Increasing the Odds of Success: Predictors of Problem Gambling Treatment Outcomes

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Acknowledgements:
VRGF
RCT Team
Outline

1. Background
2. Aims
3. Systematic Review
4. Method
5. Preliminary Results
6. Discussion
Background

- Psychological treatments can be effective but not everyone responds to intervention.
  - Cognitive behavioural therapy
  - Motivational Interviewing

- Success rates for psychological treatment reduce as time goes by.

- Need to improve effectiveness and durability of treatments for problem gambling.
Background

- Heterogeneous population
- Various factors interact and lead to the development and maintenance of PG
  - Psychological
  - Biological
  - Environmental

- Need to identify who is more likely to benefit from treatment.
- Identifying predictors of treatment outcomes allows for:
  - Tailoring problem gambling treatments to meet individual needs
  - More accurate prognosis

- Limited research on how these factors impact on the effectiveness of PG treatment
Aims

- To identify participant, treatment and therapist predictors of treatment success following psychological treatment for problem gambling.

1. Predictors of changes in gambling behaviours and gambling symptom severity
   i. Frequency of gambling
   ii. Time spent gambling
   iii. Gambling expenditure
   iv. Gambling symptom severity

2. Predictors of relapse

3. Predictors of dropout
Systematic Review

- Aim to identify the evidence relating to predictors of gambling related treatment outcomes, defined as changes in gambling behaviours and gambling symptom severity.

- Studies eligible if:
  - Individuals received treatment for a primary gambling problem;
  - Attempted to predict gambling treatment outcomes during or at an end of treatment, or at a follow-up time point; and
  - Treatment outcomes were based on validated or replicable measures that assessed change in gambling behaviours or gambling symptom severity

- 31 articles based on 25 studies were included
Systematic Review

- Based on the number of studies and number of significant results, predictors were classified

<table>
<thead>
<tr>
<th>Consistent predictors</th>
<th>Probable predictors</th>
<th>Not reliable predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Age; Sex</td>
<td>Duration of gambling disorder</td>
</tr>
<tr>
<td>Treatment type</td>
<td>Alcohol use</td>
<td>Education level</td>
</tr>
<tr>
<td># sessions attended</td>
<td>Anxiety</td>
<td>Relationship status</td>
</tr>
<tr>
<td>Pre-treatment gambling behaviours</td>
<td>Employment status</td>
<td>Psychiatric history</td>
</tr>
<tr>
<td>Pre-treatment gambling severity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Readiness to change</td>
<td></td>
<td>Treatment for other mental health disorders</td>
</tr>
</tbody>
</table>
Systematic Review

- Possible predictors:
  - gambling debt
  - gambling related cognitions
  - self-efficacy
  - quality of life
  - social support
  - goal choice
  - age of disordered gambling onset
  - preferred gambling activity
  - coping skills
  - impulsivity

- Main limitation:
  - Variability and inconsistency in measuring gambling related treatment outcomes
Method

- Screening and Intake
- Baseline Data Collection
- Randomisation
  - Cognitive-Behaviour Therapy
  - Behaviour Therapy
  - Motivational Interviewing
  - Client-Centred Therapy
- Post-Treatment and Follow-up Data Collection
Design

- Randomised Controlled Trial
- 4 treatment arms
  - Cognitive Behavioural Therapy
  - Behaviour Therapy
  - Motivational Interviewing
  - Client-centred Therapy
- Longitudinal study. Outcome assessment interviews at:
  - Baseline
  - Post-treatment
  - 6 and 12 months post-treatment
Recruitment

- Community sample through public advertisements in:
  - Newspaper (Herald Sun)
  - Venue-based advertising
  - Gambling help organisations
    - Gamblers Help agencies
    - Gamblers Anonymous

- Online:
  - Google search
  - Facebook
  - Gumtree
  - University websites (Monash, Melbourne)
  - Gambling help websites
    - Victorian Responsible Gambling Foundation
    - 100 Day Challenge
    - Gamblers Help
  - Newspaper websites
Screened for eligibility

- **Inclusion criteria:**
  - 18+ years
  - Wish to receive treatment for gambling
  - Can communicate in English

- **Exclusion criteria:**
  - Unable to provide informed consent
  - At current risk of self-harm
  - Gambling treatment within the last 12 months provided by a counsellor or therapist
Controlling for bias

- **Randomisation**
  - Participants randomised using an independent clinical trials unit using telephone randomisation service
  - Permuted block design, with varying block sizes

- **Concealed allocation**
  - Randomisation did not occur until after participants had completed their first telephone interview. All subsequent interviews conducted by trained blinded Research Assistants.
Treatments (CBT, BT, MI and CCT)

- All four treatments were manualised
- 6x individual 1-hour treatment sessions
- Registered psychologists in the Melbourne metropolitan area
- Recruited on the basis of skills and experience
  - Treatment offered in psychologists’ private rooms
- One treatment type per psychologist
- All sessions recorded for treatment fidelity purposes
Treatment outcomes

1. Gambling symptom severity – measured using the Gambling Symptom Assessment Scale (G-SAS).

2. Gambling behaviours:
   1. Frequency – assessed by past month instances of gambling
   2. Time – assessed by past month hours spent gambling
   3. Expenditure – assessed by average spend per session in past month * instances of gambling
Predictor Variables

Patient-related variables:

- Age
- Age of PG onset
- Alcohol use – Alcohol Use Disorders Identification Test (AUDIT)
- Coping skills - Brief-Coping Orientation to Problems Experienced (B-COPE)
- Gambling related debt (yes/no)
- Depression and Anxiety – Depression Anxiety Stress Scale -21 (DASS-21)
- Erroneous cognitions - Gambling Related Cognitions Scale (GRCS)
- Family history of PG (yes/no)
- Self-efficacy – Perceived inability to stop gambling subscale of GRCS
Predictor Variables

Patient-related variables:

- Impulsivity – Non-Planning, Motor Impulsiveness and Attentional Impulsiveness of the Barratt Impulsiveness Scale (BIS-15)
- Preferred gambling activity (EGM vs not EGM)
- Gambling Urge – Urge subscale of the GSAS
- Quality of life - WHO-8: EUROHIS Quality of Life Scale
- Sex
- Social support - MOS Social Support Survey
- Stage of change
- Therapeutic relationship –patient rated – Working Alliance Inventory short form
Predictor Variables

Treatment-related variables:
- Treatment goal - abstinence vs controlled
- Number of treatment sessions attended

Therapist-related variables:
- Therapeutic relationship – clinician rated – Working Alliance Inventory short form
Statistical analysis

- Sample size allows for 25 predictor variables.
- Complete cases only (n=252)
- Analysis approach based on de Graaf and colleagues (2010):
  - All variables initially examined as univariate predictors while controlling for the effect of treatment
  - Those approaching significance (p<.10) were included in the multivariate model
- Linear regression used to examine predictors of changes in G-SAS scores from pre to post-treatment.
- Highly skewed data for gambling behaviours.
  - Categorised in to improved vs not improved
  - Logistic regression
Preliminary Results

- n=442 expressed interest
- n=395 assessed for eligibility
  - n=50 did not consent
    - n=41 not eligible
  - n=7 withdrew before baseline assessment
  - n=1 withdrew before referral
- n=297 completed baseline assessment
- n=74 randomised to CBT
  - n=62 completed EOT assessment
    - n=43 completed 6 month follow-up
      - n=20 completed 12 month follow-up
  - n=74 randomised to BT
    - n=65 completed EOT assessment
      - n=44 completed 6 month follow-up
      - n=17 completed 12 month follow-up
  - n=73 randomised to MI
    - n=65 completed EOT assessment
      - n=41 completed 6 month follow-up
      - n=21 completed 12 month follow-up
- n=76 randomised to CCT
  - n=67 completed EOT assessment
    - n=42 completed 6 month follow-up
    - n=21 completed 12 month follow-up
    - n=83 completed 12 month follow-up
  - n=259 completed EOT assessments
    - n=186 completed 6 month follow-up

Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>All (n=252)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean)</td>
<td>50.00 (14.29)</td>
</tr>
<tr>
<td>Sex (% males)</td>
<td>53%</td>
</tr>
<tr>
<td>PGSI (% problem gambling)</td>
<td>89%</td>
</tr>
<tr>
<td>DSM-IV PG cut-off (%)</td>
<td>87%</td>
</tr>
<tr>
<td>Preferred gambling activity (% EGMs)</td>
<td>70%</td>
</tr>
<tr>
<td>Australia born (%)</td>
<td>73%</td>
</tr>
<tr>
<td>Previous treatment for PG (%)</td>
<td>44%</td>
</tr>
<tr>
<td>Predictor variables</td>
<td>CBT (n=59)</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------</td>
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<tr>
<td><strong>Patient related variables</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>Mean years (SD)</td>
<td>51.44 (13.84)</td>
</tr>
<tr>
<td><strong>Age of PG onset</strong></td>
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</tr>
<tr>
<td>Mean years (SD)</td>
<td>37.43 (14.87)</td>
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<tr>
<td>AUDIT</td>
<td>7.51 (6.98)</td>
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<tr>
<td>BCOPE Factor 1</td>
<td>19.36 (6.03)</td>
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<tr>
<td>BCOPE Factor 2</td>
<td>9.75 (5.15)</td>
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<tr>
<td>BCOPE Factor 3</td>
<td>5.63 (3.69)</td>
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<tr>
<td>BIS–Attentional</td>
<td>10.59 (3.44)</td>
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<tr>
<td>Impulsiveness (SD)</td>
<td>11.32 (3.44)</td>
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<tr>
<td>Mean (SD)</td>
<td>13.75 (3.49)</td>
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<td>DASS–21–Depression</td>
<td>6.37 (7.44)</td>
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<tr>
<td>Mean (SD)</td>
<td>25.80 (6.22)</td>
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<tr>
<td>Debt</td>
<td>30 (51)</td>
</tr>
<tr>
<td>Yes n (%)</td>
<td>29 (49)</td>
</tr>
<tr>
<td>EUHROS WHOQOL 8</td>
<td>15.47 (4.00)</td>
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<tr>
<td>Mean (SD)</td>
<td>4.49 (1.41)</td>
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<tr>
<td>Family history of PG</td>
<td>36 (62)</td>
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<tr>
<td>No n (%)</td>
<td>22 (38)</td>
</tr>
<tr>
<td>Yes n (%)</td>
<td>25.80 (6.22)</td>
</tr>
<tr>
<td>GRCS total Mean (SD)</td>
<td>15.47 (4.00)</td>
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<td>GRCS–Inability Mean (SD)</td>
<td>4.49 (1.41)</td>
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<td>GSAS – Urges Mean (SD)</td>
<td>8.34 (2.58)</td>
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<td>MOS Social Support Mean (SD)</td>
<td>68.12 (18.84)</td>
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<td>Sex</td>
<td>29 (49)</td>
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<tr>
<td>Male n (%)</td>
<td>30 (51)</td>
</tr>
<tr>
<td>Female n (%)</td>
<td>22 (37)</td>
</tr>
<tr>
<td>Stage of change</td>
<td></td>
</tr>
<tr>
<td>(Pre)Contemplation n(%)</td>
<td>21 (36)</td>
</tr>
<tr>
<td>Preparation n(%)</td>
<td>16 (27)</td>
</tr>
<tr>
<td>Action/maintenance n(%)</td>
<td>16 (27)</td>
</tr>
<tr>
<td>WA1 Participant Mean</td>
<td>71.95 (7.26)</td>
</tr>
</tbody>
</table>
Descriptive statistics for main outcomes

- Preliminary results of the RCT indicate that there were:
  - significant reductions from pre to post treatment for all interventions on all main outcomes
  - no difference between the intervention on the main outcomes at pre-treatment, post-treatment or change scores

<table>
<thead>
<tr>
<th>Outcome and time</th>
<th>CBT M (SD)</th>
<th>BT M (SD)</th>
<th>MI M (SD)</th>
<th>CCT M (SD)</th>
<th>Total M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSAS (t0)</td>
<td>25.24 (6.59)</td>
<td>27.24 (8.25)</td>
<td>25.90 (8.80)</td>
<td>26.63 (8.03)</td>
<td>26.27 (7.97)</td>
</tr>
<tr>
<td>GSAS (t1)</td>
<td>17.85 (8.61)</td>
<td>18.70 (9.49)</td>
<td>17.37 (8.90)</td>
<td>18.48 (8.81)</td>
<td>18.11 (8.94)</td>
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<tr>
<td>Frequency (t0)</td>
<td>18.09</td>
<td>18.35</td>
<td>19.76</td>
<td>15.70</td>
<td>17.94 (16.95)</td>
</tr>
<tr>
<td>Frequency (t1)</td>
<td>(17.43)</td>
<td>(13.85)</td>
<td>(16.83)</td>
<td>(19.26)</td>
<td></td>
</tr>
<tr>
<td>Time (t0)</td>
<td>8.68 (9.87)</td>
<td>7.94 (7.23)</td>
<td>10.11</td>
<td>9.38 (12.36)</td>
<td>9.04 (10.51)</td>
</tr>
<tr>
<td>Time (t1)</td>
<td>32.22</td>
<td>38.06</td>
<td>45.33</td>
<td>27.95</td>
<td>35.82</td>
</tr>
<tr>
<td>(26.85)</td>
<td>(44.87)</td>
<td>(64.72)</td>
<td>(31.17)</td>
<td>(44.69)</td>
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<tr>
<td>Time (t1)</td>
<td>15.11</td>
<td>12.73</td>
<td>20.38</td>
<td>15.42</td>
<td>15.92</td>
</tr>
<tr>
<td>(22.10)</td>
<td>(17.10)</td>
<td>(30.50)</td>
<td>(27.87)</td>
<td>(25.04)</td>
<td></td>
</tr>
<tr>
<td>Expenditure (t0)</td>
<td>3304.59</td>
<td>4153.19</td>
<td>4460.58</td>
<td>4397.12</td>
<td>$4096.21</td>
</tr>
<tr>
<td>(3751.73)</td>
<td>(5098.84)</td>
<td>(6930.86)</td>
<td>(7042.07)</td>
<td>(5897.92)</td>
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</tr>
<tr>
<td>Expenditure (t1)</td>
<td>1303.31</td>
<td>1817.40</td>
<td>1709.38</td>
<td>1842.20</td>
<td>1676.62</td>
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<tr>
<td>(1866.83)</td>
<td>(4753.1)</td>
<td>(3354.12)</td>
<td>(33347.70)</td>
<td>(3486.68)</td>
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</tr>
</tbody>
</table>
Preliminary results

Improvement in gambling frequency

- Univariate results:
  - B-COPE – adaptive emotion focused coping (p=.07)
  - BIS-15 Motor Impulsiveness subscale (p=.07)
  - WAI participant rated (p=.01)
  - WAI therapist rated (p=.01)
Preliminary Results

Improvement in gambling frequency

- Multivariate results:
  - The full model was statistically significant $\chi^2=(7, n=252) = 25.88$, $p<.01$.
  - Model explains 9.9% - 15.5% of variance
  - Correctly classifies 81.1% of cases

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-COPE – adaptive emotion focused coping</td>
<td>.91</td>
<td>.84-.98</td>
<td>.02*</td>
</tr>
<tr>
<td>BIS-15 Motor Impulsiveness subscale</td>
<td>1.08</td>
<td>.98-1.20</td>
<td>.10</td>
</tr>
<tr>
<td>WAI Therapist rated</td>
<td>1.04</td>
<td>1.00-1.07</td>
<td>.04*</td>
</tr>
<tr>
<td>WAI Participant rated</td>
<td>1.02</td>
<td>.99-1.04</td>
<td>.19</td>
</tr>
</tbody>
</table>
Preliminary Results

Improvement in time spent gambling

- Univariate results:
  - WAI therapist rated ($p=0.00$)
  - WAI participant rated ($p=0.04$)
  - DASS-21 – Depression scale ($p=0.07$)
Preliminary Results

Improvement in time spent gambling

- Multivariate results:
  - The full model was statistically significant $\chi^2 = (6, n=252) = 21.57$, $p<.01$.
  - Model explains 8.3% - 13.4% of variance
  - Correctly classifies 79.9% of cases

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>DASS-21 Depression scale</td>
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<td>.95-1.01</td>
<td>.14</td>
</tr>
<tr>
<td>WAI Therapist rated</td>
<td>1.06</td>
<td>1.02-1.10</td>
<td>.00*</td>
</tr>
<tr>
<td>WAI Participant rated</td>
<td>1.00</td>
<td>.98-1.03</td>
<td>.89</td>
</tr>
</tbody>
</table>
Preliminary Results

Improvement in gambling expenditure

- Univariate results:
  - Age (p=.06)
  - B-COPE – adaptive emotion focused coping (p=.09)
  - BIS-15 Motor Impulsiveness subscale (p=.06)
  - DASS-21 – Depression scale (p=.00)
  - Family history of PG (p=.06)
  - Sex (p=.01)
  - WAI therapist rated (p=.01)
Preliminary Results

Improvement in gambling expenditure

- Multivariate results:
  - The full model was statistically significant $\chi^2=(11, n=252) = 49.89, p<.01$.
  - Model explains 18.3% - 28.6% of variance
  - Correctly classifies 83.4% of cases

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR</th>
<th>95% CI</th>
<th>p</th>
</tr>
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<tbody>
<tr>
<td>Age</td>
<td>1.00</td>
<td>.97-1.03</td>
<td>.96</td>
</tr>
<tr>
<td>B-COPE – adaptive emotion</td>
<td>.90</td>
<td>.83-.99</td>
<td>.03*</td>
</tr>
<tr>
<td>focused coping</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>BIS15-Motor Impulsiveness</td>
<td>1.17</td>
<td>1.05-1.32</td>
<td>.01*</td>
</tr>
<tr>
<td>DASS-21 Depression scale</td>
<td>1.01</td>
<td>.95-1.07</td>
<td>.77</td>
</tr>
<tr>
<td>Family history of PG</td>
<td>.60</td>
<td>.29-1.23</td>
<td>.17</td>
</tr>
<tr>
<td>WAI Therapist rated</td>
<td>1.05</td>
<td>1.01-1.08</td>
<td>.01*</td>
</tr>
<tr>
<td>Sex</td>
<td>.44</td>
<td>.20-.97</td>
<td>.04*</td>
</tr>
</tbody>
</table>
Preliminary Results

Change in G-SAS

- Univariate results:
  - Gambling urge (p=.00)
  - GRCS (p=.02)
  - Self-efficacy (p=.02)
  - WAI therapist rated (p=.00)
  - WAI participant rated (p=.01)
Preliminary Results

Change in G-SAS

- Multivariate results:
  - The full model was statistically significant $F(7,241)=11.47$, $p<.001$.
  - Model accounts for 25% of variance

<table>
<thead>
<tr>
<th>Variable</th>
<th>beta</th>
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<td>Gambling urge</td>
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<td>.00*</td>
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<tr>
<td>GRCS</td>
<td>-1.53</td>
<td>.13</td>
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<tr>
<td>Self-efficacy</td>
<td>.11</td>
<td>.15</td>
</tr>
<tr>
<td>Treatment goal</td>
<td>.57</td>
<td>.32</td>
</tr>
<tr>
<td>WAI Participant rated</td>
<td>-.15</td>
<td>.03*</td>
</tr>
<tr>
<td>WAI Therapist rated</td>
<td>-.15</td>
<td>.02*</td>
</tr>
</tbody>
</table>
Discussion

- Main findings
  - Therapeutic relationship is a consistent unique predictor across all main outcome measures.
  - Inconsistent with previous gambling literature where participant rated therapeutic alliance was a stronger predictor than therapist rated.
  - However, is consistent with alcohol treatment literature.
  - Results highlight the significance of establishing a strong therapeutic relationship.
  - Implications for treatment providers – training and education in relationship skills.
References


References


References


Thank You For Your Attention Any Questions?