Pathological Gambling in Combat Veterans

Robert Hierholzer, MD; Holly Vu; and Ronna Mallios, MPH

This study explores the prevalence of pathological gambling among veterans who seek counseling for such conditions as posttraumatic stress disorder, discusses the clinical implications of the findings, and suggests avenues for future research in this area.

Pathological gambling has been associated with a number of adverse conditions and consequences, including suicide and suicide attempts, bankruptcy, homelessness, smoking, sleep deprivation, irritability, mood disorders, withdrawal reactions, sudden cardiac death, divorce, neglect of family, and violence against intimate partners.[1–4] Consequently, some have come to regard pathological gambling as a serious public health issue and have called for blocking the expansion of gambling.[2,3,5] This study was designed to determine the prevalence of pathological gambling among veterans receiving VA counseling services.

Some previous studies had revealed elevated rates of problem gambling among the following groups compared with the general U.S. population: Native American veterans; veterans in VA substance abuse or psychiatric programs; and homeless veterans affected by substance abuse.[6–9] In 3 of these studies, participants were receiving treatment at a VA facility.[7–9] By contrast, a study of both combat and noncombat Vietnam era veterans, who were not necessarily receiving treatment at a VA facility, found a lifetime prevalence of pathological gambling of 2.3%[10]—a rate roughly in line with the prevalence estimates Volberg provides (3.3% to 5.4%) for problem and pathological gambling found in studies of the general U.S. population since 1991.[11] These findings suggest that there may be important differences in gambling behavior between veterans who receive their health care in the VHA and those who do not. Another reason to explore this issue is that gambling has become more widely available in the years since these studies were conducted, and rates of pathological gambling are likely to have increased during this time.[12–14]

This study, which was presented, in part, as a poster at the 59th Institute on Psychiatric Services in New Orleans, Louisiana,[15] sought to determine the prevalence of pathological gambling in a group of combat veterans receiving VA mental health services and to explore the relationship between pathological gambling and posttraumatic stress disorder (PTSD). We believe it is the first study in the past decade designed to investigate these issues within this particular group of American veterans.

Our interest in these topics grew out of our clinical observation that gambling plays a detrimental role in the well-being of several patients receiving services at our local vet center. In this setting, PTSD is nearly a universal diagnosis, and a recent study of active duty military outpatients receiving treatment at a naval psychiatric clinic, found pathological gambling to be "markedly underdiagnosed" and "often unrecognized among new patients."[16]

The various large-scale surveys of mental health disorders among combat veterans from World War II to the present do not typically report on the prevalence of pathological gambling.[17–20] More than 40 years ago, Niederland's observations on the behavior of European victims of political and racial persecution suggested a link between gambling and adaptation to trauma.[21] When studying Native American and Hispanic American veterans, Westermeyer and colleagues also found a potential association between PTSD and pathological gambling, prompting them to call for further study "of the role of trauma in gambling behavior."[6] A study of older primary care patients found the presence of current PTSD symptoms to be one of the strongest predictors for "at-risk gambling behavior."[22] Although an epidemiologic cohort study published in 1998 found no relationship between PTSD and gambling among Australian veterans of the Vietnam War,[23] a study published in 2005 found a 29% lifetime prevalence and a 17% current prevalence of probable problem gambling among Australian veterans admitted to a PTSD treatment program—rates estimated to be 34

Dr. Hierholzer is the associate chief of staff for research and education at the VA Central California Health Care System, Fresno and a health sciences clinical professor in the department of psychiatry, University of California, San Francisco (UCSF) School of Medicine. During the initial preparation of this manuscript, **Ms. Vu** was a UCSF-Fresno summer biomedical intern. **Ms. Mallios** is a research analyst with the UCSF-Fresno Medical Education Program.

Continued on page 9

Continued from page 8

to 64 times higher than those for an aged-matched cohort in the general population.[24]

A secondary aim of this study was to assess the feasibility of conducting research related to a highly sensitive topic with financial implications on a group of patients often concerned about the potential loss of VA disability benefits. Feasibility entailed assessing participants' response rates and study burden (the amount of time required to complete the study questionnaires and the degree of distress, or deleterious consequences thereof, induced by questionnaire completion).

The potential for psychological distress is often the major risk factor associated with participating in research that deals with emotionally charged issues.[25] A recent review of participant distress in psychiatric research, which evaluated relevant findings of 46 psychiatric studies that had assessed subjects' negative emotional reactions following participation, failed to include even 1 study of gambling behaviors.[25] To our knowledge, the present study is the first to evaluate subjects' emotional reactions to participation in a study of gambling behaviors. Our findings should be of value to institutional review boards (IRBs) attempting to gauge potential participant distress arising from similar studies in the future.

METHODS

This study was conducted at the Fresno Vet Center and the VA Central California Health Care System (VACCHCS), and was approved by the VA Northern California Health Care System IRB. Because data were collected anonymously and the study was believed to pose minimal risk, the IRB waived the requirement to obtain signed consent.

The Fresno Vet Center is 1 of 232 VA community-based centers that provide readjustment counseling for veterans who have served in a combat zone during any period of war or armed hostility, or who were sexually assaulted during their military service. Through posters and vet center announcements, we invited clients who were seeking or receiving rehabilitative counseling services between June 21 and September 29, 2006, to participate. We provided an informational letter to potential participants that explained the purposes and procedures of this anonymous study and gathered no personally identifying information.

Participants completed the South Oaks Gambling Screen (SOGS)[26] and a brief demographic questionnaire; placed the 2 documents in a plain envelope, and deposited the envelope in a collection box from which they were collected weekly. We hoped this anonymous approach would encourage candor, but recognized that the price of such candor was a reliance on self-reported data and the inability to link questionnaire data with information from medical records.

The SOGS is a 20-item questionnaire based on the criteria for pathological gambling outlined in the

Table 1. Age of study participants

Age, years	No. (%)
< 35	7 (5.9)
36–45	5 (4.2)
46–55	7 (5.9)
56–60	75 (63.0)
61–65	14 (11.8)
66–75	3 (2.5)
76–89	8 (6.7)
Total	119[a] (100)

[a]Age data missing for 1 subject from original sample of 120.

Table 2. Periods of service of study participants

Era	No. (123[a]) (%)
World War II	4 (3.3)
Korean War	6 (5.0)
Vietnam War	96 (80)
Gulf War	9 (7.5)
OIF[b]/OEF[c]	8 (6.7)

[a] Total > 120 because some participants served in more than 1 conflict.

[b] OIF = Operation Iraqi Freedom.

[c] OEF = Operation Enduring Freedom.

Diagnostic and Statistical Manual of Mental Disorders (*DSM*)-III.[26] The instrument originally was designed to assess lifetime gambling behaviors in clinical populations. It has, however, become widely used for epidemiologic studies of general populations[27,28] and has been modified for some studies to examine specific periods within a lifetime.[13,27–30]

In this study, participants were told that their answers should reflect their behavior over the previous 12 months. We classified participants with SOGS scores of 5 or more as probable pathological gamblers,[26] those with scores of 3 or 4 as problem gamblers,[11,13,30] and those with scores below 3 as having no problem with gambling.

The demographic questionnaire asked about age (in 5-year intervals), period(s) of military service, combat exposure, VA service-connected status for PTSD, and marital status. To assess study burden, 2 additional multiple-choice questions were included. One asked how long it took the participant to complete the questionnaires (the 4 possible choices ranged from "less than 10 minutes" to "more than 30 minutes"), and another asked how "upsetting or disturbing" it was to complete the questionnaires (the 4 choices ranged from "not upsetting at all" to "very upsetting").

RESULTS

Of the 365 veterans who made at least 1 visit to the vet center during the study period, 120 (32.9%) chose to participate. They ranged in age from under 35 to 89 years (Table 1). Most (80%) were veterans of the Vietnam era (Table 2). Almost 92% reported combat exposure, most reported being classified as having service-connected PTSD (75%) or being in the process of applying for such classification (14.2%), and 85% reported being either married or in a long-term, committed relationship.

Almost all participants were able to complete the 2 questionnaires in less than 20 minutes (less than 10 minutes for 77% and 10 to 20 minutes for 21%). Very few participants found completing the questionnaires upsetting: About 87% found it "not upsetting"; 9.3% reported it was "a little upsetting"; and 3.4% described it as "fairly upsetting." No one reported that the experience was "very upsetting."

Based on responses to the first SOGS question—which asks about participation in a number of different gambling activities—85% of respondents reported engaging in some gambling activity over the past year. Based on this activity, 20% (24) of the 120 participants were classified as "probable pathologic gamblers," and 4.2% (5) were classified as "problem gamblers."

To assess potential associations between gambling status and other variables, we examined gambling in 2 ways: using the 3 SOGS categories of "no problem," "problem gambling," or "probable pathological gambling," and dichotomizing gambling as either "no problem" (SOGS score below 3) or "some problem" (SOGS score of 3 or above). Using either classification scheme, chi-square analysis revealed no statistically significant associations between gambling status and period of service, combat exposure, PTSD service connection, relationship status, or age.

The degree of distress experienced in completing the questionnaires was highly correlated with gambling status. Those with some gambling problems were significantly ($P < .001$) more likely to find completion of the questionnaires "a little upsetting" or "fairly upsetting" compared with those who had no gambling problem. Among those who had no gambling problem, 82.5% were not upset by the questionnaires, while this was true for only 64% of those with some gambling problem. No participant contacted the principal investigator regarding this distress nor sought help for a gambling problem, despite being invited to do so in the informational letter.

DISCUSSION

Prevalence of pathological gambling

The major finding of this study was that, in a group of counseling-seek-

ing veterans, mostly of the Vietnam era, the 1-year prevalence of probable pathological gambling was 20%, as assessed using the SOGS. This study was unable to establish a particular association between PTSD and problem gambling, most likely because study participants were overwhelmingly classified as having service-connected PTSD (75%) or were in the process of applying for such classification (14.2%).

The high prevalence of probable pathological gambling found in this study roughly echoes the findings of a study of Australian combat veterans seeking treatment for PTSD,[24] but is substantially higher than the 1.9% 12-month prevalence rate of pathological gambling (SOGS scores of 5 or more) and the 5.5% 12-month prevalence rate of problem gambling (SOGS scores of 3 or more) Welte and colleagues estimated for the entire U.S. population, based on a study published in 2001.[13] Our results also are substantially higher than the 1994 1.2% 12-month prevalence estimate of probable pathological gambling in Minnesota, obtained using a modified SOGS.[27]

The participants in the present study were all men; therefore, they did not reflect the wide age and gender distributions seen in some of the other prevalence studies.Welte and colleagues do not provide age and gender data to allow for a direct comparison of the present sample with a similar subsample from their study. Their data, however, indicate only slightly higher rates of probable pathological gambling in men (2.1%) vs women (1.8%) and relatively low rates in a similarly aged (51–60 years) cohort (1.1%).[13]

The high prevalence rate of pathological gambling found in this study is roughly equivalent to the prevalence rates reported in some other studies using the SOGS to identify pathologic and problem gambling in U.S. veteran populations. In 1 such study, problem gambling was identified in about 14% of homeless veterans.[9] A study of veterans being treated in either a VA general psychiatric unit or a substance abuse unit found that 15% were pathological gamblers, while another 25% had "mild" gambling problems.[7] When investigators administered the SOGS to a population of hospitalized veterans affected by substance abuse, they found that one-third had a comorbid gambling pathology.[8] These 3 studies were published a decade before the present study, suggesting that pathological gambling has been a problem for veterans, or at least certain veteran subgroups, for some time.

The survey by Westermeyer and colleagues found the lifetime prevalence of pathological gambling to be 9.9% for Native American veterans and 4.3% for Hispanic American veterans. These rates may have been lower than those found in the current study because the former was a community-based survey, rather than a VA facility-based study.[6]

For our population, participation in any form of gambling over the past year (85%) was close to that estimated by Welte and colleagues for the entire U.S. population (84.4% for all men and 81.2% for men and women aged 51–60 years).[13] This suggests that the high rate of probable pathological gambling found in our study does not arise simply because study participants were more likely than other Americans to participate in gambling.

Pathological gambling and PTSD

Although this study was unable to establish a particular link between PTSD and pathological gambling, there are reasons to suspect that such a connection exists. In general, people who have PTSD, as opposed to people with a history of trauma exposure without PTSD, have elevated rates of several other psychiatric disorders, including major depression and substance abuse or dependence.[31–33] Substance abuse and dependence are highly associated with pathological gambling: 25% to 36% of pathological gamblers have a lifetime diagnosis of a substance use disorder and 9% to 16% of those with a substance use disorder are probable pathological gamblers.[33] Studies of pathological gamblers have found high rates of PTSD symptoms and high rates of emotional, physical, and sexual trauma, mostly sustained in childhood.[34,35]

Apart from such diagnostic associations, PTSD has been linked with deficient reward function.[36] In 1 study, combat veterans of the Vietnam War who had chronic PTSD were found to have a low expectation of receiving rewards and a low level of satisfaction with rewards that are received. They further failed to experience "the extra satisfaction that is normally incumbent upon obtaining a reward when reward expectancy is low."[36] Gambling may represent a compensatory attempt to heighten reward expectancy and increase rewards in response to a dampened expectancy and reward system.

Additionally, there is evidence that certain combat experiences are associated with a propensity to engage in high-risk behaviors. A study of over 1,200 combat army soldiers who had been deployed to Iraq found that higher levels of exposure to violent combat, exposure to intense human trauma, and a history of having killed another person were associated with a willingness to engage in risky behaviors and actual engagement in high-risk activities (such as

Table 3. Gaming activities of study participants[a]

Gaming activity	No. reporting (%)
Card games	35 (29.2)
Horses/animal races	17 (14.2)
Sporting events	30 (25.0)
Dice	15 (12.5)
Lottery	79 (65.8)
Bingo	13 (10.8)
Slots/machines	68 (56.7)
Golf/billiards	24 (20.0)

[a]Study participants could report more than 1 gaming activity.

dangerous driving, drug use, cigarette smoking, unsafe sexual behavior, and problem gambling).[37]

Study burden

Participation in this study was not found to be particularly burdensome. Subjects reported that it was a small imposition on time and rarely upsetting. Not surprisingly, distress was positively correlated with problem or pathological gambling. The generally low study burden suggests that IRBs need not be overly concerned about psychological distress arising in similar studies of gambling behaviors. The fact that no distressed veterans sought help from the principal investigator in dealing with distress or for assistance with a gambling problem suggests either that any distress was very mild or short-lived, or that researchers and IRBs should re-evaluate the access of study participants to help in the event of distress.

Limitations

Because this study was conducted in a VA treatment setting, and most participants were Vietnam era veterans in the sixth decade of life, generalizability of the results to other settings and populations may be limited.

The 32.8% participation rate was disappointing, particularly in light of the fact that the study employed anonymity in the hopes of achieving greater subject participation and candor. The degree to which the 120 participants are reflective of the 365 potential subjects is unclear. Nevertheless, the distribution of study participants who were Vietnam era veterans (80%) was similar to the proportion of the Fresno Vet Center clients who are Vietnam era veterans (about 77%).

It is impossible to determine whether gamblers or nongamblers were more or less likely to participate in this study, though others have argued that gamblers are less likely to participate and less likely to be candid about their gambling.[24] It seems unlikely that this study could capture all problem gamblers from among the 365 potential participants, skewing the prevalence figure upward. Assuming that none of the 245 nonparticipants were pathological gamblers, the resulting 1-year prevalence of pathological gambling for the entire clinic population still would have been 6.6% (24/365), a figure significantly larger than expected.

The anonymity of the study required us to rely on self-report rather than structured interviews or data abstracted from medical records. While it is widely used, the SOGS has been criticized as having a high false positive rate and only modest sensitivity when compared with the *DSM*-IV criteria.[28] Biddle and colleagues contend that the correlation between the SOGS and the *DSM*-IV suggests that they measure the same phenomena.[24]

Because the prevalence of pathological gambling found in this study was so high, it is necessary to ask whether this was merely a reflection of the particular locality. Access to gambling often is cited as a risk factor for pathological gambling,[11,33,38,39] though some prospectively gathered data suggest the contrary.[30]

California has a state lottery and, within a 40-mile radius of downtown Fresno, there are 4 Indian gaming casinos and 3 card clubs. We believe, however, that our findings have broader implications and are not solely reflective of local particulars. The fact that our population engages in gambling at a rate that is similar to the general American population suggests that differential access is not a primary determinant.

The most common form of gambling in our study was playing the lottery (Table 3). Lottery has been the most common form of gambling in studies of other populations as well, including active duty military personnel receiving mental health services[15] and elderly primary care patients.[22] At present, 42 states, the District of Columbia, and the Virgin Islands have lotteries, the scope of which has been expanded by Internet-based lottery purchasing services.[40] According to the National Indian Gaming Commission, Indian gaming is available in 28 states and, in California alone, there were 55 Indian gaming operations as of June 2008.[41,42] In other words, veterans have ready access to gaming opportunities in many localities.

The clinic population in this study is not unlike that of many VA clinics. The heavy combat exposure in our population (92%) is in keeping with the mission of the 232 vet centers nationwide, which seek to provide readjustment counseling and outreach services to veterans who have served in a combat zone. The implications of our findings, of course, are greatest for the other 231 centers. Our study population was heavily weighted toward Vietnam combat veterans who

Continued on page 14

Continued from page 12

are classified as having service-connected PTSD. According to the Veterans Benefits Administration, this is a large group, which comprised 194,446 veterans at the end of fiscal year 2006.[43]

CONCLUSION

This study, which found a high rate of pathological gambling among combat veterans seeking counseling services, provides a solid rationale for asking this patient population, particularly those with PTSD, about gambling behaviors. Research suggests that many VA clinicians feel ill-equipped to evaluate and treat patients with gambling problems.[44] In the current study, however, we found that simply raising the issue of gambling can open doors. When invited to participate in this study, a veteran volunteered, "That's me…the monkey's on my back. I can show you a shopping bag full of 'scratchers'." Another said, "That's my problem! I use all my extra money to gamble." Such comments suggest that there is significant distress and turmoil associated with pathological gambling in the study population.

Unfortunately, the study instrument, the SOGS, does not assess the wide range of social, medical, and psychiatric problems associated with pathological gambling.[1-5] Given the anonymous nature of this study, it too was unable to address these associations, though we have no reason to believe that the negative adverse effects of pathological gambling identified in other studies would be any less frequent in this study population.

This study suggests a need for larger-scale studies that assess the associations between PTSD and pathological gambling. Prospective studies that assess soldiers with and without combat exposure, both prior to and after military service, may be able to establish a definitive causal link between PTSD and pathological gambling. Short of that, larger-scale studies assessing only the prevalence of pathological gambling among those with combat-related PTSD would be clinically useful, provided that they include veterans of a wide age range, use standard measures for PTSD, and consider such common, potentially confounding, comorbid conditions as substance abuse and depression. Ideally, such studies would assess the adverse psychological, financial, and social effects of pathological gambling.

Author disclosures

The authors report no actual or potential conflicts of interest with regard to this article.

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REFERENCES

1. Kausch O. Suicide attempts among veterans seeking treatment for pathological gambling. *J Clin Psychiatry*. 2003;64(9):1031–1038.
2. Griffiths M. Betting your life on it. *BMJ*. 2004;329(7474):1055–1056.
3. Middleton J, Latif F. Gambling with the nation's health. *BMJ*. 2007;334(7598):828–829.
4. Muelleman RL, DenOtter T, Wadman MC, Tran TP, Anderson J. Problem gambling in the partner of the emergency department patient as a risk factor for intimate partner violence. *J Emerg Med*. 2002;23(3):307–312.
5. Setness PA. Pathological gambling, when do social issues become medical issues? *Postgrad Med*. 1997;102(4):13–18.
6. Westermeyer J, Canive J, Garrard J, Thuras P, Thompson J. Lifetime prevalence of pathological gambling among American Indian and Hispanic American veterans. *Am J Public Health*. 2005;95(5):860–866.
7. Miller MA, Westermeyer J. Gambling in Minnesota. *Am J Psychiatry*. 1996;153(6):845.
8. Daghestani AN, Elenz E, Crayton JW. Pathological gambling in hospitalized substance abusing veterans. *J Clin Psychiatry*. 1996;57(8):360–363.
9. Castellani B, Wootton E, Rugle L, Wedgeworth R, Prabucki K, Olson R. Homelessness negative affect, and coping among veterans with gambling problems who misused substances. *Psychiatr Serv*. 1996;47(3):298–299.
10. Eisen SA, Griffith KH, Xian H, et al. Lifetime and 12-month prevalence of psychiatric disorders in 8,169 male Vietnam War era veterans. *Mil Med*. 2004;169(11):896–902.
11. Volberg RA. Prevalence studies of problem gambling in the United States. *J Gambl Stud*. 1996;12(2):111–128.
12. Pasternak AV, Fleming MF. Prevalence of gambling disorders in a primary care setting. *Arch Fam Med*. 1999;8(6):515–520.
13. Welte J, Barnes G, Wieczorek W, Tidwell MC, Parker J. Alcohol and gambling pathology among U.S. adults: Prevalence, demographic patterns and comorbidity. *J Stud Alcohol*. 2001;62(5):706–712.
14. Fong TW. The biopsychosocial consequences of pathological gambling. *Psychiatry MMC*. 2005;2:22–30.
15. Hierholzer RW, Vu H, Mallios R. Prevalance of problematic gambling among U.S. military veterans. Poster presented at: 59th Institute on Psychiatric Services; October 13, 2007; New Orleans, LA.
16. Weis DR, Manos GH. Prevalence and epidemiology of pathological gambling at Naval Medical Center Portsmouth psychiatric clinic. *Mil Med*. 2007;172(7):782–786.
17. Health status of Vietnam veterans. I. Psychosocial characteristics. The Centers for Disease Control Vietnam Experience Study. *JAMA*. 1998;259(18):2701–2707.
18. Norquist GS, Hough RL, Golding JM, Escobar JI. Psychiatric disorder in male veterans and nonveterans. *J Nerv Ment Dis*. 1990;178(5):328–335.
19. Jordan BK, Schlenger WE, Hough R, et al. Lifetime and current prevalence of specific psychiatric disorders among Vietnam veterans and controls. *Arch Gen Psychiatry*. 1991;48(3):207–215.
20. Seal KH, Bertenthal D, Miner CR, Sen S, Marmar C. Bringing the war back home: Mental health disorders among 103,788 US veterans returning from Iraq and Afghanistan seen at Department of Veterans Affairs facilities. *Arch Intern Med*. 2007;167(5):476–482.
21. Niederland WG. Compulsive gambling and the survivor syndrome [letter]. *Am J Psychiatry*. 1984;141(8):1013.
22. Levens S, Dyer AM, Zubritsky C, Knott K, Oslin DW. Gambling among older, primary care patients: An important public health concern. *Am J Geriatr Psychiatry*. 2005;13(1):69–76.
23. O'Toole BI, Marshall RP, Schureck RJ, Dobson M. Posttraumatic stress disorder and comorbidity in Australian Vietnam veterans: Risk factors, chronicity and combat. *Aust NZ J Psychiatry*. 1998;32(1):32–42.
24. Biddle D, Hawthorne G, Forbes D, Coman G. Problem gambling in Australian PTSD treatment-seeking veterans. *J Trauma Stress*. 2005;18(6):759–767.
25. Jorm AF, Kelly CM, Morgan AJ. Participant distress in psychiatric research: A systematic review. *Psychol Med*. 2007;37(7):917–926.
26. Lesieur HR, Blume SB. The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *Am J Psychiatry*.

1987;144(9):1184–1188.
27. Emerson MO, Laundergan JC. Gambling and problem gambling among adult Minnesotans: Changes 1990 to 1994. *J Gambl Stud*. 1996;12(3):291–304.
28. Stinchfield R. Reliability, validity, and classification accuracy of the South Oaks Gambling Screen (SOGS). *Addict Behav*. 2002;27(1):1–19.
29. Wallisch LS. Gambling in Texas: 1995 surveys of adult and adolescent gambling behavior. Texas Commission on Alcohol and Drug Abuse. www.tcada.state.tx.us/research/gambling/gambling1995.pdf. Published August 1996. Accessed June 17, 2010.
30. Jacques C, Ladouceur R. A prospective study of the impact of opening a casino on gambling behaviours: 2- and 4-year follow-ups. *Can J Psychiatry*. 2006;51(12):764–773.
31. Breslau N, Davis GC, Schultz LR. Posttraumatic stress disorder and the incidence of nicotine, alcohol, and other drug disorders in persons who have experienced trauma. *Arch Gen Psychiatry*. 2003;60(3):289–294.
32. Oquendo M, Brent DA, Birmaher B, et al. Posttraumatic stress disorder comorbid with major depression: Factors mediating the association with suicidal behavior. *Am J Psychiatry*. 2005;162(3):560–566.
33. Shaffer HJ, Korn DA. Gambling and related mental disorders: A public health analysis. *Annu Rev Public Health*. 2002;23:171–212.
34. Ledgerwood DM, Petry NM. Posttraumatic stress disorder symptoms in treatment-seeking pathological gamblers. *J Trauma Stress*. 2006;19(3):411–416.
35. Kausch O, Rugle L, Rowland DY. Lifetime histories of trauma among pathological gamblers. *Am J Addict*. 2006;15(1):35–43.
36. Hopper JW, Pitman RK, Su Z, et al. Probing reward function in posttraumatic stress disorder: Expectancy and satisfaction with monetary gains and losses. *J Psychiatr Res*. 2008;42(10):802–807.
37. Killgore WDS, Cotting DI, Thomas JL, et al. Post-combat invincibility: Violent combat experiences are associated with increased risk-taking propensity following deployment. *J Psychiatr Res*. 2008;42(13):1112–1121.
38. National Gambling Impact Study Commission: Final Report to Congress. Chapter 4: Problem and Pathological Gambling; 1999. http://govinfo.library.unt.edu/ngisc/reports/4.pdf. Accessed October 29, 2008.
39. Campbell F, Lester D. The impact of gambling opportunities on compulsive gambling. *J Soc Psychol*. 1999;139(1):126–127.
40. North American Association of State and Provincial Lotteries. Resources. http://www.naspl.org/index.cfm?fuseaction=content&PageID=41&PageCategory=38. Accessed June 1, 2010.
41. Frequently asked questions. National Indian Gaming Commission; http://www.nigc.gov/About_Us/Frequently_Asked_Questions.aspx. Accessed June 16, 2010.
42. Questions & Answers. California Nations Indian Gaming Association. http://www.cniga.com/facts/qanda.php. Accessed June 16, 2010.
43. Annual benefits report fiscal year 2006. Veterans Benefits Administration; 2006. http://www.vba.va.gov/REPORTS/abr/2006_abr.pdf. Accessed June 1, 2010.
44. Drebing CE, Mello A, Penk W, et al. Clinical care of gambling disorders: Training, experience, and competence among VHA psychologists. *J Gambl Stud*. 2001;17(2):117–136.