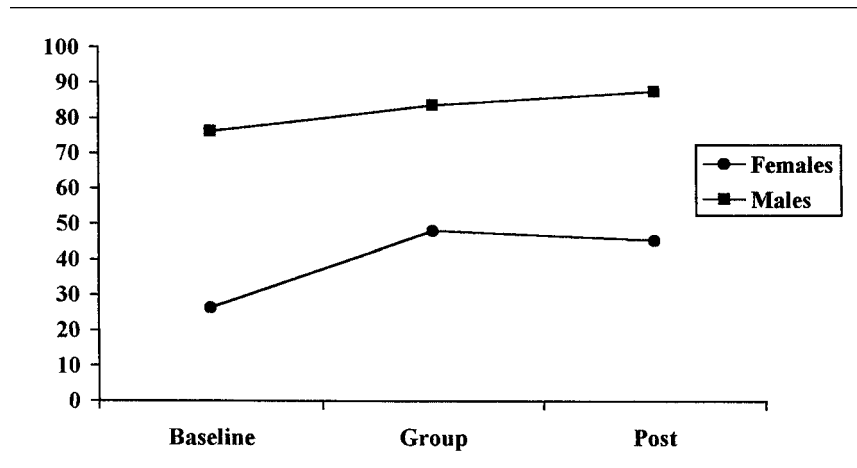
group, $F(6, 110) = 3.32$, $p < .005$; and post-test, $F(6, 110) = 5.00$, $p < .001$ conditions. No significant interaction between group and average amount bet was found.

Interestingly, a look at wagers across conditions demonstrates that all groups increased their average bets from the baseline to the group game with the exception of the MF/FM dyad (see Table 4). Further, it appears as though the MM and MMM groups remain consistently high in their betting across the baseline, group, and post-test games. While the MM group maintains a steady increase from the group to the post-test, the MMM group decreased their average bets slightly in the post-test. With respect to female dyads and triads, females appear to peak during the group game with the FF group increasing their average bets dramatically.

The only group that decreased their average wagers from the baseline to the group game was the combined MF/FM group. However, they increased their average bets in the post game. Interestingly, with respect to the mixed gender triads, the MMF group has greater average bets in the baseline and post games which may be due to male bets raising the mean. However, from the baseline to the group condition, both the MMF and FFM groups experience an increase in their average bets by virtually the same amount. Overall the males groups had the greatest average wagers, with the females and mixed gender

Table 4
**Average Amount Bet by the Different Groups Across Trials**

| | *Average Amount Bet ($)* | | | | | |
| | *Baseline Trial* | | *Group Trial* | | *Post Trial* | |
Group	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
MM	92.98	101.01	99.33	90.57	107.06	97.83
MMM	108.35	161.25	112.59	87.02	107.06	105.87
FF	39.89	46.97	84.48	157.72	64.47	68.30
FFF	27.01	23.52	36.70	30.45	24.87	15.41
MF & FM	38.38	46.29	27.41	17.93	57.58	46.05
MMF	47.43	47.36	70.85	44.57	69.95	57.55
FFM	31.49	19.79	59.96	51.57	41.08	33.37

groupings' average bets about equal (see Table 4 and Figures 2 and 3 which graphically depict these results).

Bonferroni-corrected planned pairwise comparisons revealed that during the baseline, the MMM group differed significantly from the FFM group, with male triads wagering significantly more than mixed gender groups. Furthermore, in the group game, results indicated that the MM group bet significantly more than the MF/FM group. Finally, in the post game, the MMM group was found to make significantly greater average bets than the FFM group. Interestingly no differences were found between the MMM and the MMF groups, perhaps because there are two males in this group who are contributing to the larger average bets. Additionally, no differences were observed when comparing the females to the mixed gender groupings in any of the trials. With respect to differences in average bets wagered between dyads and triads, no significant differences were found between the MM and MMM's or the FF and FFF's. However, the mean wagers indicate that the FF group increased by a greater amount from the baseline to the group game.

Although statistically non-significant, some interesting trends were observed when examining the difference in the average amount bet between males and females in the different groups for the baseline, group and post play (see Table 5).

Figure 2
Average Bets Placed by the Various Groups Across Trials
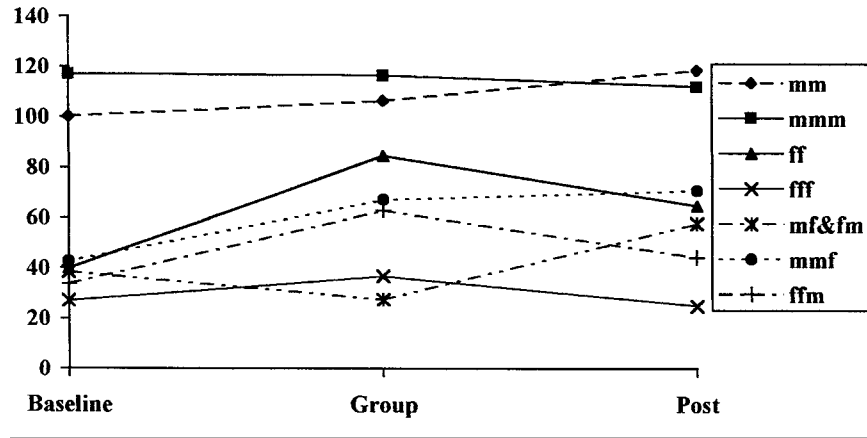
As noted previously, all groups increased their average bets from the baseline to the group game, with the exception of the MF/FM dyad. It can be observed that males in this group are the individuals who decreased their average wagers, thus, lowering the overall group mean. It appears as though playing with a female inhibited males

Figure 3
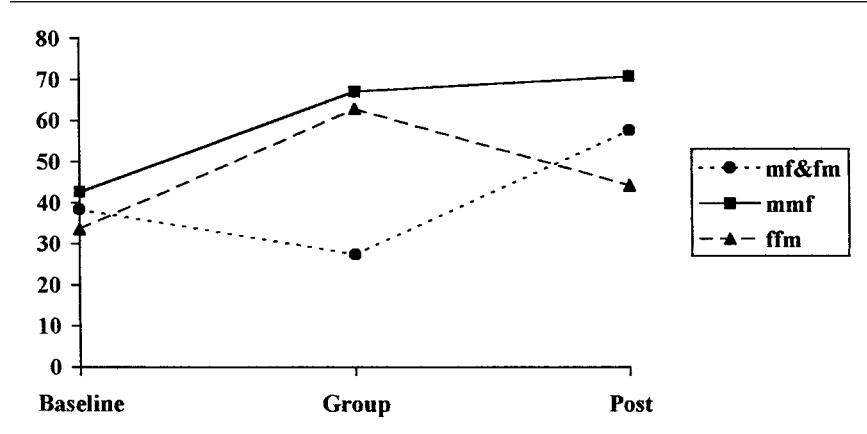**Average Bets Placed by the Mixed Gender Groups Across Trials**

Table 5
Average Bets Placed by Males and Females in the Various Groupings Across Trials

| | Average Amount Bet ($) | | | | | |
| | Baseline Trial | | Group Trial | | Post Trial | |
Group	Mean	SD	Mean	SD	Mean	SD
Females						
FF	39.89	46.97	84.48	157.72	64.47	16.46
FFF	27.01	23.52	36.70	30.45	24.87	15.52
MF & FM	15.98	14.38	20.92	14.34	44.76	23.28
MMF	20.62	10.42	40.35	31.46	57.44	25.15
FFM	27.25	19.83	54.13	41.66	34.98	19.01
Males						
MM	92.98	101.02	99.33	90.57	107.06	97.83
MMM	108.35	161.25	112.59	87.02	107.06	105.87
MF & FM	60.78	56.90	33.91	19.67	70.41	53.57
MMF	60.84	53.11	86.10	42.98	78.91	59.65
FFM	39.97	18.34	71.62	70.56	53.28	40.93

(their average bets drop in half) in this dyad. However, between the group to post game their wagers increased (Figure 4). Males are great risk takers either when playing alone or with other males. However, males in the FFM triad appear to have increased greatly from the baseline to the group game. The fact that they are paired with two females seems to increase their betting rather than inhibit it.

DISCUSSION

Peer Influences

As hypothesized, a significant increase in wagers was observed from the baseline (individual play prior to group exposure) to the group condition, and was maintained during the post-test (individual

Figure 4
Average Bets Placed by Females and Males in the MF/FM Dyads
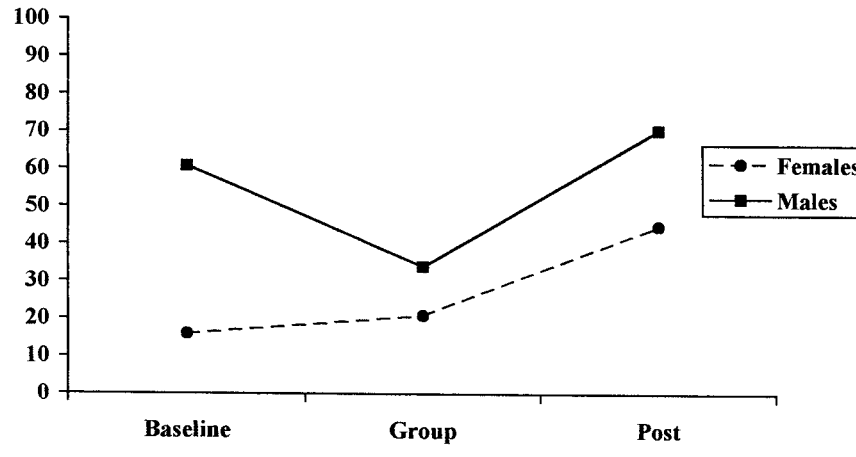
play following group exposure). One possible explanation for the find-
ing that wagering changed as a result of the group condition is that
betting naturally increases over time. The literature has demonstrated
that monetary risk-taking increases as a function of exposure to gam-
bling (Ladouceur & Mayrand, 1987) and that between gambling ses-
sions, risk-taking behavior does not return to the baseline, rather the
progressive effect is transferred to the next session (Ladouceur, May-
rand, & Tourigny, 1987). However, if this were the case then an in-
crease in average wagers from the group to the post game condition
would have also been found. Yet no significant overall differences were
observed between these 2 trials. Further, it is important to note that
while the possibility exists that greater average wagering could be at-
tributed to success (winning), results indicated that no significant dif-
ferences were found in the participants' final bankrolls and between
the groups in any of the three trials. Thus, since wagering did not
increase from the group to the post condition, and since no differ-
ences were found with respect to final bankrolls, it is likely that the
increase in betting from the baseline to the group game occurred as a
direct result of group exposure. Regardless of group (dyads and tri-
ads), the betting behavior of the entire sample significantly increased
from the baseline to the group game. Peers influenced participants'

playing behavior and this effect was maintained, at a minimum, over a relatively short period of time (e.g., post-test). These findings provide preliminary support for the hypothesis that peers serve as models for gambling behavior, such that bets increased from the baseline to the group game (i.e., children's betting changed as a result of group exposure). Furthermore, it appeared as though peers were trying to impress one another when playing by increasing wagers during group play.

Previous studies have demonstrated that gambling activities are reinforcing to youth because they produce excitement, and arousal, and are entertaining (Derevensky et al., 1996). Moreover, gambling behaviors can be encouraged and strengthened by one's peers depending on developmental level and social status (Gupta, 1994) and may be considered a "rite of passage" into adulthood (Stinchfield & Winters, 1998). It appears that in the present study some type of modeling/peer influence is involved in increasing the participants' betting behavior, such that increased wagering may lead to recognition as a "gambler" among peers in the group condition, resulting in social recognition (Fisher, 1995; Opie & Opie, 1969; Smith & Abt, 1984). Further, if the principles of social learning theory are applied directly to gambling behavior, the question still remains as to whether children can be influenced by their peers simply by observing them engage in a gambling activity, by being part of a peer group which recognizes gambling and risk-taking as socially acceptable, or if an interactive group condition is necessary.

Gender Differences

As expected, the results indicated that males placed significantly higher wagers than females in all three conditions. These findings are consistent with previous research with children indicating that males make higher gross wagers and have greater gross winnings than females, suggesting they are exhibiting greater risk-taking behaviors (Derevensky et al., 1995; 1996). Gambling has also been found to be more popular amongst males than females (Fisher, 1993; Ide-Smith & Lea, 1988; Ladouceur et al., 1994a; 1994b; Lesieur et al., 1991; Rosenstein & Reutter, 1980; Stinchfield & Winters, 1998). This gender difference was noted for children in both grades 4 and 6. Further, the overall betting patterns of males remained consistent across trials, while fe-

males' average wagers increased significantly over time. This is of particular concern as it appears that females are more susceptible to group influences and/or multiple exposure to gambling activities.

Group Differences: Size and Gender

Group Size Differences.   One of the hypotheses of the present study was that group size would have an effect on wager patterns, such that individuals in larger groups (triads) would have greater mean bets as compared with dyads. Results indicated that no significant differences in wagers were found between the male dyads and triads (MM and MMM) or between the female dyads and triads (FF and FFF). However, it must be noted that while not statistically significant, the FF group largely increased their average wagers during the group condition (much more so than female triads). It appears as though female dyads exhibit increased risk-taking behavior, as measured by total amount wagered, in the group condition. It is possible that the FF group's increase from the baseline to the group game did not reach statistical significance due to intra-group variability of mean bets in the group trial. Results of the present study seem to indicate that simply gambling with another child serves to increase wagering behavior. The findings do not support the hypothesis that having more children in a group (triad) would have a greater effect on modifying pre-existing gambling behavior (wagering). Essentially, the inclusion of one peer appears to be a sufficient influence for increased betting behavior amongst female dyads. However, additional research needs to be conducted in order to further investigate the effects of the female dyads and differences between dyads and triads.

Group Differences.   Analyses of group differences (i.e., how groups changed over time) revealed that all groups increased their average bets from the baseline to the group game, with the exception of the MF/FM dyads. Interestingly, compared to all other groups, the male dyads (MM) and triads (MMM) changed the least over time and placed significantly higher wagers than female and mixed gender dyads and triads across all trials and in both grades 4 and 6. Female dyads and triads increased their wagers from the baseline to the group game. However, as noted, when discussing size differences in the present sample, female dyad groups (FF) increased their average bets dra-

matically in the group game, denoting that female dyads appear to induce greater wagering behavior than female triads, who do not seem to have the same magnitude of effect (in terms of increasing their average wagers). In addition, while both female dyads (FF) and triads (FFF) responded to peer influences by increasing their average wagers, both groups' average bets decreased during the post-test. Thus, it appears that when females play individually in the third trial (post-test), they return to more conservative betting patterns which were observed during the baseline. Research, in general, on young children's play styles suggests that females tend to play in dyads, while males tend to play in larger groups (Benenson, 1993; Benenson, Apostoleris, & Parnass, 1997). The finding that female dyads risked more money as a result of the group condition is worrisome, such that when engaging in gambling activities together, females are possibly in jeopardy of exhibiting increased risk-taking behavior. However, the finding that females return to their regular betting patterns following the group condition indicates that changes resulting from the group game were not maintained. These findings appear to be encouraging for female dyads given that the social influences which occur in the group game do not appear to be generalized to individual play (post-test). More research needs to be conducted in order to ascertain whether female dyads are at heightened risk when gambling in dyads and whether social influences are in fact maintained over time or generalized in other gambling venues.

Interestingly, no differences in wagering were observed when comparing the all female dyads and triads (FF & FFF) to the mixed gender groupings (MF/FM, FFM, MMF) during any of the trials. These findings partially confirm the hypothesis that groups involving males would exhibit greater risk-taking behavior since findings were specific to the all male groups (MM & MMM) and not to mixed gender groups involving both males and females.

Given that there were two males and one female in the MMF group, it was thought that this triad collectively would have larger wagers than the FFM triad (irrespective of the individual performances of the males and females), since males were found to exhibit greater wagers overall. However, it was observed that both the MMF and FFM triads (as a group) increase their average bets from the baseline to the group game by almost the same amount. Interestingly, the MMF group maintained the increase in the post-test, while the FFM group did not.

Gender Differences by Group.   As previously noted, the MF/FM dyad was the only group to decrease their average wagers from the baseline to the group game. The results suggest that it was actually the males in this group who decreased their bets as a result of group exposure while females slightly increased their average wagers. Thus, it appears as though playing exclusively with one female somehow inhibits males' wagering. Nevertheless, the males' wagers increase in the post-test and become larger than their baseline wagers. Males in the FFM triad appear to increase greatly from the baseline to the group game. Furthermore, while males in the MMF triad exhibited larger mean bets during both the baseline and group games than males in the FFM triad, their wagers did not make as large an amount as males in the FFM triad. Thus, it appears as though being paired in a triad with one or two females (MMF, FFM) seems to increase males' betting behavior rather than inhibit it. Interestingly, males in both groups (MMF/FFM) do not maintain increased wagers in the post-test. Perhaps an element of competition is involved in the FFM triad, when one male is paired with two females, accounting for the larger mean differences in the males' average bets (compared to the MMF group). The male may feel as though he wants to exert his masculinity by wagering more. Griffiths (1989) hypothesized that gambling allows boys to display their masculinity in a social environment by exhibiting "courage and bravery," and may provide an explanation for the present findings. Clinical observations of several FFM triads confirm this speculation, such that the females form their own dyad and exclude the male. The female dyads then compete against the male even though each individual has their own bankroll. However, observation of MMF triads demonstrates much less competition and much more cooperation. With respect to females in the MF/FM dyad, they were found to increase their average wagers slightly from the baseline to the group game, and much more so in the post condition. In the MMF triad, females were observed to linearly increase their average wagers across the three trials. Finally, females in the FFM triad appear to be most affected by the group condition (increased wagers) and did not maintain any changes in the post-test. These findings are further consistent with the clinical observations of the FFM triads, such that the girls appear to form their own distinct group.

The aforementioned findings regarding group differences did not provide support for the hypothesis that groups involving males would

generate greater group influences. Given that no changes in average wagers were observed in the male dyads and triads (MM & MMM) across the three trials, and considering the finding that females increased their average wagers playing in all groupings (i.e., same sex and mixed sex dyads and triads), support is not provided for the hypothesis that males are more likely than females to influence other males and females during gambling activities. Furthermore, the findings suggest that females appear to be more susceptible to social influences. Thus, for females, simply playing in a group, regardless of gender, seems to increase wagering. The finding that males do not appear to exert an influence on each other may indicate that they are already high wagerers by nature (i.e., not only in the group condition) and are not as susceptible to external influences. While females paired with males in the mixed gender groups (MF/FM, MMF, and FFM) exhibit an increase in their average bets over time, their wagers never reach the magnitude of males' wagers. Thus, while females may be more susceptible to group influences, the results indicate that they nevertheless remain more conservative than males. These findings again provide support for previous literature which has found that males demonstrate greater wagers than females, suggesting that they are exhibiting greater risk-taking behaviors (e.g., Derevensky et al., 1995; 1996).

The present findings suggest that some type of peer/social influence is involved in gambling behavior. Results have demonstrated that changes in average wagers from the baseline to the group game were found between and within the experimentally predetermined groups. The predominant finding of the present research program was that increased wagering resulted from playing in a group with one or more children. Males were found to exhibit greater wagering behavior overall, while females were found to be most susceptible to external influences during the group game such that they demonstrated increases in their average bets.

The present findings represent one piece of the puzzle with respect to social influences involved in gambling behavior. There are likely other factors which may influence gambling behaviors as well as limitations inherent in the present study. For example, it is unknown whether children's actual gambling behavior was changed merely as a result of the group condition. Moreover, the present study was con-

ducted in a laboratory setting and only one game (roulette) was employed. In addition, many researchers have questioned the use of incentives, rather than money in gambling research. However, this type of incentive has proven successful with children (Derevensky et al., 1996; Gupta & Derevensky, 1996) and adults (Powell et al., 1996) and it appears as though money does not hold as great a value with children as other incentives (e.g., candy, toys, and movie certificates). Although the present sample was randomly distributed and assigned into their respective groupings, there was huge variability in the average bets placed by the participants, especially by the males at the baseline.

Other limitations of the present study include the fact that there was no control group and that the post-test was played immediately following the group game. In addition, some children may have bet more money in the baseline, and thus had greater average wagers, because they knew that they had two more additional trials and may have reasoned that they could "afford" to take greater risks. Only further research can determine what occurs when children play with their peers during actual naturalistic and varying gambling activities and can be aimed at clarifying the social influences involved in gambling activities.

By developing a better understanding of individual and social factors which influence gambling behavior in children and adolescents, effective prevention and intervention programs can be developed and can target the appropriate age and at-risk groups. The development of prevention and intervention programs are greatly needed, as gambling is the most frequently reported potentially addictive behavior engaged in by children and adolescents (Gupta & Derevensky, 1998; 1997).

APPENDIX A: STANDARDIZED INSTRUCTIONS

General Instructions

You will be playing one game against the dealer in order to win a prize. First you will be playing by yourself for a few minutes, then you will be playing with some of your friends, and then you will be playing alone again. For each game we are going to give you $500 of fake money to play with. When you play alone, you will be playing for 7

minutes. In that time, you should try to win as much money as you can because for all the money that you make over the $500 you will earn the equivalent in monopoly money that we will put into a draw. The draw is for 3 prizes, you can either win $30 in movie certificates, $20 and $10 gift certificates at McDonalds. The more money that you win the better the chance you have of winning a prize. For example, if at the end of 7 minutes you have $550 then we will give you $50 in monopoly money which will be put into this box for the drawing of $10 in McDonald's certificates, but if you have $450 we can't give you any money, you have to have more than $500. You don't have to play the whole game, you can stop whenever you want and take your money and put it into the draw. Remember, the more money you have the better your chances of winning one or more of the prizes. This is the same for when you will be playing with your friends, when you will be playing for about 12–14 minutes.

Individual Instructions

You will be playing a casino game called roulette. In this game, you are betting on what number or color the little ball will land on after the wheel is spun. For this game you can only bet *evens, odds, black, and/or red.* For example, if you have bet black, you will only win if the number that the ball lands on is black. To bet, you place the chip on the right spot. The chips can be worth *$1, $5, $25,* and *$100.* You can make the wheel spin faster by moving the arrow near the wheel and clicking the left mouse button. But this doesn't change anything. To make a bet click on play, then you click on whatever amount you want your chips to be. Then click on the table in the spot where you want to put your bet. The more times you click, the more chips you are putting on the table. So if you choose $5 chips and click 3 times on red then you are betting $15 on red. If you make a mistake and want to take off a chip then click on the right mouse button. If you win, the money that you win will be left on the table, to pick them up click *cash in.*

Don't forget that your goal is to end up as much money over the $500 dollars we lent you so you can win as much money as you can for the draw. You have 7 minutes to play, or until you run out of money. Don't forget that you can stop at any time.

Group Instructions

You have all played this game before by yourselves. Now you will be playing it together, with (another child/ or two other children). Each of you will take a turn placing your bet before we spin the wheel. Remember that you are playing against the dealer and not against each other. *You can talk and help each other out if you want.* You will each have $500 in your bank to play with and you will play for 12 *(dyad)*/14 *(triad)* minutes. You can win more tickets in this game, if you end up with more than $500 at the end of the game. Remember, for all the money over $500 you will "win" the equivalent in monopoly money to enter into the draw. You can also stop whenever you want.

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