Evaluation of a web-based Acceptance & Commitment Therapy (ACT) program for increasing mental health in university students

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Students are stressed:

- **USA:**
  - 47% have a diagnosable psychological disorder (Blanco et al., 2008).
  - Increase in a wide range of psychological problems in students (Gallagher, 2014).

- **Australia:** 83% reporting clinically significant distress levels (Stallman, 2010):
  - 19.2% severe distress;
  - 64.7% sub-syndromal mild to moderate; and
  - Location irrelevant.

- Many disciplines of study linked to increased stress (Regehr, Glancy, & Pitts, 2013).
University Student Stress

- University student vs general population (Stallman, 2010; Stallman & Shochet, 2009):
  
  **18-24 years**
  - 8.6% males, 8.4% females (uni sample)
  - 2.7% males, 5.4% females (general)

  **25-34 years**
  - 6.7% males, 17.4% females (uni sample)
  - 2.1% males, 4.6% females (general)

- Counsellor to student ratios:
  - AUS 1:4,340 (Stallman, 2012)
  - USA 1:1604 (Gallagher, 2014)

- Help-seeking:
  - 11.7 – 18.45% distressed overall
  - 36.3 – 39.4% high to very high
  - General population: 35% seek help
Mental Health Promotion

- Students need mental health skills for personal and professional development:
  - Disability (days missed due to distress)
  - Academic achievement
  - Quality of life
  - Physical and emotional health

- Online programs suit this cohort.

- ACT as the framework:
  - Transdiagnostic
  - Teaches skills
YOLO Program

- 4-week online ACT based program
  - 4 modules 30-45 minutes.
  - Exercises 5-15 minutes.
  - Modules targeted 1-2 ACT processes each week through presentations, videos and interactive exercises.
  - Engagement: emails or sms messages.
  - No face-to-face contact.
  - Module recap.

- Extends current research:
  - Australian sample
  - Unpaid participants
  - Full ACT framework
  - Completely web-based
Program Content

- **Module 1 – Cognitive Fusion**
  - Presentation on concept plus experiential tasks (e.g., leaves on a stream, observing thoughts).

- **Module 2 – Acceptance**
  - Presentation on concept plus videos and metaphors (e.g., passengers on the bus and struggle switch).

- **Module 3 – Mindfulness and the Observer Self**
  - Presentation on concepts plus videos, formal and informal mindfulness tasks and metaphor (e.g., classroom metaphor).

- **Module 4 – Values and Committed Action**
  - Presentation of concepts, videos, values exercises (e.g., 80 year old birthday speech, values drop) and SMART goal training.
Pilot Study

Pilot: October 2015 to February 2016:

- Three treatment delivery groups with pre and post questionnaires:
  - G1: recommendation of one module per week for 4-weeks, with flexibility to complete as desired
  - G2: 4-weeks to complete the program at their own discretion with no recommended completion
  - G3: access to each module after completion and an enforced gap of three days between modules
  - Groups did not differ – data combined.

- Pre questionnaire $n = 134$.
- Post-questionnaire $n = 49$.
- Two samples – Intention-to-Treat (ITT) and T1T2.
- Data imputation method – LOCF (Brinkborg, Michanek, Hesser, & Berglund, 2011; de Vibe et al., 2013).
Pilot Study

- **Primary Outcome Measures:**
  - Distress: Depression Anxiety & Stress Scale 21
  - Wellbeing: Mental Health Continuum Short Form
  - Self-compassion: Self-Compassion Scale Short Form
  - Life Satisfaction: Satisfaction with Life Scale

- **ACT Process Measures:**
  - Acceptance: Acceptance & Action Questionnaire II
  - Fusion: Cognitive Fusion Questionnaire
  - Education Values: Personal Values Questionnaire – Education Subscale
  - Valued Living: Engaged Living Scale
  - Mindfulness: Mindful Attention Awareness Scale
Sample Characteristics

- **Demographics:**
  - 73% female, 27% male
  - Mean age 26 years
  - 53% undergrad, 13% post grad and 34% RHD
  - 51.5% identified as Caucasian with the remainder a wide variety of other ethnicities.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>M (SD)</th>
<th>Normal</th>
<th>Mild to Moderate</th>
<th>Severe to Ext Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>12.30 (8.74)</td>
<td>41.7%</td>
<td>44.8%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>9.48 (6.51)</td>
<td>41%</td>
<td>38.1%</td>
<td>20.9%</td>
</tr>
<tr>
<td>Stress</td>
<td>16.24 (8.23)</td>
<td>51.5%</td>
<td>32.1%</td>
<td>16.4%</td>
</tr>
</tbody>
</table>

- Mild to moderate at increased risk of serious mental health issue (Kessler, 2002).
Results

- Significant improvements from pre to post in both ITT and T1T2 samples for primary outcomes:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>ITT Sample</th>
<th>T1T2 Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>p value</td>
<td>Cohen’s d</td>
</tr>
<tr>
<td><strong>Primary Outcomes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>.000***</td>
<td>.16</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.001**</td>
<td>.13</td>
</tr>
<tr>
<td>Stress</td>
<td>.006*</td>
<td>.14</td>
</tr>
<tr>
<td>Well-Being</td>
<td>.000***</td>
<td>-.44†</td>
</tr>
<tr>
<td>Self-Compassion</td>
<td>.000***</td>
<td>-1.03††</td>
</tr>
<tr>
<td>Satisfaction with Life</td>
<td>.000***</td>
<td>-.16</td>
</tr>
</tbody>
</table>

Note. * p < .01, ** p = .001, *** p = .000. Effect sizes † = small, †† = large. ITT sample n = 134, T1T2 sample n = 49.
## Results

- Significant improvements from pre to post in both ITT and T1T2 samples for some ACT processes:

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<th>T1T2 Sample</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>$p$ value</td>
<td>Cohen’s $d$</td>
</tr>
<tr>
<td><strong>ACT Processes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptance</td>
<td>.09$^t$</td>
<td>.07</td>
</tr>
<tr>
<td>Cognitive Fusion</td>
<td>.89</td>
<td>0</td>
</tr>
<tr>
<td>Education Values</td>
<td>.31</td>
<td>0</td>
</tr>
<tr>
<td>Valued Living</td>
<td>.000**</td>
<td>-.17</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>.000**</td>
<td>-.18</td>
</tr>
</tbody>
</table>

*Note. $^t p < .10$, $^* p < .01$, $^{**} p = .000$. Effect sizes $^† = $ small. ITT sample $n = 134$, T1T2 sample $n = 49.$*
Results
Mediation analyses using MEMORE (Montoya & Hayes, 2016).

<table>
<thead>
<tr>
<th>Primary Outcome</th>
<th>ACT Process</th>
<th>Bootstrap CIs</th>
</tr>
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<tr>
<td><strong>ITT Sample</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>Valued Living</td>
<td>[.0049, 1.0586]</td>
</tr>
<tr>
<td>Well-Being</td>
<td>Valued Living</td>
<td>[-.2222, -.0340]</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>Valued Living</td>
<td>[-1.0225, -.1998]</td>
</tr>
<tr>
<td>Self-Compassion</td>
<td>Acceptance</td>
<td>[-.0744, -.0020]</td>
</tr>
<tr>
<td><strong>T1T2 Sample</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well-Being</td>
<td>Cognitive Fusion</td>
<td>[.0130, .2476]</td>
</tr>
<tr>
<td>Self-Compassion</td>
<td>Cognitive Fusion</td>
<td>[-.1623, -.0142]</td>
</tr>
<tr>
<td>Well-Being</td>
<td>Valued Living</td>
<td>[-.3255, -.0309]</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>Valued Living</td>
<td>[-2.7485, -.6305]</td>
</tr>
</tbody>
</table>

*Note.* Based on 5,000 bootstrapped samples. CIs = Confidence Intervals. ITT Sample n = 134, T1T2 Sample n = 49.
Qualitative Feedback

- Program and Content likes:
  - Easy to understand, relevant and practical (57%)
  - Learning format and short sessions (28%)
  - Integration and explanation of key concepts (26%)
  - Helpfulness of ACT strategies (26%)
  - Videos (21%) and metaphors (17%)

- Program and content dislikes:
  - Too short (22%)
  - Cartoon/video aesthetic annoying at times (22%)
  - Technology/website issues (14%)

- Length – 64% endorsed 4 week period, 23% too short and 13% too long.

- Reminders – 89% found helpful.

- Program delivery – 52% endorsed completing the program in their own time over a 4-week period.
Intervention Completion

- Intervention completion analyses:
  - Repeated measures ANOVAs on T1T2 Sample ($n = 49$).
  - 4 level factor: started/completed module 1, started/completed module 2, started/completed module 3 and started/completed module 4.
  - 2 level factor: started/completed modules 1-3 and started/completed module 4.
  - Both sets of analyses showed that pre- to post-intervention improvements on primary outcomes and ACT processes did not vary as a function of intervention completion.
  - Small sample size lacked power to detect changes.
Drop Out Analyses

- Do assessment drop outs differ from assessment completers in ITT sample?
  - Univariate ANOVAs and Chi square analyses
  - Factor: completer vs non-completer
  - Results – significant for degree level.

- Do mental health outcomes/demographics influence drop out in T1T2 sample?
  - Univariate ANOVAs and Chi square analyses
  - Factor: 4 levels of program completion or 2 levels of program completion.
  - Result – all non-significant.
What’s next for YOLO

- RCT completed:
  - Treatment and waitlist groups
  - 1,200 students
  - Pre-, post- and 3-month follow-up assessments.

- Data analysis underway.

- Questions?