

The Suitableness of Both DSM-IV and SOGS as the Diagnostic Criteria for Problem Lottery Players In Mainland China (2012 Nov., Macau)

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outline

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4. Conclusion

1. background

Gambling and lottery in Mainland

- Gambling in China has a long history
- Gambling was forbidden by government several times in old dynasties , but has not succeeded completely ever before
- it was extinct completely in 1951 because of the effort of the Mainland government
- In 1987, Mainland restarted to issue lottery with a reward of real object so as to raise money for the causes of the public
- Now there are two kinds of lottery in the Mainland: welfare lottery and sport lottery
- But no gambling except lottery is legal in Mainland China at present

Rapid development of the lottery industry in Mainland

- Lottery industry in Mainland develops rapidly in recent years
- Lottery sales, including welfare and sport, in 2011 is 221.4 billion, which is about 33% increase than in 2010 (Ministry of Finance of PRC, 2012)
- According to our estimation(Chen, 2012), there are about 214-461 million of lottery players in Mainland in 2011

Problem lottery players in Mainland

- There are usually reports of problem lottery players (PLP) in the news papers, which make people worry about if its development is quite enough healthy
- What's the prevalence of PLP in Mainland?
- no accurate number of PLPs can be got before we reliable diagnostic criterion of PLP is available.

No reliable criterion for PLP

- Lottery is a mild gambling that is thought to be less harmful than other gambles
- There is a Chinese criterion for pathological gambling in Mainland, included in [Chinese classification of mental disorders](#) (CCMD-3, in 2001), but it is not suitable for PLPs since it only covers severe symptoms of pathological gambling
- No test or screening criterion besides CCMD-3 for PLPs by now in Mainland

A lot of criterion for PG in the world

1. Canadian Problem Gambling Index (CPGI)
2. Diagnostic and Statistical Manual of Mental Disorders, DSM-IV Screen (APA, 1994)
3. Diagnostic Interview for Gambling Schedule (DIGS)
4. Diagnostic Interview Schedule (DIS)
5. Diagnostic Statistical Manual-IV-Multiple-Response-Adapted for Juveniles (DSM-IV-MR-J) (Fisher, 2000)
6. Gamblers Anonymous' 20 questions, GA-20(Gamblers Anonymous, 2001),
7. Gambling Behaviour Interview (GBI)
8. Gambling Severity Index
9. Gambling Symptom Rating Scale (Kim et al., 2001).
10. Gambling Symptoms Assessment Screen
11. Gambling Treatment Outcome Monitoring system (GAMTOMS)
12. Gambling Urge Scale (Raylu & Oei, 2004)
13. Lie/Bet Screen (Johnson et al., 1998)
14. Maroonah Assessment Profile for Problem Gambling (G-MAP)
15. Massachusetts Adolescent Gambling Screen-MAGS (Shaffer et al., 1994)
16. National Opinion Research Center DSM IV Screen for gambling Problems (NODS)
17. NORC DSM-IV Screen for Gambling Problems NODS (National Gambling Impact Study Commission, 1999)
18. South Oaks Gambling Screen-Revised Adolescent version-SOGS-RA (Winters et al., 1993)
19. Structured Clinical Interview for Pathological Gambling (SCIP)
20. Victorian Gambling Screen (VGS) (Ben-Tovim et al, 2001)

Usual instruments for PG prevalence

1. Diagnostic and Statistical Manual of Mental Disorders, DSM-IV Screen (APA, 1994)
2. South Oaks Gambling Screen (SOGS, Lesieur & Blume, 1987)
3. Gamblers Anonymous' 20 questions, GA-20 (Gamblers Anonymous, 2001),
4. Lie/Bet Screen (Johnson et al., 1998)
5. National Opinion Research Center DSM IV Screen for gambling Problems (NODS, National Gambling Impact Study Commission, 1999)

gold standards

- Both DSM-IV and SOGS are believed to be gold PG standards, though it is argued that there is no gold standard (The South Australian Centre for Economic Studies, SACES, 2003)

PG Criterion is not suitable for PLP

- They might not be proper standards for PLP because:
 1. Lottery is not a kind of typical gambling
 2. With these PG standards, there are differences in language, culture, population in addition to different items in different countries
 3. SOGS and DSM-IV is only a screening test
 4. In Mainland no gambling except lottery is legal and people might have complicated moral view of gambling due to its special history

Purpose of the research

- Can DSM-IV or SOGS be used to diagnose PLP though they are developed originally for Pathological Gambler similar to PLP as a screen test?
- Whether DSM-IV or SOGS is more suitable for problem lottery player?

2. methods

Lottery buying survey

1. Data from a large scale of online survey composed of 5 questionnaires in 2nd half of 2011, which covers more than 176,205 raw cases from a dozen of lottery websites located in Mainland
2. All questions are answered anonymously
3. a lot of technical treatments to ensure the sample representativeness, e.g. HTML layout, cookies clueing, missing/random answer checking, MAC address checking, user confirmation, small reward for answering questions
4. thorough data cleaning resulted in a subsample of 23,069 adult lottery players

Important terms

- In our research:
 - **Lottery player (Caimin, in Chinese)**: it is defined in our research as lottery buyer who spends money on lottery every month and has at least one favorite lottery
 - **Problem lottery player (PLP)**: lottery player whose score is above 5 on DSM-IV or SOGS (same to PG standard)
 - Adult lottery player who is 18 or elder

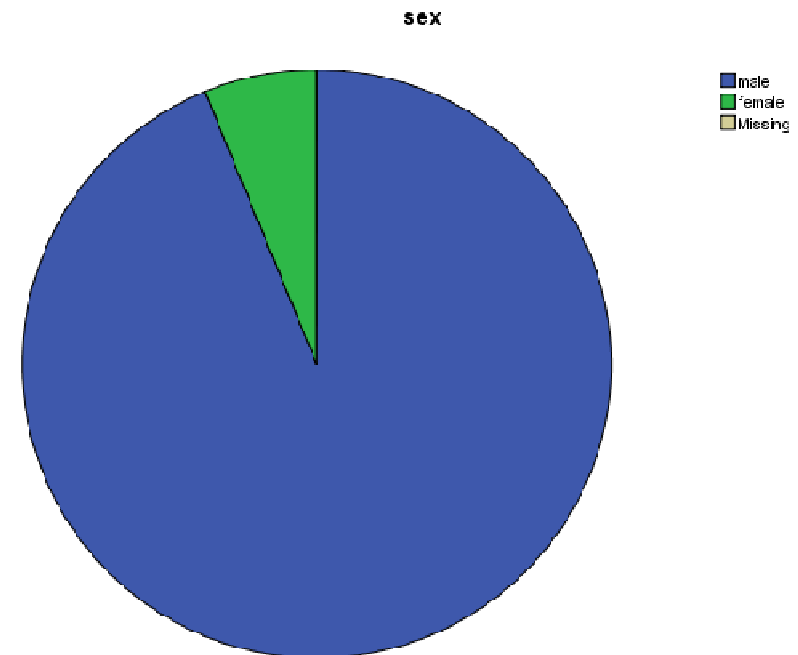
The Sample of online adult lottery players

Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---------------------------|-------|---------|---------|----------|----------------|
| age | 23069 | 18 | 80 | 29.66 | 4.993 |
| month income | 22293 | 100.00 | 7500.00 | 4.3659E3 | 1278.58060 |
| month cost | 22739 | 15.00 | 9000.00 | 3.2002E3 | 1335.36527 |
| month cost / month income | 22968 | .0000 | 20.0000 | .724753 | .4144425 |
| spent hours a week | 22396 | 0 | 100 | 2.63 | 6.481 |
| investment a time | 22836 | 0 | 10000 | 20.61 | 172.711 |
| notes a time | 22768 | 0 | 10000 | 8.55 | 138.733 |
| Valid N (listwise) | 21531 | | | | |

性别

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid | male | 21637 | 93.8 | 93.8 | 93.8 |
| | female | 1426 | 6.2 | 6.2 | 100.0 |
| | Total | 23063 | 100.0 | 100.0 | |
| Missing | System | 6 | .0 | | |
| Total | | 23069 | 100.0 | | |

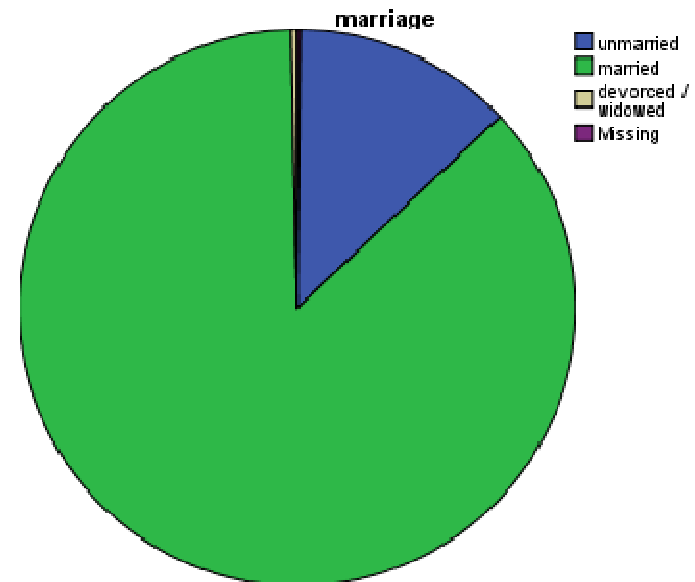


Why are so small percent of woman interested in lottery?

marriage

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------------------|-----------|---------|---------------|--------------------|
| Valid | unmarried | 2953 | 12.8 | 12.8 | 12.8 |
| | marrid | 20005 | 86.7 | 86.9 | 99.7 |
| | Divorced / widowed | 74 | .3 | .3 | 100.0 |
| | Total | 23032 | 99.8 | 100.0 | |
| Missing | System | 37 | .2 | | |
| Total | | 23069 | 100.0 | | |

It seems that to indulge in lottery is not a good way to relieve loneliness. It is more of a means to make money to change present life situations.



The questionnaire

- There are 56 items besides demographical variables, Including all items of both DSM-IV and SOGS
 - DSM-IV 19, SOGS 16
 - self-written items based on those characteristic behaviors of PLP cases reported by newspaper
 - The Questionnaire is named ‘Online survey of Chinese lottery player’s behaviors: differential characteristics of problem lottery player’, considering the social desirability of word “screening”

Item translation

1. All items from DSM-IV and SOGS are translated by two psychology undergraduates whose English proficiency are excellent
2. Whatever difference between two independent Chinese versions would cause retranslation.
3. All the words 'gambling' in the items of DSM-IV and SOGS are replaced by the word 'lottery'
4. The equivalence of word meaning is examined by a senior researcher.
5. 1-6 Likert ratings are used in place of yes/no answer

3. results

Items Descriptive Statistics

| | Mean | Std. Deviation | N |
|---------|-------|----------------|-------|
| DSM 19 | .7472 | 1.76806 | 23069 |
| SOGS 16 | .8313 | 1.75734 | 23069 |

| Internal Reliability Statistics | | | |
|---------------------------------|------------------|--|------------|
| | Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
| DSM-IV | 0.945 | 0.943 | 19 |
| SOGS | 0.894 | 0.886 | 12 |

| DSM-IV items | Mean | Std. Deviation | N |
|---------------------------------|-------|----------------|-------|
| 为了能有钱买彩票我用了公款或拿了别人的钱。 | 1.350 | 0.947 | 21994 |
| 为了能有钱买彩票，都想过去偷、去抢或去骗。 | 1.350 | 0.970 | 21994 |
| 因为买彩票耽误了正事（重要的工作、社交或家务）。 | 1.430 | 1.022 | 21994 |
| 我在欠账的时候会找别人给我付买彩票的钱。 | 1.440 | 1.052 | 21994 |
| 我买彩票欠钱多时就指望买更多彩票把钱赢回来。 | 1.470 | 1.095 | 21994 |
| 因为买彩票跟家人、朋友或同事关系不好。 | 1.500 | 1.130 | 21994 |
| 我把买彩票当作摆脱个人烦心事的方式。 | 1.530 | 1.159 | 21994 |
| 当我想少买或不买彩票时就会烦躁不安。 | 1.540 | 1.180 | 21994 |
| 买彩票次数越来越多我才会有当初那种兴奋感。 | 1.560 | 1.199 | 21994 |
| 向别人隐瞒我买彩票的事情。 | 1.580 | 1.148 | 21994 |
| 过去一年中，我很多时间都是在想过去的彩票经历或者未来购彩的事。 | 1.590 | 1.182 | 21994 |
| 有几次试着少买彩票或者克制自己，却发现很难。 | 2.220 | 0.834 | 21994 |
| 买彩票好像能缓解我不舒服的感觉。 | 2.290 | 0.933 | 21994 |
| 买了彩票没中奖的话，我会总想着去买彩票赚回损失。 | 2.300 | 0.968 | 21994 |
| 找时间买彩票，把钱赚回来。 | 2.320 | 0.977 | 21994 |
| 有几次想不买彩票了，但是没成功。 | 2.330 | 0.965 | 21994 |
| 对于到底买了多少彩票，花了多少钱，我不让家人、朋友或同事知道。 | 3.020 | 0.849 | 21994 |
| 经常沉浸在自己中大奖的想象中。 | 3.140 | 0.910 | 21994 |
| 我常跟别人说自己会中奖。 | 3.550 | 1.033 | 21994 |

| SOGS item | Mean | Std. Deviation | N |
|----------------------------|-------|----------------|-------|
| 1 为买彩票借的钱我还没还上。 | 1.370 | 0.924 | 22252 |
| 2 因买彩票的钱和他人发生过冲突。 | 1.425 | 1.002 | 22252 |
| 3 为钱争吵都是因为彩票。 | 1.450 | 1.036 | 22252 |
| 4 买彩票虚耗我大量工作时间。 | 1.451 | 1.017 | 22252 |
| 5 买彩票给我带来负面影响。 | 1.500 | 1.106 | 22252 |
| 6 为自己购彩而感到悔恨。 | 1.504 | 1.107 | 22252 |
| 7 我得一次买更多彩票才会有当初那种兴奋感。 | 1.536 | 1.143 | 22252 |
| 8 买了彩票没中奖的话，我会总想着去买彩票赚回损失。 | 2.302 | 0.975 | 22252 |
| 9 有几次想不买彩票了，但是没成功。 | 2.335 | 0.973 | 22252 |
| 10 我买的彩票远比我原来打算买的。 | 2.395 | 1.060 | 22252 |
| 11 有人批评我买彩票。 | 3.649 | 1.017 | 22252 |
| 12 愿意让别人知道自己买彩票。 | 3.993 | 0.816 | 22252 |

Some items seems not so good!

Item-Total Statistics

| DSIM-IV item | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---------------------------------|----------------------------|--------------------------------|----------------------------------|------------------------------|----------------------------------|
| 过去一年中，我很多时间都是在想过去的彩票经历或者未来购彩的事。 | 35.9100 | 167.6250 | 0.8010 | 0.6970 | 0.9390 |
| 经常沉浸在自己中大奖的想象中。 | 34.3600 | 181.6360 | 0.4510 | 0.4440 | 0.9450 |
| 买彩票次数越来越多我才会有当初那种兴奋感。 | 35.9400 | 166.7510 | 0.8180 | 0.7450 | 0.9390 |
| 我常跟别人说自己会中奖。 | 33.9500 | 205.1260 | -0.4280 | 0.3680 | 0.9590 |
| 有几次想不买彩票了，但是没成功。 | 35.1800 | 174.2210 | 0.7210 | 0.5540 | 0.9410 |
| 有几次试着少买彩票或者克制自己，却发现很难。 | 35.2800 | 179.1970 | 0.6100 | 0.4770 | 0.9430 |
| 当我想少买或不买彩票时就会烦躁不安。 | 35.9600 | 166.2640 | 0.8500 | 0.7900 | 0.9380 |
| 我把买彩票当作摆脱个人烦心事的方式。 | 35.9700 | 168.3580 | 0.7920 | 0.6850 | 0.9390 |
| 买彩票好像能缓解我不舒服的感觉。 | 35.2100 | 175.3730 | 0.6990 | 0.5560 | 0.9410 |
| 找时间买彩票，把钱赚回来。 | 35.1800 | 174.2390 | 0.7110 | 0.5570 | 0.9410 |
| 买了彩票没中奖的话，我会总想着去买彩票赚回损失。 | 35.2000 | 173.6280 | 0.7430 | 0.6180 | 0.9400 |
| 我买彩票欠钱多时就指望买更多彩票把钱赢回来。 | 36.0400 | 168.8540 | 0.8250 | 0.7720 | 0.9390 |
| 对于到底买了多少彩票，花了多少钱，我不让家人、朋友或同事知道。 | 34.4800 | 182.8200 | 0.4350 | 0.3220 | 0.9450 |
| 向别人隐瞒我买彩票的事情。 | 35.9300 | 169.7330 | 0.7510 | 0.6120 | 0.9400 |
| 为了能有钱买彩票我用了公款或拿了别人的钱。 | 36.1500 | 173.5630 | 0.7640 | 0.8250 | 0.9400 |
| 为了能有钱买彩票，都想过去偷、去抢或去骗。 | 36.1500 | 173.3040 | 0.7550 | 0.7530 | 0.9400 |
| 因为买彩票跟家人、朋友或同事关系不好。 | 36.0100 | 168.4210 | 0.8120 | 0.7520 | 0.9390 |
| 因为买彩票耽误了正事（重要的工作、社交或家务）。 | 36.0700 | 170.9430 | 0.8060 | 0.7600 | 0.9390 |
| 我在欠账的时候会找别人给我付买彩票的钱。 | 36.0600 | 170.2120 | 0.8090 | 0.7800 | 0.9390 |

No item should be deleted!

Item-Total Statistics

| SOGS item | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|--------------------------|----------------------------|--------------------------------|----------------------------------|------------------------------|----------------------------------|
| 我买的彩票远比我原来打算买的多。 | 22.5145 | 57.3160 | 0.6630 | 0.5650 | 0.8830 |
| 为买彩票借的钱我还没还上。 | 23.5392 | 57.3390 | 0.7780 | 0.6840 | 0.8780 |
| 我得一次买更多彩票才会有当初那种兴奋感。 | 23.3733 | 54.4910 | 0.7870 | 0.6750 | 0.8750 |
| 为自己购彩而感到悔恨。 | 23.4046 | 54.4620 | 0.8200 | 0.7120 | 0.8730 |
| 买彩票给我带来负面影响。 | 23.4087 | 55.0090 | 0.7840 | 0.6580 | 0.8760 |
| 有人批评我买彩票。 | 21.2600 | 70.1650 | -0.1240 | 0.0990 | 0.9210 |
| 愿意让别人知道自己买彩票。 | 20.9156 | 71.9060 | -0.2520 | 0.1050 | 0.9200 |
| 为钱争吵都是因为彩票。 | 23.4594 | 55.3500 | 0.8220 | 0.7510 | 0.8740 |
| 因买彩票的钱和他人发生过冲突。 | 23.4840 | 56.0840 | 0.7990 | 0.7360 | 0.8760 |
| 买彩票虚耗我大量工作时间。 | 23.4583 | 55.8310 | 0.8040 | 0.7100 | 0.8750 |
| 买了彩票没中奖的话，我会总想着去买彩票赚回损失。 | 22.6072 | 57.6370 | 0.7090 | 0.5360 | 0.8810 |
| 有几次想不买彩票了，但是没成功。 | 22.5738 | 57.6890 | 0.7070 | 0.5590 | 0.8810 |

No item should be deleted!

Two ways of SCORING

- Likert rating 1-6 into 1/0
- Two ways
 - Rigor standard: Likert rating 5/6 into yes (1 score)
 - loose standard: Likert rating 4-6 into yes (1 score)

DSM-IV SCORE based on rigor scoring standard

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| 0 | 18246.00 | 79.10 | 79.10 | 79.10 |
| 1 | 1024.00 | 4.40 | 4.40 | 83.50 |
| 2 | 770.00 | 3.30 | 3.30 | 86.90 |
| 3 | 820.00 | 3.60 | 3.60 | 90.40 |
| 4 | 707.00 | 3.10 | 3.10 | 93.50 |
| 5 | 678.00 | 2.90 | 2.90 | 96.40 |
| 6 | 346.00 | 1.50 | 1.50 | 97.90 |
| 7 | 183.00 | 0.80 | 0.80 | 98.70 |
| 8 | 116.00 | 0.50 | 0.50 | 99.20 |
| 9 | 79.00 | 0.30 | 0.30 | 99.60 |
| 10 | 100.00 | 0.40 | 0.40 | 100.00 |
| Total | 23069 | 100 | 100 | |

7.5% Pathological! Overestimated?

SOGS SCORE based on rigor scoring standard

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| 0 | 16501.000 | 71.500 | 71.500 | 71.500 |
| 1 | 2177.000 | 9.400 | 9.400 | 81.000 |
| 2 | 1387.000 | 6.000 | 6.000 | 87.000 |
| 3 | 961.000 | 4.200 | 4.200 | 91.100 |
| 4 | 872.000 | 3.800 | 3.800 | 94.900 |
| 5 | 426.000 | 1.800 | 1.800 | 96.800 |
| 6 | 255.000 | 1.100 | 1.100 | 97.900 |
| 7 | 168.000 | 0.700 | 0.700 | 98.600 |
| 8 | 102.000 | 0.400 | 0.400 | 99.000 |
| 9 | 80.000 | 0.300 | 0.300 | 99.400 |
| 10 | 78.000 | 0.300 | 0.300 | 99.700 |
| 11 | 41.000 | 0.200 | 0.200 | 99.900 |
| 12 | 21.000 | 0.100 | 0.100 | 100.000 |
| Total | 23069 | 100 | 100 | |

3.2% Pathological! Overestimated too!

Pearson Correlations

| | | DSM | SOGS |
|------|---------------------|--------|--------|
| DSM | Pearson Correlation | 1 | .875** |
| | Sig. (2-tailed) | | .000 |
| | N | 23069 | 23069 |
| SOGS | Pearson Correlation | .875** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 23069 | 23069 |

** . Correlation is significant at the 0.01 level (2-tailed).

DSM-IV Split-half Reliability

| | | | |
|--------------------------------|------------------|------------|-----------------|
| Cronbach's Alpha | Part 1 | Value | .868 |
| | | N of Items | 10 ^a |
| | Part 2 | Value | .935 |
| | | N of Items | 9 ^b |
| | Total N of Items | | 19 |
| Correlation Between Forms | | | .831 |
| Spearman-Brown Coefficient | Equal Length | | .908 |
| | Unequal Length | | .908 |
| Guttman Split-Half Coefficient | | | .907 |

a. The items are: 过去一年中，我很多时间都是在想过去的彩票经历或者未来购彩的事。经常沉浸在自己中大奖的想象中，买彩票次数越来越多我才会当初那种兴奋感。我常常跟别人说自己会中奖，有几次想不买彩票了，但是没有成功。有几次试着少买彩票或者克制自己，却发现很难。当我想少买或不想买彩票时，就会烦躁不安。我把买彩票当作摆脱个人烦恼的方式。买彩票好像能缓解我不舒服的感觉。找时间买彩票，把钱赚回来。

b. The items are: 买了彩票没中奖的话，我会总想着去买彩票赚回损失。我买了彩票欠钱多时就指望买更多彩票把钱赢回来。对于到底买了多少彩票，花为买了多少钱，买彩票我用了公款或拿了别人的钱。向别人隐瞒我买彩票的事。为偷了能去抢或去骗。因为买彩票跟家人、朋友或同事有关系不好。因为买彩票耽误了重要的工作、社交或家务。我在欠账的时候会找别人给我付买彩票的钱。

SOGS Split-half Reliability

| | | | |
|--------------------------------|----------------|------------|----------------|
| Cronbach's Alpha | Part 1 | Value | .797 |
| | | N of Items | 6 ^a |
| | Part 2 | Value | .793 |
| | | N of Items | 6 ^b |
| Total N of Items | | | 12 |
| Correlation Between Forms | | | .878 |
| Spearman-Brown Coefficient | Equal Length | | .935 |
| | Unequal Length | | .935 |
| Guttman Split-Half Coefficient | | | .933 |

a. The items are: 我买的彩票远比我原来打算头的多。 , 为头彩票借的钱我还没还上。 , 我得一次买更多彩票才会有当初那种兴奋感。 , 为自己购彩而感到悔恨。 , 买彩票给我带来负面影响。 , 有人批评我买彩票。 .

b. The items are: S24负变正, 为钱争吵都是因为彩票。 , 因买彩票的钱和他人发生过冲突。 , 买彩票虚耗我大量工作时间。 , 买了彩票没中奖的话, 我会总想着去买彩票赚回损失。 , 有几次想不买彩票了, 但是没成功。 .

SOGS_PLP * DSM_PLP Crosstabulation

| | | DSM_PLP | | Total |
|----------|---------|---------|------|-------|
| | | Non-PLP | PLP | |
| SOGS_PLP | Non-PLP | 21205 | 693 | 21898 |
| | PLP | 362 | 809 | 1171 |
| Total | | 21567 | 1502 | 23069 |

Symmetric Measures

| | Value | Asymp. Std. Error ^a | Approx. T ^b | Approx. Sig. |
|----------------------------|-------|--------------------------------|------------------------|--------------|
| Measure of Agreement Kappa | .581 | .012 | 89.083 | .000 |
| N of Valid Cases | 23069 | | | |

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

4. Discussion

- Is PLP high prevalence due to the difference in gamble, in culture, or in population?
- Item back-translation might be needed

5. Conclusions

1. Both DSM-IV and SOGS have high alpha coefficients and split-half coefficients;
2. Both gave quite similar PLP prevalence;
3. both comprise a few of items that its described behavior is rather popular among the general lottery players, which might results in overestimation of problem pathological lottery players
4. Further validation research needed, e.g. test-retest reliability

General conclusion

- Both DSM-IV and SOGS are not so good tools for diagnosing PLP before they are adapted!

Thanks for your attention!

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