

Opportunity Structure for Gambling and Problem Gambling Among Employees in the Transport Industry

Tevje Revheim · Kristin Buvik

Received: 30 May 2008 / Accepted: 12 September 2008 /
Published online: 16 October 2008
© Springer Science + Business Media, LLC 2008

Abstract Working conditions for employees in the transport sector might present an opportunity structure for gambling by providing access to gambling during the workday. This study investigates connections between opportunity structure, gambling during the workday, and gambling problems among employees in the transport sector. Data has been collected from three different transport organizations in Norway: bus, truck, and taxi drivers ($N=1033$). 6.8% of the sample gambled during working hours and 3.2% of the employees could be characterized as having a gambling problem. We found a positive relationship between opportunities to gamble during working hours and problem gambling, with the odds for problem gambling increasing fourteen-fold if employees gambled during working hours. Gambling during the workday is a major risk factor for gambling problems in this sample.

Keywords Problem gambling · Availability · Occupational · Work · Transport industry · Risk factors

This article investigates the relationship between gambling opportunity structure, gambling during working hours and problem gambling.

Pathological gambling (PG) is classified as a disorder of impulse control (American Psychiatric Association, 1994). Individuals exhibiting pathological gambling might experience it as an addiction (Griffiths, 1995; Sharpe et al. 1995), hence PG is conceptualized as such. Furthermore, underlying the diagnostic criteria is the recognition that pathological gambling affects performance at work. Studies of populations in treatment indicate that gambling problems affect business through absenteeism, reduced productivity and embezzlement (Ladouceur, Boisvert, Pepin, Loranger, and Sylvian, 1994; Nower, 2003). According to Griffith (2003) and Nower (2003), the workplace is an arena where problem gambling can be identified and action taken to counteract the problem (Griffith,

T. Revheim (✉) · K. Buvik
AKAN-Workplace Advisory Centre, Oslo, Norway
e-mail: tevje.revheim@gmail.com
e-mail: tevje.revheim@sthf.no

2003; Nower, 2003). Despite this potential, studies of pathological or problem gambling in workplace settings are rare.

Opportunity Structure

A given behavior, in this case gambling, is the outcome of several factors or facilitators. An opportunity structure is defined as a set of external factors that prevent or encourage action. Willy Martinussen (1985; 1991) uses the term *facilitator* to describe opportunity structures. Whether physical, technological, economic, legal or political, such facilitators create conditions for certain actions while excluding others. In this sense, then, access to slot machines would be tantamount to an opportunity to gamble. Facilitators therefore prescribe or regulate behavioral options.

For our present purposes, opportunity structure consists of spare time during working hours along with exposure to gambling possibilities. An employee may be directly exposed to slot machines during working hours because the company has machines accessible on the premises. At the same time, part of the opportunity structure will comprise spare time which an employee may spend gambling in the workplace, or to leave and visit gambling venues elsewhere.

We can also differentiate opportunity structure in terms of objectivity and subjectivity (Hundeide, 2003). The objective opportunity structure will comprise the opportunities actually available to the employee to gamble during working hours. The subjective opportunity structure refers, on the other hand, to the employee's *subjective perception* of opportunities to gamble. Some employees may report time they have taken off from work as spare time. An employee could schedule his daily duties to allow time for gambling, transforming what at the outset are working hours into spare time. Furthermore, some employees might be more attentive to opportunities to gamble. Here, the urge to gamble colors subjective perceptions of the opportunity structure.

Availability

In the field of alcohol research, a great body of research has been conducted on the association between availability, alcohol consumption and alcohol-related problems. Raising the price of alcohol has proven to be an effective way to reduce alcohol-related problems in society. This is also the case for restrictions on when alcohol may be purchased (limits on time of day and day of the week) and the reduction in the number and types of alcohol sales outlets. The present consensus is that regulations reducing the availability of alcohol also affect alcohol consumption and the number of alcohol-related problems (Babor et al., 2003; Room, Babor, & Rehm, 2005).

In the field of gambling research, a positive correlation between accessibility and problem gambling is evident, in line with exposure theory. For instance, states in the US where gambling has been legal for twenty years or longer have a higher rate of pathological gambling than states where gambling has been legal for less than ten years (Volberg, 1994). In another US study, people living inside a ten-mile radius of a casino are more likely to exhibit gambling disorders (Welte, Wierzorek, Barnes, Tidwell, and Hoffman, 2004). A Canadian study detected a positive correlation between the prevalence of problem gambling and residing in areas with a high ratio of slot machines and permanent casinos (Cox, Yu, Afifi, and Ladouceur, 2005). In a recent study from New Zealand, proximity to gambling venues bears a connection with the level of problem gambling (Mason, 2008). Shaffer,

Vander Bilt and Hall (1999) found a higher prevalence among employees at casinos in Las Vegas than among the population in general. According to Hing and Breen (2005; 2006; 2008), accessibility to gambling, contribute to a higher risk of gambling problems among gambling venue staff.

The merits of exposure theory are under scholarly debate (Abbott, 2005; Blazczynski, 2005; Orford, 2005; Room, 2005; Rønneberg, 2005). Some studies are unable to detect a causal link between exposure to gambling opportunities and pathological gambling (Shaffer, Hall, and Vander Bilt, 1999). While increased exposure to gambling would be expected to result in an increase in gambling pathologies, adaptation theory suggests that people adapt to high-exposure environments (Shaffer, LaBrie, and LaPlante, 2004). According to adaptation theory, the number of gambling disorders initially rises with new exposure to gambling, it is a response to a new stimulus. Over the longer run, however, people adapt to the new situation and gain a type of immunity to the increase in gambling opportunities. So, while prevalence of pathological gambling rises initially, it reaches a plateau and settles at a “natural” level.

This debate can be regarded as a conflict between those who tend to see the cause of pathological gambling in the makeup of the problem gambler and those for whom the cause lies in the social structure. If the cause of problem gambling is confined to the individual, it lets the gambling industry “off the hook” and lessens the onus on it to take responsibility for gambling addiction. But if access/availability is, indeed, the main causal mechanism behind problem gambling, pressure will increase on the authorities to regulate the gambling industry and contain the problem. A more restrictive policy on gambling, or, in the extreme case, banning certain types of gambling altogether, would cause widespread economic disruption for the gambling industry. In this sense then, choosing one’s theoretical starting point for explaining the causes of problem gambling, will have significant implications for society.

The Situation in Norway

During the 90’s, following a liberalization of the Norwegian slot machine policy, we witnessed a considerable increase in the availability of such machines. We had more gambling machines per capita than most other countries and they were all of the fast-playing casino type. The fact that a large proportion of these machines were located at street level, without any age control, increased access availability (Lund, 2007). In 2005, Norwegians 15 years or older wagered an average of EUR 1424. Slot machines accounted for 66% of gross income (The Norwegian Gambling Authorities, 2008a). Several reports and studies from Norway show that the main problems for gamblers involve slot machines (Lund and Nordlund, 2003). Due to this, the authorities saw the need to regulate the market. Several actions were taken following political and juridical processes.

Norwegian legislators made two recent decisions which changed the gambling machine opportunity structure. The first outlawed banknotes as legal gambling machine tender, while the second banned slot machines altogether. The banknote restriction came into effect in July 2006 as a component of the government’s commitment to reduce problem gambling. The Norwegian Gambling Authority (2008b) considers the banknote ban a success; betting on slot machines and gambling helpline¹ calls (The Norwegian Gambling Authorities,

¹ The helpline was set up to help problem gamblers, their families and others requiring information about problem gambling. Health Region South East RHF runs the helpline together with the Norwegian Gaming Authority. Statistics are kept on the number of callers, age and gender, type of game discussed, and game causing most problems.

2008c) fell by about 40% in the wake of the banknote restriction. Furthermore, Engebø and Gyllstrøm (2008) found that the number of patients referred to 18 outpatient clinics treating pathological gambling decreased after the banknote restriction.

On July 1, 2007, a ban on slot machines entered into force in Norway. Legislators had acted in response to a perceived increase in problems associated with slot machines. An immediate effect of the new law was evident in the number of helpline calls (The Norwegian Gambling Authorities, 2008b). In July 2007, 90 calls were made to the helpline, representing a drop both in relation to the previous year (137) and to the monthly average over the first 6 months of 2007 (144). In the first six months following the ban on slot machines, the number of patient referrals to outpatient clinics mentioned above was more than halved (Engebø & Gyllstrøm, 2008). This might suggest that the removal of slot machines was followed by a reduction in gambling-related problems.

Pursuing this line of thought in terms of the workplace, we turn now to gambling opportunity structures found in the companies chosen for this study.

Gambling Opportunity Structure In The Transport Sector

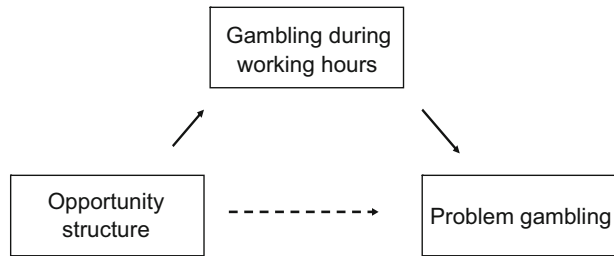
Problem gambling is not confined to any particular group; however, certain segments of the population do seem to be more vulnerable than others. A combination of factors—male, young, member of ethnic minority, low education and low socio-economic status—seems to increase the risk of developing a gambling problem or pathological gambling disorder (Lund, 2007; Abbott et al. 2004; Schaffer, Hall and Vander Bilt, 1999). This combination of risk factors is frequently found among bus, truck and taxi drivers (Statistics Norway, 2007). In addition to these individual risk factors, there are physical facilitators that pertain in particular to the transport sector. Workers in the transport industry have time to gamble—for instance, in between fares, for taxi drivers. And as drivers often find themselves during a shift in venues where slot machines are found (convenience stores, gas stations, etc.) they have the opportunity to gamble. Given this opportunity structure, we would expect a higher prevalence of gambling problems in this occupational group than in the workforce as a whole.

The aim of this article is to explore the relationship between the opportunity structure to gamble at the workplace, gambling during working hours and problem gambling among employees. We have the following hypotheses:

- People with time on their hands during work and with access to slot machines will gamble more during working hours.
- A higher prevalence of problem gambling will exist among employees that gamble during working hours.
- We expect a positive correlation between opportunities to gamble and problem gambling. However, we expect this association to be mediated through gambling during working hours. Thus, we expect this relationship between opportunity structure and problem gambling to disappear after controlling for gambling during working hours.²

² To substantiate a hypothesis where the relation between A (opportunity structure) and O (problem gambling) is mediated by B (gambling in working hours), then 1) A must predict O; 2) A must predict B; 3) B must predict O; 4) the connection between A and O should disappear or decline in strength after correcting for B (Kraemer et al 2001). Whether B acts as a mediator entirely or partially depends on whether the connection between A and O disappears or is only reduced in strength after correction for B (Holmbeck, 1997).

Fig. 1 The relationship between opportunity structure, gambling during working hours, and problem gambling



A mediator explains how or why one variable affects the dependent variable (Kraemer et al. 2001). Fig. 1 describes the relations between opportunity structure and problem gambling, indicated by a dotted line, based on the hypothesis that the connection is mediated by gambling during working hours.

Subjects and Methods

The data for this study was collected in connection with a study of problem gambling in the workplace³. Given the paucity of research in the area, it was useful to design the survey on the basis of information retrieved from qualitative interviews. Interviews were carried out with problem gamblers, managers, union representatives and organizational health services. Most of these respondents believed there to be a link between opportunities to gamble during working hours and problem gambling.

Surveys⁴ were carried out in three companies within the transport sector: a taxi service, a bus operator and a delivery service. Overall, questionnaires were distributed to 2,879 employees. The response rate was 38%. Males accounted for 85.4% of our sample. Slightly over 17% are ethnically non-Western.⁵ In terms of age distribution, there were three main groups, each accounting for about a third of the sample: persons under 40 years of age; persons aged between 40 and 50; and those over 50. Both the levels of education and of income are lower than for the average Norwegian worker.

The businesses were selected because they are representative of various types of business in the transport sector. Furthermore, these companies were larger than average in the Norwegian transport sector. The companies' leadership and labor unions were contacted so that they could give their approval to the study. Respondents do not comprise a random sample of the Norwegian workforce and do not represent Norwegian workers in general.

³ The study is part of the Government's Problem Gambling Action Plan. It is a three-year collaborative project between AKAN Workplace Advisory Center, Eastern Norway Center for addiction issues, and the Norwegian Gambling Authority. The study is funded by the Norwegian Directorate of Health.

⁴ Various methods were used to ensure standards were maintained during the design of the questionnaire. Focus groups and pilot interviews with employees, gamblers and therapists were used to make sure we asked the right questions, and were understood in line with intentions. Outside specialists in addiction and workplace research were used to make sure the questionnaire provided a reliable indicator of the phenomena we are interested in.

⁵ Non-Western origin means that either yourself, or both of your parents come from non-western countries.

In conformity with our hypotheses, we focus on three groups of variables. The first measures opportunity structure. The second establishes prevalence of gambling during working hours. The third is an index of problem gambling.

In devising an indicator of an employee's gambling opportunity structure, the two most important factors were spare time during shifts and exposure to gambling opportunities. An image of the employee's gambling opportunity structure is therefore obtained by looking at:

- Time available for gambling during working hours. The question was phrased as follows in the questionnaire: "Think about a normal day at work. Roughly how much spare time do you have (Breathing space, waiting time, dead time, breaks)?" The five response alternatives covered different amounts of time.
- Presence in a venue with slot machines during working hours. The question was formulated as "Are you in venues with slot machines during working hours?" The response alternatives here were "yes" and "no". This opportunity structure indicator deals only with slot machines, not other forms of betting, such as gambling online or remotely.

To determine whether employees take time out from their shift to play slot machines, we posed the following question: "Reflect over the last five days at work. About how much of your working time did you spend gambling?" There were six response alternatives to this question, covering all forms of gambling. We dichotomized the variable in the analysis into those who did and those who didn't gamble during working hours.

The NORC DSM Screen for Gambling Problems (NODS) was deployed to measure the prevalence of problem gambling. NODS is based on DSM-IV criteria (American Psychiatric Association, 1994), and developed by Opinion Research Center, University of Chicago (Gerstein et al. 1999). A psychometric evaluation of the Norwegian version of NODS ($N=5332$) (Lund and Nordlund, 2003), confirmed that the scale has adequate reliability ($\alpha=0,78$). NODS can estimate prevalence over a lifetime and in the present (i.e. the last 12 months). We apply the past-year version. NODS - past year, has seventeen questions and the highest score is 10. The cut-off for problem and pathological gambling is 3 or 4 and 5, respectively. For our purposes, we dichotomized the variable. Individuals with scores >3 on the NODS were classified as problem gamblers.

The data was collected during the spring of 2007. Contacts in the different companies handed out and collected the questionnaires. The overall response rate was 38%. Lund (2007) points out that a very low prevalence rate of problem gambling is likely to affect the response rate. Low response rates are also likely to undermine the reliability of the study as we lack information on the non-responders. People with gambling problems are arguably also more likely to avoid participating in surveys (Lesieur, 1994). There are basically two reasons for this type of behavior. 1) A sense of shame and other painful feelings associated with gambling will motivate problem gamblers to avoid survey participation, or to underreport the extent of their gambling problems. An Australian study found support for this hypothesis; only 29% ($N=401$) of the patients in therapy for problem gambling said they would give an honest answer to questions about problem gambling (Australian Productivity Commission, 1999). 2) Problem gamblers are systematically more difficult to reach than others due to irregular habits. For example, they are less likely to spend evenings at home and are less likely to have a telephone or be accessible by telephone. This did not affect our sample, as the questionnaires were distributed at the workplace, except for some of the taxi drivers whose questionnaires were sent by mail. On the other hand, it has also been argued that people with little interest in and experience with gambling will be less

interested in taking part in surveys (Volberg, 2002 cited in Lund and Nordlund, 2003). The response rate did not differ between gender and age groups.

We used SPSS (Version 15.0) for data analysis. We ran the data through binary (binomial) logistic regression analyses. Dependent variables were “gambling during working hours” and “problem gambling”, respectively.

Results

A third of employees in this sample have more than two hours to spare at work every day. 21.2% reported being in the vicinity of a gambling machine during working hours. This means that a gambling opportunity exists in the companies included in the study. 6.8% reported that they gambled during working hours. With a threshold of 3 or more on the NODS scale, 3.2% of the employees could be characterized as problem gamblers. In comparison, 0.7% of the general population in Norway suffers from problem gambling, according to a recent survey (Øren and Bakken, 2007).

Opportunity Structure Predicts Gambling During Working Hours

Under the hypothesis that opportunity structure predict gambling during working hours, “spare time during working hours” and “being in a venue with slot machines during working hours” were entered into a logistic regression model. We did this to establish the variables’ validity in predicting whether an employee gambled during working hours. Opportunity structure predicted gambling during working hours (see Table 1). The model explained 10.6% of the variation in the dependent variable (R^2 Nagelkerke).

The results support the hypothesis that people with time on their hands during work and with access to slot machines gamble more during working hours.

Opportunity Structure Predicts Problem Gambling

In compliance with Fig. 1, the same variables were used to see if they predicted problem gambling. The opportunity structure variables were entered into a regression model to explore their ability to predict problem gambling in the workforce. The opportunity structure predicted problem gambling among employees (see Table 2, Step 1). This model explained 5.9% of the variance in the dependent variable (R^2 Nagelkerke).

In respect to Fig. 1, we can confirm the variable’s ability to predict both gambling during working hours and problem gambling. The likelihood of being a problem gambler increases if you have spare time and are in the vicinity of slot machines during working hours.

Table 1 Logistic Regression Analysis. Dependent Variable: Gambling During Working Hours (no/yes)

	B (S.E.)	OR	95 % confidence interval
Constant	−5.82 (.59) ***	0.0	
Spare time (more than 2 h)	1.22 (0.28) ***	3.4	1.97–5.79
In vicinity of slot machines (no/yes)	1.10 (0.59) ***	3.0	1.76–5.15

*** $p > 0.001$

Table 2 Hierarchic Logistic Regression Analysis. Dependent Variable: Problem Gambling (no/yes)

	Step	B (S.E.)	OR	95 % Confidence interval
Constant	1	-5.98 (0.79) ***	0.0	
Spare time (more than 2 h)	1	0.96 (0.38) *	2.6	1.24–5.49
In vicinity of slot machines (no/yes)	1	0.96 (0.38) *	2.6	1.23–5.50
Constant	2	-7.91 (0.87) ***	0.0	
Spare time (more than 2 h)	2	0.51 (0.41) ns	1.7	0.75–3.73
In vicinity of slot machines (no/yes)	2	0.48 (0.42) ns	1.6	0.71–3.66
Gambling during working hours (no/yes)	2	2.64 (0.42) ***	14.0	6.09–32.07

*** $p < 0.001$, * $p > 0.05$, ns=not significant

Gambling During Working Hours Predicts Problem Gambling

To gauge gambling during working hours as a valid predictor of problem gambling, the variable was entered into a logistic regression model as Step 2 after the opportunity structure variables. Gambling during working hours did, indeed, predict problem gambling (see Table 2, Step 2). The model explained 20.7% of the variance in the dependent variable (R^2 Nagelkerke).

In accordance with Fig. 1, there is evidence to support that gambling during working hours increases the likelihood of being a problem gambler.

Relations are Mediated

In Fig. 1, the relation between opportunity structure and problem gambling, indicated by the dotted line, is assumed to be mediated by gambling during working hours. To substantiate this mediation hypothesis, the opportunity structure has to predict gambling during working hours and problem gambling. And gambling during working hours must predict problem gambling. Whether gambling during working hours mediates fully or partly depends on whether the relationship between opportunity structure and problem gambling disappears or only diminishes after correcting for “gambling during working hours” (cf. Holmbeck, 1997).

The opportunity structure predicted gambling during working hours (Table 1) and problem gambling (Table 2, Step 1). Gambling during working hours also predicted problem gambling in the workforce (Table 2, Step 2). At the same time, opportunity structure did not predict problem gambling after “gambling during working hours” was included (corrected for) in the model (Table 2, Step 2).

This lends support to our hypothesis stating that opportunity structure are positively related to problem gambling. Persons with an opportunity to gamble while at work will gamble more during working hours, and this increases the risk of problem gambling. In other words, “gambling during working hours” appears to act as a mediator between opportunity structure and problem gambling. Furthermore, the variance in problem gambling predicted by the opportunity structure seems to be mediated in its entirety by gambling during working hours.

Discussion

About one third of the respondents reported having at least two hours of spare time during a day at work. More than a fifth reported visiting venues with slot machines during their shift.

Hence, opportunities to gamble during working hours exist in the companies included in the study. Nearly 7% reported that they gambled during working hours. The prevalence of problem gambling seems to be more than four times higher in this sample than in the general population. The gambling opportunity structure might be one of the factors contributing to a higher prevalence of problem gambling among these employees.

In this sample; the opportunity structure facilitators increase the likelihood of workforce gambling. If an employee gambles during working hours, the odds of problem gambling increases fourteen-fold. On the basis of our analyses, it appears that the connection between opportunity structure and problem gambling is mediated by gambling during working hours. This mediation hypothesis is based on four sub-hypotheses. When a hypothesis depends on substantiating all four sub-hypotheses, it reduces the probability of erroneously rejecting the null hypothesis (type 1 error). In support of the mediation hypothesis, all four sub-hypotheses were confirmed.

Since the study is based on a cross-sectional study it is difficult to establish the proper sequence of the different variables. This, in turn, weakens the reliability of causal conclusions. To gain reliable confirmation that gambling opportunity structure is a cause of problem gambling, mediated through gambling during working hours, requires opportunity structure to precede gambling during working hours. The opportunity structure must also precede problem gambling. In other words, there must be an opportunity to gamble, gambling must occur, and it must thereafter lead to problem gambling. Now, we cannot exclude the possibility of a reverse sequence. Since we are unable to reliably determine the temporal sequence of these variables, we cannot rule out that problem gambling is a cause of gambling during working hours. There may also be mutual interaction between the variables.

Individual employees have little impact on the objective opportunity structure. Spare time at work is generally determined by the employer.⁶ The employer has the means to decide whether employees are exposed to slot machines in the workplace. Given this fact, the probability of gambling problems in the workforce or of gambling during working hours being the cause of the objective opportunity structure would be small. The opportunity structure variables are, nonetheless, based on self-reporting. So, rather than measuring the objective opportunity structure, we may have measured its subjective perception or the subjective opportunity structure. The latter would also be a reflexive construct, affected by what the individual brings to the situation. Problem gamblers in the workforce may systematically entertain different perceptions of the opportunity structure and organize their schedules to increase the possibility of getting to venues with slot machines. They may be more likely to notice slot machines and justify the time they spend gambling by reporting that they have more spare time.

A self-reported opportunity structure would probably not differ significantly from the objective opportunity structure. Given a strong correlation between opportunity structure and problem gambling, it would be reasonable to see the cause of part of this correlation in the objective opportunity structure. In our analyses, however, opportunity structure explains less than 6% of the variance in problem gambling among employees. We are, therefore, unable to identify causal directions between gambling opportunity structure, gambling during working hours and problem gambling. The established relationship between opportunity structure and problem gambling may also be spurious in the sense that problem gambling may predispose for gambling during working hours and also explain the

⁶ The exception in our study would be the taxi drivers who own their own vehicles.

subjective opportunity structure. A third possibility that cannot be discounted is reciprocal effects of variables on one another (reciprocal correlation).

In this study, we operationalized opportunity structure using only two criteria: reported spare time during working hours and respondents' reports of being in the vicinity of slot machines during working hours. If we had included more facilitators in our operationalization of the opportunity structure, it may have explained more of the variance in the dependent variables. Hing and Breen (2008) have identified several possible facilitators for gambling among gambling venue staff. Some of these will also be relevant for employees in the transport sector. For example, since bus and taxi drivers often carry money to provide change to customers, they might use it on gambling. This money—or a lack of control routines for this money—might be a facilitator for gambling. Other types of gambling than on slot machines have different opportunity structures not well captured here. For example, access to the Internet, will be a part of the opportunity structure for gambling on the Internet.

One limitation with this study is the aforementioned, non-representative sample. It is possible that the associations found in this sample between gambling opportunity structure, gambling during working hours and gambling problems is limited to this sample. Furthermore, it is rather likely that the gambling opportunity structure described in this article is limited to employees in the transport sector. On the other hand, our findings are in accordance with earlier research on availability, consumption and problems in the fields of gambling (Cox et al., 2005; Mason, 2008; Shaffer, Vander Bilt, and Hall, 1999; Volberg, 1994; Welte et al., 2004) and addiction research (Babor et al., 2003; Room et al., 2005).

This study takes account of Shaffer, Hall and Vander Bilt's (1999) advice to focus on potential groups at risk, including risk occupations. This is the first piece of research to look into gambling among employees in the transport sector. It is also the first examination of correlations between perceived opportunity structure, gambling during working hours and problem gambling in the workforce.

Conclusion

As predicted by exposure theory, in the course of the study we identified the opportunity structure as a risk factor for, but not necessarily a cause of, gambling during working hours and problem gambling. Gambling during working hours is a major risk factor for problem gambling. This means that management staff should be at the ready should an employee take time out during a shift to gamble. This would send an important signal concerning policy out to business and labor groups. Social partners could play an important role in the prevention of problem gambling. Employees who gamble during working hours might very likely have a gambling disorder. In this sense, gambling problems can probably be detected more readily in the workplace. Being aware of the risks and maintaining vigilance could result in problem gamblers getting help at an earlier stage, and some of the harmful effects might be limited.

When attempting to prevent problem gambling, changing contextual factors such as opportunity structure can be easier and more effective than attempting to change the individual (Welte et al., 2004). Companies can implement strategies that reduce the time employees find themselves at places with slot machines, and spare time at work could be organized by the management. In other words, the objective opportunity structure is amenable to regulation and management.

It is also possible to do something about the subjective opportunity structure. Management can make it clear that gambling at work will not be tolerated, while

monitoring the situation and initiating assistance measures for implicated employees. To impact company culture, a ban on gambling at work could be incorporated in the company's internal guidelines.

It is clear that business and labor face new challenges in the foreseeable future. The technology of gambling is changing and so are the gambling opportunity structure. The Internet is universally accessible, as is gambling by mobile phone. Previously in this paper, we identified the workplace as a good place to detect problem gambling. In occupational risk groups, the workplace itself might be an arena for intervention. However, this will require further research in order to establish the extent of the problem, its effect on the workplace, and to measure the effects of preventive interventions.

References

- Abbott, M. (2005). Disabling the public interest: gambling strategies and policies for Britain: a comment on Orford 2005. *Addiction*, *10*, 1233–1235. doi:10.1111/j.1360-0443.2005.01198.x.
- Abbott, M., Volberg, R., & Rönnerberg, S. (2004). Comparing the New Zealand and Swedish national surveys of gambling and problem gambling. *Journal Of Gambling Studies*, *20*, 237–258. doi:10.1023/B:JOGS.0000040278.08853.c0.
- American Psychiatric Association (1994). *Diagnostic and statistical manual of the mental disorders (4th ed., Rev)*. Washington, DC: American Psychiatric Association.
- Australian Productivity Commission (1999). *Australian gambling industries. Report no. 10*, Canberra: Ausinfo.
- Babor, T., Caetano, R., Casswell, S., Edwards, G., Giesbrecht, N., Graham, K., et al. (2003). *Alcohol: Research and public policy*. Oxford: Oxford University Press.
- Blazczinsky, A. (2005). To formulate gambling policies on the premise that problem gambling is an addiction may be premature. *Addiction*, *10*, 1230–1232. doi:10.1111/j.1360-0443.2005.01199.x.
- Cox, J. B., Yu, N. N., Afifi, T. O., & Ladouceur, R. (2005). A national survey of gambling problems in Canada. *Canadian Journal of Psychiatry*, *50*, 213–217.
- Engelbø, J., Gyllström, F. (2008). *Regulatory changes and finally a ban on existing slot machines in Norway: What's the impact on the market and problem gambling?* Presented at the 2008 International Gambling Conference. Auckland, New Zealand, February 2008.
- Gerstein, D., Hoffman, J., & Larison, C. (1999). *Gambling impact and behaviour study*. Report to the National Gambling Impact Study Commission. Chicago: National Opinion Research Center at the University of Chicago.
- Griffiths, M. (1995). The role of subjective mood states in the maintenance of fruit machine gambling behavior. *Journal Of Gambling Studies*, *11*, 123–135. doi:10.1007/BF02107111.
- Griffiths, M. (2003). Internet gambling: Issues, concerns, and recommendations. *Cyberpsychology & Behavior*, *6*, 557–568. doi:10.1089/109493103322725333.
- Hing, N., & Breen, H. (2008). Risk and protective factors relating to gambling by employees of gaming venues. *International Gambling Studies*, *8*, 1–23. doi:10.1080/14459790701870100.
- Hing, N., & Breen, H. (2006). Workplace factors that encourage and discourage gambling amongst gaming venue employees: An employee's perspective. *Gambling Research: Journal of the Natural Association for Gambling Studies (Australia)*, *18*, 7–32.
- Hing, N., & Breen, H. (2005). Gambling amongst gaming venue employees: Counsellors' perspective on risk and protective factors in the workplace. *Gambling Research: Journal of the Natural Association for Gambling S*, *17*, 25–46.
- Holmbeck, G. N. (1997). Toward terminological, conceptual and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal Of Consulting And Clinical Psychology*, *65*, 599–610. doi:10.1037/0022-006X.65.4.599.
- Hundeide, K. (2003). *Barnas livsverden: sosiokulturelle rammer for barns utvikling*. Oslo: Cappelen Akademisk Forlag.
- Kraemer, H. C., Stice, E., Kazdin, A., Offord, D., & Kupfer, D. (2001). How do risk factors work together? Mediators, moderators, and independent, overlapping and proxy factors. *American Journal of psychiatry*, *158*, 848–856.
- Ladouceur, R., Boisvert, J. M., Pepin, M., Loranger, M., & Sylvian, C. (1994). Social cost of pathological gambling. *Journal of gambling studies*, *10*, 399–409. doi:10.1007/BF02104905.

- Lesieur, H. R., & Custer, R. L. (1984). Pathological gambling: Roots, phases, and treatment. *Ann Am Acad Pol Soc Sci*, 474, 146–156. doi:10.1177/0002716284474001013.
- Lund, I. (2007). Lessons from the grey area: A closer inspection of at-risk gambler. *Journal Of Gambling Studies*, 23, 409–419. doi:10.1007/s10899-007-9058-4.
- Lund, I., & Nordlund, S. (2003). *Pengespill og pengespillproblemer i Norge*. Oslo: Statens institutt for rusmiddelforskning.
- Martinussen, W. (1985). Flernivåanalyser. In B. Dale, M. Jones, & W. Martinussen (Eds.), *Metode på tvers. Samfunnsvitenskaplige forskningsstrategier som kombinerer metoder og analysenivåer* (pp. 217–239). Trondheim: Tapir.
- Martinussen, W. (1991). *Sosiologisk analyse. En innføring*. Oslo: Universitetsforlaget.
- Mason, K. (2008). *Does distance to gambling venues matter?* Presented at the 2008 International Gambling Conference. Auckland, New Zealand, February 2008.
- Norwegian Gambling Authorities. (2008a). Gaming in Norway 2005, Retrieved August 08, 2008, from <http://www.lottstift.no/dav/0e11d3c4b0.pdf>
- Norwegian Gambling Authorities (2008b). *Årsmelding 2007*, Retrieved Mai 27, 2008, from <http://www.lottstift.no/dav/b961e49a31.pdf>
- Norwegian Gambling Authorities (2008c). *Samtalestatistikk 2007*. Retrieved Mai 27, 2008, from <http://www.lottstift.no/dav/d3cf09723d.pdf>
- Nower, L. (2003). Pathological gamblers in the workplace: a primer for employers. *Employee Assist Q*, 18, 55–72. doi:10.1300/J022v18n04_03.
- Orford, J. (2005). Disabling the public interest: gambling strategies and policies for Britain. *Addiction*, 9, 1219–1225. doi:10.1111/j.1360-0443.2005.01143.x.
- Room, R. (2005). The wheel of fortune: Cycles and reactions in gambling policies. *Addiction*, 10, 1226–1227. doi:10.1111/j.1360-0443.2005.01201.x.
- Room, R., Babor, R., & Rehm, J. (2005). Alcohol and public health. *Lancet*, 365, 519–530.
- Rønneberg, S. (2005). Steps toward responsibility. *Addiction*, 10, 1232–1233. doi:10.1111/j.1360-0443.2005.01202.x.
- Shaffer, H. J., Hall, M. N., & Vander Bilt, J. (1999). Estimating the prevalence of disordered gambling behavior in the United States and Canada: a research synthesis. *American Journal Of Public Health*, 89, 1369–1376.
- Shaffer, H. J., LaBrie, R. A., & LaPlante, D. (2004). Laying the foundation for quantifying regional exposure to social phenomena: considering the case of legalized gambling as a public health toxin. *Psychology Of Addictive Behaviors*, 18, 40–48. doi:10.1037/0893-164X.18.1.40.
- Shaffer, H. J., Vander Bilt, J., & Hall, M. N. (1999). Gambling, drinking, smoking and other health risk activities among casino employees. *American Journal Of Industrial Medicine*, 36, 365–378. doi:10.1002/(SICI)1097-0274(199909)36:3<365::AID-AJIM4>3.0.CO;2-I.
- Sharpe, L., Tarrier, N., Schotte, D., & Spence, S. H. (1995). The role of automatic arousal in problem gambling. *Addiction*, 90, 1529–1540. doi:10.1111/j.1360-0443.1995.tb02815.x.
- Statistics Norway (2007). *Statistical yearbook of Norway 2007*. Retrieved May 28, 2008, from <http://www.ssb.no/english/yearbook/>
- Volberg, R. A. (1994). The prevalence and demographics of pathological gamblers: implications for public health. *American Journal Of Public Health*, 84, 237–241.
- Volberg, R. A. (2002). *Gambling and gambling problems in Nevada*. Report to the Nevada Department of Human Resources.
- Welte, J. W., Wierzorek, W. F., Barnes, G. M., Tidwell, M. C., & Hoffman, J. H. (2004). The relation of ecological gambling behavior and pathology. *Journal Of Gambling Studies*, 20, 405–423. doi:10.1007/s10899-004-4582-y.
- Øren, A., & Bakken, J. (2007). *Pengespill og pengespillproblem i Norge 2007*. Trondheim: SINTEF Helse. Avdeling for epidemiologi.