

## Pacific Islands Families: The First Two Years of Life: Gambling Amongst Pacific Mothers

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Pacific peoples in New Zealand are at high risk of developing gambling-related problems; estimated to be six times more likely than the risk for New Zealand Europeans. However, there is a paucity of research investigating Pacific people's gambling within a New Zealand context. This paper presents preliminary data, from the first data collection point, about gambling activity per se (as opposed to problem gambling) from a cohort of mothers who are part of the longitudinal Pacific Islands Families study. The data are analysed against various associated demographic and cultural variables. These early results indicate that cultural differences could play a part in gambling behaviour, for example, Tongans are more likely to gamble than Samoans, and those who partake in traditional gift giving customs are also more likely to gamble. Additionally, the data show an increased propensity for gambling amongst those with comorbid disorders, such as alcohol misuse.

*Keywords:* Pacific Islands Families study; Gambling; Cultural differences; New Zealand.

### Introduction

Results from the 1991 and 1999 New Zealand national prevalence surveys indicate that adult Pacific peoples in New Zealand are the most at-risk ethnic population group for developing problem or pathological gambling behaviour (Abbott & Volberg, 1991, 1996, 2000). In 1999, the prevalence estimate for Pacific peoples was more than six times greater than for New Zealand Europeans. The data indicated that 14% of current probable pathological and problem gamblers were of Pacific origin.

Findings from the 1999 New Zealand prevalence survey (Abbott & Volberg, 2000) suggest that one of the reasons that Pacific people were highly at risk was due to their 'bimodal' distribution for gambling. A

bimodal distribution is described where the population group contains proportionately large numbers of non- and infrequent gamblers and frequent participation/high expenditure gamblers. Additionally, with regard to Pacific peoples, the survey found that there was a high average expenditure on gambling relative to other ethnic groups, meaning that the subgroup of Pacific people who gamble regularly have a very high expenditure. People in these groups may be more likely than others to develop gambling problems (Abbott & Volberg, 2000). Also of concern is the finding that Pacific people were less likely than Europeans to have overcome gambling problems when re-assessed seven years later, indicating the possibility that Pacific people are more likely than European New Zealanders to have persisting gambling problems (Abbott, 2001).

That problem gambling is a significant issue for Pacific peoples is supported by a trend of increasing presentation at gambling help services during the past three years, whilst the national population percentage of Pacific peoples has remained static. In 2001, 6.3% of callers to the national Gambling Helpline and 5.1% of the clients at personal gambling counselling services

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around the country were of Pacific origin, compared with a total adult (18 years and over) Pacific peoples population estimate of 4.8% (Paton-Simpson, Gruys, & Hannifin, 2002). The following year, 7.3% of callers to the Helpline and 6.1% of personal counselling clients were of Pacific origin (Paton-Simpson, Gruys, & Hannifin, 2003). By 2003, the numbers of Pacific peoples seeking help for problem gambling had increased further to 9.1% calling the Helpline and 6.5% attending face-to-face services (Paton-Simpson, Gruys, & Hannifin, 2004).

In terms of percentage Pacific peoples in the general population, there appears to be an over-representation of those seeking help for problem gambling. However, given that 14% of current probable pathological and problem gamblers are of Pacific origin (Abbott & Volberg, 2000), it is likely that despite the trend of increasing presentations at treatment services this is, in fact, an under-representation of Pacific problem gamblers. This hypothesis is based on the fact that a proportion of those calling the Helpline are subsequently referred to the face-to-face services (the level of referral for the population as a whole was 18% in 2003) and given that, overall, approximately 30% of those seeking help were family members or friends rather than problem gamblers themselves (Paton-Simpson et al., 2004).

Therefore, there is a need to understand why Pacific peoples are at higher risk of developing gambling-related problems than other ethnic groups and a further need to identify the barriers to help-seeking. To date, very little research has been conducted with Pacific peoples in relation to gambling and/or problem gambling.

This paper presents some preliminary basic demographics and associated factors related to gambling by mothers of a birth cohort of Pacific infants in New Zealand (the Pacific Islands Families study). This study has importance in terms of being a prospective longitudinal study that is examining the development of children within the familial context.

## Method

Data were collected as part of the Pacific Islands Families: First Two Years of Life (PIF) Study. The PIF study is a longitudinal investigation of a cohort of 1398 infants (1376 mothers) born at Middlemore Hospital, South Auckland, New Zealand during the year 2000. Middlemore Hospital was chosen as the site for recruitment of the cohort as it has the largest number of Pacific births in New Zealand and is representative of the major Pacific ethnicities. It was estimated that a cohort of 1000 would provide sufficient statistical power to detect moderate to large differences after stratification for major Pacific ethnic groups and

other key variables. Eligibility criteria included having at least one parent who self-identified as being of Pacific ethnicity and a New Zealand permanent resident. Detailed information about the cohort and procedures is described elsewhere (Paterson et al., 2002).

Approximately six weeks after the birth of their child, the mothers were visited in their homes by Pacific interviewers fluent in English and a Pacific language. Following confirmation of eligibility criteria and the gaining of informed consent, mothers participated in one-hour long interviews concerning the health and development of the child and family functioning. These interviews included three questions related to gambling. The first questioned whether the mothers had gambled within the previous 12 months; if the answer was affirmative, the mothers were then asked how much they usually spent per week on gambling activities and whether other people had ever criticised their gambling involvement during the previous 12 months. The interviewers provided the following examples of gambling prior to the first gambling question: Lotto, poker/slot machines in casinos or pubs, raffles, card games, Housie (bingo), Instant Kiwi, horse betting and lottery tickets. It is acknowledged that these three questions relating to gambling are limited, especially in terms of the diversity of gambling activities given as examples. However, this was unavoidable due to the large battery of questions asked of the mothers as part of the study (with gambling only a minor part) and given that the main purpose of the study is to follow the development of Pacific children from birth, within the familial context.

The preliminary results presented in this paper relate to the three questions and to any associations between the first question (whether the mothers gambled) and other measured variables at the six-week time point. Univariate and multivariate logistic regression procedures were used to assess associations between whether the mothers gambled and age, ethnicity, social marital status, education, household income, whether New Zealand born, years in New Zealand, English fluency, cultural alignment, depression, traditional “gift-giving”, smoking and alcohol usage. All analyses looked at gambling per se and not at problematic gambling. The variables analysed in association with gambling were selected by the researchers from the plethora of measured variables as being those most likely to provide information that will build on current knowledge regarding gambling and that will increase knowledge around Pacific specific cultural issues. The ultimate aim is to enable comparisons between gambling-related activities of the Pacific populations within the study and general populations within New Zealand and internationally.

In terms of analysis of ethnicity, categories of “other Pacific” and “non-Pacific” were formed that need some explanation. “Other Pacific” included mothers identify-

ing equally with two or more Pacific groups, equally with Pacific and non-Pacific groups or with Pacific groups (e.g., Niuean) other than Tongan, Samoan or Cook Island. These groups were merged to increase sample size for statistical analysis. A small number of “non-Pacific” mothers were part of the cohort because their child was classified as being of Pacific origin (father of Pacific descent).

## Results

At the six-week measurement point, all 1376 mothers responded to the question “In the last 12 months, have you bet or spent money on gambling activities or games similar to those I just talked about?” Of the group, 69.9% stated that they had not gambled in the previous 12 months and 30.1% ( $n = 414$ ) replied in the affirmative.

The usual weekly amount of money spent on gambling activities by the 414 mothers ranged from \$1 to \$100, with a median spend of \$10 per week ( $M = \$17$ ). The most common weekly amounts spent on gambling were \$5 (32.1%), \$10 (24.4%) or \$20 (15.5%). Only 3.9% of the group spent \$100 per week. However, a total of 14.9% of the mothers spent \$30 or more per week on gambling.

Of the 414 mothers who had gambled, 85.3% stated that they had never been criticised by other people in regard to their gambling activities, whilst 14.7% ( $n = 61$ ) stated that they had received criticism in the previous 12 months.

### *Univariate Analyses of Associations with Gambling Activity*

Statistically-significant associations were found between whether mothers gambled and all variables examined (see previously) except for English fluency, cultural alignment and smoking. Data are presented in [Table 1](#).

**Ethnicity.** Statistically significant differences were found between the various ethnic groups, in terms of numbers of mothers who had gambled in the previous 12 months. A majority of mothers were Samoan ( $n = 650$ ), of whom 17.7% reported having gambled. In contrast, and differing significantly ( $p < .001$ ) from this group, were Tongan mothers ( $n = 289$ ) of whom 53.6% had gambled, other Pacific mothers ( $n = 106$ ) and non-Pacific mothers ( $n = 99$ ) of whom 38.7% and 44.4% had gambled, respectively. Cook Island mothers ( $n = 232$ ) also differed significantly from their Samoan counterparts with 25.4% having gambled ( $p < .05$ ).

**Age.** Mothers aged less than 20 years ( $n = 111$ ) were least likely to gamble (18.0%), whilst those aged over 40 years ( $n = 44$ ) were most likely to gamble

(36.4%,  $p < .05$ ). Those of intermediate age groups were more likely to gamble than the younger mothers but less likely than the older mothers.

**Social marital status.** Mothers who were married ( $n = 779$ ) or in a de facto relationship ( $n = 328$ ) were more likely to have participated in gambling activities during the previous 12 months (32.0% and 32.9% respectively) than solo mothers (21.2%,  $p < .01$ ).

**Education.** Mothers who had no formal qualifications ( $n = 535$ ) were less likely to have gambled (22.1%) than those with secondary school qualifications ( $n = 464$ , 32.8%,  $p < .01$ ) or those with post-school qualifications ( $n = 377$ , 38.2%,  $p < .01$ ).

**Household income.** Where the total annual household income was low (<\$20,000) the propensity for mothers to gamble ( $n = 457$ ) was less (25.6%) than when the income ranged between \$20,001 and \$40,000 ( $n = 710$ , 31.5%,  $p < .05$ ) or greater than \$40,000 ( $n = 161$ , 36.0%,  $p < .05$ ).

**Country of birth and years resident in New Zealand.** Mothers who were not born in New Zealand and who were most probably born in the Pacific islands ( $n = 922$ ) were more likely to have spent money gambling (32.6%) than those who were New Zealand born ( $n = 454$ , 24.9%,  $p < .01$ ). Additionally, those migrants who had lived in New Zealand for between 6 to 10 years ( $n = 147$ ) were more likely to gamble (36.7%) than those who had been in New Zealand for two years or less (23.5%,  $p < .05$ ).

**Postnatal depression.** Birth mothers who suffered from postnatal depression ( $n = 224$ ) were more likely to have gambled (39.3%) than birth mothers who did not suffer from postnatal depression ( $n = 1136$ , 28.0%,  $p < .01$ ).

**Traditional gifting.** Those mothers who participated in traditional gifting ( $n = 860$ ) were also more likely to have gambled in the previous 12 months (32.9%) than mothers who did not participate in traditional gifting customs ( $n = 516$ , 25.4%,  $p < .01$ ).

**Alcohol consumption.** Mothers who drank alcohol before they were pregnant were more likely to have gambled ( $p < .001$ ) than mothers who never drank alcohol. The frequency of alcohol usage was not a predictive factor. During pregnancy, no statistically significant differences were noted in terms of mothers who gambled and consumption of alcohol, although a higher percentage of mothers who drank also gambled. After birth, a higher proportion of mothers who drank two or more times per month ( $n = 13$ ) also gambled (48.1%) in comparison with mothers who did not consume alcohol ( $n = 385$ , 29.3%,  $p < .05$ ).

When the association between high alcohol consumption (considered to be six or more alcoholic drinks on any one occasion) and gambling was explored, the findings indicated that before pregnancy, gambling occurred amongst 26.4% of mothers ( $n =$

**Table 1**  
*Numbers (row percentages) and univariate odds ratios of mothers gambling during the past 12 months by selected variables (n = 1,376<sup>1</sup>)*

	Spent Money on Gambling		Univariate Odds Ratio (95% CI)
	Yes (%)	No (%)	
<i>Age (years)</i>			
<20	20 (18.0)	91 (82.0)	1.00
20-29	207 (28.8)	513 (71.3)	1.84 (1.10, 3.06)*
30-39	171 (34.2)	329 (65.8)	2.37 (1.41, 3.97)**
40+	16 (36.4)	28 (63.6)	2.60 (1.19, 5.68)*
<i>Ethnicity</i>			
Samoan	115 (17.7)	525 (82.3)	1.00
Cook Island	59 (25.4)	173 (74.6)	1.59 (1.11, 2.27)*
Tongan	155 (53.6)	132 (46.4)	5.38 (3.96, 7.31)***
Other Pacific <sup>2</sup>	41 (38.7)	65 (61.3)	2.93 (1.89, 4.56)***
Non-Pacific	44 (44.4)	55 (55.6)	3.72 (2.39, 5.81)***
<i>Social/Marital Status</i>			
Partnered, legally married	249 (32.0)	530 (68.0)	1.75 (1.26, 2.43)*
Partnered, de facto	108 (32.9)	220 (67.1)	1.83 (1.26, 2.65)*
Non-partnered	57 (21.2)	212 (78.8)	1.00
<i>Education</i>			
Post-school qualification	144 (38.2)	233 (61.8)	2.18 (1.30, 2.82)***
Secondary-school qualification	152 (32.8)	312 (67.2)	1.72 (1.63, 2.92)***
No formal qualifications	118 (22.1)	417 (77.9)	1.00
<i>Household Income</i>			
<\$20,000	117 (25.6)	340 (74.4)	1.00
\$20,001-\$40,000	224 (31.5)	486 (68.5)	1.34 (1.03, 1.74)*
>\$40,000	58 (36.0)	103 (64.0)	1.64 (1.11, 2.40)*
Unknown	15 (31.3)	33 (68.8)	1.32 (0.69, 2.52)
<i>Born in New Zealand</i>			
Yes	113 (24.9)	341 (75.1)	1.00
No	301 (32.6)	621 (67.4)	1.46 (1.14, 1.89)**
<i>Years Lived in NZ</i>			
0-2	24 (23.5)	78 (76.5)	1.00
3-5	58 (33.9)	113 (66.1)	1.67 (0.96, 2.91)
6-10	54 (36.7)	93 (63.3)	1.89 (1.07, 3.33)*
>10	276 (29.0)	677 (71.0)	1.33 (0.82, 2.14)

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

<sup>1</sup> Numbers will vary due to missing data for some variables.

<sup>2</sup> Includes mothers identifying equally with two or more Pacific groups, equally with Pacific and non-Pacific groups, or with Pacific groups other than Tongan, Samoan or Cook Island.

319) who did not drink six or more alcoholic drinks on any one occasion, in comparison with 57.9% ( $p < .001$ ) amongst mothers who did drink that amount ( $n = 92$ ). During pregnancy and following birth, the number of mothers drinking six or more alcoholic drinks on any one occasion was reduced and no statistically significant differences were noted in gam-

bling activity between those who drank that amount and those who did not.

Of the mothers who had ever been unable to stop drinking in the past year, 59.5% ( $n = 25$ ) had also participated in gambling activities, in comparison with 29.0% ( $p < .001$ ) of mothers who had been able to control their drinking ( $n = 384$ ).

Table 1 (Cont'd)

Numbers (row percentages) and univariate odds ratios of mothers gambling during the past 12 months by selected variables ( $n = 1,376$ )

	Spent Money on Gambling		Univariate Odds Ratio (95% CI)
	Yes (%)	No (%)	
<i>Post-Natal Depression</i>			
No	318 (28.0)	818 (72.0)	1.00
Yes	88 (39.3)	136 (60.7)	1.66 (1.24, 2.24)**
<i>Traditional Gifting</i>			
No	131 (25.4)	385 (74.6)	1.00
Yes	283 (32.9)	577 (67.1)	1.44 (1.13, 1.84)**
<i>Frequency of alcohol usage</i>			
Before pregnancy			
Never	306 (26.4)	854 (73.6)	1.00
Monthly or less	50 (49.5)	51 (50.5)	2.74 (1.81, 4.13)***
Two or more times per month	56 (50.9)	54 (49.1)	2.89 (1.95, 4.30)***
Since birth			
Never	375 (29.3)	907 (70.7)	1.00
Monthly or less	25 (39.7)	38 (60.3)	1.59 (0.95, 2.67)
Two or more times per month	13 (48.1)	14 (51.9)	2.25 (1.05, 4.82)*
<i>Six or more alcoholic drinks on one occasion</i>			
Before pregnancy			
No	319 (26.4)	891 (73.6)	1.00
Yes	92 (57.9)	67 (42.1)	3.84 (2.73, 5.39)***
Ever unable to stop drinking in past year			
No	384 (29.0)	938 (71.0)	1.00
Yes	25 (59.5)	17 (40.5)	3.59 (1.92, 6.73)***

### *Multivariate Analyses of Associations with Gambling Activity*

A multiple logistic-regression analysis was undertaken to control for potential confounding effects. Five demographic variables (maternal age, education, ethnicity, marital status and household income) were initially forced into the model as control variables and all remaining variables in Table 1 were then submitted to a forward stepwise entry procedure ( $p$  to enter = .15 and  $p$  to remove = .20). A  $p$  value in the range from 0.15 to 0.20 was selected based on the recommendation of Hosmer and Lemeshow (1989), who indicate that the choice of  $p$  to enter = .05 is too stringent, often excluding important variables from the model. In the resulting final model, variables retaining their significant associations with gambling activity were age,

education, ethnicity, marital status, country of birth and drinking six or more drinks on one occasion before pregnancy. Statistical significance was also attained for increased number of cigarettes smoked yesterday ( $p = .047$ ) and for six or more alcoholic drinks on one occasion during pregnancy ( $p = .001$ ). Data are presented in Table 2.

### **Discussion**

It is to be stressed that the data presented in this paper are preliminary and need further investigation. Furthermore, they have only touched upon whether gambling occurred and are not necessarily indicative of problem gambling. This is a limitation of the research, and caution is required when drawing conclusions. Nevertheless, these preliminary results are interesting in their own right.

**Table 2**  
*Adjusted odds of mothers who had gambled in the past 12 months for variables attaining significance in a multiple logistic regression (n = 1,343)*

	Adjusted Odds Ratio	95% CI
<i>Age (years)</i>		
<20	1.00	
20-29	1.53	(0.84, 2.76)
30-39	2.07	(1.11, 3.86)*
40+	3.17	(1.31, 7.69)*
<i>Education</i>		
Post-school qualification	2.03	(1.44, 2.85)***
Secondary-school qualification	1.88	(1.37, 2.59)***
No formal qualifications	1.00	
<i>Ethnicity</i>		
Samoan	1.00	
Cook Island	1.49	(1.00, 2.24)
Tongan	5.09	(3.65, 7.10)***
Other Pacific <sup>1</sup>	2.03	(1.21, 3.42)**
Non-Pacific	3.79	(2.16, 6.65)***
<i>Social/Marital Status</i>		
Partnered, legally married	1.58	(1.00, 2.49)*
Partnered, de facto	2.23	(1.38, 3.61)**
Non-partnered	1.00	
<i>Born in New Zealand</i>		
Yes	1.00	
No	2.01	(1.40, 2.89)***
<i>Cigarettes smoked yesterday</i>		
None	1.00	
1-9	0.88	(0.60, 1.28)
10 or more	1.84	(1.06, 3.19)*
<i>Six or more alcoholic drinks on one occasion</i>		
Before pregnancy		
No	1.00	
Yes	5.95	(3.70, 9.55)***
During pregnancy		
No	1.00	
Yes	0.24	(0.11, 0.54)**

\* p < .05. \*\* p < .01. \*\*\* p < .001.

<sup>1</sup> Includes mothers identifying equally with two or more Pacific groups, equally with Pacific and non-Pacific groups, or with Pacific groups other than Tongan, Samoan or Cook Island.

In their 1999 prevalence study, [Abbott and Volberg \(2000\)](#) found that more Pacific people reported never gambling or not gambling in the previous six months than the general adult population (20% versus 14%). In this study, 70% of mothers reported no gambling in the previous 12 months. However, of those that did gamble, almost 15% had received criticism from other

people regarding their gambling. Whether this indicates a cultural antipathy towards gambling per se or whether this could be an indication of excessive gambling activity cannot be deduced from these data and further analyses are required. However, 14.8% of mothers had a usual weekly spend on gambling of \$30 or more which may have been deemed excessive in

some of the lower income households. These findings are consistent with [Abbott and Volberg's \(2000\)](#) observations that Pacific people have a bimodal distribution for gambling with those who do gamble having a higher average expenditure relative to other ethnic populations. A recent study conducted in the state of Victoria, Australia which investigated the impact of gaming on specific cultural groups similarly found that Chinese, Vietnamese and Greek groups were less likely to be involved in certain forms of gambling than the general community sample but that those who did gamble were more likely to have a higher weekly expenditure on gambling ([Cultural Partners Australia Consortium, 2000](#)).

The finding of ethnic differences amongst levels of gambling activity with Tongan mothers being the most likely to gamble and Samoan mothers being the least likely, suggests that future gambling research with Pacific peoples should consider this heterogeneity and should not assume all Pacific peoples will behave in a similar fashion.

A further cultural aspect associated with levels of gambling activity is the custom of gift giving. This is a part of traditional life and relates to community obligations and commitments as well as occasions when a family requires support (e.g., weddings and funerals). Additionally, gifting of money to the church is an important part of Pacific culture, particularly amongst Samoans ([Perese & Faleafa, 2000](#)). In this study, it was found that mothers who participated in traditional gift giving activities were more likely to gamble than mothers who did not take part in the custom. Although the difference did not attain a level of statistical significance when other factors were controlled for, this finding is nevertheless of importance due to the potential for those following the custom to be more at risk of developing problems with gambling. [Perese and Faleafa \(2000\)](#) found that in order to fulfil gifting obligations most participants in their preliminary study ( $N = 14$ , Samoans living in New Zealand) reported that fundraising often took place in the form of gambling (such as poker, housie and tote tickets). Some participants in that study also identified gifting as a motivation to gamble in an attempt to raise the required money. However, other participants reported that gambling was frowned upon if it led to absence of payment or participation in gifting. [Perese and Faleafa \(2000\)](#) also found that gambling at or for some churches was perceived by most participants as a form of fundraising and "giving" that was necessary to maintain the church and that winnings from gambling given to the church were perceived as acceptable.

It is not surprising that this study found that mothers under the age of 20 years were least likely to gamble, given that gambling in a casino is prohibited for that age group and at the time of data collection the

minimum age for alcohol purchase was 20 years. Since non-casino electronic gambling machines are only permitted in liquor-licensed premises, this would have also precluded those aged less than 20 years from legitimately engaging in that form of gambling. The trend of increasing propensity to gamble with increasing age, amongst the mothers in this study, followed a similar trend in presentations at helping services at that period of time ([Paton-Simpson, Gruys, & Hannifin, 2001](#)).

In this study, increasing propensity to gamble was related to increasing educational level. In the multivariate analyses this effect remained even when the effects of household income and marital status were both controlled for. These findings are similar to the 1999 New Zealand general population prevalence survey results which indicated that there was generally an increasing likelihood to gamble amongst "past six month gamblers" (i.e., people who participated in one or more types of gambling in the past six months) with increasing educational level ([Abbott & Volberg, 2000](#)).

This study found that partnered mothers were more likely to have gambled than solo mothers. Again, this finding remained in multivariate analyses even when controlling for household income. This suggests that being partnered is independently predictive of a propensity to gamble from factors such as available disposable income.

Migrant mothers, particularly those who had resided in New Zealand for between six to ten years, were more likely to gamble than New Zealand born mothers. In their review of the role of culture in gambling and problem gambling, ([Raylu & Oei, 2004](#)) state that in relation to acculturation, increased gambling amongst migrants could be attributed to two processes. Firstly, increased gambling could be related to successful acculturation (i.e., successfully adapting to a culture that has high acceptance and practice of gambling). Secondly, it could be related to problems in the acculturation process (i.e., difficulties in adapting to the mainstream culture). The processes involved in adapting to a new country could be one reason why there was an increased propensity to gamble by migrant mothers, especially those who have been in New Zealand for a few years. However, as no studies have been performed that specifically look at the migration and adaptation process of Pacific peoples in a Western country such as New Zealand in relation to gambling activity, further research in this area is required.

In this study, alcohol consumption and/or frequency of alcohol consumption were related to gambling activity before and after pregnancy. Additionally, mothers who consumed higher amounts of alcohol, such as six or more drinks on any one occasion, were up to twice as likely to gamble as mothers who did not drink that amount of alcohol. Similarly, after other factors were

controlled for, increasing number of cigarettes smoked was associated with a higher propensity to gamble. It is well documented that problem gamblers are likely to have comorbid disorders, with alcohol and nicotine being some of the most common co-dependencies (Crockford & el-Guebaly, 1998; Maccallum & Blaszczynski, 2002; Potenza, Fiellin, Heninger, Rounsaville, & Mazure, 2002). Thus, further analysis of the data is required to attempt to determine the relationships between alcohol misuse and/or cigarette smoking and gambling activities amongst Pacific mothers.

Despite the limited information that can be gleaned from the results presented in this paper, the Pacific Islands Families study is of great importance in terms of being a prospective longitudinal study that is examining the development of children within the familial context. With regard to gambling, future data obtained from the mothers and fathers, and eventually from the children as they grow up, will be invaluable in helping to identify factors that could lead to problems with gambling at some stage in a person's life.

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