GAMBLING BEHAVIORS AMONG EX-OFFENDERS & NON-OFFENDERS: A PRELIMARY INVESTIGATION

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Abstract

The current study examined the prevalence of gambling behaviors among 87 residents recovering from substance-dependent disorders and living in self-run sober-living recovery homes. The variables addressed included the type of gambling addiction (non-problem gambling, at risk gambling, and disordered gambling), among two compared groups (ex-offenders and non-ex-offenders). These variables were manipulated in a 2x3 factorial, between subjects, non-repeated measure design. Ex-offenders and non-offenders used in this study resided in residential treatment centers throughout the United States. All participants were given the South Oaks Gambling Screen (SOGS) to assess gambling behaviors and the prevalence of disordered gambling.. Those participants classified as disorganized gamblers reported proportionately more involvement in a variety of gambling behaviors than other residents. In addition, there was significant difference between non-offender and ex-offender populations in reported gambling habits. Engagement in a variety of gambling activities by the current sample is consistent with previous investigations, suggesting that, self-run recovery-homes may provide suitable referral sources for recovering ex-offenders and persons with comorbid gambling problems. These results argue for more interventions that screen for and detect gambling behaviors at self-run sober-living recovery homes.

Keywords: Gambling, Criminal Justice, ex-offenders, substance abuse, comorbidity, Recovery Homes, recovery home

Pathological gambling, from this point on referred to as PG, is classified by the Diagnostic and Statistical Manual of Mental Disorders IV-TR (DSM-IV) as an impulse control disorder that is characterized by excessive gambling, and it is further explained as "persistent, recurrent maladaptive gambling behavior" (Kertzman et al., 2010). Diagnosis as a pathological gambler requires five out of the ten criteria as listed in Table 1 (American Psychiatric Association, 2000). The DSM-IV diagnostic criteria for pathological gambling is mainly composed of symptoms that fall under the substance dependence criteria, with two of the items referring to either financial or legal consequences of gambling (Slutske, Zhu, Meier, & Martin, 2011). In addition, due to high rates of comorbidity between substance use disorders and pathological gambling, the America Psychiatric Association plans to move PG to the Substance Use Disorders Section in the DSM V. Moving PG will likely improve diagnosis, screening, and treatment efforts (Petry, 2010). There is growing support from clinicians to include PG within the substance use diagnoses due to the growth in comorbid disorders (Lyk-Jenson, 2010; National Gambling Impact Study Commission, 1999).

Table 1: Diagnostic Criteria for Pathological Gambling

A. Persistent and recurrent maladaptive gambling behavior as indicated by five (or more) of the following:

1) Is preoccupied with gambling (e.g., preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)
2) Needs to gamble with increasing amounts of money in order to achieve the desired excitement
3) Has repeated unsuccessful efforts to control, cut back, or stop gambling
4) Is restless or irritable when attempting to cut down or stop gambling
5) Gambles as a way of escaping from problems or of relieving a dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, depression)
6) After losing money gambling, often returns another day to get even ("chasing" after one's losses)
7) Lies to family members, therapist, or others to conceal the extent of involvement with gambling
8) Has committed illegal acts such as forgery, fraud, theft, or embezzlement to finance gambling
9) Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling
10) Relies on others to provide money to relieve a desperate financial situation caused by gambling

B. The gambling behavior is not better accounted for by a manic episode

Note. This list of criteria is adapted from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision. Copyright 2000 American Psychiatric Association

History of Legalized Gambling and its Expansion in America

Gambling has long played a significant role in the life of people in numerous societies, especially Western society (Reith, 1999). Historically, gambling behaviors have been identified in most ancient to modern societies, including many types of populations ranging from primitive

to complex (Schwartz, 1998, p.145). This indicates that virtually all classes in almost all societies have practiced gambling as a development of social entertainment. Gambling remains popular in our current society, especially in the United States, where Internet gambling websites and cable television (e.g., Bodog.com and ESPN's *World Series of Poker*) not only model, but also promote gambling behaviors (Gray, 2005; Reilly, 2004). Gross annual revenues support this popularity with a legalized gambling surge from a relatively anemic 30 billion dollars in 1992 to 88.3 billion dollars in 2010. These statistics are promoted and maintained by the United States casinos and gaming sector (see Figures 19 & 20; Datamonitor, 2011). In 2015 gross gambling revenue is forecasted to have a value of $111.3 billion, an increase of 25.5% since 2010 (Datamonitor, 2011; Worsnop, 1994). This increase in gambling's revenue and current popularity is the result of several changes that occurred during the nineteenth century. These changes are discussed in further detail in the following paragraphs.

Various changes that occurred in the nineteenth century dramatically changed the face of gambling. The history of gambling has been the history of attempts to outlaw, banish, and repress what society has regarded as a disruptive and dangerous activity from civil society (Reith, 2003). From the Reformation onward, gambling games were seen to "encapsulate an orientation an orientation that opposed the mainstream values of hard work, personal effort, and saving" (Reith, 2003, p. 15). In addition, gambling was strongly condemned by the church as a sinful activity (Reith, 2003). At the same time that gambling was being condemned as a vice during the nineteenth century, a movement was developing that would change the position of gambling.

According to Reith (2003), this movement was the force of commercialization: the organization of gambling games for profit that ended attempts to ban and outlaw them and led to the view of gambling as a legitimate form of consumption. Gambling was now a recreational activity that was, like any other product, a legitimate part of a capitalist enterprise (Reith, 2003).

This shift in perception of gambling from deviance to a leisure activity started at the beginning of the nineteenth century. As scientific understanding of probability developed, it became clear that profits were to be made from organizing and overseeing gambling games (Reith, 2003). This recognition along with increased demand encouraged gambling development of casinos, slot machines, and the first casinos (Reith, 2003). According to Reith (2002), as the calculation of betting odds became more utilized by players, the nature of the games played changed to become more "amendable to commercial organization, more homogenous, and more sellable" (p. 74). In other words, gambling became less stigmatized as an evil or corrupt activity, and it became a benign or acceptable activity. Therefore, a larger portion of the population started gambling, and it became a commercial success. Thus, gambling began its life in the public.

The first casinos, public racetracks, and slot machines appeared in the 19th century (Reith, 2006). In the second half of the 19th century, casinos moved away from its earlier formulation as dancing saloons and summerhouses to a collection of public rooms devoted exclusively to gambling. Another part of this trend was the immense popularity of gambling in the new west, particularly along the Mississippi River and New Orleans (Pierce & Miller, 2004). As the population grew, so did the commercialization of gambling games such as poker and dice games such as craps (Pierce & Miller, 2004). By the end of the nineteenth century gambling had turned into something closer to what Americans currently recognize as modern casino games (Reith 2002). Each of these developments are discussed below.

One of the most significant developments of the nineteenth century was the introduction of the gambling machine (Reith, 1999). The Industrial Revolution laid the foundation for automatic gambling when a London bookseller created a vending machine selling proscribed literature, although the introduction and proliferation of the first coin-operated slot machine did not appear until 1895 (Reith, 2002). Charles Frey created the first slot machine in 1895, which he named the Liberty Bell (Rogers, 2005). The first slot machine inspired others to build off of Frey's creation, developing the gambling machine industry. During the nineteenth century Californians, whom Findlay (1986) called "people of chance" moved to Nevada building the gambling empire currently known as Las Vegas (Reith, 2006). The "people of chance" eventually provided slot machines with a final configuration and created the most modern form of a gambling machine (Reith 1999).

The creation of democratic games such as casinos, horse racing, and slot machines provide modest stakes to attract a majority of players throughout the 19th century. These games allowed for prolonged rather than excessive betting. Prior to the democratic development of gambling, high stakes gambling was reserved for the individuals of the seventeenth century aristocracy- the wealthy. This provided gambling entertainment as well as status affiliation (Reith, 2003). Gambling is still popular among the wealthy and social elite today even after gambling was banned by the government and criticized by the public

There was another decline in the popularity of gambling in the early 1900s. The government banned legalized gambling indicating that gambling operated fraudulently, were morally corrupt, and created social problems, such as pathological gambling (Gribbin & Bean, 2005). At various times severe penalties were imposed on gamblers including criminal sanctions (Morse & Goss, 2007). Several private groups opposed gambling on moral grounds, including religious groups (Dunstan, 1997). Religious groups argued that individuals who gambled were sinful or pathological (Lears, 1995). By 1910, the only legal gambling in the United States was at racetracks in three states (Marshall, 2003).

However, in the wake of the Great Depression and in times of a desperate government, gambling made a comeback through horse racing and pari-mutuel betting. The term pari-mutuel betting refers to the type of gambling where the total prize pool is based off the amount of money wagered. The more money gambled, the higher the prize pool becomes (Dunstan, 1997). Horse racing is the best-known and largest sector within pari-mutual betting. The increased interest in horse racing in the nineteenth and twentieth century is largely attributed to the rise in the pari-mutual style of betting (National Gambling Impact Study Commission, 1999).

The Great Depression led to a greater legalization of gambling and a revival in horseracing (Dunstan, 1997). In 1909, horse racing was allowed in three states: Kentucky, New York, and Maryland (Marshall, 2003). In 1927 Illinois joined these states by legalizing pari-mutuel betting (Sauer, 2000). With the stock market crash of 1929, the government acknowledged the legalization of gambling would generate necessary revenue (Dunstan, 1997). Michigan, Ohio, New Hampshire, and California joined the above states in legalizing pari-mutuel wagering in 1933 (Dunstan, 1997). During the 1930's a total of 21 states brought back racetracks. According to Sauer (2000), this is the single largest gambling liberalization on record.

Horse racing continued to grow, and it became a spectator sport as railways sponsored events and provided transportation from one town to another (Reith, 1999). Furthermore, public interest in horseracing continued to increase with the release of new established journals such as *Sporting Life* (published 1863-1917; 1922-1924) and *Sports Chronicle* (1871). These journals provided horseracing news and gambling tips for winning money at the track to the American

spectators. At this point, gambling was not only seen as a way of building revenue but as a leisure and entertainment sources. The liberation and commercialization of gambling revolutionized horse racing.

Today horse racing exists as an arena for working class entertainment. Today pari-mutuel wagering on horse racing is legal in 43 states, and it generates an annual gross revenue of $3.25 billion. Racing takes place at off track betting sites (OTB), where no racing occurs at all, and on track betting sites. While there are 150 racetracks most of the wagering takes place away from the venue of the originating race. Satellite broadcasting makes it possible to simultaneously broadcast races either between track or at off track betting sites.

As the Great Depression supplied the impetus for the resurrection of horse racing, it also opened up the door for other forms of gambling, such as casino gambling. Following the success of horse racing, U.S. national opinion on gambling changed from immoral to a way to stimulate the economy (Pierce & Miller, 2004; Frey, 1998; Morse & Goss, 2007). Gambling did work as an economic stimulant, and so politicians and legislators began to make movements to use casino revenue rather than taxes to fund education and improve the economic development of their states (Pierce & Miller, 2004). With this in mind, Nevada legalized almost all forms of gambling in 1931and New Jersey followed suit by opening up Atlantic City in 1978.

As of 1978, only two states, Nevada and New Jersey, offered casinos. Like New Jersey's attempt to revive a regional economy, the next five approvals were of a similar nature (Pierce & Miller, 2004) Between 1989 and 1990, states such as South Dakota, Colorado, Iowa, Mississippi, and Illinois followed suit (Marshall, 2003). Today, there are 29 states that offer casinos (Marshall, 2003). Hawaii and Utah remain the only states without legalized gambling (Marshall, 2003).

With an increase in portrayals of gambling in the media for commercialized gambling as well as the support from politicians and lawmakers, pathological gambling and crimes at or near gambling venues such as money laundering, theft, and prostitution are increasing. Crimes committed by problem gamblers such as fraud, assault, burglary, and family abuse are also increasing (Ferentzy & Turner, 2009; Marshall, 2003). The suggestion that gambling may be contributing to the increase in violence, theft, fraud, drug crimes, and other illegal activity is a major public health concern (Griffiths, 2010). Furthermore, gambling can be seen as an escape from negative life events. For example, gambling can be used to replace or distract from coping with life stressors. Because of the immediate gratification gambling can offer, it is understandable that gambling could become a problematic, if not an addictive activity (Rockloff, 2011). Therefore, we developed the following hypotheses for the present study to describe gambling behaviors:

Hypothesis 1: Individuals with gambling problems will exhibit more gambling behaviors than individual classified as problem gamblers or those s without gambling problems.

H1a: Individuals classified as problem gamblers will play cards for more money more frequently than at risk gamblers and individuals with no gambling problems.

H1b: Disordered gamblers will bet on horses or other animals more frequently than at risk gamblers or individuals without gambling problems.

H1c: Disordered gamblers will bet on sports more frequently than at risk gamblers or individuals without gambling problems.

H1d: Disordered gamblers will play dice games more frequently than at risk gamblers or individuals without gambling problems.

H1e: Disordered gamblers will go to casinos more frequently than at risk gamblers or individuals without gambling problems.
H1f: Disordered gamblers will play the lottery more frequently than at risk gamblers or individuals without gambling problems.
H1g: Disordered gamblers will play bingo more frequently than at risk gamblers or individuals without gambling problems.
H1h: Disordered gamblers will play the stock/commodities market more frequently than at risk gamblers or individuals without gambling problems.
H1i: Disordered gamblers will play gambling machines more frequently than at risk gamblers or individuals without gambling problems.
H1j: Disordered gamblers will play games of skill for more money more frequently than at risk gamblers or individuals without gambling problems.

Research indicates that college students engage in many problematic gambling behaviors. Indeed, some research has found that college students report higher rates of pathological than the general adult population (Weiss, 2010). Moreover, college students are two to three times more likely than the adult population to gamble problematically (McComb, 2009). In addition, problem and pathological gambling was uniformly associated with alcohol abuse, illicit drug use, risky sexual behavior, and other risk-taking problem behaviors among college students (Huang et al., 2007). Engwall et al. (2010) found college students with pathological gambling reported increased marijuana use, more episodes of heavy drinking, and drug/alcohol related problems. All these studies taken together suggests that colleges students with at-risk behaviors or substance use disorders who have co-occurring pathological gambling would benefit from interventions that screen for and detect gambling behaviors. The combined issue of problematic gambling behaviors with substance abuse may lead to long-term consequences including legal problems.

Gambling & Criminal Justice System

Research indicates that gambling is a major contributor to the criminal justice system (McCorkle, 2002). Several research studies have found a causal relationship between pathological gambling and criminal behavior (Meyer & Stadler, 1999; Abbott, McKenna, & Giles, 2005; Blaszczynski & McConaghy, 1992; Rosenthal & Lorenz, 1992; Sakurai & Smith, 2003; Williams & Walker, 2009). Williams (2005) found that one third of all criminal offenders from several countries are probable or pathological gamblers. The authors conducted keyword searches in several databases (Criminal Justice Abstracts, National Criminal Justice, PsyInfo, Medline) and in Google using the terms *gambling, problem gambling, pathological gambling, forensic, offender, prison*, and *prevalence* to identify all offender populations. A total of 27 published and unpublished studies were identified and were organized by country. Williams found most countries do not assess for problem gambling and few countries are providing treatment services for incarcerated offenders. Williams (2005) findings suggest more routine screening for problem gambling should take place during intake at correctional facilities. This would increase staff members' awareness of problem gambling among inmates and direct inmates into appropriate treatment. Although this would not eliminate criminal recidivism, it would help reduce it.

Furthermore, of all the gambling activity committed, 40-60% of gamblers admit to having committed illegal acts to obtain money with which to gamble (Lesieur & Anderson,

1995). For instance, the Australian National University Centre for Gambling Research (2003) found 46% of pathological gamblers reported that they committed an illegal act to pay off gambling debts or to get money for gambling. In addition, 51% of problem gamblers reported gambling-related offending, and 35% were in prison for a crime of this type. In this same sample, pathological gambling was uniformly associated with crimes including burglary, theft, fraud, and armed robbery among 357 recently sentenced male prison inmates (Abbott, McKenna, & Giles, 2005).

In 2004, a study released by The United States Department of Justice found pathological gamblers had committed robbery, assault, and sold drugs to fund or pay gambling debts (DOJ, 2004). Other researchers have found prison inmates committed further crimes after their release to pay significant gambling debts they accrued behind bars. Turner et al. (2009) found in a sample of 254 incarcerated male offenders, 65% severe and 20% moderate gamblers reported engaging in criminal activity because of gambling problems and continued this cycle in prison. Taken together, these studies suggest that there is a significant need for criminal offenders who have co-occurring psychiatric problems, such as pathological gambling to receive treatment services, Furthermore, there is research evidence indicating that gambling is related to mental health problems (Barry, Stefanovics, Desai, & Potenza, 2011), including co-morbid substance use disorder (Cardone, 1997; Kausch, 2003; Dannon et al., 2006; Hodgins & el-Guebaly, 2010).

Hodgins & el-Guebaly, (2010) found that pathological gamblers and compulsive gamblers, both in treatment and not receiving treatment, reported excessive substance use throughout their lives. Furthermore, poor health issues including alcohol abuse and dependence were uniformly associated with 45-64 year old pathological gamblers (Morasco et al., 2006). Additional research indicates that there is a positive relationship between gambling severity and substance use/abuse in terms of problem severity. (Rush, Bassani, Urbanoski, & Castel, 2008); El-Guebaly et al., 2006). This type of comorbidity, between substance dependence and the co-occurrence of compulsive gambling may produce recurrent substance abuse/use and relapse. According to National Institute on Drug Abuse (NIDA; 2009), between 40% and 60% of treated individuals with drug addiction relapse at some point**.** The researcher expects to find ex-offenders are more likely than non-offenders to gamble. Therefore, the second hypothesis states:

H2: Ex-offenders will exhibit more gambling behaviors than non-offenders.

Each gambling behavior was broken down. The researchers believed that ex-offenders would gamble more than non-offenders in each gambling category:

H2a: Ex-offenders will play cards for more money more frequently than non-offenders.

H2b: Ex-offenders will bet on horses or other animals more frequently than non-offenders.

H2c: Ex-offenders will bet on sports more frequently than non-offenders.

H2d: Ex-offenders will play dice games more frequently than non-offenders.

H2e: Ex-offenders will go to casinos more frequently than non-offenders.

H2f: Ex-offenders will play the lottery more frequently than non-offenders.

H2g: Ex-offenders will play bingo more frequently than non-offenders.

H2h: Ex-offenders will play the stock/commodities market more frequently than non-offenders.

H2i: Ex-offenders will play gambling machines more frequently than non-offenders.

H2j: Ex-offenders will play games of skill for more money more frequently than non-offenders.

New research reveals evidence that gamblers are genetically predisposed to have a gambling addiction. Compulsive gamblers share a common gene with substance abusers that predispose them to addictive behavior: the D-2 receptor gene (Comings, 1996; Price, 1996). The Comings, et al. (1996) found that that "genetic variants at the DRD2 gene play a role in pathological gambling." Comings et al. (1996) also found that "variants of the D-2 are a risk factor for impulsive and addictive behaviors such as alcoholism" (Comings et al., 1996**).** Further studies by Comings indicated genes for dopamine, serotonin, and norepinephrine, metabolism may also add to the risk for developing pathological gambling problems (Comings, 2001). These genes were also found to play a role in alcoholism, tobacco dependence, and other drug and alcohol disorders as well as problems with impulsivity, compulsivity, and additive behaviors (Comings 2001).

For example, Van Toor et al. (2011) found individuals with substance use disorders performed worse on decision-making related to gambling tasks than the control group. Van Toor concluded that behavioral inhibition, impulsivity, and occurrences of psychiatric distress did not have any impact on their sample's gambling task performance. Goudriann et al. (2006) found neurocognitive decision-making deficits such as diminished performance on inhibition, time estimation, cognitive flexibility, and planning tasks among both the pathological gambling and alcohol dependent group. These deficits were greater when compared to all clinical groups. Comorbid psychiatric disorders such as attention deficit/hyperactivity disorder, anxiety, and depression, minimally influenced the impaired functions of the clinical groups. Decision-making deficits were not related to psychological disorders. Guadriann concluded the pathological gamblers and alcohol dependents were characterized by diminished executive functioning, suggesting a dysfunction of frontal lobe circuitry. Guidriann also concluded that both group have a common neurocognitive aetiology. It is most likely that individuals recovering from substance dependence may be at risk for making poor decisions with regard to their ongoing abstinence, especially among those with gambling problems (Majer et. al, 2011).

For instance, in a previous residential treatment center gambling study, Majer, Angulo, Aase, and Jason (2011) investigated the prevalence of gambling behaviors among 71 residential treatment center residents at a residential treatment center. Residents were given the South Oaks Gambling Screen (SOGS) to assess gambling behaviors and pathological gambling. Majer et al. (2011) found that 50% of Oxford House residents participated in gambling behaviors. Of these people, 19.7% had a probable pathological gambling problem. Majer concluded gambling behavior is common among individuals with substance dependence problems who typically have comorbid disorders such as pathological gambling. The paper called for further gambling research at residential treatment centers.

All these studies together suggest that individuals with substance use disorders who have co-occurring pathological gambling problems would benefit from making use of residential treatment centers across the United States. Therefore, it is important that ex-offenders or substance dependent individuals who also have gambling problems have effective interventions and post-treatment referral sources.

While the above literature gives an expectation about pathological gambling there remains a need to find that empirical relationship. In the previous studies only Majer et al. (2011) has conducted gambling research among substance dependent residents living in residential treatment centers across the U.S. Ex-offenders were not included in Majer's (2011) sample. Prior research has found ex-offenders to have a high gambling rate. Previous research such as Majer et al. (2011) has also shown it is likely that ex-offenders and non-offenders recovering from

substance abuse are at risk for poor decision-making strategies with regard to their ongoing abstinence, especially those with gambling problems.

Currently there is no known study that examines the prevalence of pathological gambling among both non-offenders and ex-offenders that live in residential recovery homes. In addition, there is not a study that compares their gambling behaviors. Clearly, more extensive evaluation of this problem with both samples would be useful. The current study aims to make up for the gaps in this research. The researcher expects to find subjects in the present sample will have a higher pathological gambling rate than subjects living in other residential treatment centers across the U.S.

H3: ex-offenders are more likely to be classified as pathological gamblers than non-offenders.

The present study investigated the prevalence of gambling behaviors in a sample of persons who had substance use disorders and were living in self-run recovery homes within the United States. The current study was interested in comparing the gambling behaviors of individuals who had previously served prison time with individuals with no criminal record.

The current study also attempted to answer the following empirical question

Research Question 1: How does including ex-offenders in the current sample effect gambling behaviors in residential treatment centers?

Research Question 2: What are the differences in gambling behaviors between the previous residential treatment center gambling studies and the present study?

Research Question 3: Are residential treatment centers a suitable referral source for substance-dependent persons who have co-occurring psychiatric problems such as pathological gambling?

Research Question 4: Is it possible that efforts toward (substance) abstinence take priority over gambling abstinence and this might explain the high prevalence of pathological gambling in the current study?

Each of these research questions is addressed in the discussion section.

Methodology

Participants

Eighty-seven (80 males, 7 females) treatment center residents and ex-offenders participated in the present study. Participants were recruited from several substance abuse residential treatment centers across the United States including Wisconsin, Pennsylvania, Colorado, Wyoming, Washington State, and the Chicago metropolitan area during the winter, spring and summer of 2011. In addition, participants were recruited from a national convention for addiction recovery houses in October of 2010. Table 2 shows the demographic characteristics of the 87 participants who agreed to participate in the study. The average age of the sample was 46.6 years old. The sample consisted of 64.4% Caucasians, 17.2% African Americans, 9.2% Latino, 2.3% Native Hawaiian or other Pacific Islander, and 2.3% multiracial participants. Three individuals (3.4%) did not report their ethnicity. With regard to marital status, 64.3% were single, 25% were divorced, 4.8% were separated, 6% were married, and 3.4% did not report their marital status. The majority of participants (66.3%) reported having a GED/HS diploma; 14.5% reported having an associate's degree, 6% had a bachelor's degree, 7.2% had less than a high school degree 3.6% completed a certificate program, and 2.4% had a graduate degree.

Table 2: Demographic Characteristics of the Participants (N=87).

	N	%
Age		
18-30	17	19
39-39	20	23
40-49	27	31
50+	20	23
Sex		
Male	80	92
Female	7	8
Race/ethnicity		
White	56	64
Black	15	17
Latino	8	9
Native Hawaiian or other Pacific Islander	2	2
Multi-racial	2	2
Other	1	1
Missing	3	3
Marital Status		
Single	54	64
Married	5	6
Divorced	21	25
Separated	4	5
Last grade completed		
Less than High School	6	7
GED/High School Diploma	55	66
Associates Degree	12	15
Bachelor's Degree	5	6
Certificate Program	3	4
Graduate Degree	2	2

Sampling

Participants were selected on the basis of their history in the corrections system and their gambling habits. The researchers distinguished between two corrections systems categories: ex-offender and non-offender. Participants were given "ex-offender" status if they lived in a residential treatment center at the time of the study and had previously served time in prison. Participants were identified for inclusion into this category by reporting themselves as an ex-offender and being identified by staff as an ex-offender. The residential treatment center staff identified ex-offenders and introduced them to the researcher at house meetings. The staff also gave the ex-offenders surveys at the national convention where a table was setup for ex-offenders to take surveys. Prior to taking the survey, the researcher screened the participants to ensure that they fit the criteria for ex-offender set by the researcher. Surveys were also separated into ex-offender and non-offender folders. Finally, ex-offender staff also volunteered to take the surveys.

The criteria for "non-offender status" were met if the participants did not report committing a crime and did not serve previous prison time. The participant also had to be living in the facility. Non-offenders were also screened for the criteria listed above Staff introduced non-offenders to the research team at house meetings and passed surveys out as well. During the convention, staff introduced the researcher to non-offenders. Prior to taking the survey the researcher screened the participant to make sure they were a non-offender. Finally, non-offender staff volunteered to take the survey.

Design

The present research consisted of a 2x3 factorial design, between subjects, non-repeated measure. The first independent variable was type of gambling addiction (no gambling addiction, problem gambler, pathological gambler). The second independent variable compared two groups (ex-offenders, non-ex-offenders). The experimental design is displayed in Table 3.

Table 3: Experimental Design

Independent Variables	No Gambling Problem	Problem Gambler	Pathological Gambler
Ex-Offenders	Ex-Offender No Gambling Problem	Ex-Offender Problem Gambler	Ex-Offender Pathological Gambler
Non- Offenders	Non-Offender No Gambling Problem	Non-offender Problem Gambler	Non-offender Pathological Gambler

The dependent variable was gambling behaviors. This was measured with the *South Oaks Gambling Screen* (SOGS). The SOGS is a standardized measure of pathological gambling and gambling behaviors based on DSM-III criteria (Gambino & Lesieur, 2006; Lesiuer & Bloom, 1987). The SOGS consists of 16 items that are dichotomously scored, including scored sub-items and other items that are not scored but nonetheless yield meaningful information. SOGS is scored on a scale of 0-to-20: no gambling problem (scores < 3), problem gambling (scores 3-4) and probable pathological gambling (scores > 5). Typically a score of 0 designates *no problem gambling* or *non-problematic gambling*, 1 to 2 represents *recreational gambling*, 3 to 4 represents *some problem gambling*, and 5 or more indicates probable *pathological gambling* (Shaffer & Hall, 2001). There are 6 factors measured in the SOGS: defaulting on debt, lying

about winnings and loses, family disruption, job disruption, seeking out help from someone to relieve a financial problem caused by gambling, borrowing from illegal sources, and committing an illegal act to finance gambling behaviors (Vassar, 2008). Reliability coefficients of the SOGS have ranged from .69 to .97 across investigations (Vassar, 2008), and the internal consistency (Cronbach's alpha = .82) was acceptable in the present study.

Scoring

In order to assess pathological gambling, the researcher used a revised version of the SOGS. The amended SOGS questionnaire is composed of fifteen questions and 11 scoring items. The questions and scoring items are randomly mixed throughout the questionnaire (See Appendix F). Using the Schaffer and Hall (2001) categorization of disordered gambling, participants were assigned to one of the three gambling groups: a) non-problem gambler (score of 0); b) at risk gambler like social gamblers (scores of 1 or 2); or c) disordered gambler (scores > 3). Disordered gamblers consist of problem gamblers and pathological gamblers (defined as moderate to severe gamblers with scores of three or more). The breakdown of the three gambling groups is displayed in Table 4.

Table 4

Final Breakdown of the 60 Ex-offender & Non-offender Gambling Groups

Independent Variables	No Gambling Problem	Problem Gambler	Pathological Gambler
Ex-Offenders	5 Ex-Offender No Gambling Problem	10 Ex-Offender Problem Gambler	15 Ex-Offender Pathological Gambler
Non- Offenders	15 Non-Offender No Gambling Problem	6 Non-offender Problem Gambler	9 Non-offender Pathological Gambler

Classification of Groups

The revised SOGS was selected due to an imbalance in the three gambling groups. After using the original SOGS scoring scale there were 60 non-problem gamblers, 7 problem gamblers, and 20 pathological gamblers (see Table 5). For the purpose of analysis, the groups were brought closer together using Schaffer and Hall (2001) categorization. Since the problem and pathological group sizes in our sample were so disparate the researcher combined the probable and pathological group together to form a disordered gambling group. In addition, non-problem gamblers with scores of 1 of 2 were assigned to the at risk group. Non-problem gamblers with scores of 0 stayed in the non-problem gambling group. The new revised breakdown of the three gambling groups is displayed in Table 6.

Table 5: *Breakdown of Original SOGS Gambling Groups*

	Prevalence of Pathological Gambling		
Variable	Non-Problem	Problem Gambling	Pathological gambling
Total N	60	7	20
Total %	69%	8%	23%

Table 6: *Breakdown of Adjusted SOGS Gambling Groups*

	Prevalence of Pathological Gambling		
Variable	Non-Problem	Problem Gambling	Pathological gambling
Total N	43	18	26
Total %	49%	21%	30%

Frequency of Behavior Questions

The first section measures the frequency of one's behavior on gambling activities. The frequencies of the following 10 gambling activities done in one's lifetime were assessed including: playing cards for money; betting on horses; sports; casino; lotteries; bingo; stock or commodities market; slot, poker, or other gambling machines; and gambles of skill such as bowling or pool. These 10 gambling categories were analyzed using 3 different categories: not at all, once a week, and more than once a week.

Eleven Scoring items

The second section of the SOGS focuses on the prevalence of problem and pathological gambling activity and associated behavior among the residents throughout their lifetime. borrowed money or sold something to get money for gambling, and gambling has caused you to miss time from work or school. The 11 items were used to compute SOGS scores that measures pathological gambling. While 3 of the SOGS scoring items (4,5,6) have a multiple-response format, all of the other 8 SOGS items use a dichotomous (yes/no) response format. Participants receive 1 point for each positive (affirmative) answer with a maximum possible score of 1.The 11 questions on the questionnaire are weighed equally. Scores on the SOGS measure range from 0 to 11.

Questions 4 through 6 use an ordinal level of measurement. As shown in Table 7, Question 4 has four choices: Never, some of the time (less than half the time I lost), most of the time I lost, and every time I lost. The first two responses are scored as 0. A resident receives a point if they answer "most of the time I lost" or "every time I lost."

The scoring breakdown for questions 5 and 6 is presented in Table 8. As shown in Table 8, question 5 has three responses and only the last two answers receive a score of 1. For example, question 5 has three choices and is scored as follows: Never (or never gamble) is 0, "Yes less than half the time" is 1 point and "Yes most of the time" is a 1 point. For both

questions, only the last two responses are affirmative answers. Question 6 has three responses and only the last two responses are positive affirmative answers "Yes in the past, but not now or "Yes" (See Table 8). When the resident answered "No" to 6 they received a 0. Therefore, for questions 4-6 the last two responses are positive affirmative answers. The overall SOGS scoring is: questions 4-6 for 1 point for last two positive affirmative answers and 1 point for each yes answer for questions 6-15.

Table 7: *Question 4 Scoring*

0 points	0 Points	1 point	1 point
Never	Some of the time (less than half the time) I lost	Most of the time	Every time I lost

Table 8: *Question 5-6 Scoring*

	0 Points	1 point	1 point
Question 5	Never	Yes, less than half the time I lost	Yes, Most of the time
Question 6	Never	Yes, in the past but not now	Yes

Procedure

Approval from the residential treatment centers was obtained prior to conducting the study. The researcher contacted the head of the residential treatment centers for permission to survey the participants. The researcher explained that access was needed into their residential treatment centers for the purpose of recruiting residents to fill out questionnaires for research. Approval was granted and the head of the residential center and this writer arranged separate dates and times in order to gather the data. Approval from a Tiffin University Institutional Review Board was obtained for this study.

After permission was received from the treatment center administration and the university IRB committee, the procedure utilized various residential treatment centers across the United States. Participant recruitment occurred during facility resident meetings during the winter, spring, and summer of 2011. Staff helped the researcher meet residents during weekly house meetings or chapter meetings. After being identified by staff as an ex-offender or non-offender they were asked to read and sign a consent form (see Appendix A). Each participant was given a folder containing the South Oaks Gambling Questionnaire (see Appendix B). Participants were given instructions on how to self-administer the surveys, and they were informed that it would take approximately 10-20 minutes to complete all measures. After the questionnaires were returned, they were placed into a large envelope labeled as ex-offender or non-offender.

Participants were also recruited from a national convention from the same organization; an attempt was made to secure a volunteer sample at this national convention. Prior to the convention, staff a table was set up in a room where individuals could complete their surveys with the researcher and staff. Next, staff helped identify non-offenders and ex-offenders. The researcher explained to the participants that their involvement in this research was entirely voluntary. Furthermore, they were informed that they could discontinue their participation at any

time. After a participant agreed to take the questionnaire, they printed their name, the date, and signed their signature on the informed consent form. All consent forms were placed into a large envelope so that each person's identity could not be related to their responses. The folder was labeled "consent forms." Participants were given instructions on how to self-administer their confidential surveys and that it would take approximately 10-20 minutes to complete all measures. After the questionnaires were returned, they were placed into a large envelope labeled as ex-offender or non-offender.

Data collected from both sources were analyzed, but they did not reveal significant differences in outcome variables, thus we collapsed cases from both methods (n = 87) for our analyses.

Results

After all the data had been figured and recorded, the data for the current study were analyzed in SPSS. Each analysis was evaluated at alpha= .05 level. The breakdown of the three gambling groups SOGS scores is presented in Table 9. Playing cards (M = 2.46), lotteries (M = 2.38), and games of skill (M = 2.08) were the most frequent gambling behaviors reported. Results of the SOGS revealed 43 individuals had no gambling problem, 18 individuals were at risk gamblers, and 26 were disordered gamblers.

Table 9: *Scores on the SOGS among Non-problem, At Risk, and Disordered Gamblers*

	SOGS Score	Participants
Non Problem Gamblers	0	43
At Risk Gamblers	1-2	18
Disordered Gamblers	>3	26

Gambling behaviors were further examined by testing for differences between gambling category groups' gambling behaviors mean scores. We observed significant differences in 9 out of 10 questions of the SOGS scale when mean scores were compared with ANOVA. The following results section provides details on the mean differences in gambling behaviors among the three gambling groups.

Our first hypothesis stated that individuals classified as problem gamblers would engage in more gambling behaviors than at risk gamblers or individuals with no gambling problems. This hypothesis was tested with ANOVA. Scores are reported in Table 10.

An ANOVA was performed to compare card-playing differences between the three gambling groups. A significant difference was found among the different gambling groups, $F(2, 85) = 31.59$ $p < .01$. Post hoc comparisons of all pairwise differences revealed that residents in the disordered group obtained significantly higher mean scores on the SOGS (M = 2.46) as compared to both at risk gamblers (M = 1.61) and non-problem gamblers (M = 1.33), $p < .05$ (see Figure 1). Therefore, Hypothesis 1a was supported.

Individual mean scores for betting of horses or other animals were significantly different among the three groups, $F(2, 85) = 8$, $p < .01$. Consistent with hypothesis 1b, Tukey post hoc

analyses revealed that the mean scores of disordered gamblers (M = 1.54) were significantly different than the mean score for non-problem (M=1.07) and at risk gamblers (M = 1.33), $p < .05$. There was no difference between non-problem and at risk gamblers (see Figure 2). The next analysis found significant differences in sports gambling among the three gambling groups, $F (2, 85) = 20.05$, $p < .01$. A post-hoc Tukey's Honestly Significant Difference Test was conducted in order to find mean differences among the groups. As shown in Figure 3, disordered gamblers obtained higher mean scores on sports betting (M = 1.96), as compared to both at risk (M = 1.28) and non-problem gamblers (M= 1.28), $p < .05$. Therefore, Hypothesis 1c was supported.

An ANOVA was performed to compare dice playing differences among the three gambling groups. Mean scores for dice playing were significantly different among the three groups, $F (2, 85) = 8.31$, $p < .01$. Follow up Tukey post hoc analyses revealed that disordered gamblers had more involvement in this type of gambling (M=1.77) than both the at risk gamblers (M = 1.56) and the non-problem gamblers (M= 1.17), $p < .05$ (see Figure 4). Therefore, Hypothesis 1d was supported.

An ANOVA was conducted in order to compare the means of casino wagering among the three groups. A significant difference was found among the different gambling groups, $F (2, 85) = 19.61$, $p < .01$. As shown in Figure 5, a post hoc Tukey analysis revealed that non-problem gamblers had lower mean scores (M = 1.36) than both at risk gamblers (M = 1.67) and disordered gamblers (M = 2.12), $p < .05$. Therefore, Hypothesis 1e was supported.

An ANOVA was performed to compare betting of lotteries among the gambling groups (hypothesis 1f). A significant difference was found among the different gambling groups, $F (2, 85) = 19.61$, $p < .01$. As shown in figure 6, a post hoc Tukey analysis revealed that mean scores for disorder gamblers (M = 2.38) and at risk gamblers (M = 2.00) on the SOGS was significantly higher than the mean score for non-problem gamblers (M =1.62), $p < .05$. Therefore, Hypothesis 1f was supported.

Another ANOVA was done in order to compare bingo playing differences among the three gambling groups. A significant difference was found among the different gambling groups, $F (2, 85) = 7.54$, $p < .01$. A post hoc Tukey test revealed that disordered gamblers (M = 1.85) scored higher than at risk-gamblers (M= 1.61), and non-problem gamblers (M = 1.33), $p<.05$ (see Figure 7). Therefore, Hypothesis 1g was supported.

An ANOVA was conducted in order to test for mean differences in slot/poker machines use among the three groups. A significant difference was found among non-problem, at risk, and disordered gamblers, $F (2, 85) = 10.17$, $p < .01$. A post hoc Tukey test found that disordered gamblers had more involvement in this type of gambling (M = 1.92) than both non-problem (M = 1.38) and at risk gamblers (M = 1.72), $p<.05$ (see Figure 8). Therefore, Hypothesis 1i was supported.

The final AVOVAs for Hypothesis 1was performed in order to compare the games of skill playing differences among the three gambling groups. A significant difference was found among the different gambling groups, $F (2, 85) = 7.08$, $p < .01$. As shown in Figure 9, a Tukey post hoc analysis revealed that disordered gamblers (M =2.08) had the highest frequency of involvement in games of skill followed by at risk gamblers (M = 1.78) and non-problem gamblers (M = 1.48), $p < .05$. Therefore, Hypothesis 1j was supported. No significant interaction between playing the stock market/commodities and the three gambling groups was found $F (2, 85) = .70$, $p > .53$. Therefore, Hypothesis 1h was not supported.

Table 10: *Gambling Behaviors Among Three Gambling Groups*

	Mean SOGS Scores		
Gambling Activity	Non-problem	Problem Gambler	Pathological Gambler
Played Cards for Money*	1.33	1.61	2.46
Bet on horses or other animals (off-track betting)*	1.07	1.33	1.54
Bet on sports*	1.12	1.28	1.96
Played dice games*	1.17	1.56	1.77
Went to Casino (legal or otherwise)*	1.36	1.67	2.12
Played the numbers or bet on lotteries*	1.62	2.00	2.38
Played bingo*	1.33	1.61	1.85
Played the Stock and/or commodities market	1.12	1.22	1.23
Played slot machines, poker machines, or other gambling machines*	1.38	1.72	1.92
Bowled, shot pool, played golf played other game of skill for money*	1.48	1.78	2.08

Note. n = 87. An * indicates that $p < .05$.

Ex-offender and Non-offender Gambling Groups

The second hypothesis focused on the differences in gambling behaviors between ex-offenders and non-offenders. The frequency of gambling behaviors is presented in Table 11. A multivariate analysis compared nine specific gambling behaviors between ex-offender and non-offender gambling groups. Table 11 displays mean scores for each statistically significant gambling activity. Overall, we found significant differences in 9 out of 10 questions of the scale. Results for each comparison are provided below.

An ANOVA was conducted in order to compare card-playing differences between the two offender groups. The difference between the means for ex-offenders and non-offenders was significant, $F (2, 58) = 17.14$, $p < .01$. As shown in Figure 10, ex-offenders ($M = 2.10$) were more likely than non-offenders ($M = 1.73$) to play cards for money. Ex-offenders ($M = 1.53$) also bet on horses or other animals more than non-offenders ($M = 1.07$; see Figure 11), $F (2, 58) = 6.91$, $p < .01$. Therefore, Hypotheses 2a and 2b were supported.

An ANOVA was conducted in order to compare sports between behaviors between the offender groups. A significant result was found, $F (2, 58) = 16.33$, $p < .01$.A Ex-offenders ($M = 1.57$) were more likely to gamble on sports than non-offenders ($M = 1.37$; see Figure 12). Therefore, Hypothesis 2c was supported. An ANOVA was conducted in order to compare dice playing between offenders and non-offenders. Mean scores for dice playing were significantly

different, F (2, 58) = 5.1, p < .01. Ex-offenders (M = 1.77) gambled more on dice games than Non-offenders (M = 1.33; see Figure 13). Therefore, hypothesis 2d was supported. There was also a statistically significant difference on going to the casino, F (2, 58) = 9.82, p < .01. The mean score for ex-offenders (M = 1.90) was significantly higher than mean score for non-offenders (M =1.67). Therefore, Hypothesis 2e was supported (see figure 14).

A significant result was also found between ex-offenders and non-offenders playing the lotteries or betting on numbers F (2, 58) = 10.13, p < .01. Ex-offenders (M=2.07) reported more involvement in playing the lotteries than non-offenders (M = 1.87). Therefore, Hypothesis 2f was supported (see Figure 15). An ANOVA was also conducted in order to compare bingo playing between offenders and non-offenders. A significant difference in bingo participation was found, F (2, 58) = 5.54, p < .01. As shown in Figure 16, ex-offenders (M=1.73) played bingo more frequently than non-offenders (M=1.50). Therefore, Hypothesis 2g was supported. A significant difference was also found between ex-offenders and non-offenders when playing gambling machines, F (2, 58) = 4.33, p = .02. The ANOVA revealed that ex-offenders (M = 1.93) were more likely to bet on slot and poker machines for money than non-offenders (M = 1.50; see Figure17). Therefore, Hypothesis 2i was fully supported. An ANOVA was conducted in order to compare mean scores of game of skill playing between ex-offenders and non-offenders, F (2, 58) = 3.77 (3.67), p < .03. Non-offenders (M = 1.77) reported playing games of skill less frequently than ex-offenders, (M=1.97; see Figure 18). Therefore, Hypothesis 2j was supported.

Table 11: *Frequency of Gambling Behaviors for Ex-offenders and Non-offenders*

	Frequency of Behavior	
Gambling Activity	Non-offender	Ex-offender
Played cards for money*	1.73	2.10
Bet on horses / other animals (off-track betting)*	1.07	1.53
Bet on sports*	1.37	1.57
Played dice games*	1.33	1.77
Went to casino (legal or otherwise)*	1.67	1.90
Played the numbers or bet on lotteries*	1.87	2.07
Played bingo*	1.50	1.73
Played the Stocks / commodities market	1.07	1.23
Played slot machines, poker machines, or other gambling machines*	1.50	1.93
Bowled, shot pool, played golf or played other game of skill for money*	1.77	1.97

Note. n = 60. An * indicates that groups were significantly different at the p < .05 level.

Pathological Gambling

Hypothesis 3 stated that ex-offenders are more likely to be classified as pathological gamblers than non-offenders. Chi-square was used to compare the 6 cells of the three gambling groups with ex-offender and non-offender. A chi-square cross-tabulations test was conducted and an overall significant difference was found within the 2x3 table of offender status and level of gambling, χ^2 (2) = 57.14, p < .01. Since the overall finding was significant, the researcher conducted follow up analyses to look for differences between the three gambling groups separately for non-offenders and ex-offenders.

Nonparametric chi-square tests were used to determine if there was a significant difference in the number of subjects in the three gambling groups. One of these analyses looked at offenders, and the other chi square test looked at non-offenders. A non-significant difference was found for ex-offenders χ^2 (2) = 5.600, p < .61. A non-significant difference was also found for non-offenders, χ^2 (2) = 4.2, p < .12. Therefore, Hypothesis 3 was partially supported.

Discussion

This study investigated gambling behaviors among 87 people who were recovering from substance-dependent disorders and living in residential treatment centers across the United States. The present study also compared the gambling behaviors of 30 ex-offenders and 30 non-offenders among the 87 residents. Gambling behavior was measured using the South Oaks Gambling Screen (SOGS). Consistent with published research, gambling behavior is common among people with substance-dependence issues and ex-offender populations (Toneatto & Brennan, 2002; Majer, et al., 2011; Meyer & Stadler, 1999; Wickwire, Burke, Brown, Parker & May, 2008). The results of this study do show that ex-offenders and substance dependent persons living in residential treatment centers engage in a variety of gambling behaviors.

Multivariate analyses comparing gambling behaviors between non-problem, at-risk, and disordered gamblers yielded nine statistically significant differences. The research found that individuals with severe gambling problems engaged in 9 out of 10 gambling activity measured more frequently than at risk gamblers or individuals without gambling problems. Similarly, a multivariate analysis yielded significant differences between ex-offenders and non-offenders on all nine gambling behavior questions. Ex-offenders gambled more than non-offenders on all nine gambling activities. This finding confirmed the researcher's hypothesis that the ex-offender group will gamble more than the non-offender group on a variety of gambling activities. Ex-offenders had the highest SOGS scores. Proportionately more ex-offenders were assessed with pathological gambling. SOGS scores revealed ex-offenders had more disordered, at risk, and less non-problem gamblers than non-offenders. The high portion of ex-offenders that met the criteria for problem gambling is similarly consistent with previous research (Williams, 2005). It was hypothesized that ex-offenders would have the highest PG rate. This result confirmed the researcher's hypothesis that ex-offenders are more likely to have a higher pathological gambling rate. In terms of the three gambling groups, disordered gamblers had the highest SOGS scores.

One interesting finding was that the pathological gamblers tended to engage in each type of gambling measured. This suggests that the use of the SOGS did not over-diagnose compulsive gambling in the present sample, which is consistent with previous studies (Majer et al., 2011, Strong & Kahler, 2007; Strong, Lesieur, Breen, Stinchfield, & Lejuez, 2004). This is also fascinating because is suggests that the pathological gamblers do not discriminate. Whenever they have the chance, they will take it.

It was hypothesized that subjects in the present sample would have a higher pathological gambling rate than subjects living in other residential treatment centers. About 49% of the sample did not gamble, whereas one third of the sample was assessed with having problem or pathological gambling. This is a higher rate than what has been reported in other studies that examine gambling among persons seeking or receiving primary treatment for abuse issues (Griffiths, 1994; Majer et al., 2011, Spunt et al., 1998; Toneatto & Brennan, 2002; Wickwire et al., 2008). Further, the findings are consistent with the researcher's hypothesis. We believe that so many problematic and pathological gamblers were included in the study because we included ex-offenders. It would have been interesting to measure previous exposure to drugs, alcohol or impulse control as well.

In addition, the data also indicated that the efforts of ex-offenders and of non-offenders put a higher priority on substance abuse abstinence maintenance than gambling abstinence. This might explain the higher prevalence of pathological gambling in the current study. These findings support previously existing research that has found pathological gambling is often developed after the onset of substance dependence (Kessler et al., 2008). Results of this study are consistent with those found in a National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) studies of 2005 and 2010 that found high rates of alcohol use disorders (73%) among pathological gamblers. In addition, another National Comorbidity Survey Replication (NCS-R) study found 74% of any comorbid disorder, such as alcohol abuse, precedes pathological gambling (Gebauer, LaBrie, Shaffer, 2010).

Limitations

There are some limitations to the present study. Some of these limitations were related to the issue of sampling. The researcher was not able to obtain permission to include offenders residing in state and local correctional facilities. It was the intent of the researcher to get consent from a correctional facility allowing offenders to participate in the study. A total of three jails and prisons were chosen in an effort to obtain more participants, but none of these facilities gave their consent. Therefore, a new strategy was implemented. Participants were found at different residential treatment centers across the U.S.

Another issue with sampling in the present study had to do with the issue of gender. There were a disproportionate number of male participants in the sample. The majority of questionnaires were distributed to males at residential house meetings or at the national convention where the researcher recruited participants. Research has shown that men mainly gamble and women do not. For this reason, the researcher considered including only males the sample. However, more subjects were needed so a new strategy was applied and some female participants were recruited at meetings and the convention. This explains why there is a greater number of male participants (n = 80) than female participants (n = 7). The unique sample and its size create issues for external validity. Furthermore, there is little research on women and gambling. Recent articles have been released indicating that a number of women in recovery homes are participating in a variety of gambling behaviors, as well as gambling pathologically (Majer et al. 2011). Future researchers could include more women living in recovery homes in order to reflect these changes and get a more realistic sample.

There was one major methodological limitation of the present study. There was no control or comparison group that would otherwise provide a wider context for understanding the results of this study. The researcher was able to collect a certain amount of data for the present study. With recruiting efforts at residential treatment centers, the national conference, and

correctional facilities, we could not logistically extend our recruiting efforts any further. Future researchers could use professionally led substance abuse or gambling treatments as a comparison group. Future researchers should include people who are recovering from comorbid substance dependence, and pathological gambling and not receiving primary treatment.

There was also no control for social desirability in the data analysis. To prevent social desirability in the future the Gambling Attitude Scale (GAS) developed by Jeffrey I. Kassinove can be used (Fischer & Corcoran, 2007). The GAS is a 59-item instrument that measures people's general attitudes toward gambling. It also measures attitudes toward gambling in casinos, betting on horses, and playing the lottery. Therefore, the GAS can be used to help predict which people may be more likely to engage in gambling.

Little is known about comorbid gambling pathology among persons recovering from substance dependence that live in recovery homes. Another assessment that can be coupled with the SOGS is the two question Lie/Bet Questionnaire. The Lie Bet Tool has been deemed valid and reliable for ruling out pathological gambling behaviors. The Lie Bet has consistently differentiated between pathological and non-problem gambling. In two previous studies the Lie-Bet Questionnaire had a high specificity (85% and 91%) and sensitivity (100% and 99%) in groups enriched with pathological gambling (Potenza, Fiellin, Heninger, Rounsaville, & Mazure, 2002). If an individual answers yes to one or both questions on the Lie-Bet further assessment is needed by another measure, such as the SOGS. The Lie Bet questionnaire could have been used in the present study to detect for responder bias and improve pathological gambling classification. As with any self-reported study, the accuracy of the results is limited by the truthfulness of respondents. Although the researcher assured the participants the confidentiality of the survey submission, subjects may have provided false answers to survey questions out of fear of discovery. To distinguish individuals with PG from those without it, the researcher recommends the use of the Lie-Bet questionnaire in future studies.

Future investigations should look more in-depth to the relationship between substance abuse and gambling. Recent findings have been released indicating that a number of persons with substance abuse are beginning to show the signs of a gambling disorder after the onset of substance dependence. Given the previous research and experiences recounted by participants in this study, such a finding is not surprising, and given the lack of substance abuse resources currently available to substance dependent persons, recovery may be exponentially slow.

The present research is the first known study of gambling behavior among ex-offenders and persons recovering from substance dependence that live in residential treatment centers. To help better understand gambling behaviors among this population multiple investigations and assessment intervals (e.g. The GAS or Lie-Bet Questionnaire) and with comparison groups are needed. For instance, the comparison group would include those in professionally led treatments and have women in the sample. In order to further explore the co-morbidity of substance abuse and pathological gambling in offender populations, future research could explore using state and local correctional populations.

Conclusion

The findings of this study indicate that the benefits of living in a residential treatment center extend to those with pathological gambling behaviors and comorbid pathological gambling recovering from substance abuse. This confirmed the researcher's hypothesis that residential treatment centers across the U.S. might be suitable referral source for recovering persons and ex-offenders who have comorbid gambling.

Gambling behavior is continuing to become increasingly common among substance-dependent persons and ex-offenders who usually have comorbid disorders such as pathological gambling. Findings from the present study suggest some recovering substance dependent persons and ex-offenders who live in recovery homes do engage in gambling behaviors. Criminal justice educators and practitioners should inquire about gambling behaviors among clients who are recovering from substance abuse, especially those who have been abstinent for a substantial length of time and are seeking help for other issues such as previous abuse/trauma, family problems, and gambling. In addition, criminal justice educators and practitioners should become familiar with the residential treatment centers by attending national conventions or visiting different residential treatment centers to learn more about this unique, cost efficient, and effective treatment for those recovering from substance abuse: including those with psychiatric comorbidity. Overall, results of the present study suggest that recovering ex-offenders as well as substance dependent individuals with problem gambling behaviors use residential care model, and it should be considered as a referral source by Criminal Justice educators and practitioners.

The present study was unique in that it measured individuals in residential treatment centers. However, much research remains to be done to better understand pathological gambling in residential treatment centers across the U.S. Screening for problem gambling and provision of special treatment are currently lacking in most residential treatment centers. In addition to more screening and treatment, there needs to be greater vigilance in detecting and enforcing its prohibition in residential treatment centers.

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