Gambling and Risk Behaviour:

A Literature Review

Prepared by

Erin Gibbs Van Brunschot

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Executive Summary

Determining the connections between gambling and other forms of risk activity is a complicated task. The research literature is not clear on the nature of the relationship between gambling and risk activity and, specifically, whether behaviours that appear somewhat similar derive from the same or different sources. On the one hand, researchers tend to use risk activities to predict certain other risk activities – a strategy that relies on the assumption that these activities stem from different sources. Still other studies suggest that risk activity, including gambling, are symptomatic of an underlying issue or issues and are therefore related and unsuited to use in causal models.

In this review, we take a high level approach and establish the factors that are commonly associated with and used to explain both gambling and various risk activities. Demographic features come to the fore, including age, sex, socioeconomic status (SES) and family background. We then consider particular types of risk activities which are frequently discussed in the research literature. While the range of risk activity is far-reaching, we limit our discussion to particular types of risk activity – those that tend to be most frequently discussed in tandem with gambling activity, including: alcohol use, drug use, smoking, and suicidal behaviour; also briefly referring to other less prominent types of risk activity, such as ‘risky’ sexual activity. The relationship between drinking and gambling, for example, is a mainstay of the gambling literature. Finally, we consider the explanations used to link these behaviours together, drawing specifically upon sociological, psychological and economic accounts of these behaviours.
To establish these connections and identify themes, an extensive review of the
literature was conducted using a number of databases, as detailed in Appendices One and Two.
The initial search of the literature involved the identification of over 80 000 items, which were
subsequently reduced through the use of Endnote (a bibliographic software) to include only the
material deemed best suited to exploring the question of gambling’s link to other risk activity.
Introduction

Understanding the complex associations between gambling and risk activity is difficult. Prior research has not clearly specified the nature of the relationship between these types of behaviour. What is more, it remains unclear whether seemingly similar behaviours stem from the same or different sources. In this review of the literature, we take a high level approach and establish the factors that are commonly associated with and used to explain both types of activities.

Dimensions of Risk

The notion of ‘risk’ is commonplace throughout society today. For example, we hear of risk associated with playing the stock markets – individuals vary in their willingness to go ‘out on a limb’ to reap financial rewards or, possibly, suffer financial losses. Gamblers also ‘take risks’ – they expose themselves to potential loss or gain when involving themselves in gambling activity. Some who play the stock market reap rewards for exposing themselves to potential loss; similarly, some gamblers ‘win big’ by exposing themselves to possible financial loss through particular betting strategies. Beyond those activities where there may be tangible gains or losses, one could argue that there are potential gains or losses associated with many of the behaviours that we engage in on a daily basis. Public speaking, for example, is infused with risk – we may embarrass ourselves (suffer loss) or we may effectively transmit our message (experience gain). Similarly, using illegal drugs may result in gain or loss – one may, for example, either get high or get caught.

Common use of the word ‘risk’ tends to imply negative outcomes, yet risk activities may also result in positive outcomes. Clearly there are different categories of risk activity, some of
which imply differences based on the *nature* of the losses or gains experienced. Losses and gains may be financial, social and physical, to name just a few. Further, there are *degrees* of loss or gain associated with risk activities: the individual who buys a weekly lottery ticket may be taking fewer risks (reducing his or her potential losses or gains) than one who gambles with life savings in the poker room.

Another means of categorizing risk behaviour may take into account *exposure*: those who participate in various (risk) activities may be differentially exposed to other (risk) activities. In particular, individuals engaging in certain risk behaviours may be exposed to other risk activities through personal interactions and associations with others; through the ‘clustering’ of various risk activities (co-morbidities); or through the geography that either includes or excludes particular opportunities for participation. For example: back country skiers may meet and associate with ice-climbing enthusiasts due to overlapping memberships in each sport; similarly, the use of alcohol and drugs appears to be associated with a certain level of gambling activity. In terms of geographic exposure, gang activity – another form of risk behaviour – is simply less likely in areas characterized by a substantially older demographic.

This literature review is divided into five parts: the first considers the concept of risk as it relates to gambling and other activities that have been similarly cast as “risky” or as “risk behaviour”. This overview of risk suggests that, when applied to gambling and other activities, risk is a multi-functional concept and is employed in very different ways in different contexts. The second part of the review considers a number of ‘risk factors’ often considered to be associated with or predictive of gambling and risk activities – factors such as age and sex. The third part considers risk activities found more prominently in the literature, including, for
example, alcohol and drug consumption, smoking and suicidal behaviours. A review of theories that link gambling and other forms of risk activity is found in the fourth part of the review, and the fifth part of the review contains concluding comments. The appendices include an explanation of the method used to identify articles for this project; a lengthy bibliography of sources that have contributed to this overview, as well as a list of sources by subject.

1. Framing Gambling and Risk Behaviour

There are a number of ways in which the activity of gambling may be framed, with the concept of risk, not surprisingly, figuring prominently. In its most accurate sense, ‘risk’ refers to probabilities of future events – events which may be negative or positive, or some combination thereof. However, as Mary Douglas (1992) indicates, the concept of risk has become fraught with negativity – ‘risk’ tends to be associated with negative characteristics, events and behaviour. Further, everyday use of the term risk has tended to remove the future orientation of the concept. Rather than implying an outcome that has yet to occur, risk is often used to describe a negative attribute or circumstance in the present. Yet gambling activity is centrally defined by consequences, or future events, with various gambling outcomes associated with losses or gains. These losses and gains, however, are not restricted to the economic dimension, as is perhaps the most common depiction of gambling, but may also include gains and losses in terms of social relationships (social capital), for example, and life chances (cultural capital).

While we may think of gambling behaviour as the product of individual choice or, alternatively, individual compulsion, this activity is impacted by structural features that may facilitate or hinder the probability of participating in certain types of gambling, and which may
further impact the extent or degree of participation in specific types of gambling. Institutional bodies, such as governments, provide opportunities for gambling by either limiting or restricting access to specific types of games. For example, provincial governments across Canada have implemented regulations that impact public accessibility to video lottery terminals (VLTs). As noted by Stevens, “A major 1985 amendment to the Criminal Code permitted provincial governments to administer computer and video gaming devices (i.e. VLTs, slot machines) and gave them exclusive control over gambling” (2005:1). The desire for governmental control stems, at least in part, from the revenue generated from what is, essentially, ‘rent’ or ‘royalties’ from the regulation of gambling activity: gambling activity includes revenues generated by participation that may be subsequently placed into government coffers. It is important to note, however, that this revenue generation may be somewhat mediated by the costs associated with the treatment of problem gambling.

Yet a focus on the ‘outcomes’ of gambling activity is only one way in which gambling activity has been studied. There are precursors to gambling activity that may be the focus of study: researchers have attempted to identify the factors that lead to gambling and how particular factors might encourage individuals to participate in gambling, or, alternatively, how certain factors discourage (or protect against) the likelihood of its occurrence. Precursors to gambling activity are referred to as ‘risk factors’ (essentially ‘threats’ or ‘vulnerabilities’) if they

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increase the likelihood of problem gambling, and ‘protective factors’\(^2\) if they reduce the likelihood of problem gambling.

Individual characteristics may set the stage for increasing or decreasing the likelihood that individuals may gamble or, often more importantly, gamble too much or with detrimental effects. Along with individual-level factors, structural factors also impact on gambling activity and serve to increase or decrease the likelihood of its occurrence. Opportunities for gambling behaviour are limited or promoted by the regulatory agencies that govern them. For example, while VLTs may be government controlled, with restrictions on the numbers of machines available for licensing, regulatory bodies also determine where these machines can be located, with the result that they may be placed in close proximity to, or in, drinking establishments. Further, although the Criminal Code of Canada defines various types of gambling as illegal, gambling offenses are time-consuming for police to address. If there are few structural impediments to gambling activity, such as law enforcement to serve as a deterrent to it, this structural feature may increase the likelihood of its occurrence. While gambling is undertaken by individuals, the contexts in which it occurs are deeply impacted by structural factors.

With respect to gambling activity (and other “risk” activities), it is important to recognize that there is a gradient or continuum associated with this activity, from non-problematic, or social, at one end of the continuum, to problematic at the other end. Clearly not all gambling behaviour is problematic, nor is all of it benign. How and where the gradient shifts from non-problematic to problematic is the subject of much research and debate.

\(^2\) More accurately speaking, ‘risk factors’ should impact on the risk of either positive or negative outcomes, yet the literature refers to risk factors as those which enhance the probability of negative outcomes, while protective factors increase the probability of positive outcomes.
particular “risk factors” may serve to push or pull individuals into more problematic levels of play, other protective factors may insulate play from problematic levels. Similarly, it is inaccurate to paint all ‘risk behaviour’ as negative. In North American society, some degree of risk-taking is expected and rewarded. We consider this further below.

Associated with push/pull and protective factors, is the impact of risk perception. Risk perception is a multi-faceted concept that serves as an umbrella to issues that include: vulnerability, self-esteem, anticipated outcomes and probability estimates (and weights) of particular outcomes, exposure to hazards/opportunities, available resources and perceived control. Individuals differ in terms of how they perceive the likelihood of particular events and outcomes depending upon their respective backgrounds, including their experience with various activities, as well as their assessments of their resources. For example, individuals who are in poor health may perceive the outcomes of drinking alcohol as negative or “too risky” (involving a greater chance of a negative outcome). Behaviour will therefore be tempered by social location – personal attributes and characteristics – and the perception that harm or benefit will accompany participation in particular behaviours.

Risk perception is reviewed more thoroughly below, but importantly, risk perception is relevant to each temporal phase of behaviour. For example, our understanding (perception) of the possible impacts, positive or negative, of participating in particular activities determines, at least in part, our willingness to actually partake of particular activities. Similarly, while we participate in various behaviours, we assess our potential for losses or gains on an on-going basis, perhaps choosing to increase or continue with an activity, reduce the level of play, or stop the behaviour altogether. Finally, in the aftermath, post-participation, we may consider
our behaviours either positively or negatively, which, in turn, impacts upon the likelihood of repeating or continuing to participate in particular activities. Perception therefore impacts behaviour at every stage. Perceptions may not, of course, cohere with and reflect reality. Individuals may not assess their vulnerabilities in accurate ways, for example, nor may they even register vulnerability. [Table One suggests different aspects of gambling and risk behaviour that have been the focus of studies of gambling and risk activity.]

Table One: Gambling and Risk Behaviour – Focal Points

<table>
<thead>
<tr>
<th></th>
<th>Precursor</th>
<th>Behaviour</th>
<th>Aftermath</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural</td>
<td>▪ laws, regulations and enforcement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk Perception</td>
<td>▪ “risk” and “protective factors”</td>
<td>▪ “risk taking”</td>
<td>▪ consequences and non-sequences</td>
</tr>
<tr>
<td></td>
<td>▪ “risk behaviours” (co-morbidities)</td>
<td>▪ “risk behaviours” (co-morbidities)</td>
<td>▪ losses and gains</td>
</tr>
</tbody>
</table>

Risk is also ‘perceived’ at an institutional level, with various factors playing a role in how institutions consider risk. Political regimes, for instance, play a central role in how behaviours are defined. Conservative governments, for example, may attempt to curb particular activities, viewing them as morally harmful or detrimental to traditional norms. On the other hand, fiscally conservative governments may see gambling activity as a means to generate revenue, thereby ‘perceiving’ gambling activity positively. The resources available to governments and institutions also impact how issues are defined. Those with greater resources may be more willing to focus their attention on specific problems than are institutions that have fewer
resources available. A government that has a great deal of money to work with will prioritize the use of that money differently than a government that may have fewer resources. If funds are limited, only certain types of activities will be identified as ‘risky’ or risky enough to address through institutional means.

Despite the relevance of the concept of risk to gambling activity, the ways in which the concept of risk is used tends to obscure its connection to gambling as much as it illuminates. First, gambling is often considered to be one of a number of ‘risk factors’ that may include smoking, drinking and drug use, for example. If gambling is a risk factor or predictor, it remains unclear as to what, specifically, is ‘at risk’. What does gambling (and other “risk factors”) predict? Second, there is the suggestion that certain behaviours are the signs of trouble (problems are yet to come), yet these behaviours may also be the ‘trouble’ themselves. Third, although gambling tends to be correlated with smoking, drinking, etc., these correlates have been used to predict associated behaviour without fully explicating the causal links between them. For example, drinking and drug use may in fact be correlated, but using these to predict gambling behaviour does little to explain how or why these behaviours may occur in the first place and what their subsequent connections are. In the discussion that follows, we begin with a discussion of gambling and other behaviours (and characteristics) identified in the literature as ‘risk factors’.

2. Gambling and ‘Risk Factors’

Gambling activity tends to be categorized according to participation and the relative disruption and exposure to harm that gambling may bring to an individual’s life. Often,
disruption is measured by the time spent at a particular activity in association with the resulting consequences of that activity. For example, Currie and colleagues (2006) indicate that the likelihood of experiencing harm from gambling-related activity climbs the more often one gambles and the more money is invested in gambling activity. As with studies of alcohol consumption, these authors refer to “risk curves” – the levels of consumption (in the case of alcohol) that result in various degrees of harm: “low risk” participation, for example, has optimal limits based specifically on relatively low levels of participation (or consumption, in the case of alcohol use). Categorizations of gambling behaviour tend to fall along a particular range, from ‘low-risk’ gambling, at one end, to ‘at-risk’ gambling, to ‘high-risk/problem’ gambling at the other end (i.e. Langhinrichsen-Rohling et al, 2004). For many researchers, the goal has been to identify the factors that may contribute to an individual being placed within a certain category, as well as factors that may result in advancing to more deleterious categories (see Table Two: harm increases as one moves right).

<table>
<thead>
<tr>
<th>Table Two: “Risk” Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gambling/Risk Activity</td>
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<tr>
<td>Degree of harm:</td>
</tr>
</tbody>
</table>

References to ‘risk’ or ‘protective’ factors in relation to gambling point to the examination of particular activities (or characteristics) that may either ‘encourage’ or ‘inhibit’ movement between categories of relative harmfulness. For example, if an individual gambles
moderately, but couples this gambling activity with significant alcohol or drug intake, the likelihood, or risk, of harm to that individual may increase. On the other hand, if an individual gambles moderately but refrains from drinking and sets a dollar limit to his or her activities, then the likelihood of negative experiences associated with gambling may be reduced. In effect, risk factors associated with low-risk activities would be those that would increase the likelihood of harm: non-problematic participation is examined to determine factors insulating individuals from harm. Alternatively, particular behaviours and factors are examined that might cause movement to a higher likelihood of problems associated with ‘risk’ activity. For those who participate in high-risk activity, consideration is given to the types of factors and characteristics that accompany such high-risk behaviour and sustain or maintain high-risk activity, rather than diminish it.

Essentially, when a particular level of gambling is considered as one among other risk activities, the assumption is that heightened numbers (and degrees) of ‘risk factors’ will have the effect of increasing the likelihood of harm – harm which may occur either in the realm of gambling or in another realm of risk activity. Yet there is a distinction made in the literature with regard to the meaning behind the convergence of risk factors, with the possibility that these may reflect a ‘syndrome’ of problematic behaviour (see, for example, Huang et al, 2007). According to this interpretation of risk factors, it is assumed that the same causal mechanisms are responsible for the convergence or clustering of such activities or characteristics. It is important to note, however, that the meaning behind risk activities may be different depending where on the continuum we are focused. A cluster of ‘low-risk’ activities has different meaning than, for example, a clustering of high-risk activities.
And yet, the research is not clear: other studies suggest a weak tendency for addiction across substances and activities, and cast doubt on the notion that there is, for example, an addictive personality (Rozin and Stoess, 1993). It may be that risk behaviours, while correlated, stem from very different beginnings. We turn to explanations of gambling and risk activity later in our discussion.

Whether we assume that risk activities are ‘risky’ because they contribute to increased probabilities of harm, or they are indicative of a syndrome or condition generally considered negative, in the discussion that follows we review the range of activities and characteristics associated with gambling behaviour. It should be noted that the vast majority of studies focus attention on gambling as problematic, despite the fact that prevalence studies have typically found that a relatively small proportion of gamblers may be classified as ‘problem’ or ‘pathological’, with estimates generally at about 2% of the population, with those considered ‘at risk’ accounting for another 2-4% (Miller and Currie, 2008). As suggested in Table Two, the vast majority of gambling activity may be considered ‘normative’ – within the range of acceptable and non-problematic levels (Adams, 2000).

Types of Risk Factors

A number of factors have been identified as related to the onset and continuation of particular types of risk behaviour; at the same time, there are other identified factors that appear to reduce the likelihood that certain behaviours will emerge or worsen. As mentioned earlier, the literature tends to speak to two types of factors: ‘risk’ factors – those increasing the likelihood of negative outcomes; and protective factors, those reducing the likelihood of
negative outcomes. While this seems relatively uncomplicated, it becomes problematic when, depending on the study under examination, behaviours simultaneously serve both as risk factors (predictors) and as outcomes.

In the discussion that follows, we review a number of characteristics and behaviours identified in the research literature as either serving to increase or decrease the likelihood of harm associated with gambling and other risk activity. We turn first to characteristics of individuals – age, sex, socio-economic status and family background – the characteristics most often associated with problem gambling and harmful risk activities (Poenaru et al, 2007).

**Age**

The literature on gambling and risk activity points to age as being one of the most significant correlates of ‘risky’ behaviour. In general terms, the idea is that those who are younger are more likely to place themselves in harm’s way by their very participation in particular types of activities. While there is a recognition that adult participants may also suffer greater levels of harm because of their participation in risk activities, with youth it is assumed that there may be little understanding of the consequences of participating in these types of activities due to the immaturity that accompanies youth. While we turn more specifically to using drugs later in our discussion, youth who use drugs, for example, are considered less able to understand the consequences of their actions and therefore place themselves at a heightened likelihood of harm compared to their older drug-using counterparts. While Table Two suggests a continuum from less harmful participation, low-risk participation, to more harmful or high-risk participation, the threshold of harm for youthful participation in these activities appears to be much lower. In other words, participation by youth in gambling and
other risk activities is nearly always characterized as ‘high-risk’. Is it possible, for example, for drug use to be low risk when the consumer is 14 years old? As alluded to above, the degree of potential harm is impacted by the frequency and duration of the activities under consideration. Again, however, the thresholds for frequency and duration appear in the literature to be much less for youth than these thresholds are for adults.

Boeck and colleagues (2006) point out that youth simply have less social capital to work with in order to effectively navigate risk. As these authors indicate, social capital includes resources that would enable young people to understand and manage, as well as make decisions, about the types of opportunities and hazards they face; a young person, it is claimed, may lack the capacity to make decisions with respect to risk (Boeck et al, 2006). With regard to risk navigation, researchers have noted that as individuals age, they begin to use increasingly objective criteria to evaluate prospects, contrary to the subjective criteria that may be used while younger (Harbaugh et al, 2002). Along with social capital, Schissel (2001) indicates that youth may also lack economic capital, and that youth gambling, for example, is “a form of regressive taxation” exploiting those who are most vulnerable in our society – those who are economically marginal and essentially powerless.

Adding to the concerns over youth and gambling activity is the amount of unstructured time that youth may have at their disposal, which, coupled with immaturity and lack of social and economic capital, may amount to more frequent gambling and more time to participate in ‘risk activities’ (Moore and Ohtsuka, 2000). It is suggested that increased opportunity to participate in gambling means greater likelihood of problematic involvement. Opportunity to participate in gambling depends not only on available time, but available venues as well. Some
studies have focused on how certain types of gambling are more available to youth. Internet gambling, for example, may impact adolescents differently than adults because of the private nature of this form of gambling participation (Fritz, 2003; Derevensky and Gupta, 2007), as well as the increasingly tech-savvy audience that youth have become.

Much of the literature frames the participation of youth and gambling as constituting a public health issue: it is seen as an adverse activity because it is associated with negative social and public health outcomes (Wilson et al, 2006). Others note that gambling first occurring during adolescence is associated with elevated severity and number of problems throughout the lifespan and as adults (Burge et al, 2004). While some studies suggest that a considerable amount of adolescent gambling is non-problematic and simply social without serious consequences (Derevensky and Gupta, 2007), other research on youth gambling focuses on the centrality of substance abuse coupled with gambling and other risk-taking behaviours, as compromising health outcomes (Dickson, 2006).

The ‘special case’ that youth represent is but one dimension of the concerns associated with age and involvement in gambling and other risk activities. It could be argued that the relationship between age and harms associated with various risk activities is U-shaped. For reasons suggested earlier, those who are young may not have the same degree of immunity to the potential harms associated with risk activity as those who are older. At the other end of the age spectrum, however, are the elderly who are increasingly the focus of gambling research. The motivations for the different age groups to participate in risk activity is wide-ranging: while youth may participate for reasons including status and excitement, among other motivations, the elderly tend to seek out gambling for social contact, as well as food, excitement and
inexpensive holidays. Hagen and colleagues (2005) note that the main attractions of gambling for the elderly have little to do with the gambling activity itself – the nature of the game, for example, is less important than the social component.

Concern over elderly participation in gambling reflects some of the same issues that are central to youth involvement in gambling. While youth are often perceived as being at greater risk of harm when participating in particular activities due to their relative immaturity and lack of resources, the elderly may also be at risk due to diminished resources. Elderly gamblers have less ability to recover gambling losses, for example, than those who are middle-aged. Similarly, older individuals who participate in health-compromising activities such as drug or alcohol use may lack the physical resources to recover from the demands that certain forms of risk behaviour may involve. We see far fewer senior citizens on the ski slopes, for example, for this very reason: the expectation for recovery should a fall occur is simply lower. Economically, while the elderly tend to have funds at their disposal, it has also been noted that those with lower incomes are more likely to be problem gamblers. Studies suggest that those with few resources cannot afford, literally or figuratively, to part with or expend resources through risk activity.

**Sex**

Participation in risk activities generally, and more specifically participation in problematic levels of risk activity, has tended to be dominated by males. While women participate in a variety of risk activities, greater proportions of participants in most risk activities are male. Grant and Kim (2004) note that gambling also tends to be a male phenomenon: men are also more likely to be diagnosed as pathological or problem gamblers, as well as at-risk
gamblers than are females (Davis and Avery, 2004). The types of gambling activity preferred by men and women also varies, with women tending to have a narrower scope of gambling activity than men (Hraba and Lee, 1996), though the impact of gender on other types of risk activity is not as clear (Delfabbro, 2000).

Women have been noted to start gambling later in life than men, but may become pathological gamblers at a faster rate than men (Grant and Kim, 2004). At the same time, antisocial behaviour and risk-taking may be more common in boys during adolescence, with girls making more advantageous decisions (D’Acremont and Van Der Linden, 2006). As adults, the motivations behind gambling and other forms of risk activity vary between the sexes. Studies have noted a range of different predictors of gambling behaviour for men and women: coping through distraction, substance use, and impulsivity significantly predicted male problem gambling; yet for females, impulsivity and intensity seeking were most predictive (Nower, Derevensky and Gupta 2004).

Below, we turn to risk activities and their co-occurrence with gambling, but highlight here the significant differences in co-morbidity found between men and women. Alcohol consumption has been found to better predict men’s problem gambling than women’s (Hraba and Lee, 1996, Grant and Kim, 2004). In a study of young problem gamblers, although the use of alcohol, drugs and tobacco is considered primarily to be a male ‘problem’ (see also Grant and Kim, 2004), girls used cigarettes more, though the levels of harder drug use between the sexes was similar (Isralowitz et al, 2006). For boys, higher levels of participation in sports was related to increases in gambling activity, at the same time that lower levels of masculine activities were also associated with more gambling behaviour among boys. For girls, the more time spent
studying, the less time there was for gambling (Moore and Ohtsuka, 2000). Compared to their non-gambling counterparts, female gamblers vs. non-gamblers were more likely to report use of alcohol and drugs; while male gamblers vs. non-gamblers had higher levels of alcohol use and abuse/dependence and were more likely to have a history of substance abuse and past incarceration (Potenza et al, 2006).

A criticism identified in the literature is that much research has focused on males rather than females, with the result that gender-related findings haven’t been reported (Mark and Lesieur, 1992). It may also be the case that risk activities are gendered. For example, a greater proportion of women than men appear to experience eating disorders; more men than women have substance use disorders. Mark and Lesieur (1992) note that women’s drinking and drug use may be more socially acceptable than men’s eating disorders, and that behaviours considered typically ‘masculine’ may be more acceptable for women, than are stereotypically ‘feminine’ behaviours for men. Over-spending, over-eating and depression has also been associated more so with female than with male gambling (Boughton and Falenchuk, 2007). As mentioned earlier, however, it is difficult to establish specifically whether there are gendered ‘syndromes’ of risk activity, given that there is a range of activity that occurs within each sex category as well as between these categories.

**Socio-Economic Status (SES)**

A common stereotype of the problem gambler is one who is spending or has spent the family income to support a gambling habit. Those with lower income are presumed to be more susceptible to the lure of gambling because of having relatively little: gambling may therefore represent a means to potentially capitalize on whatever money is available. A risk factor
associated with problem gambling is low income or poverty (Marshall and Wynne, 2004; Poenaru et al, 2007). The locations of VLTs (video lottery terminals) have also been found to “reflect local geographies of socio-economic disadvantage and may have greatest impact on those in lower income neighbourhoods” (Wilson et al, 2006). At the same time that the stereotype prevails, it has also been found that factors such as near-misses, excitement and social reward need to be taken into account, given the limited role that financial rewards play in the continuance of gambling behaviour (Delfabbro and Winefield, 1999).

**Family Background**

Shaw and colleagues (2007) report that problem gambling may be associated with various dysfunctions and potential chaos within the family unit, including marital disruption and high rates of separation and divorce. These authors also note that problem gambling is associated with child abuse and neglect. Establishing causality, however, is difficult. Correlates of adolescent gambling have identified parental gambling, including the frequency with which parents gambled and the problems associated with parents’ gambling.

**3. Risk Activity**

An examination of the gambling and risk activity literature identifies four primary risk activities: alcohol use, drug use, smoking and suicidal behaviour. Again, it would be difficult to claim that any of these activities are causally related to each other, but rather, these activities appear to be strongly correlated. We begin our examination with consideration of these activities and other, proportionately less frequently mentioned, risk activities that are associated with a focus on gambling research.
Alcohol Consumption

In a study of alcohol use and problem behaviours, Plant and colleagues (2005) found that drinking was associated with a number of problem behaviours related to various realms including work, eating, shopping, internet use, sexual activity, exercise, gambling and dieting. The ways in which these behaviours were distributed, however, varied somewhat by men and women. The findings suggest that adult drinking was associated with several forms of problem behaviour, but the results do not necessarily support the conclusion that all ‘problem’ behaviours are inevitably interconnected. In fact, Plant et al (2005) found that the differences appeared to reflect stereotypes and prevailing social norms. Other studies suggest that the presence of comorbid substance abuse disorders may increase the likelihood that problem gamblers engage in other problematic behaviours (Kausch, 2003). Problem gambling and alcohol consumption are activities which correspond with one another (French et al, 2008).

Unlike the previously mentioned study, Kausch (2003) maintains that there is a connection among problem behaviours. In yet another study, an assessment was made of those who drink while gambling – those who drank while gambling were more likely to be problem gamblers, even when holding constant frequency of gambling, size of wins or losses, and average alcohol consumption. In addition, for gamblers who are drinkers, but did not drink while gambling, the prevalence of problem gambling is negligible, suggesting that those who drink and gamble at the same time may be more reckless (Welte et al, 2004; no relationship was found between alcohol abuse and gambling behaviour in a study by Bondolfi et al, 2008). One quarter of the patients who showed alcohol dependence syndrome have, or had, problems with gaming (de
Pablo et al, 2002). The participation in a number of risk behaviours simultaneously appears to enhance the likelihood of harm associated with these activities.

Again, the idea that there are connections between risk behaviours is a central issue. Studies examining the co-occurrence of a wide range of adolescent problem behaviours, such as alcohol use, smoking, marijuana use, hard drug use, sexual activity, major and minor delinquency, aggression and gambling, have considered whether there is a “problem syndrome model” that might be applied to behaviours that are otherwise quite diverse. Willoughby and colleagues (2004) indicate that few adolescents reported involvement in a wide variety of activities, suggesting that these behaviours are not indicative of a syndrome, but may instead be the result of distinct pathways leading to different behaviours. We consider how these behaviours may be linked in our discussion of theory, “explaining the links”, found on p. 30.

Drug Use

The second most common ‘risk behaviour’ associated with gambling is drug use – ranging from smoking marijuana to involvement in hard drug use. Some studies indicate that drug abuse and compulsive gambling overlap (Stinchfield and Winters, 2004), with drug use escalating in a linear pattern until young adulthood (Stinchfield and Winters, 2004). A high frequency of pathological gambling was found among drug addicts who attended a drug treatment centre (de Carvalho et al, 2005). Among college students, it was found that as the level of gambling problems increased, the prevalence of substance use (along with gorging/vomiting and unprotected sex) also increased (Huang et al, 2007). Huang and colleagues (2007) also found that problem gamblers experienced significantly more
drug/alcohol-related problems than did non-gamblers and social gamblers. These authors suggest that this may indicate the persistence of a “youth problem behaviour syndrome” and suggest the need for multi-faceted initiatives to tackle these risk behaviours simultaneously. For gamblers with comorbid disorders, the onset of substance dependence preceded the onset of problem gambling.

**Smoking**

In January of 2008, Calgary casinos, along with other public places, were made smoke-free by way of bylaw. The controversy surrounding the application of this bylaw to casinos highlighted the extent to which smoking is believed to be associated with gambling. This common-sense knowledge is supported by the research literature which suggests a strong association between smoking and gambling. A study by Petry and Oncken (2002) found that those who smoked daily were also more likely to have been previously treated for a substance use disorder than the non-daily smokers. Further, those who smoked daily indicated that they were also more likely to crave gambling than those who did not smoke daily, and daily smokers perceived themselves as having less control over their gambling. The question raised by this study is whether smoking adversely impacts the course of treatment for problem gamblers (Petry and Oncken 2002).

While smoking tends not to be the singular focus of many studies, it is regularly included in gambling and other studies that consider “risk factors” and/or “risk activities” (see, for example, Griffiths and Sutherland, 1998; Junger and Wiegersma, 1995). As with alcohol consumption, some (limited) drug use, and gambling, there are arguably degrees of
endangerment associated with these behaviours. While it may be difficult to argue for acceptable levels of cigarette smoking – especially given the success of anti-smoking campaigns – it is also fair to say that smoking may not yet carry the same negative connotations as drug use, for example, which was not bolstered by a large and powerful tobacco industry. Further, although smoking tends to be framed as a ‘risk factor’, suggesting a future occurrence of harm, smoking seems more accurately framed as a hazard, suggesting the occurrence of present harm.

**Suicidal Behaviour**

The results of a study by Philips, Welty and Smith (1997) indicate that both residents of and visitors to major gaming communities tend to experience higher suicide levels compared to non-gaming communities. Suicidal tendencies were also noted to accompany problem gambling, along with experiencing depression and reporting daily tobacco smoking (Potenza et al, 2004). Compared to their non-suicidal gambling counterparts, Petry and colleagues (2002) indicate that those with suicidal ideation experienced greater psychiatric symptoms, were not as satisfied with their situations and experienced more disagreement prior to entering gambling treatment. This may suggest that differentiating gamblers on the basis of suicidal behaviour may be warranted (Penfold et al, 2006) and that different treatment may also be appropriate for those have attempted suicide versus those who have not (Petry et al, 2002).

Other psychological studies point to a number of disorders associated with gambling. Kausch (2003), for example, suggests that ‘dysfunctional gamblers’ were also characterized by the following behaviours: suicide attempts, compulsive spending and shopping, as well as
compulsive sexual behaviours. It may be that the presence of substance abuse influences the extent of problem gamblers’ engagement in additional problematic behaviours including suicidal behaviour (Kausch, 2003).

**Other Risk Activities**

In their study of the relationship of gambling to other types of risk activities, Chalmers (2005) demarcated various types of adolescent gamblers, ranging from no risk, low-risk, at-risk, to high-risk. The study examined ‘other’ types of risk behaviours, including smoking, marijuana use, alcohol use, sexual activity, hard drug use, delinquency, and aggression. Gender was found to be one of the strongest predictors of gambling; unstructured and structured activities, risk attitudes and perception were also predictors. For high-risk problem gamblers, other significant predictors included minor delinquency, alcohol and direct aggression. Their findings suggest that the continuum of gambling behaviour is associated with a range of other ‘risk activity’ and that the relationship is not straightforward.

Dickson and Derevensky (2006) studied the relationship of gambling to drug and alcohol use, smoking, and sexually transmitted behaviours. These authors found that those who are problem gamblers reported more sex partners and less frequent use of condoms with casual and paid sex partners. The association was positive between severity of gambling problems and more risky sexual behaviours, with the authors concluding that problems with gambling may increase the likelihood of contracting HIV (Petry, 2000). In another study of personality and problem behaviour, the authors considered various dimensions of personality and how these may be associated with a broad range of behaviours such as drug and alcohol use, interpersonal
violence and sexual risk-taking. This study examines the “moderator hypotheses,” which explores those conditions which increase, decrease or eliminate the extent to which personality influences problem behaviours (Hoyle, 2000).

Types of Gambling

There are a variety of types of gambling that may not have the same potential for ‘problems’ and which vary in terms of their social acceptability. Overall, the acceptability of gambling has changed somewhat due to the increasing involvement of charitable groups in government controlled gambling. In Alberta, for example, a variety of groups apply to participate in casino events across the province which enables them to take advantage of a profit-sharing structure with other groups and with the government. The involvement of charitable groups in casino activity may make this form of gambling more socially acceptable.

Other factors influence the popularity of types of gambling. Moss (2007) found that technology impacts the amounts wagered, with higher bets placed on-line than in other settings (Moss, 2007). Specific types of games appear to differentially impact particular groups in society as well. For example, those who use and have ready access to computers, such as students, demonstrate increased participation in online gambling (Clifford, 2000). Table game players vs. mechanical game players tend to be more deeply involved and aware of the intricacies of play, are more self-controlled and less impulsive (Titz, 1996).

Another study considered the differential outlook of regular players compared with those who were occasional players. In a study that considered the poker machine, it was found that regular players held more consistent views about their playing than did occasional players:
“regular players held fixed views about the profitability of given machines, were less likely to vary their wagers (stakes) and tended to increase their stakes when winning and decrease them when losing” (Delfabbro and Winefield, 1999). Dickerson (1993) found that there may be different processes associated with different games – for example, some games may produce negative emotions, while others produce indebtedness. These authors suggest that different processes cause impaired control in different forms of gambling. Other distinctions have also been found between table game players and those who are mechanical game players. Further, those with different levels of sensation-seeking are attracted to different types of games, as were males and females (McDaniel and Zuckerman, 2003).

4. Explaining the Links

Our discussion of risk factors included references and suggestions as to what might provide not only the motivation to gamble, but also suggestions regarding the characteristics or motivations that link types of ‘risk’ activity. References to impulsivity, self-control and sensation-seeking suggest that the motivations to participate in gambling or risk activity come from within the individual. Other explanations of gambling and risk-taking behaviour locate the source of such activity in the relationships that participants have with others, or with the larger society around them. Differential association theory, for example, explains gambling and risk activity as a function of those with whom parties interact. Our peers and colleagues have particular expectations of behaviour, providing support for certain types of behaviour, at the same time discouraging behaviour that is not highly regarded or is less valued.
In the discussion that follows, we examine the explanations for participating in various risk activities; as well as the *degree* of participation in these activities.

**Sociological Explanations**

Sociological explanations of risk activity tend to focus on the contexts in which behaviours occur. These contexts include those associated with individual lives, as well as the political and social contexts in which individuals live their respective lives. A number of theories are offered by sociologists as to why individuals gamble or participate in risk-taking activities. Below, we briefly consider opportunity, differential association, anomie and symbolic interaction theories.

**Opportunity theory**

Opportunities exist at a variety of levels, from structural to individual, and can be created or undermined at various levels as well. Governments, for example, create opportunities for behaviour by legalizing or criminalizing particular activities. While criminalizing behaviour does not necessarily mean that it will not occur, it does mean that the opportunities for participation in certain forms of behaviour will be circumscribed by structural features. Similarly, individuals may structure their lives to create opportunities for participation in various activities.

Gambling, unlike most of the other types of risk activity described above, is legitimated through state support. The involvement of government in the regulation of gambling and the ever-increasing dependence of government on gambling revenues (i.e. Higgins, 2001) creates a situation whereby gambling is not discouraged. The provision of opportunities to gamble, and
validation of gambling activity, also means that the state may have to bear some of the responsibility for addressing problematic levels of gambling activity. As noted by Ladouceur and colleagues (1994), there are specific problems associated with state support of what, for some individuals, may become problematic, including debt, diminished work productivity and legal problems. These authors consider the price to be paid for “adopting a liberal attitude toward the legalization of various gambling activities” (Ladouceur et al, 1994). Jacobs (2006) considers the ‘system of vices’, including drinking, tobacco, drugs, prostitution and gambling, and why it is that some vices are more highly controlled than others. Jacobs (2006) suggests that low costs and high availability are the reasons behind government involvement in gambling. In other words, the opportunity to gamble is not restricted to those with particular incomes, at the same time that gambling can occur in a variety of locations. In the case of Alberta, Video Lottery Terminals (VLTs), for example, are under the control of the government. State involvement and government policy provide opportunities for gambling that differ substantially from other kinds of risk behaviour.

**Differential Association and Lifestyles/Exposure Theory**

At the same time that state-level involvement provides, or fails to provide, for opportunities to participate in risk activity, individuals may also capitalize on the opportunities presented around them. A study of gamblers in Chania, Greece, considered how gambling provided the opportunity to perform socially. As Malaby (1998) explains, gamblers dealt with the concepts of probability, chance and fate and used gambling to “situate themselves among the vicissitudes of fortune”. In this scenario, those who are willing to play and either won or lost spectacularly are the “winners”, with players adopting strategies to suggest that their play in
the game is linked to other spheres of everyday life including business, politics, health and social relationships (Malaby, 1998). Social support has been found to be a strong predictor of both gambling and problem gambling (Lopez Viets, 2001). In this view, gambling is normative.

Opportunity theory at the level of the individual begins to fold into the theory of differential association and lifestyle theory. The idea behind differential association is that behaviour is learned – individuals are socialized to participate in various activities by those with whom they interact (see, for example, Czerny et al, 2008). In the case of gambling, it might be argued that gamblers are supported in their level of play by those around them. The example of the Chania gamblers suggests that gambling activity is clearly supported by a number of individuals – it may be the case that failing to participate in these activities would be socially detrimental. Social support is often a pre-requisite to involvement in other types of risk-taking activity. In a study of adolescent risk-taking by Michael and Ben-Zur (2007), it was noted that there were differential impacts of parents and peers on individual risk-taking. Boys were more likely to be influenced by their peers, whereas girls were more influenced by their parents.

Another theory of participation in risk activity is that of lifestyle/exposure theory, which suggests that opportunities to participate in certain types of activity are created by habitual routines or by leading certain types of lifestyles. For example, studies of offending and victimization suggest that exposure to harm may be reduced or enhanced depending upon the lifestyles – including social relationships – that one has (see, for example, Fisher and Wilkes 2003). Similarly, Baron, Forde and Kay (2007) note that the propensity for street youths to become involved in violence was due to leading a ‘risky lifestyle’ and the situational dynamics of particular conflict situations. Both of these factors reflect elements of opportunity and
differential association. In terms of gambling, those who are exposed to variable levels of gambling by virtue of their lifestyles, as well as through their peer group associations, will be inhibited or encouraged to gamble at a level that reflects the norms of that group.

**Anomie Theory and Symbolic Interactionism**

Anomie theory explains gambling and risk activity by focussing on specific socio-structural conditions (Wallisch, 1998) that contribute to anomie – a state of normlessness with few rules or expectations. Anomie theory points to structure as being a major contributing factor to ‘deviant’ behaviour. Those who experience less control over their lives, for example, may be drawn to activities over which they may perceive they have control – such as drinking, smoking or gambling. Lyng (1990) explores this notion through the concept of ‘edgework’. Those who are most drawn to ‘risk-taking activities’ are those who are most oppressed in their everyday (work) lives. In particular, Lyng studied skydivers and found that many attracted to the sport worked in jobs over which they had little control.

Gambling and risk activity more generally is not limited to those who have particular types of jobs, incomes or education. As Welte and colleagues (2002) found, rates of participation in most forms of gambling increased with socio-economic status, but gamblers with greater socio-economic status had lower rates of pathological gambling and less gambling involvement. A perceived lack of control in a realm of one’s life may contribute to looking for control in other realms and, in particular, risk activity.

Less often found in the risk activity literature, though somewhat related to the notion of anomie, is symbolic interactionism. Adams (2001), for example, suggests that those who partake of particular activities attribute a great deal of meaning to the ‘props’ that they use
while participating in various activities. For example, rather than simply being a ticket, Adams notes that individualized lottery tickets were seen to commodify and extend the self. Lottery play provided the opportunity for individual players to believe that they are able to “harness metaphysical forces” on their behalf (Adams, 2001). Other studies find similar significance in risk activity and the meanings that these behaviours have. Smoking, for example, was found by Denscombe (2001) to have symbolic significance among adolescents in terms of constructing identities and portraying a certain self-image, as well as being a form of self-empowerment and a self-affirming activity. LeBreton (2000) studied extreme sport participation and the meanings behind it. LeBreton suggests that we have a countless number of contradictory points of reference and live in a time where ‘values are in crisis’, making extreme sport participation desirable as a means of testing strength of character, and personal resources. He suggests that accomplishing a self-imposed ‘ordeal’, such as running, triathlon or trekking, provides the participant with a sense of legitimacy to life. Further, using Goffman’s concept of action and Lyng’s concept of edgework, Lyng (2007) argues that both approaches to voluntary risk taking explore the broad implications of risk-taking within historically specific societal contexts.

The reminder that historically specific contexts need to be taken into account is important for any study of risk activity. Raylu and colleagues (2004) indicate that much of the Western studies of gambling and risk activity reflect Western assumptions – few of which can be transported to the meanings behind participation in various ‘risk’ activities in other, non-Western cultures. These authors remind us that “cultural values and beliefs, the role of acculturation, and the influence of culturally determined, help-seeking behaviours” must be examined as culturally specific parameters (Raylu et al, 2004).
Further, there may be links between gambling and contemporary consumer culture (Emma, 2003). The importance of culture is also referred to in the study by Kingma (2004) who suggests that there has been a paradigm shift in gambling policy, from an ‘alibi model to a risk model’. Now that the potential risks associated with gambling have been identified, there has been a legitimization crisis with regard to gambling policy. This was considered specifically with respect to the application of risk society theory to the Dutch gambling market, and the recognition that the activities previously thought benign actually house elements that are potentially more sinister. Sinister elements include some of the socio-economic costs of gambling, such as higher rates of crime, the cost of gambling addiction, administrative costs, decreased property values, substitutions effects on businesses, and questions of morality (Barretta, 2004).

Psychological Explanations

The gambling and risk activity literature emerging from a psychological perspective suggests that problematic behaviours either stem from, or are evidence of, particular deviations from the ‘norm’, whether in terms of higher levels of impulsivity, for example, or reduced cognitive dissonance. The most prominent psychological theories of gambling are discussed below under three headings: impulsivity, self-control and sensation-seeking; addiction; and pathologies.

Impulsivity, Self-Control and Sensation-Seeking

Generally speaking, impulsivity is a trait that refers to individuals’ relative levels of spontaneity and behaviour that is not premeditated. Individuals presumably vary in the degree
to which they are impulsive, with high impulsivity suggesting a greater likelihood to act spontaneously than those characterized by low impulsivity. The presumed relationship between impulsivity and risk activity is that individuals who are more impulsive may be more prone to participating in behaviours that may potentially cause them (or others) harm. Yet not all studies point to consistent findings. Variable definitions of impulsivity, for example may account for the observed inconsistencies that consider this concept along with behaviours such as, in the case of one particular study, bulimic symptoms, pathological gambling and alcohol abuse (Fischer and Smith, 2008). Impulsivity is related to the notion of ‘self-control’: individuals who have greater self-control will be less likely to ‘give in’ to their impulses and will be able to better assess the consequences of their behaviours compared to those with lower levels of self-control.

Sensation seeking is “the pursuit of novel, intense and complex sensations and experiences, and the willingness to take risks for the sake of such experience.” Sensation seeking implies that there are particular individuals who structure their lives to include more activities that may involve more risk and ‘depth’ of experience. Individuals who are greater sensation seekers would be drawn to activities that involve heightened opportunities for more extreme experiences; sensation seekers are likely to be drawn to risk activities.

Some studies find little relationship between impulsivity and gambling or other risk activity, but tend to suggest that impulsivity is associated with problem gambling. Carroll (2006), for example, found that impulsivity and negative affectivity were significant predictors of pathological gambling (see also Burger, 2006). Fernandez Montalvo and colleagues (1999)

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found pathological gamblers were significantly more likely than non-pathological gamblers to score highly on measures of impulsivity and neuroticism, and lower on measures of sensation seeking. Other studies refer to pathological gambling as an impulse control disorder (Dell’Osso et al, 2005), while impulsivity is thought to be the common link between gambling and substance abuse (Moreyra et al, 2002).

Self-control has been used to explain the commission of crime, but also participation in other forms of ‘analogous behaviour’, including dangerous driving, unprotected sex, academic dishonesty and pathological gambling. Those with lower self-control were more likely to engage in these activities than were those with greater self-control (Jones and Quisenberry, 2004). A study of relapse-prone gamblers suggested that these gamblers were characterized by high degrees of impulsivity, while those with severe gambling problems also had impulsive coping styles (McCormick, 1994). On the other hand, other studies have failed to establish linear relationships between the severity of pathological gambling and the personality traits of impulsivity and sensation seeking (Saez-Abad and Bertolin-Guillen 2008). Impulsivity, low self-control and sensation-seeking are personality traits that speak to the underlying links that may ‘predispose’ particular individuals to participate in risk activity. We turn next to a consideration of addictions.

**Addiction**

Addiction is a term often used in the context of problem gambling or other types of activities characterized by participants who appear to have lost control over their behaviours. Addictions may be physical or psychological in nature, and consist of compulsions to consume various substances, as in the case of drug or alcohol addiction, or compulsion to engage in a
specific activity, despite harmful or negative consequences to the participating individual. Many studies argue that excessive or problem gambling differs little from substance addiction, and that any behaviour that provides continuous rewards may be addictive (Griffiths, 1998). As well, everyday normal behaviours may escalate and become pathological if certain criteria are fulfilled. Hand (2004) observes that ‘behavioural excesses’ may include obsessive compulsive disorders, obsessive-compulsive spectrum disorders, drug independent addictions and addictions. It is important to note that the addiction associated with gambling behaviour is not necessarily a monetary reward. The types of rewards and reinforcements in gambling situations may be addictive yet the nature of reinforcements may be multiple (Parke and Griffiths, 2004), going well beyond economic rewards alone. For example, some gamblers may not only gain economically, but may also reap physiological and social rewards as well.

The literature suggests a certain degree of discomfort with the idea of behavioural or psychological addictions, compared to addictions involving the ingestion of some psychoactive substance. For example, the diagnostic criteria and treatment for pathological gambling is modeled after psychoactive substance dependence, although the DSM defines it as a disorder of impulse control (Cusack et al, 1993). In one study of addictions, it was found that there is a low tendency to become addicted across a variety of activities/substances. Rozin and Stoess (1993) conclude that there is little evidence to suggest that certain people demonstrate a general tendency to become addicted – a conclusion which calls into question the concept of an “addictive personality” (Rozin and Stoess, 1993). On the other hand, ‘addiction transfer theory’ suggests that there is, in fact, a tendency to become addicted, with new addictions replacing old addictions. Alcohol abuse or online gambling, for example, may replace eating addictions.
(after bariatric surgery) (Sogg, 2007). Rodriguez-Villarino and colleagues (2005) recognize that there may be an “addictiveness” factor that occupies an intermediate place with particular excesses (such as shopping, eating, gambling, alcohol use and psychoactive substance use).

Similarly, Marks (1998) notes that many of the behaviours we consider harmful or addictive are at the same time encouraged and accepted in Western society.

**Pathology**

There are a variety of pathologies that may underpin problem gambling, as well as other types of problematic risk activity. Particular cognitive fallacies, such as the illusion of control, for example, and psychological disorders such as depression may perpetuate gambling and contribute to problem gambling (Dannewitz and Weatherly, 2007) as well as contribute to other harmful risk behaviours. What remains unknown is the extent to which gambling-related cognitive dysfunction is specific to gambling behaviour alone, or whether it is symptomatic of general dysfunction in other areas of life (Ferguson, 2003). Ferguson (2003) assessed and categorized gambling-related cognitive dysfunctions into three levels (mild, moderate and severe) and found that the greater the severity, the more disturbances there were in other areas of life.

There are a number of pathologies that may be behind problem gambling and risk behaviour. Irrational thinking, for example, may contribute to the maintenance of behaviour in slot machine gambling, according to Delfabbro and Winefield (2000). These authors note that the most common irrational cognitions include false beliefs regarding the predictability of outcomes, and the attribution of human qualities to gambling devices (Delfabbro and Winefield, 2000). Related to this, is the illusion of control that many who participate in risk-
taking behaviour may have. Sky-divers, for example, may perceive their jumps as entirely within their control, unable to recognize that there are factors that may be well outside of their control (Laurendeau and Van Brunschot, 2006).

Another theory of behaviour that may include a form of irrational thinking is the ‘self-regulation model’ (SRM). This theory suggests that inappropriate risk-taking is related to overconfidence and being overcome by ‘disregulating influences’ such as peer pressure and impulsivity, as well as insensitivity to outcomes (Miller and Byrnes, 1997). Various dimensions of personality are related to a wide range of other problem behaviours, including substance abuse, sexual risk-taking, interpersonal violence and gambling (Hoyle, 2000).

Those who study the ‘moderator hypotheses’ examine the conditions under which the influence of personality may magnify, weaken or eliminate problem behaviour (Miller and Byres, 1997). In the ‘pathways model’, Nower and Blaszczynski (2004) suggest that pathological gamblers are “comprised of heterogeneous groups of individuals representing at least three major etiologically distinct subgroups: behaviourally conditioned; emotionally vulnerable; and anti-social impulsivists” (Dickson, 2006). As suggested by its name, the idea behind the pathways model is that there are different paths to problem gambling, and not all problem gambling is underpinned by the same pathologies. Beyond gambling, the idea that there are varying pathways to risk-taking behaviour appears also to hold true.

Economic Explanations

There are essentially two frameworks of economic explanations that may be applied to gambling and risk-taking behaviour. The first is the consequentialist framework, which views
decision makers as attempting to maximize the utility of a decision’s outcome. In other words, the decision-maker will act based upon an assessment of that which will bring, typically, gain. Expected utility theory is a widely known economic theory that involves calculation – individuals take into account a number of factors and will behave according to their calculations. The second perspective views particular risk-taking behaviours as non-consequentialist – the decision maker is oriented to the here and now, setting aside longer-term utility for shorter term gain.

Prospect theory is consequentialist in that it considers behaviours in slightly less formulaic ways. Rather than calculating outcomes and acting in particular ways based on rational formulas, prospect theory makes use of heuristics, or mental scripts, which are a means by which people frame particular situations and the potential loss or gain that accompanies those situations. Given the variation in the expected script, one’s expectations regarding options differ depending on the context (Christie, 2003). Those who gamble to the point of negatively impacting their lives may not be using the most appropriate scripts, and losses may not register as losses if the script does not suggest it will. At the same time, the sequential risk-taking paradigm suggests that respondents adapt their learning processes and associated mental representations of the task to the stochastic environment (Pleskac and Pleskac, 2008).

With regard to how individuals orient themselves to risk, Grant and Xie (2007) explain that there are two orientations – prevention and promotion. The prevention orientation may be oriented to pursue safety and security by minimizing losses, while the promotion orientation pursues growth and advancement by maximizing gains. In terms of gambling activity, prevention oriented people fixate on what happens to the status quo, whereas promotion
oriented people attend to the new stake. Whether one orients to the present or the future is one feature that may distinguish those who might participate in risky behaviour. Welch explains that risky behaviour can be explained as myopic and as an inherently non-consequentialist attempt to maximize one’s emotional experience at the moment a decision is being made. He argues that risk behaviour must involve understanding the emotional element associated with risk behaviour. Welch (2006) considered emotional responses in various domains of risky choice, including monetary gambles, thrill seeking and public performance (Welch, 2006). Decision affect research (see Mellers et al, 1997) has found that individuals may have limited capacity to process low probabilities, and that the focus is more often on loss than on the amount of loss. Shanteau (1992) also found that individuals tend to misperceive the randomness of runs (gamblers’ fallacy); exaggerate their decision-making ability; and have difficulty conceptualizing losses they haven’t experienced.

5. Summary and Concluding Comments

A review of the gambling and risk behaviour literatures suggests that the connections between and among these activities are not necessarily transparent. The decision to gamble or participate in various risk activities is related both to individual characteristics and social contexts. The likelihood of engaging in problem gambling or participation in problematic levels of risk activities may be influenced by some degree of susceptibility and disadvantaged status (Welte et al, 2006).
A number of issues were revealed in this review, many of which must be kept in mind when examining both gambling and risk behaviour. First, it hasn’t been clearly established whether various behaviours stem from the same source or if these behaviours stem from different sources. Determining the answer to this question is critical, as so often various types of risk behaviour are used to predict other risk behaviour. Clearly this is problematic if risk behaviour, including gambling, stems from the same source or sources.

Second, in terms of theory, there are a number of explanations that highlight very specific individual characteristics as motivating participation in problematic gambling and risk behaviours, while other theories focus more on social and institutional factors. Explaining participation in these activities should include recognition of the impact of factors that emanate from different conceptual levels.

Third, it is important to keep in mind that there is a continuum of gambling activity, ranging from little harm to highly harmful, just as there is a continuum of risk behaviour. Not all gambling has negative implications, nor does all risk activity. In fact, a certain degree of risk-taking is expected in our society, with those who fail to take risks being perceived as suspiciously as those who take substantial risks. Our society tends to value at least some degree of exposure to risk, though this is clearly contextually specific.

There has been a tendency to prioritize the pathological element of gambling – suggesting a medicalized model of participation – or to emphasize the economic aspect. Both perspectives may fail to appreciate the affective dimension of play, as well as the reality that for most individuals, neither gambling nor participation in risk activity is problematic. The risk literature appears less medicalized, at least for the types of activities that do not include
ingesting, smoking or shooting various substances. High risk sport, for example, is rarely considered an addiction or pathology.

The public varies in its’ willingness to label certain types of behaviour as ‘problem’ behaviour. Many activities have a wide range or degree of tolerance before they are considered problematic – some drinking, some drug use, some sport participation, some sex partners, etc. may be tolerated – while other forms of behaviour are not tolerated by the public. For example, some prostitution or some drug dealing is not tolerable in any context. Further, we define ‘problem’ behaviour very differently depending upon the demographic characteristics of those involved. It would be difficult to identify, for example, a non-problematic level of alcohol use for 13-15 year olds.

This leads to the fourth point, having to do with risk perception and how it relates to behaviour. As some of the reviewed theories indicate, at least some of the links between behaviours may be due to a certain ‘attitude’ or ‘perception’, regardless of how that attitude or perception may be derived (i.e. either psychologically or socially). While perception is different than behaviour, Kassinove (1998) points out that the importance of studying attitudes is that attitudes often represent a readiness to act. On the other hand, Johnson and colleagues (2004) found that while risk perception may be similar across domains, risk-taking behaviour may be domain specific.
By way of conclusion, we leave the reader with a visual depiction of the dimensions that must be taken into consideration when attempting to understand both gambling and other risk activities, along with any relationship that these behaviours may have with one another (Figure One). Historico-demographic characteristics make a difference in terms of how behaviours are perceived and addressed, as do social, economic and political contexts help to define what is both problematic and non-problematic. A consideration of how we label and respond to
behaviour must also consider the individual characteristics of those who participate, as well as the personal contexts in which they are located.
Appendix One: Method

In order to identify the relevant research to establish the connections (and possible disconnections) between gambling and other risk behaviours, this review consisted of a number of literature searches that advanced in stages conducted by a research assistant under my direction.

The first stage of the analysis involved a number of broadly-based searches on variations of “risk” and “gambling” using a number of databases accessible though the University of Calgary Library on-line journal databases (see Appendix Two). The initial search was two-fold. The first search consisted of searching 29 separate databases for articles pertaining to “risk”, and then the same databases were used to complete a broad search of “gambling”. All articles found by the databases were then exported into EndNote XI, a bibliographic software program. Two distinctive EndNote databases were created, one for gambling-articles, and the second for risk-related articles. In total, over 193 000 articles were collected, 86 138 for gambling, and 107 022 for risk.

At the second stage, the 193 000 articles collected were narrowed down by searching for duplicates and non-academic sources. Duplicates were deleted though the EndNote function, “Find Duplicates”, and this allowed for the deletion of nearly 40 000 articles for each of the databases, 80 000 in total. Through EndNote, the articles were sorted based on language and any non-English articles were deleted4. Further, any popular media item, such as magazine articles, educational material (for example, curriculum outlines), or non-literary items, such as audio track listings or video information, were then deleted. This process was accomplished by

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4 English abstracts were retained.
organizing the articles based on the type of media and the journal names. At the end of this stage, nearly half of the articles remained and were then further sorted.

The third stage of the article deletion process involved in-depth keywords searches. This process began by searching the gambling database for articles unrelated to the topic at hand. Because of the nature of the initial library database search, many articles related to video and computer gaming were initially collected and resulted in these being systematically deleted based on keyword searches. This same procedure was then applied to the risk database and the largest systematic deletion was based on the keywords “education not sociology”. In total roughly 400 keywords for both databases were used, and the keywords became increasingly specific as the deletion process progressed.

After the keyword deletion process, the journals were once again sorted alphabetically in order to reveal any non-social sciences related articles. While many gambling articles were deleted in this manner, it was most useful for the risk databases. Within the risk database a large proportion of the articles derived from both insurance journals and medical journals. Therefore, articles relating to topics such as disease and mathematical analysis were deleted.

The fourth stage of the article deletion process involved manually sorting though each of the remaining articles, and reading each of the abstracts to see if they pertained to the topic. While time consuming, it allowed for a greater insight into the nature of the articles collected and allowed for increased reliability of the deletion of the remaining articles in the database. Any articles that were not perceived as relevant were then deleted. In the end there were over 2000 remaining articles, with a final cut reducing these to just over 1100.
Once all the deletions had been completed, the EndNote databases were converted into Microsoft Word documents. Two documents were created, one for gambling and another for risk. These documents were then reviewed again to identify relevance and to look for general patterns as suggested by the articles. These article abstracts are the basis upon which this review has been written.
### Appendix Two: Database Summary

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Appendix Three: Keyword Overview

The following offers a sample of articles that may be of specific relevance to particular questions. The list is not exhaustive and was specifically generated using the “key words” that accompany article abstracts as they are downloaded from various search engines into Endnote.

Gambling and ‘Risk’ Factors

Age

(de Carvalho et al. 2005; Fritz 2003; Griffiths and Sutherland 1998; LaBrie et al. 2003; Ladouceur, Dube and Bujold 1994; Langhinrichsen-Rohling et al. 2004b; Plant, Miller and Plant 2005; Potenza et al. 2006; Schissel 2001; Shaw et al. 2007; Stinchfield and Winters 2004)

Sex


Socio-Economic Status

(Delfabbro and Winefield 1999; Marshall and Wynne 2004; Poenaru et al. 2007; Wilson et al. 2006)

Family Background

(Langhinrichsen-Rohling et al. 2004b; Shaw et al. 2007)

Risk Activity

Alcohol Consumption and Drug Use

(Arnett and Balle-Jensen 1993; Austin and Gilbert 1989; Bachman, Johnston and O'Malley 1990; Barnes et al. 2007; Baron, Forde and Kennedy 2007; Benthin, Slovic and Severson 1993; Bingham 2004; Bogart et al. 2005; Codina et al. 1996; Corwyn et al. 1999; Dembo et al. 1993; Dukes and Stein 2001; Eccles and Barber 1999; Eiserma, Diamond and Schensul 2005; Finlinson et al. 2008; Forsyth and Barnard 2003; Gil, Vega and Turner 2002; Hacker et al. 2006; Hawdon...

**Smoking**

Metzler and et al. 1992; Mills 1999; Newton 2001; Ogletree, Dinger and Vesely 2001; Ohlander et al. 2006; Oman et al. 2002; Palmqvist and Santavirta 2006; Patrick et al. 1997; Sussman et al. 1993; Taylor et al. 2004; Tewolde, Ferguson and Benson 2006; Thompson, Zittel-Palmara and Forehand 2005)

Suicidal Behaviour


Other Risk Activities


Types of Gambling

(Clifford 2000; Cote et al. 2003; Delfabbro and Winefield 1999; Dickerson 1993; Liau, Khoo and Ang 2005; McDaniel and Zuckerman 2003; Moss 2007; Titz 1996)
Explaining the Links

Sociological Explanations


Psychological Explanations

(Burger 2006; Carroll 2006; Cusack, Malaney and DePry 1993; Dannewitz and Weatherly 2007; Delfabbro and Winefield 2000; Dell'Osso et al. 2005; Dickson and Derevensky 2006; Ferguson 2003; Fernandez Montalvo, Echeburua and Baez 1999; Fischer and Smith 2008; Griffiths 1998; Hand 2004; Hoyle 2000; Jones and Quisenberry 2004; Marks 1998; McCormick 1994; Miller and Byrnes 1997; Moreyra et al. 2002; Parke and Griffiths 2004; Rodriguez-Villarino et al. 2005; Rozin and Stoess 1993; Saez-Abad and Bertoli-Guillen 2008; Sogg 2007)

Economic Explanations

Bibliography: Gambling


Burger, Terry D. 2006. "College students and gambling: Gauging the effects of gender on impulse control, sensation seeking, and mental health as predictors of involvement." Indiana State University.


Bibliography: Risk and Risk Behaviours


Anderson, Peter B., and William Sorensen. 2006. ""Drinking more than normal in order to make it easier to have sex with someone": A Race, Gender, Class Analysis of College Students Living On and Off Campus." *Race, Gender & Class* 13:273-287.


Austin, Erica Weintraub, and Christopher Knaus. 2000. "Predicting the potential for risky behavior among those `too young' to drink as the result of appealing advertising." *Journal of Health Communication* 5:13-27.


Burk, Nanci M. 2000. "The Invisible Professor At-Risk: How Departmental Disconfirmation Disempower Adjunct Faculty." in *Annual Meeting of the National Communication Association* Seattle, WA.


Christoffersen, Mogens Nygaard, Keith Soothill, and Brian Francis. 2007. "Violent Life Events and Social Disadvantage: A Systematic Study of the Social Background of Various Kinds


Cuesta, Patricia Mariana. 2007. "A descriptive study to explore and define what teacher behaviors motivate the academically at-risk eleven- to fourteen-year-old early adolescents to learn." California: University of La Verne.


Green, Gill, Nigel South, and Rose Smith. 2006. ""They Say That You Are a Danger but You Are Not": Representations and Construction of the Moral Self in Narratives of "Dangerous Individuals"." *Deviant Behavior* 27:299-328.


Hertz, Debra Wallace. 2006. "An investigation of differences in social support between homeless and never-homeless female-headed families and different types of homeless


Jackson, Rosalind Curry. 2004. "Depressive symptoms and sexual risk behaviors in adolescents." Texas: The University of Texas Health Sciences Center at Houston School of Public Health.


Income African American Men and Women." *Suicide and Life-Threatening Behavior* 35:400.


LaBrie, Joseph W., Eric R. Pedersen, Toby F. Lamb, and Lane Bove. 2006. "Heads UP!: A Nested Intervention with Freshmen Male College Students and the Broader Campus Community to Promote Responsible Drinking." *Journal of American College Health* 54:301.


Miller, Kathleen E., Grace M. Barnes, Don Sabo, Merrill J. Melnick, and Michael P. Farrell. 2002b. "A Comparison of Health Risk Behavior in Adolescent Users of Anabolic-


Nash, James K., and Jong Sung Kim. 2007. "Patterns of Change over Time in Beliefs Legitimizing Aggression in Adolescents and Young Adults: Risk Trajectories and Their Relationship with Serious Aggression." *Social Work Research* 31:231.


Stone, J., and J. Horne. 2008. "The print media coverage of skiing and snowboarding in Britain - Does it have to be downhill all the way?" Journal of Sport & Social Issues 32:94-112.


