

1 Development and Validation of Sports Betting Addictive 2 Behaviour Scale

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5

6 **Abstract**

7 There has been growing societal problems relating to gambling particularly those related to
8 crime. Recently, gambling has been tilting towards sports betting since other forms of
9 gambling are gradually fading away. Unfortunately, there is no specific tool to measure
10 addiction to sports gambling. This informed the development and validation of sports betting
11 addictive behaviour scale. A total of 366 (Male = 325; Female = 39) sports bettors were
12 selected from three major towns in Benue state including Makurdi, Gboko and Otukpo. Using
13 literature review and focused group discussion, 59 items were generated. Using 5 lecturers and
14 2 Postgraduate students, content and face validity were established respectively. The already
15 standardized gambling addictive behaviour for adolescents scale was used to establish
16 convergent validity. Results of the content and face validity at 70

17

18 **Index terms**— high risk medications, medication error, content validity, reliability, instrument development,
19 instrument validation.

20 **1 Introduction**

21 sports betting simply means placing a financial wager on the outcome of a sporting match, as well as on events
22 that occur within the larger match or fixture (Palmer, 2015). Two important changes occurred in the mid-1990s.
23 First, some bookmakers moved beyond horse and greyhound racing and started taking bets on the outcome of
24 team sports. Secondly, in other part of the world, some bookmakers began taking bets over the telephone and
25 then the Internet, and in 2008, telephone and Internet sports betting became possible in almost all part of the
26 world (Palmer, 2015).

27 Research by Gainsbury (2013) also opined that sports betting appears to be the fastest growing form of
28 gambling in the world, with preliminary findings indicating that gambling via electronic gaming machines fell
29 from 39 to 19 per cent between 1999 and 2011, while participation in sports betting increased from six to 13
30 per cent over the same. In developing nations like Nigeria, many people suffer from gambling activities most of
31 whom have become addicted even without being aware of it. An online report simply puts it that, many people
32 suffering from a gambling addiction feel alone and perhaps they think that no one could possibly understand
33 what it's like to be them but they are oblivion of the fact that, they are not alone and others know exactly
34 what they are going through. This feeling is so common that the mental health field has a name for itgambling
35 disorder.

36 According to Eboh, (2015), public perceptions of sports betting are often misleading. On the one hand, people
37 are usually aware that sport betting poses serious risks to those who are predisposed to stake bets excessively.
38 However, on the other hand, it is also acknowledged that sports betting can have positive consequences for
39 communities (e.g. via providing a source of revenue for sporting clubs or humanitarian causes) and can be an
40 enjoyable pastime for individuals .

41 Gambling generally and problems associated with it have been linked with risky personality, risky decision-
42 making, and pro-risk attitudes. Such personality traits as sensation-seeking, impulsivity, and low self-control
43 have been associated with risky behavior in various domains (Zuckerman, 2007). Sensation-seeking describes a
44 preference for varied, stimulating experiences and a willingness to engage in risk-taking in order to obtain such
45 experiences (Zuckerman as cited in Eboh, 2015). While sports betting normally called sports gambling has,

4 C) POPULATION

46 at times, been considered a socially deviant or immoral behaviour in some cultures and throughout history, the
47 American Psychiatric Association only first defined it to be a medically diagnosable health problem in 1980 in the
48 3rd version of the Diagnostic and Statistical Manual (3rd ed.; DSM-III; American Psychiatric Association, 1980;
49 Korn & Shaffer, 1999). When gambling behaviour results in behavioural, emotional, relationship, or financial
50 problems, it may develop into a diagnosable condition known as problem or pathological gambling (Eboh, 2015).

51 Sport betting (as was classified in general gambling) has been associated with various forms of risky behavior,
52 and shares correlates associated with general risky behavior (Stinchfield, Govoni, & Frisch, 2007). Few researchers
53 such as Oyebisi, Alao and Popoola (2012) and Gupta and Derevensky (2000) have all carried out empirical research
54 on the concept of gambling where sports betting has been identified as an aspects of gambling with no distinct
55 instrument to measure it even as some of the items seems to measure sports betting though included in general
56 gambling without items covering all the sports betting addictive behaviour. Furthermore, finding of some of these
57 works lack generalisation to the population other than which sampling was selected. For instance, the study by
58 Park and Jung (2012) who worked on development of a gambling addictive behaviour was limited to adolescents
59 in Korea.

60 Furthermore, in as much as sports betting addiction has been seen to pose a serious societal threat and has
61 become an issue of great concern to clinicians, organizations, health workers and even scholars from different
62 works of life, the issues of contextualizing the concept has been difficult as sportsrelated problem gambling is not
63 prevalence in surveys because problem gambling is assessed on the totality of gambling experiences rather than
64 a single activity (Griffiths, 2017).

65 Looking at the society today, gambling has been shifting its base from other forms of gambling to sports
66 gambling since most of those archaic methods are becoming obsolete. Careful literature search has shown that
67 there is no distinct instrument to measure the direction of gambling. It therefore become pertinent to develop a
68 specific scale that will measure sports betting addictive behaviour as none has existed based on research findings
69 and even those available are found in general gambling as indicated by certain items which does not capture
70 all the addictive behaviours of sports bettors. This study therefore seeks to develop and validate sports betting
71 addictive behaviour scale. a) Hypotheses i. Items generated will concurrently satisfy conditions for content and
72 face validity. ii. Each Item in the scale will significantly correlate positively with total score on the scale. iii.
73 Exploratory factor analysis will significantly produce factors for the scale developed.

74 iv. Items in the developed scale with significantly be internally consistent among themselves. v. Sports
75 Betting Addictive Behaviour Scale (SpABS) will positively correlate significantly Gambling Addictive Behaviour
76 for Adolescent Scale (GABA).

77 II.

78 2 Methodology a) Design

79 The study adopted a cross-sectional research design to develop and validate Sports Betting Addictive Behaviour
80 Scale (SpBABS). The research design offered the researcher the opportunity to gather data at one point in time
81 from different categories of people in terms of age, gender, etc. as against longitudinal research that requires long
82 period of data gathering.

83 3 b) Settings

84 The study was conducted in Makurdi, Gboko and Otukpo of Benue state. These three towns are the major
85 towns in Benue state (National Population Census, 2006) which share borders with Enugu state in the South,
86 Kogi state in the West, Cross-River in the East state and Nasarawa and Taraba states in the North in terms
87 of land mass. Makurdi precisely is the capital of Benue state of Nigeria and it is located in the heart of the
88 state, inhabited by different ethnic groups; some of whom are not indigenes of the state. Gboko and Otukpo are
89 located in the hearts of Tiv and Idoma nation which are the two major ethnic groups in Benue state.

90 Specifically, the study was conducted in different settings particularly in bookmaking houses (popularly known
91 as bet shops) like BetNaija, Naira Bet, Merry Bet, 1960 Bet, among others scattered all over the towns in Makurdi,
92 Gboko and Otukpo and of course all over Nigeria and beyond. These three major towns in Benue State have
93 several outlets that have sports betting shops with thousands of bettors always seen in and around these outlets
94 who are either staking bets or discussing betting activities.

95 4 c) Population

96 The general population for this study consists of all those who patronize sports betting outlets particularly those
97 who have been found to be addictive to sports betting. As earlier mentioned, American Psychiatric association
98 (2013) put certain conditions of addiction. They are indicated by five or more of the following: (1) is preoccupied
99 with gambling (e.g., preoccupied with reliving past gambling experiences, handicapping or planning the next
100 venture, or thinking of ways to get money with which to gamble) (2) needs to gamble with increasing amounts
101 of money in order to achieve the desired excitement, (3) has repeated unsuccessful efforts to control, cut back, or
102 stop gambling, (4) is restless or irritable when attempting to cut down or stop gambling, (5) gambles as a way
103 of escaping from problems or of relieving a dysphoric mood (e.g., feelings

104 Volume XXI Issue VIII Version I 34 () of helplessness, guilt, anxiety, depression), (6) after losing money
105 gambling, often returns another day to get even ("chasing" one's losses), (7) lies to family members, therapist, or
106 others to conceal the extent of involvement with gambling, (8) has committed illegal acts such as forgery, fraud,
107 theft, or embezzlement to finance gambling, (9) has jeopardized or lost significant relationship, job, or educational
108 or career opportunity because of gambling and (10) relies on others to provide money to relieve a desperate financial
109 situation caused by gambling. This was achieved by first of all trying to observe the participants and a brief
110 interview was also conducted on them before administering the scale on them to see if they will meet up with at
111 least one of the aforementioned criteria.

112 **5 d) Participants**

113 The study considered all those who patronize bet houses all over the three locations mentioned above. Young
114 adolescents and adults who are into betting who were found in these bookmaking houses or otherwise called
115 betting shops were sampled and a brief interview was conducted on the participants before the questionnaire was
116 given to them to know if they are addicted to sports betting.

117 A total of 500 copies of questionnaire were administered to purposively selected 500 sports betters across
118 different locations in bet shops in Makurdi, Gboko and Otukpo in Benue state. However, only 366 were retrieved.
119 Frequency distribution revealed that 325 (88.8%) were males, while the other 39 (10.7%) were females. Their
120 ages ranged from 17 to 63 years old with average age of 33.07 (SD = 12.50). In addition, 237 (64.8%) of the
121 respondents were single, 117 (32.0%) were married and 12 (3.3%) were divorced/separated. Also, among the
122 sampled participants, 270 (73.8%) were Christians, 69 (18.9%) were from Islamic religion while 27 (7.4%) were
123 from other religious affiliations. Furthermore, 36 (9.8%) of the participants had primary education, 50 (13.7%)
124 had secondary education, 262 (71.6%) had tertiary education while 18 (4.9%) did not indicate their highest level
125 of education.

126 **6 e) Instruments**

127 A well-structured questionnaire was designed to gather data from selected respondents. The instrument consisted
128 of two (2) sections; A and B.

129 Section A: This section consisted of socio-demographic information of respondents. It consisted of five (5)
130 sociodemographic information of respondents. The following variables were contained in section A; Gender, age,
131 marital status, religion and highest educational qualification.

132 Section B: This section consists of Gambling Addictive Behavior Scale for Adolescents (GABSA). This is a
133 32-item scale developed by Park and Jung, (2012) to measure gambling addictive behaviour among students.

134 It has the following sub-scales; loss of control (9 -items), life dysfunction from problem gambling (4 -items),
135 gambling experience (7 -items) and social dysfunction from problem gambling (5 -items). The scale was found to
136 have adequate internal consistency as a whole ($\alpha = .94$) and subscales (loss of control $\alpha = .90$, life dysfunction from
137 problem gambling $\alpha = .89$, gambling experience $\alpha = .88$ and social dysfunction from problem gambling $\alpha = .90$).
138 Response format for the scale ranged from SA -Strongly Agree (4), A -Agree (3), D -Disagree (2) and SD -Strongly
139 Disagree (1). The Gambling Addictive Behavior Scale for Adolescents (GABSA) was used to carry out the
140 convergent validity for the Sports Betting Addictive Behaviour Scale (SpABS). A cross validation was conducted
141 and Gambling Addictive Behavior Scale for Adolescents was found to have adequate internal consistency as
142 follows; loss of control $\alpha = .93$, life dysfunction from problem gambling $\alpha = .84$, gambling experience $\alpha = .94$ and
143 social dysfunction from problem gambling $\alpha = .94$. As a whole, the internal consistency was found to be $\alpha = .96$.

144 **7 f) Procedure**

145 The researcher first and foremost recruited and trained 2 research assistants for the purpose of the study. The
146 researcher then went to the selected towns with the research assistants and located the sports betting shops in
147 the selected towns, that is Makurdi, Gboko and Otukpo. Having met with the managers of sports betting shops
148 or those in charge of the betting shops as the case may be, the researcher explained to them the purpose of the
149 study. After successfully convincing the shop managers or those in charge of the betting shops, the researcher
150 was allowed with the aid of the research assistants to administer the questionnaire on sports bettors found in
151 each shop. In some shops, the researcher and the assistants could not locate many participants and as such, the
152 research and his assistants left some copies of the questionnaires to the shop attendants to give to the participants
153 on their behalf after being briefed on how to administer the questionnaire to those who will patronize the shops.
154 The idea was to make the shop attendants have an idea of those who are expected to participate in the research
155 which is those who are sports bettors who are addictive to sports betting. In totality, 500 copies of questionnaire
156 were taken to the field and were divided into three which were taken to the three towns; Makurdi, Gboko
157 and Otukpo respectively. After a careful administration of the 500 questionnaires and some given to the shop
158 attendants, only 366 were retrieved for data analysis. The study was conducted in various stages;

159 i. Item Generation The first step in developing the new measure of Sports Betting Addictive Behaviour Scale
160 was to create Volume XXI Issue VIII Version I 35 () an initial pool of items designed to measure the construct.
161 The aim of this stage was to generate items that adequately assess Sports Betting Addictive Behaviour. This was
162 done through a careful literature search as well as a focused group discussion which was conducted with those

14 RESULTS

163 who were seen to be addicted to sports betting. To ensure that the items are conceptually consistent with the
164 construct, an assessment of content validity was conducted using a panel of experts which consisted of lecturers
165 of the Department of Psychology, University of Ibadan for content validity to judge the appropriateness of each
166 item. A preliminary set of 59 items was generated for Sports Betting Addictive Behaviour Scale (See Appendix
167 I).

168 8 ii. Content and face validity

169 The generated items were subjected to two (2) different forms of validity, to determine the items that actually
170 measure Sports Betting Addictive Behaviour. For face validity, the items were generated given to the supervisor
171 who is an expert in the field. Thereafter, a total of five (??) professionals, consisting of selected lecturers of
172 the Department of Psychology, University of Ibadan and two (2) post-graduate students of the same department
173 were consulted for expert validity and face validity respectively on the generated items. The participants were
174 requested to examine each of the items contained in the original scale and indicate whether or not the items
175 measured Sports Betting Addictive Behaviour. Their responses were given as not related (0), somewhat related
176 (1) and highly related (2). Items that received up to 70% of being related were retained in the scale (Appendix
177 II).

178 iii. Questionnaire Administration At this stage, the scaling method was determined. Respondents were asked
179 to respond to the items using the following format comprising 1 -Not applicable to me, 2 -Mildly applicable to
180 me, 3 -Applicable to me, 4 -Highly applicable to me.

181 Items remaining, after the content and face validity assessment, were administered to a sample of sports
182 bettors. In addition, other data that were used to compute the convergent validity of the scale at this stage was
183 also determined by putting them in the questionnaire and administering to the participants to achieve convergent
184 validity which include Gambling Addictive Behaviour Scale for Adolescents. Sports Betting Addictive Behaviour
185 Scale was administered to a total of 500 sports bettors in the three major towns in Benue state which include
186 Makurdi, Gboko and Otukpo but only 366 were returned and properly filled. The instrument which consists
187 of Sports Betting Addictive Behaviour Scale (SpBABS) was administered in a paper-and-pencil format to all
188 the participants. The responses were then coded and entered into Statistical Package for Social Science by the
189 researcher.

190 9 iv. Initial Item Reduction

191 When the scale was administered initially, itemtotal correlations were computed and those items that did not
192 correlate at .30 or above with total score were removed. In the case of Sports Betting Addictive Behaviour Scale,
193 all the items at this stage scaled through as they all had a correlation value above .30.

194 v

195 10 . Exploratory Factor Analysis

196 The exploratory factor analyses were conducted for the purpose of determining if underlying dimensions were
197 evident from the data. A total of six factors emerged but only four of them loaded up to 1.00 Eigen value
198 and only the four were returned and named as Betting-relationship Conflict, Betting Distress, Bettingeconomic
199 Interference and Sport Betting Anticipatory

200 11 vi. Convergent validity

201 To further assess the convergent validity of the new measure, the relations between the new measure and data
202 collected on other constructs in the second stage were examined. Specifically, the data were examined to determine
203 how much Sports Betting Addictive Behaviour Scale (SpBABS) correlate with another scale (Gambling addictive
204 behaviour scale for adolescents) that assess similar constructs (convergent validity) as reported in chapter four
205 of this study.

206 12 vii. Data Analysis

207 Gathered data were analyzed using descriptive and inferential statistics. Descriptive statistics such as simple
208 frequencies and percentages were utilized to describe the demographic features of respondents as well as the
209 content and face validity of the instrument. The inferential statistics made use of was the Pearson r correlation.
210 Also, reliability analysis was done using split-half reliability, while internal consistency was calculated using
211 Cronbach Alpha (?).

212 13 III.

213 14 Results

214 Hypothesis 1: Items generated will concurrently satisfy conditions for content and face validity.

215 15 Phase 1: Item generation, content and face validity

216 This section presents the initial items as they were used for content validity. These items are presented in the
217 tabular form including experts and students rating. Any item with less than 70% rating is removed subsequently.
218 Table 4.1 presents the initial item pool as well as the expert and student ratings of the items;

219 Volume XXI Issue VIII Version I 36 () 4.1 presents a total of 59-items initially generated item pool for
220 content and face validity and all the items were approved for further testing. When the content validity
221 was conducted, 13-items were deleted (SpBABS5, SpBABS9, SpBABS12, SpBABS13, SpBABS15, SpBABS26,
222 SpBABS32, SpBABS33, SpBABS36, SpBABS37, SpBABS45, SpBABS49 and SpBABS51). Sports Betting
223 Addictive Behaviour Scale (SpBABS) had 46-items remaining. The forty-six (46) items that emerged were
224 later administered to 500 sports bettors in three different towns namely Makurdi, Gboko and Otukpo but only
225 366 were returned and properly filled.

226 Hypothesis 2: Each item in the scale will significantly correlate positively with total score on the scale.

227 16 Item Analysis

228 The resultant item pool consisting of 46 -items administered to 500 sports bettors which 366 were returned and
229 subjected to item analysis procedure to remove items that do not correlate with the total score and subsequently
230 improve on the construct validity of the instrument. Items were selected if they met the benchmark of .30.

231 17 Factor Analysis

232 The next step was to conduct the factor analysis of Sports Betting Addictive Behaviour (SpBAB) scale.

233 The method of Principal Component Analysis was used to perform the factor analysis of the scores of the
234 remaining 46-items on the SpBAB scale. The results show that 6 factors but only 4 had Eigen values greater
235 than 1 which were extracted. The results are presented on Table 4 The results show that six factors emerged
236 but only four of them had the Eigen value of 1.00 which is appropriate figure to return a factor (Kaiser, 1960).
237 The four (4) factors whose value met the required criteria ranged in order of magnitude from 1.11 to 23.07
238 Eigenvalue and they accounted for 63.53% of the total variance for the scale. These four factors were named
239 Betting-relationship Conflict, Betting Distress, Bettingeconomic Interference and Sport Betting Anticipatory.
240 This tends to suggest the appropriateness of the scale in this study. After the varimax rotation, the loading
241 of each of the items of SpBAB scale on each of the factors was found and the results are presented on table
242 4.4; Data on the forty-six (46) items, obtained from 366 participants were subjected to factor analysis to detect
243 factorial structure or the relationships among variables on the 46-items and to unravel the interrelationship of
244 the items and to detect items with least latent roots for deletion according to Ford, McCallum and Talt's (1986)
245 and Schwab's (1980) proposition. Principal component factoring procedure with varimax rotation was used to
246 factor analyze the data. From the result, according to the cluster of items, four (4) factor solution ensued and
247 are labelled as; Betting-relationship Conflict, 25-items, Betting Distress, 9-items, Bettingeconomic Interference
248 5-items and Sport Betting Anticipatory 7-items.

249 Further, Meryer-Olkin (KMO) measure of sampling adequacy and Barlett's test of sphericity were computed.
250 The result revealed acceptable KMO, and significant chi-square following Brace, Kemp and Snelgar's (2006)
251 proposition. This confirmed that the instrument is indeed factorable and useful. It also shows clearly that the
252 respondents perceived four (4) sports betting addictive behaviour traits.

253 The varimax rotation shows that out of the four (4) SpBAB scale factors with Eigen values greater or equal to
254 1, 25 items distinctively loaded on Bettingrelationship Conflict, with item 40 (I have missed significant activities
255 in my life because of sports betting) having the highest loading of .859. On Betting Distress, a total of 9 items
256 loaded distinctively with item 57 (-I feel aggressive each time I loss a bet) having the highest loading of .743.
257 Betting-economic Interference had 5 items that loaded distinctively with item 8 (-I stake sports bets repeatedly
258 with the hope of winning at least one of the many tickets) having the highest factor loading of .713. As regards
259 Sport Betting Anticipatory, there are a total of 7 items that loaded distinctively with item 3 (-I think of staking
260 sports bets always) having the highest loading of .757.

261 Hypothesis 4: Items in the developed scale will significantly be internally consistent among themselves.

262 18 Reliability Analyses

263 The Sports Betting Addictive Behaviour Scale (SpBABS) scale reliability is defined as the extent to which it
264 provides the same results. The SpBAB scale adopted the Pearson Product Moment Correlation Statistics to
265 test for the split-half reliability, while Spearman Brown Prophecy was utilized to get the full scale reliability;
266 the following split half and full scale reliability coefficients were obtained; whole scale (SpBABS) (split half =
267 .946; full scale = .942;), Betting-relationship Conflict (Split-half = 0.969, fullscale = .958), Betting Distress
268 (Split-half = 0.889, full scale = .886), Betting-economic Interference (Splithalf = 0.738, full-scale = 0.804) and
269 Sport Betting Anticipatory (Split-half = 0.765, full-scale = 0.750). Internal consistency analyses were conducted
270 using Cronbach's alpha coefficient to obtain reliability estimates. All the four (4) factors as well as composite
271 combining the items on the four (4) factors, demonstrated strong internal consistency estimates as follows; whole
272 scale (SpBABS) ? = .977, Bettingrelationship Conflict ? = .978, Betting Distress ? = .926, Betting-economic
273 Interference ? = .828 and Sport Betting Anticipatory ? = .827. The result is presented on Table 4

274 **19 Construct Validity**

275 In order to determine the construct validity (convergent), the Pearson product Moment Correlation Coefficient
276 (r) was adopted to run the relationship between factors of Gambling Addictive Behaviour Scale for Adolescents
277 (GABSA) and Sports Betting Addictive Behaviour Scale (SpBABS). Table 4.6 presents the interrelationship
278 between the two scales; Result in table 4.6 shows that, there is a significant relationship between sports betting
279 addictive behaviour scale (SpBABS) and gambling addictive behaviour for adolescent scale (GABSA) $r = .956$;
280 $p < .001$. This is an indication that sports betting addictive behaviour scale has high convergent validity.

281 To further test the validity of the factors, correlation matrix was conducted on the factors of Sports Betting
282 Addictive Behaviour Scale (SpBABS) and Gambling Addictive Behaviour Scale for Adolescents (GABSA). The
283 results are presented in table 4.7. relationship with loss of control ($r = .217$; $p < .01$), life dysfunction from problem
284 gambling ($r = .416$; $p < .01$), gambling experience ($r = .303$; $p < .01$) and social dysfunction from problem gambling
285 ($r = .272$; $p < .01$). Betting economic interference dimension of SpBABS has significant positive relationship with
286 loss of control ($r = .115$; $p < .01$), life dysfunction from problem gambling ($r = .293$; $p < .01$), gambling experience
287 ($r = .275$; $p < .01$) and social dysfunction from problem gambling ($r = .165$; $p < .01$). Sports betting anticipatory
288 dimension of SpBABS had significant positive relationship with loss of control ($r = .399$; $p < .01$), life dysfunction
289 from problem gambling ($r = .586$; $p < .01$), gambling experience ($r = .562$; $p < .01$) and social dysfunction from
290 problem gambling ($r = .284$; $p < .015$).

291 IV.

292 **20 Discussion**

293 The purpose of this study was to develop and validate the Sports Betting Addictive Behaviour Scale (SpBABS)
294 and to determine the associated psychometric properties utilizing the Rasch rating scale measurement model.
295 Subsequently, the study led to the development and validation of Sports Betting Addictive Behaviour Scale
296 (SpBABS). The study has been able to describe the development and factor structure of the Sports Betting
297 Addictive Behaviour Scale and presented the results that provide strong evidence of reliability and validity of the
298 scale.

299 This study uncovered four (4) factors from Sports Betting Addictive Behaviour Scale which includes; Betting-
300 relationship Conflict, Betting Distress, Betting-economic Interference and Sport Betting Anticipatory. Not
301 surprising it had significant and positive relationship with Gambling addictive Behaviour Scale dimensions, as
302 they share similar factors. This confirmed Sports Betting Addictive Behaviour Scale (SpBABS) to be a valid
303 measure of one who is addicted to sports betting. It is pertinent to note that someone who is addicted to
304 sports betting will manifest such traits as they appear in the factors that emerged from Sports Betting Addictive
305 Behaviour Scale.

306 In a related study, Castro, Fuentes & Tavares (2005) looked at gambling follow-up scale specifically on
307 development and reliability testing of a scale for pathological gamblers under treatment. The main objective
308 was to provide preliminary data on the gambling follow-up scale, a new scale assessing recovering gamblers. The
309 secondary goals included assessing the impact of "work status", "family relationship", "leisure" and "enrolment"
310 in gamblers anonymous on gambling together with the impact of treatment. Using GFS, 3 independent raters
311 interviewed gamblers under treatment. The sample was collected in 2 university centers in the city of SoPaulo,
312 Brazil. Patients attended psychotherapy coupled with psychiatric follow-up, participation in GA, or both. The
313 researcher interviewed 47 pathological gamblers; 13 were interviewed twice, with a minimum interval of 6 months,
314 for a total of 60 GFS interviews. Interviews took average of 60 minutes $SD = 2.7$. Interater concordance ranged
315 from 82% to 95% (intraclass correlation coefficient range 0.85 to 0.99, $P < 0.001$). A factorial analysis showed a 1-
316 factor solution (Eigenvalue = 2.4, 47.6% of total variance accounted). "Leisure," "frequency and time gambling,"
317 and "family relationship" showed considerable loadings (0.84; 0.71; 0.71), whereas "enrolment in GA" and "work
318 status" showed moderate loadings (0.59; 0.56). A linear regression model significantly correlated gambling (R^2
319 = 0.356; $P < 0.001$) with "leisure" and length of treatment. Treatment modalities affected "leisure" ($F_2, 43 =$
320 5.00, $P = 0.011$), with GA attendees reporting more regular and gratifying activities. The GFS showed interrater
321 reliability and construct validity. More leisure and lengthier treatment were significantly related to less gambling.
322 GA enrolment seemed to particularly benefit the quality of leisure. Future studies could profit from the quickness
323 and simple structure of the GFS in providing shareable outcome measures.

324 Generally, sports betting is a form of behaviour that has been identify to have serious consequences on
325 gamblers health, study-habit, academic performance, and has been reported to be related to some criminal related
326 behaviour (Oyebisi, Alao, & Popoola, 2012). Also, betting has been generally defined as betting or wagering
327 money or something of value on an event that has an uncertain outcome with the possibility of winning money or
328 materials (Korn & Shaffer, 1999; ??otenza, Fiellin, Heninger, Rounsville & Mazure, 2002). Public perceptions
329 of betting are often misleading. On the one hand, people are usually aware that gambling poses serious risks
330 to those who are predisposed to gamble excessively. However, on the other hand, it is also acknowledged that
331 gambling can have positive consequences for communities (e.g. via providing a source of revenue for sporting
332 clubs or humanitarian causes) and can be an enjoyable pastime for individuals .

333 For the occasional bettors, these behaviors may provide an innocuous opportunity for excitement, socialization,
334 or boredom relief. When these behaviors increase, however, problem and pathological gambling create negative
335 consequences in an individual's financial, social, and overall health. Gambling explored through the public health

336 perspective looks at the effect of gambling on individual wellbeing and health, familial health, community health,
337 health care system and public policy. Korn and Shaffer (1999) V.

338 **21 Conclusions**

339 This study sought to achieve three specific objectives; to develop a sports betting addictive behaviour scale that is
340 in line with the change in gambling activities from the general gambling to sports betting; to design a useful and
341 effective tool for identifying and assessing those who are addicted to betting which affects their daily functioning
342 even at home and in work places; and to outline the necessary sub-categories of the kind of behaviours exhibited
343 by sports betters who are addicted to this form of gambling. Based on the findings, the following conclusions were
344 drawn; i. 56 items were first generated using careful literature review as well as focused group discussion and 46 of
345 these items were returned after face and content validity were conducted. ii. The findings provided psychometric
346 evidence for sports betting addictive behaviour scale which included measure of validity and reliability as well
347 as convergent validity. iii. Also, Sports Betting Addictive Behaviour Scale (SpBABS) was a significant positive
348 correlate of the dimensions of Gambling Addictive Behaviour for Adolescent (loss of control, life dysfunction
349 from problem gambling, gambling experience and social dysfunction from problem gambling). iv. Finally, it
350 is concluded that Sports Betting Addictive Behaviour Scale (SpBABS) is a good predictor of betting addiction
351 particularly in sports and as such, organizations, clinicians, researchers and other NGOs can use to measure the
352 implications of betting addiction as it affects the general society.

353 **22 Implications of Findings**

354 The items of the Sports Betting Addictive Behaviour Scale (SpBABS) are valid; therefore, clinicians, organizations,
355 NGOs and academicians can be confident that the dimensions of Sports Betting Addictive Behaviour
356 Scale (SpBABS) are effectively measuring betting addiction. More importantly, the inference made from such
357 measures is sound, credible, and precise. The Sports Betting Addictive Behaviour Scale (SpBABS) correlated
358 significantly and positively with gambling addictive behaviour for adolescents. This finding provides evidence
359 for convergent validity and demonstrates that the dimensions of the Sports Betting Addictive Behaviour Scale
360 (SpBABS) are valid and critical to the measurement of sports bettors. The Sports Betting Addictive Behaviour
361 Scale (SpBABS) provides the basis for measuring those who are addicted to sports betting. Essentially, high
362 scores of the dimensions of Sports Betting Addictive Behaviour Scale (SpBABS) are an indication that they are
363 addicted to sports betting and such negative behaviour exhibited by addiction to sports betting can manifest in
364 such an individual as such, urgent intervention needs to be provided.

365 Sports betting addiction is detrimental to both physical and emotional aspect of an individual and there is need
366 to provide a viable tool to measure such behaviour so that possible solutions can be provided for those who are
367 addicted. Sports Betting Addictive Behaviour Scale is a validated tool that measures betting addictive behaviour
368 that are congruent with the emerging trend in gambling. Many of the previously published gambling scales are
369 based on general gambling with little or no specific items to measure sports betting addiction, whereas the Sports
370 Betting Addictive Behaviour Scale (SpBABS) is eclectic and rooted to sports betting addiction specifically as it
371 measures the emerging trend of gambling.

372 The Sports Betting Addictive Behaviour Scale (SpBABS) does not measure academic aptitude and/or
373 knowledge content. The Sports Betting Addictive Behaviour Scale (SpBABS) measures frequency of betting
374 addictive behaviour. Frequency is a measure of how often the behavior is used. The frequency measure of
375 behavior is a standard behavior measure and is the most concrete of all psychometrics. Behavior can be measured
376 or counted reliably. The underlying assumption of this measure is that all betting behaviours are uniformly
377 manifested.

378 Results from this study generated a total of four (4) factors; (Betting-relationship Conflict Betting Distress,
379 Betting-economic Interference and Sport Betting Anticipatory and) and 46 items. The Sports Betting Addictive
380 Behaviour Scale (SpBABS) is able to guide guild clinicians, academicians and NGOs to development strategies
381 that will help individuals stay away from gambling.

382 **23 VII.**

383 **24 Recommendations**

384 On the basis limitation, this study involves a vast population and so there was need for larger sample but the
385 researcher was constrained in that aspect. Also, the researcher was constrained on the basis of accurate response
386 from the participants. It was therefore recommended based on the findings of this study that;

387 1. This study should be replicated in other locations of the world. Each time I loss a bet, I tell myself never to
388 go into it again but I find myself staking sports bets over and over again I feel anxious each time my stake is on
389 When I stake sports bets, I feel like the money is already in my pocket as my hope is always very high I borrow
390 money from friends, family members and significant others severally to stake sports bets Sometimes I involve
391 myself into dubious activities just to get money and stake sports bets. I sell personal belongings to stake sports
392 bets I feel sad and worried when I don't have money to bet on sports I lie to family, friends and significant others
393 just to get money to bets I pick money from relatives without their knowledge to bet on sports I use the last

24 RECOMMENDATIONS

394 money even when am starving to bet on sports Am no longer trusted with money because of my sports betting
395 attitudes I have had issues with my family and friends because of my sports betting attitudes I sometimes stay
396 in sports betting shops all day to stake bets I ignore many other activities because of sports betting Am always
397 on my gadget staking bets or checking updates on my bets When am walking on the road, I constantly check
398 my bets on my phone/tab I talk people into staking sports bets I lie to family, friends and relatives to cover my
399 sports betting activities I do not benefit from staking sports bets considering what I lost compared to the one
400 I gain in sports betting, yet I keep staking sports bets Virtual games takes my time and resources more than
401 other games I have marital/relationship problems because of my sport betting attitudes I have missed significant
402 activities in my life because of sports betting My life is preoccupied with sports betting such that I think of
403 nothing else than sports betting I need to stake sports bets with increasing amounts of money in order to get
404 the desired money I have repeated and several times had unsuccessful efforts to control, cut down, or stop sports
405 betting I become restless or irritable when each time I try to reduce my sports betting activities.

406 After loosing a bet, I often return the next day to get even more to recover my loss I have jeopardized or lost
407 significant relationship because of sport bet I have committed fraudulent acts to raise money to stake sports bets
408 I rely on others most times to provide money to relive a situation I find myself in because of sports betting I feel
409 like am losing when I don't have money to stake bets I forfeit other important activities to meet up with time
410 on sports betting I transfer aggression to others each time I lost a bet Losing a bet to me is like losing money
411 I already have Am always ready to risk anything to get money to stake sports bets I feel aggressive each time
412 I loss a bet I feel sad and moody each time I loss a bet I have lost a job and similar opportunities because of
413 sports bets ()¹

¹© 2021 Global JournalsDevelopment and Validation of Sports Betting Addictive Behaviour Scale

S/No	ems	Expert Rating (%)	Students Rating (%)
1	SpBABS1	100.00	94.23
2	SpBABS2	100.00	99.10
3	SpBABS3	77.10	78.90
4	SpBABS4	71.40	80.21
5	SpBABS5	57.10**	42.10**
6	SpBABS6	85.70	90.66
7	SpBABS7	71.40	80.12
8	SpBABS8	71.40	72.18
9	SpBABS9	57.10**	50.11**
	SpBABS10	71.40	80.12
	SpBABS11	100.00	99.10
	SpBABS12	57.10**	56.12**
	SpBABS13	57.10**	54.12**
	SpBABS14	82.10	88.12
	SpBABS15	57.10**	45.12**
	SpBABS16	85.70	90.12
	SpBABS17	85.70	76.12
	SpBABS18	85.70	85.70
	SpBABS19	100.00	100.00
	SpBABS20	71.40	71.40
	SpBABS21	100.00	100.00
	SpBABS22	85.70	85.70
	SpBABS23	100.00	100.00
	SpBABS24	100.00	100.00
	SpBABS25	100.00	100.00
	SpBABS26	57.10**	50.12**
	SpBABS27	71.40	71.40
	SpBABS28	85.70	85.70
	SpBABS29	71.40	71.40
	SpBABS30	71.40	71.40
	SpBABS31	85.70	85.70
	SpBABS32	57.10**	47.22**
	SpBABS33	57.10**	60.12**
	SpBABS34	83.40	90.12
	SpBABS35	76.90	88.14
	SpBABS36	42.90**	50.22**
	SpBABS37	57.10**	61.13**
	SpBABS38	84.30	88.30
	SpBABS39	75.40	76.40
	SpBABS40	85.70	88.70
	SpBABS41	77.90	87.90
	SpBABS42	71.40	81.40
	SpBABS43	84.40	94.40
	SpBABS44	71.40	81.40
	SpBABS45	42.90**	52.90**
	SpBABS46	85.70	85.70
	SpBABS47	87.50	77.50
	SpBABS48	88.30	98.30
	SpBABS49	42.90**	52.90**
	SpBABS50	85.70	85.70
	SpBABS51	57.10**	67.10**
	SpBABS52	71.40 ⁹	81.40
	SpBABS53	85.70	85.70
	SpBABS54	85.70	85.70
	SpBABS55	71.40	81.40

4

2, present the item-total
correlation result;

Figure 2: Table 4 .

S/No	Items	Item-total correlation	? if item deleted
1	SpBABS1	.636	.976
2	SpBABS2	.601	.976
3	SpBABS3	.472	.977
Volume 6 7 8	SpBABS4	.425	.977
XXI 10 11 14	SpBABS8	.459	.977
Is- 16 17 18	SpBABS11	.521	.977
sue 19 20 21	SpBABS16	.458	.977
VIII	SpBABS18	.977	.977
Ver-	SpBABS19	.977	.977
ersion	SpBABS20	.977	.977
I	SpBABS21	.977	.977
22	SpBABS22	.784	.976
23	SpBABS23	.741	.976
24	SpBABS24	.794	.976
25	SpBABS25	.839	.976
27	SpBABS27	.828	.976
28	SpBABS28	.788	.976
29	SpBABS29	.760	.976
30	SpBABS30	.749	.976
31	SpBABS31	.638	.976
34	SpBABS34	.770	.976
35	SpBABS35	.673	.976
38	SpBABS38	.667	.976
39	SpBABS39	.791	.976
40	SpBABS40	.795	.976
41	SpBABS41	.692	.976
42	SpBABS42	.680	.976
43	SpBABS43	.723	.976
44	SpBABS44	.759	.976
46	SpBABS46	.773	.976
47	SpBABS47	.814	.976
48	SpBABS48	.783	.976
50	SpBABS50	.807	.976
52	SpBABS52	.746	.976
53	SpBABS53	.816	.976
54	SpBABS54	.756	.976
55	SpBABS55	.641	.976
56	SpBABS56	.782	.976
57	SpBABS57	.634	.976
58	SpBABS58	.662	.976
59	SpBABS59	.669	.976

[Note: 38()]

Figure 3: Table 4 . 2 :

4

Hypothesis 3: Exploratory
significantly produce factors for the scale developed.

factor analysis will

Figure 4: Table 4 .

43

SN Factors	Eigen-values	% of variance	Cumulative %
Factor 1	23.07	50.15	50.15
Factor 2	2.95	6.41	56.56
Factor 3	2.10	4.56	61.12
Factor 4	1.11	2.41	63.53
Factor 5	.961	2.09	65.61
Factor 6	.687	1.49	67.11

Figure 5: Table 4 . 3 :

S/No	Extracted factors	Betting-relationship	Conflict	1	0.859	0.847	2	3	4	39	Volume
1	SpBABS40	SpBABS19									XXI
2											Issue
3	SpBABS48	SpBABS39			0.808	0.796					VIII
4											Ver-
5	SpBABS47				0.793						sion I
6	SpBABS22				0.778)
7	SpBABS59				0.742						(
8	SpBABS17				0.723						
9	SpBABS21				0.715						
	SpBABS53				0.707						
	SpBABS41				0.695						
	SpBABS28				0.674						
	SpBABS56				0.64						
	SpBABS25				0.638						
	SpBABS50				0.622						
	SpBABS24				0.619						
	SpBABS34				0.607						
	SpBABS30				0.598						
	SpBABS27				0.587						
	SpBABS29				0.564						
	SpBABS20				0.562						
	SpBABS52				0.518						
	SpBABS18				0.515						
	SpBABS23				0.498						
	SpBABS42				0.477						
	Sports Betting Distress										
	SpBABS54					0.672					
	SpBABS44					0.546					
	SpBABS38					0.538					
	SpBABS43					0.516					

Figure 6: Table 4 . 4 :

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Figure 7:

24 RECOMMENDATIONS

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S/No	Scale	Split-half (r)	Full-scale (r)	Cronbach alpha (?)
1	Whole scale	0.946	0.942	0.977
2	Betting-relationship Conflict	0.969	0.958	0.978
3	Betting Distress	0.889	0.886	0.926
4	Betting-economic Interference	0.738	0.804	0.828
5	Sport Betting Anticipatory	0.765	0.750	0.827

Hypothesis 5: Sports Betting Addictive Behaviour Scale (SpABS) will positively correlate significantly Gambling Addictive Behaviour for Adolescent Scale (GABSA).

Figure 8: Table 4 . 5 :

46

Variable	Mean	SD	Df	r	p
Sports Betting Addictive Behaviour Scale (SpABS)	97.51	38.92	318	.965	<.000
Gambling Addictive Behaviour for Adolescent Scale (GABSA)	87.85	28.56			

Figure 9: Table 4 . 6 :

47

S/No	Variable	1	2	3	4	5	6	7	8	Mean	
1	Betting relationship conflict (SpBABS)	-								48.59	2
2	Betting distress (SpBABS)	.484**	-							23.10	
3	Betting economic interference (SpBABS)	.333**	.258**	-						16.16	
4	Sport betting anticipatory (SpBABS)	.649**	.248**	.246**	-					16.09	
5	Loss of Control (GABAS)	.371**	.217**	.115**	.399**	-				28.09	1
6	Life dysfunction from problem gambling (GABAS)	.733**	.416**	.293**	.586**	.338**	-			79.09	5
7	Gambling Experience (GABAS)	.695**	.303**	.275**	.562**	.411**	.462**	-		101.09	
8	Social dysfunction from problem gambling (GABAS)	.403**	.272**	.165**	.284**	.752**	.374**	.338**	-	17.56	

** Significant at the 0.01 level

* Significant at the 0.05 level

Figure 10: Table 4 . 7 :

4

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Figure 11: Table 4 .

4. Academicians should use Sports Betting Addictive Behaviour Scale (SpBABS) to research on the how the behaviour affects other aspects of individual behaviour.

44 5. Volume XXI Items I bet on sports because I hear people win
Issue VIII Version huge amount of money I bet on sports everyday
I to me S/No 1 2 3 I bet on sports every week I think of betting on
4 5 6 7 sports always I dream of betting sports I bet on
sports because of my economic situation I bet on
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2. Use the Sports Betting Addictive Behaviour Scale (SpBABS) to identify those that addictive to sports betting so that intervention can be provided to adductors.
3. Develop training/rehabilitation modules for the four (4) dimensions; to train individuals on ways of eliminating betting behaviours based on the categories of their behaviour identified.

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Figure 12:

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