

A coordinated health communication campaign addressing casino and sports gambling among undergraduate students

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Abstract

Research has outlined many negative effects of disordered gambling. While gambling disorder exists among all US sociodemographic groups, college students are particularly vulnerable. This study describes a health communication approach commonly studied in the intervention of college behaviors such as risky alcohol/substance use and sexual activity. Specifically, two health communication messages targeting casino and sports betting disordered gambling were distributed at a Midwestern US public research university, and central intercept techniques were utilized to collect quantitative and qualitative data assessing student reception. Results revealed females preferred the casino message more than males ($U = 4696.50, p < .05$) and stated more often that the advertisement would appeal to friends ($U = 4745.50, p < .05$). Individuals who lost more money than they intended to lose 1–2 times understood the message more than those persons who never gambled ($U = 946.50, p < .05$) and those persons who never lost more than planned ($U = 249.50, p < .05$). Students who first gambled at ages 16–18 liked the casino message less than those students who first gambled at 13–15 ($U = 208.00, p < .05$) and the students who had never gambled ($U = 1656.00, p < .05$). For the sports betting message, the only significant association was between students' understanding of the advertisement and race/ethnicity ($\chi^2(5) = 14.095, p < .05$). Based on our findings, we suggest a health communication approach might be effective to raise awareness about gambling disorder among college students. We recommend researchers develop targeted materials with support of college administrators to deter disordered gambling.

Keywords: gambling disorders, college students, health communication, public health, college health

Résumé

La recherche a mis en relief de nombreux effets négatifs du jeu pathologique. Bien qu'on retrouve des problèmes de jeu dans tous les groupes sociodémographiques américains, les étudiants constituent une classe particulièrement vulnérable. Cette étude décrit une approche de communication sur la santé qui est couramment étudiée pour effectuer des interventions sur les comportements à risque observés dans les collèges et universités, tels que la consommation d'alcool ou de drogues et l'activité sexuelle. Plus précisément, on a distribué deux messages sur la santé ciblant les jeux de hasard et les jeux de paris sportifs dans une université de recherche publique du Midwest américain, et on a eu recours à des techniques centrales d'interview pour recueillir des données quantitatives et qualitatives évaluant la réception des messages par les étudiants. Les résultats ont révélé que les femmes ont préféré les messages du casino davantage que les hommes ($U = 4696,50, p < 0,05$) et ont plus souvent dit que l'annonce intéresserait les amis ($U = 4745,50, p < 0,05$). Les personnes qui ont perdu au jeu une à deux fois de plus que prévu ont davantage saisi le message que ceux qui n'ont jamais joué ($U = 946,50, p < 0,05$) et que ceux qui n'ont jamais perdu plus que prévu ($U = 249,50, p < 0,05$). Les étudiants qui ont joué pour la première fois entre 16 et 18 ans ont moins aimé le message du casino que les étudiants qui ont joué la première fois entre 13 et 15 ans ($U = 208, p < 0,05$) et que les étudiants qui n'avaient jamais joué ($U = 1656, p < 0,05$). Pour le message sur les paris sportifs, la seule association significative était celle entre la compréhension de l'annonce par les étudiants et la race/l'origine ethnique, $\chi^2(5) = 14,095, p < 0,05$. Selon nos constatations, nous sommes d'avis qu'une approche de communication sur la santé pourrait être efficace pour sensibiliser les étudiants aux problèmes du jeu. Nous recommandons donc aux chercheurs de concevoir du matériel ciblé, avec le soutien des administrateurs de collèges et d'universités, pour dissuader les comportements de jeu pathologique.

Introduction

Numerous forms of gambling exist, including lottery, casino games, slot machines, bingo, card playing, sports betting (including office pools), and informal gambling among friends (National Center for Responsible Gaming [NCRG], 2012). Accordingly, the diversity of options and inherent risk involved with gambling yields the potential for gambling-related problems. Estimates place the number of individuals in the United States who either currently suffer from or have suffered from a pathological gambling disorder in their lifetime at 0.6 percent, and an additional 2.3% have suffered from some non-diagnosable problem with gambling in their lifetime (Kessler et al., 2008). The fifth edition of the *Diagnostic and Statistical Manual of Mental Health Disorders* (DSM-5) defines gambling disorder as the “[p]ersistent and recurrent problematic gambling behavior leading to clinically

significant impairment or distress,” as indicated by four (or more) criteria in a 12-month period (American Psychiatric Association [APA], 2013).

Gambling is a common activity among young people, approximately 86–93% of adolescents having gambled in their lifetimes for money (Derevensky, Gupta, & Winters, 2003). Given their age and often-newfound independence, college students in the United States enjoy many opportunities to engage in potentially damaging behaviors. Their experiences may range from basic experimentation to a consistent gambling habit, one potentially leading to more excessive forms of disordered gambling (Stinchfield, Hanson, & Olson, 2006). Various studies have confirmed the regularity of gambling behaviors among this demographic, with prevalence rates ranging from 42%–75% of college students engaging in this behavior in the past year (Barnes, Welte, Hoffman, & Tidwell, 2010; Blinn-Pike, Worthy, & Jonkman, 2007; Engwall, Hunter, & Steinberg, 2004; LaBrie, Shaffer, LaPlante, & Wechsler, 2003). A meta-analysis of 15 studies from 1999 to 2005, representing nearly 10,000 college students, estimated the proportion of gambling disorder among college students to be approximately 8% (Blinn-Pike et al., 2007). The authors argued that the rise in gambling over the past few decades was partially because of increased access. This suggestion was similarly echoed by the findings of LaBrie et al. (2003), in which the authors found college students with two or more forms of legalized gambling in the state of their respective institutions were 1.65 times more likely to gamble. Additionally, Blinn-Pike et al. (2007) predicted the rates of gambling disorder would continue to rise within this demographic group because of the increased number of legal gambling venues and opportunities, a prediction confirmed in a later meta-analysis by Nowak and Aloe (2014) that estimated 10.23% of students to be probable disordered gamblers.

The negative effects of gambling disorders among college students extend beyond just the potential to incur debt. Among one sample, Engwall et al. (2004) noted that gambling disorder was positively associated with heavy drinking, tobacco and marijuana use, and negative consequences resulting from alcohol consumption. Derevensky and Gupta (2004) found that problem gambling in college can lead to consequences such as tense interactions, delinquency, and unlawful comportment, all outcomes with both short and long term repercussions for both the individual and college society as a whole. Students with gambling disorder also have higher risk for severe depression, increased alcohol and substance abuse, severe anxiety, and suicide (Derevensky & Gupta, 2004), with one other study finding that students with gambling problems were twice as likely to report considering or attempting suicide (Stuhldreher, W. L., Stuhldreher, T. J., & Forrest, 2007). Although research has suggested college students may not differ significantly from the overall population of young adults in terms of general gambling behaviors (Barnes et al., 2010; LaBrie et al., 2003), the cumulative lifetime effects for college-aged disordered gamblers might be greater.

Accordingly, public health approaches are needed to address this complex behavior. Under this paradigm, researchers and practitioners can address gambling-related

problems via harm reduction strategies in an effort to minimize the deleterious consequences associated with gambling (Messerlian, Derevensky, & Gupta, 2005). Specifically, a health communication intervention can yield a favorable cost-to-benefit ratio, given that researchers can use the approach to reach large number of individuals quickly. Health communication is defined by the Centers for Disease Control and Prevention (CDC, 2011) as “the study and use of communication strategies to inform and influence individual decisions that enhance health” (para. 12). Although health communication alone is usually not sufficient to alter such macro-level social variables, as the availability of gambling venues in an area or the adoption of legal policies that address gambling, it is nonetheless particularly useful in educating, informing, and empowering individuals who may be more susceptible to engaging in particular risk behaviors (Parvanta, C. F., Nelson, Parvanta, S. A., & Harner, 2011).

Health communication media campaigns have been used extensively to address alcohol and other substance abuse among college students (Churchill, Pavey, Jessop, & Sparks, 2016; Quick & Bates, 2010), and they have been shown collectively to have small, yet significant effects on behavior change for both addictive and non-addictive behaviors (Snyder, Hamilton, Mitchell, Kiwanuka-Tondo, Fleming-Milici, & Proctor, 2004). Nonetheless, a dearth of research exists using these strategies to address problem gambling behavior among college students and youth, compared to other risk behaviors such as tobacco use, unsafe sexual behavior, and substance abuse (Messer, Shoe, Canady, Sheppard, & Vincus, 2011; Scheier & Grenard, 2010; Scribner et al., 2011; Witkiewitz et al., 2014). In one of the few published studies in this area, McKinley and Wright (2012) discovered that college campus counselling services employed health communication messaging as an intervention strategy to address gambling among college students much less frequently compared to other common behaviors such as alcohol and other drug use.

Further, of the little health communication focus that has been applied to problem gambling among college students, one primarily suggested strategy is targeting underage gambling advertising and promotion (Byrne, Dickson, Derevensky, Gupta, Lussier, 2005; Friend & Ladd, 2009; Lemarié & Chebat, 2012). Byrne et al. (2005) described that health communication messages that denormalize gambling may have a positive impact on youth knowledge, attitudes, and behavior, similar to what has been demonstrated for other risk behaviors such as substance abuse, unsafe sexual practices, and eating disorders. More specifically, Munoz, Chebat, and Suissa (2010) also demonstrated that fear appeal health communication messages are effective in positively influencing attitude and intention to practice safer gambling behavior among video lottery terminal users. Yet researchers have suggested the effectiveness of fear appeals might depend on an individual’s perceived risk regarding a specific behavior (Andrews, Netemeyer, Kees, & Burton, 2014). Collectively, the few existing research findings support the need for continued testing of gambling disorder messages on college campuses to help determine what approaches college students perceive as being most appealing, understandable, and effective at reaching their peer groups. Noar (2006) found that health communication media campaigns were more

likely to be successful if campaign designers conducted this sort of formative research with their target populations.

Perhaps because of lower levels of awareness about gambling disorder among college students (as compared, for example, to alcohol or drug abuse), few university administrators have either created policies related to gambling on campus or have formally addressed potential gambling disorders among their student populations. Shaffer, Donato, LaBrie, Kidman, & LaPlante (2005) discovered that out of 119 colleges examined, only 26 schools featured an explicit gambling policy. Furthermore, McKinley and Wright (2012) reviewed college counselling centre websites and found only 15% contained any information about gambling disorders, with only 1% of those websites displaying information about gambling on their main homepage. Overall, campus officials typically direct their resources towards the prevention and treatment of alcohol and other drugs; however, gambling is an emerging issue affecting substantial numbers of students.

Since universities often have limited funds available to address multiple college health issues, many universities might never fund larger interventions addressing gambling issues. Given the comparative low cost, a health communication campaign is an excellent first step towards increasing awareness. Student feedback on media messages can be incorporated into the design of future materials (Noar, 2006), and it can also be used to inform targeted interventions using other approaches beyond health communication. First, though, formative data must be collected to help researchers better understand the target population. Accordingly, this exploratory study sought to assess student response to two messages created as part of a coordinated disordered gambling health communication campaign at a large public research university in the Midwestern United States. Included in this study is a detailed description of the creation of the media messages, collaborative strategies used to disseminate the campaign, as well as the positive and negative student responses to the campaign.

Method

After approval by the university's institutional review board, two health communication posters targeting gambling disorders among undergraduate students were created for this study. Posters were created by researchers in conjunction with the problem gambling director and administrators from a local mental health and substance abuse treatment facility. After agreeing upon message themes, content, and layout, both posters were pilot tested using theatre testing in undergraduate university courses to assess initial student reactions. Students in each university course used for pilot testing were shown both of the posters. After making minor adjustments to graphics and layout based on pilot testing feedback, the university's director of residence life approved the two posters for distribution throughout on-campus residence halls. A total of 40 posters (20 per message) were placed in prominent areas (e.g., bathrooms, bulletin boards, study areas, hallways) of four undergraduate residence halls by residence hall directors and residence assistants. The first message was displayed for one week, and at the conclusion of the

dissemination period, central intercept testing (i.e., one-on-one interviews with the target audience) was conducted by teams of two individuals who were trained by members of the research team. Team members were instructed to collect as many surveys as possible during a two-hour block of time; specifically, they approached undergraduate students in the atriums of the residence halls as they entered or exited, showed them a copy of the poster, and invited them to complete central intercept surveys. The instrument included questions about whether students noticed the advertisements hanging throughout the residence halls, as well as if they liked, understood, and were influenced by the posters' messages. The surveyors explained the purpose of the study and obtained participant consent prior to student completion of the survey. Upon completion of this first set of interviews, the entire process was repeated to assess student response to the second health communication poster within the same four undergraduate residence halls.

Messages

Two poster advertisements were designed for this health communication campaign. One targeted casino gamblers and featured a slot machine with three reels indicating the word "Broke." The poster's tagline was "What are the odds?" written in heavily stylized font, and its byline implored students, "To talk to someone about your gambling, call..." and featured the telephone number for a local mental health and addiction services organization that provided treatment for gambling disorders. The word "gambling" was emphasized via capital letters and different colored font.

The poster targeting sports gamblers featured three racially diverse young males watching a television screen intently, one of whom is holding a basketball with images of money superimposed on it. To emphasize further the targeted behavior, the image presented a basketball court and hoop in the distance behind the men. The tagline read, "Having trouble rebounding from your losses" and the word "rebounding" was emphasized with capital letters and different colored text. The byline was the same as in the other advertisement, including the emphasis of the word "gambling" and the telephone number of the treatment agency.

Although the research team wished to test and distribute additional messages related to college student gambling, only casino gambling and sports betting were addressed because of time and funding constraints. These topical areas were chosen because a casino had recently been opened in the metropolitan area of the study, and NCAA March Madness, a basketball tournament often associated with "bracket pool" betting, was taking place contemporaneous to the study. Because of time and budgetary constraints, as well as having to work within university administration timeframes and guidelines, these two messages were prioritized over other possible options (e.g., informal poker games, lottery).

Measures

Questions on the first part of the survey were derived from a previously content-validated message-testing instrument that was found to be reliable across different

undergraduate health risk behaviors (Domigan, Glassman, Miller, Hug, & Diehr, 2015; Glassman et al., 2013). In the present study, students responded to the following open-ended questions: “What is the very first thing you noticed when you looked at the ad?”; “In a few words, what does this ad ‘say’ to you?”; “What do you think the people who created this ad want you to know?”; “What do you think the people who created the ad want you to do?” and, “What suggestions do you have that would make the ad better?” Eight questions assessing message comprehension, believability, likability, appeal, quality, third-person effect, and topical relevance were measured using a 4-point Likert scale, ranging from “strongly disagree” to “strongly agree.”

The final portion of the survey contained two sets of questions: demographics, including gender, age, academic year, and race/ethnicity; and information about participants’ gambling behaviors. In particular, students were asked the following questions: “In the past year, how many times have you lost more than planned when you gambled?”; and “At what age did you first gamble for money or possessions?”

Analysis

Responses to open-ended questions were organized thematically, and comments were coded as recommended by Creswell (2012). Apart from the principal investigator, two other members of the research team analyzed the data for themes, initially agreeing on 90% of the coding. After debriefing and discussion, all researchers came to 100% consensus. Items measured with Likert scales were analyzed first for normality. Upon discovering that response patterns did not conform to the Gaussian distribution, data were analyzed nonparametrically using Kruskal-Wallis H tests for analyses featuring ordinal dependent variables and Mann-Whitney U tests for those with dichotomous dependent variables. When Kruskal-Wallis H tests were significant, ordinal groupings were analyzed in pairs to determine specific differences.

Results

Sample Demographics

Table 1 displays the demographic information of the total sample. A total of 431 participants completed the central intercept surveys; approximately half assessed the casino message ($n = 214$), while the other half assessed the sports betting message ($n = 215$). In both groups, just under half of the participants (41% and 40%, respectively) reported that they had seen the posters hanging up in their residence halls during the previous week. Overall, participants were predominantly first-year students (71.7%), Caucasian (65%), under 21 years old (88.2%), and evenly split between males (49.2%) and females (49.9%). Nearly 34% had gambled in the last year, and 11.2% of those individuals reported losing more than intended at least one time in the past year. Regarding age of gambling initiation, approximately 10% of the sample first gambled for money or possessions before 13 years of age.

Table 1
Demographic Characteristics of Total Sample

Demographic Characteristics		<i>n</i>	%
Gender	Male	212	(49.2)
	Female	215	(49.9)
	Transgender	4	(0.9)
Age	18-20	380	(88.2)
	21-23	48	(11.1)
	24 or older	3	(0.7)
Academic year	1st Year	309	(71.7)
	2nd Year	70	(16.2)
	3rd Year	31	(7.2)
	4th Year	16	(3.7)
	5th Year	5	(1.2)
Race/ethnicity	White/Caucasian	280	(65.0)
	Black/African Descent	101	(23.4)
	Hispanic/Latino	15	(3.5)
	Asian/Pacific Islander	13	(3.0)
	South Asian	1	(0.2)
	Other	2	(0.5)
Lost more than planned in the last year	Multi-Racial/Multi-Ethnic	19	(4.4)
	N/A (Didn't gamble)	285	(66.1)
	0	98	(22.7)
	1-2	35	(8.1)
	3-4	5	(1.2)
	> 5	8	(1.9)
Age student first gambled	> 13	42	(9.7)
	13-15	37	(8.6)
	16-18	68	(15.8)
	19-21	19	(4.4)
	> 21	3	(0.7)

Note: *N* = 431

Descriptive Statistics

Tables 2 and 3 display the results for each of the message assessment questions, suggesting that students found both advertisements appealing. They understood, believed, and liked each advertisement; moreover, they thought the advertisements would appeal to their friends, were of professional quality, discouraged disordered gambling, and encouraged someone with a problem to seek treatment. The observed student responses for both messages differed significantly from the hypothesized normal distribution. For the message focused on casino gambling, results for the aforementioned characteristics were as follows: understanding ($\chi^2 = 193.963, p < .01$), believability ($\chi^2 = 136.318, p < .01$), liking ($\chi^2 = 157.813, p < .01$), appeal to self ($\chi^2 = 70.449, p < .01$), perceived appeal to friends ($\chi^2 = 74.112, p < .01$), quality ($\chi^2 = 159.794, p < .01$), discouraged disordered gambling ($\chi^2 = 84.879, p < .01$), and encouraged treatment ($\chi^2 = 87.084, p < .01$). For the message pertaining to

Table 2
Descriptive Statistics for Casino Advertisement

	Strongly Agree		Agree		Disagree		Strongly Disagree		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Understanding	122	(57.0)	83	(38.8)	7	(3.3)	2	(0.9)	214	(100)
Belief	84	(39.3)	106	(49.5)	21	(9.8)	3	(1.4)	214	(100)
Likeability	65	(30.4)	123	(57.5)	23	(10.7)	3	(1.4)	214	(100)
Appeal (Friends)	40	(18.7)	103	(48.1)	54	(25.2)	17	(7.9)	214	(100)
Appeal (Self)	50	(2.4)	102	(47.7)	45	(21.0)	17	(7.9)	214	(100)
Quality	96	(44.9)	103	(48.1)	13	(6.1)	2	(0.9)	214	(100)
Discourages Gambling?	76	(35.5)	95	(44.4)	33	(15.4)	10	(4.7)	214	(100)
Encourages Treatment?	93	(43.5)	81	(37.9)	27	(12.6)	13	(6.1)	214	(100)
Total	626	(36.6)	796	(46.5)	223	(13.0)	67	(3.9)	1712	(100)

Note: n = 214

Table 3
Descriptive Statistics for Sports Betting Advertisement

	Strongly Agree		Agree		Disagree		Strongly Disagree		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Understanding	97	(45.1)	101	(47.0)	15	(7.0)	2	(0.9)	215	(100)
Belief	60	(27.9)	142	(66.0)	12	(5.6)	1	(0.5)	215	(100)
Likeability	38	(17.7)	130	(60.5)	39	(18.1)	8	(3.7)	215	(100)
Appeal (friends)	22	(10.2)	107	(49.8)	72	(33.5)	14	(6.5)	215	(100)
Appeal (self)	29	(13.5)	102	(47.4)	66	(30.7)	18	(8.4)	215	(100)
Quality	65	(30.2)	114	(53.0)	29	(13.5)	7	(3.3)	215	(100)
Discourages gambling?	54	(25.1)	97	(45.1)	58	(27.0)	6	(2.8)	215	(100)
Encourages treatment?	84	(39.1)	109	(50.7)	17	(7.9)	5	(2.3)	215	(100)
Total	449	(26.1)	902	(52.4)	308	(17.9)	61	(3.5)	1720	(100)

Note: n = 215; Some percentages may not add up to 100 percent because of rounding.

sports betting, the findings were thus: understanding ($\chi^2 = 154.098, p < .01$), believability ($\chi^2 = 229.819, p < .01$), liking ($\chi^2 = 155.772, p < .01$), appeal to self ($\chi^2 = 81.279, p < .01$), perceived appeal to friends ($\chi^2 = 107.102, p < .01$), quality ($\chi^2 = 121.949, p < .01$), discouraged disordered gambling ($\chi^2 = 77.558, p < .01$), and encouraged treatment ($\chi^2 = 143.158, p < .01$). Students predominantly agreed or strongly agreed with most of the message assessment questions (Table 2, Table 3).

Inferential Analysis

For the advertisement focused on casino gambling, there were significant associations between various demographic variables and the responses to the central intercept questions (Table 4). Specifically, females (mean rank = 114.27, *Mdn* = 3) liked the advertisement more than males (mean rank = 97.81, *Mdn* = 3) ($U = 4696.50, p < .05$) and stated (mean rank = 113.80, *Mdn* = 3) more often than males (mean rank = 98.27, *Mdn* = 3) that the advertisement would appeal to their friends ($U = 4745.50, p < .05$). A Kruskal-Wallis H test revealed students' understanding of the advertisement differed by how many times they had lost more than planned in the past year ($\chi^2(4) = 11.271, p < .05$). Particularly, individuals who lost more than planned one or two times (mean rank = 97.92, *Mdn* = 4) understood the advertisement more than those who never gambled (mean rank = 77.71, *Mdn* = 4) ($U = 946.50, p < .05$) and those who gambled without losing more than planned (mean rank = 29.92, *Mdn* = 3), ($U = 249.50, p < .05$). Lastly, students' liking of the advertisement differed by the age they first gambled for money or possessions ($\chi^2(5) = 12.730, p < .05$). Specifically, students who first gambled at ages 16–18 (mean rank = 24.28, *Mdn* = 3) liked the advertisement less than students who first gambled at 13–15 (mean rank = 32.76, *Mdn* = 3) ($U = 208.00, p < .05$) and students who had never gambled (mean rank = 88.76, *Mdn* = 3) ($U = 1656.00, p < .05$). No significant associations were found between the responses to the central intercept questions and age or race/ethnicity.

Table 5 displays the results of inferential tests for the sports betting advertisement. No significant associations existed between the central intercept responses and the following variables: gender, age, academic year, having lost more than planned in the last year, and age when student first gambled. A significant association was found, however, between students' understanding of the advertisement and race/ethnicity ($\chi^2(5) = 14.095, p < .05$). In particular, white students (mean rank = 71.83, *Mdn* = 3) understood the advertisement more than Hispanic students (mean rank = 40.75, *Mdn* = 3), ($U = 223.50, p < .05$).

Thematic Analysis

In response to the open-ended questions on the central intercept survey, participants highlighted images for each message they considered to be most prominent. In the casino advertisement, they stated the poker chips, casino table, and slot machine were most noticeable, whereas in the sports betting message, they noticed the three men,

Table 4
Inferential Results for Casino Advertisement

Advertisement Assessment	Understanding		Belief		Likeability		Appeal (friends)		Appeal (self)		Quality		Discourages gambling?		Encourages treatment?	
	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>
Gender	.432	.511	.071	.790	4.933	.026^a	3.951	.047^a	2.817	.093	.285	.593	.591	.442	.878	.349
Age	1.132	.568	.412	.814	2.00	.398	2.370	.306	2.131	.345	2.634	.268	5.668	.059	.985	.611
Academic Year	5.437	.245	2.425	.658	2.273	.686	5.194	.268	6.701	.153	4.176	.383	13.929	.008^b	1.578	.813
Race/Ethnicity	3.908	.689	4.546	.603	6.871	.333	2.123	.908	1.720	.944	6.031	.420	4.121	.660	5.062	.536
Lost more than planned in last year	11.271	.024^c	6.214	.184	2.959	.565	1.322	.858	4.282	.369	5.180	.269	3.258	.516	.900	.925
Age student first gambled	2.772	.735	5.920	.314	12.730	.026^d	6.341	.274	5.786	.328	2.692	.747	6.546	.257	8.132	.149

Notes: Results from Kruskal-Wallis H Test. All results significant at $\alpha = .05$.

a. Females more than males liked the advertisement and thought it would appeal to friends.

b. *Post-hoc* Mann-Whitney U comparisons found both 1st year and 2nd year students thought the message discouraged gambling more than 4th year and 5th year students.

c. *Post-hoc* Mann-Whitney U comparisons found individuals who lost more than planned 1–2 times understood the advertisement more than those who never gambled and those who gambled without losing more than they planned.

d. *Post-hoc* Mann-Whitney U comparisons found students who first gambled at ages 16–18 liked the advertisement less than students who first gambled at 13–15 years old and students who had never gambled.

Table 5
Inferential Results for Sports Betting Advertisement

Advertisement Assessment	Understanding		Belief		Likeability		Appeal (Friends)		Appeal (Self)		Quality		Discourages gambling?		Encourages treatment?	
	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>	χ^2	<i>p</i>
Gender	1.144	.285	3.379	.066	.499	.480	.158	.691	.606	.436	2.435	.119	3.760	.052	1.638	.201
Age	.089	.957	1.338	.512	1.470	.479	2.727	.256	2.442	.295	1.579	.454	2.108	.349	1.778	.411
Academic Year	1.640	.802	1.546	.819	1.348	.853	1.397	.845	5.966	.202	5.964	.202	3.993	.407	2.499	.645
Race/Ethnicity	14.095	.015^a	9.873	.079	2.710	.745	2.103	.835	6.978	.222	5.137	.399	5.233	.388	9.128	.104
Lost more than planned in last year	.727	.948	2.303	.680	1.059	.901	6.696	.153	4.928	.295	2.980	.561	9.326	.053	3.279	.512
Age student first gambled	3.755	.440	2.882	.578	2.161	.706	4.022	.403	5.747	.219	1.297	.862	7.493	.112	2.467	.651

Notes: Results from Kruskal-Wallis H Test. All results significant at $\alpha = .05$.

a. *Post-hoc* Mann-Whitney U comparisons found white students reported understanding the advertisement more than Hispanic students.

the basketball court, and the basketball most often. They overwhelmingly responded both advertisements' messages emphasized risk vs. reward considerations:

“You have a better chance of going broke than winning.”

“Gambling, though tempting, can be dangerous.”

“Sports gambling has serious consequences.”

Additionally, they understood both posters' goal of raising awareness about gambling disorders among college students:

“[I should] self-evaluate to see if I have a gambling addiction.”

“It is important to gamble responsibly.”

“Gambling affects college students daily.”

There were, however, a few criticisms about the advertisements as well. Certain students were concerned that the bright images in the casino advertisement could unintentionally promote gambling, thereby acting as a trigger to students who might already have a gambling disorder:

“I thought it was promoting gambling at first. It makes gambling look fun.”

“Make it more clear that [the advertisement] is to help people.”

For the sports betting advertisement, concerns were expressed that the individuals portrayed in the image were all males, men who some presumed to be athletes themselves:

“Women have this problem also.”

“Only men who play sports have a gambling problem.”

Nonetheless, the qualitative feedback for both posters was overwhelmingly positive—though more so for the casino advertisement—and participants understood the advertisements were intended to raise awareness of gambling disorders among college students as well as to provide them with linkage to treatment options.

Discussion

Based on the limited availability of research, there is an evident further need to explore the impact that health communication interventions may have on problem gambling behavior among college students. To create more focused and effective materials, researchers must conduct *message testing* with the target audience to assess perceived effectiveness, appeal and general understanding of the information (Noar, 2006). Accordingly, the purpose of the present research study was to describe a disordered gambling health communication campaign for undergraduate students at a large public research university in the Midwestern United States, including the creation of materials and student reactions to the messages featured in the campaign.

Two posters were designed for this purpose, one focusing on casino gamblers, and the other targeting individuals who engage in sports betting. Messages were placed in well-travelled locations in four undergraduate residence halls for one week per poster, and immediately following each message's dissemination, undergraduate students were approached and asked to fill out central intercept surveys assessing their reactions to each message.

Students responded particularly favorably to the casino gambling message; however, certain students noted that the flashy and bright images could inadvertently urge students to gamble. Indeed, to avoid iatrogenic effects, message designers must achieve balance between using captivating images, while addressing the problematic behavior (i.e., gambling) rather than potentially normalizing it or promoting it. Also, students who self-reported they lost more than planned said they understood the message more than those who had neither gambled nor lost more than planned. Since regularly losing more than intended is a warning sign of gambling disorder (APA, 2013), future campaign designers might consider using messages focused on this particular antecedent behavior.

Furthermore, females were more receptive to the message, underscoring the need for continued research on messages and images that appeal most to each gender, perhaps related to various factors that motivate each gender to gamble, in concordance with the findings of Korn, Gibbins, & Azmier (2003). When subsets of the target population (such as males and females) differ in response to message-testing variables, segmenting the audience by major demographic characteristics can help to ensure more impactful and targeted health communication messages (Noar, 2006). Consistent with the findings from the current study, research has shown that males are between two and five times more likely than females to be problem gamblers (Barnes et al., 2010; LaBrie et al., 2003), and they are more likely to have an overall higher gambling debt than other college males if they are members of Greek organizations (Stuhldreher et al., 2007). As such, it is critical that the creators of future health communications campaigns utilize approaches that might better target these subsets.

Finally, students who had only recently begun gambling were less receptive to the casino advertisement. Nonetheless, it is crucial to continue targeting this particular demographic with messages, given the research suggesting that students who begin gambling problematically in college have a greater likelihood of remaining as problem gamblers throughout adulthood (Shaffer & Hall, 2001). Since students in this age group are likely living independently for the first time, researchers must continue to employ educational strategies that both emphasize the seriousness of problems related to gambling while not offending the target audience. Korn et al. (2003) noted that individuals with greater household income participated more frequently in gambling, though individuals in lower income households spent more. College students paradoxically might fit into both categories, given that many likely come from families of middle to high socioeconomic status in which gambling has

been normalized yet are living independently—or semi-independently—for the first time with fixed incomes.

With the poster highlighting the risks associated with betting on sports (in this campaign, betting pools for college basketball were targeted), there were fewer demographic differences in students' assessment of the message, the primary finding being that white students understood the advertisement better than Hispanic students did. Among the general United States population, the percentage of disordered gamblers is higher among blacks and Native Americans (Alegria et al., 2009), and among young adults, studies have suggested that minority groups are more likely to gamble than their white counterparts (Barnes et al., 2010; Rinker, Rodriguez, Krieger, Tackett, & Neighbors, 2016; Stinchfield, 2000). Therefore, more attention to cultural inclusiveness and diversity regarding health communication materials is needed to improve effectiveness. Regarding gender, one predominant criticism both males and females had was the focus of the message on men. Nonetheless, though students often seek equal gender representation in communication materials, health practitioners must segment their audience to target those most affected by a particular health issue, much as commercial marketers do with their products (Institute of Medicine, 2002; Lee & Kotler, 2011). In this case, previous researchers support the decision to target males for this specific gambling behavior. For example, one national study conducted by Welte, Barnes, Wiczorek, Tidwell, & Parker (2002) found that, with regard to sports betting, men not only gambled more frequently, but also enjoyed larger wins and losses.

Implications

The findings from this message-testing study underscore the need to conduct more research on gambling health communication campaigns, as this behavior is not as studied among college students nearly as often as other addictions using these techniques. Additionally, these formative data can be used to develop future health communication media materials or to inform other potential interventions among college students. Using the findings from existing research on how income affects gambling might provide useful insight in researching college settings in greater detail, since many college students come from middle-to-upper class families yet, upon entering college life, easily can find themselves short of money. Hence, there remains particular need for awareness campaigns addressing the addictive dangers of gambling, especially with college students just beginning their academic careers. Along with providing formative research data, the present study represents one method of building awareness of gambling disorder among college students, particularly considering the low priority often given to gambling disorders as compared with alcohol and substance use issues. At the very least, this study's findings can provide college administrators with evidence that students are generally receptive to messages about disordered gambling.

Wider-reaching health communication campaigns that target other gambling behaviors, especially more informal types (e.g., lottery tickets, informal card or

dice games), should be implemented and audience-tested as well. Researchers should continue to explore using diverse channels, such as currently popular forms of social media and students' existing social networks, to disseminate messages and assess the most effective channel for gambling-related health communication. Perhaps, too, the creators of future campaigns might consider disseminating messages in locations outside of the residence halls, specifically in areas that might be visited more frequently by students 21 years of age and older. Ultimately, upon identifying students' preferred messages (and media formats), researchers should consider using experimental or quasi-experimental designs to determine which of the preferred messages are more effective at producing desired behavior change. Finally, as various researchers have explored the impact of injunctive and descriptive social norms beliefs on gambling behavior (see Larimer & Neighbors, 2003; Meisel & Goodie, 2014), to date no one has assessed the efficacy of a social norms message specifically tailored to gambling. Further, in alignment with Noar's (2006) recommendations for future studies, it may be beneficial to create messages that address the perceived approval of students' reference groups (such as friends, family, and authority figures) related to this behavior, as college students tend to be more motivated by proximal rather than distal norms.

Limitations

The findings from this study should be interpreted with a few limitations in mind. First, the survey instrument measured student perceptions of the messages (e.g., likability, believability, understanding) using single item scales. Although the questions were used previously in other message-testing studies (Domigan et al., 2015; Glassman et al., 2013) and were initially designed following Lee and Kotler's (2011) message-testing suggestions, multi-item scales might allow for a more accurate understanding of student perceptions. Second, no additional psychometric testing was conducted for this specific study; it should be noted, though, that the instrument was shown to be reliable for health communication campaigns across other risk behaviors in similar college populations. The wording of the portion of the instrument that assessed message response was written generically (e.g., "What do you think the people who created this ad want you to know?") and did not include gambling-specific questions, which were collected only in the demographics section.

Furthermore, this study was implemented at only one Midwestern university in the United States and did not include a control group, so the results cannot be generalized to all college students. Even though the survey instrument itself was anonymous, given the nature of self-reported data, it is possible students responded in a socially desirable manner, especially since many respondents were under the age of 21 and may have engaged predominantly in illegal forms of gambling. Another limitation is that only two types of gambling behaviors (i.e., casino gambling and sports betting) were addressed in this campaign; these were chosen for two primary reasons: the existence of a casino in the metropolitan area and the beginning of NCAA March Madness, a basketball tournament often associated with "bracket pool" betting. Because of time and budgetary constraints, as well as having to work

within university administration timeframes and guidelines, these two messages were prioritized over other possible options (e.g., informal poker games, lottery). To address other gambling behavior, additional tailored messages should be developed and tested, preferably using a control or comparison group. Additionally, since no identifying information was collected, it is possible that certain students who responded to the first poster message may have also responded to the second message, thereby providing them with a frame of reference by which to compare the two posters. It is possible that those students may have responded differently from students who had only seen one of the posters. Furthermore, students who chose not to participate in the study at all may have differed significantly from those who agreed to fill out surveys. Finally, all associations discovered in this study were correlational in nature; consequently, no causal links can be inferred.

Conclusions

This health communication campaign assessed student response to two health communication posters addressing casino gambling and sports betting that were created by university researchers in conjunction with gambling counselors from a local mental health and substance abuse treatment facility. Coordinated health communication campaigns have been used successfully to address various other addictive behaviors—such as high-risk drinking and drug abuse—among college students, and public health practitioners should continue using these approaches, applying similar principles to disordered gambling behaviors. Researchers can use findings from this study to target specific subsets of the college student population, developing customized messages for demographic groups that are either disproportionately affected by, or vulnerable to, gambling disorders. When messages have been appropriately tailored to subsets of the college student population, targeted multi-faceted interventions should be created and fully evaluated using experimental or quasi-experimental designs. Regardless, when developing messages and determining their related distribution channels, special emphasis should be directed towards race, ethnicity, gender as well as idiosyncratic issues concerning gambling.

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Submitted December 17, 2016; accepted July 25, 2017. This article was peer reviewed. All URLs were available at the time of submission.

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Competing interests: None declared (all authors).

Ethics approval: The University of Toledo Institutional Review Board approved on February 16, 2015 the research project, “Health Communications Strategies to Address Problem Gambling in College Undergraduates” (IRB #200564).

Acknowledgements: The authors would like to thank Zepf Center for providing funding to produce and print the posters used in this health communication campaign.