Resilience, Traumatic Stress and Clinical Trial Outcomes among Young Adults with Complex Drug Use

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SUPPORT

• This research was supported by grant number DA0196048 from the National Institute on Drug Abuse.

• The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute on Drug Abuse or the National Institutes of Health.

• There are no conflicts to report.
Miami is an international center of nightclub culture

“Every night is like New Year’s Eve on South Beach, and drugs and sex are all part of it.”
Illicit “club drugs” include:

- Ecstasy
- Cocaine
- Methamphetamine
- LSD
- GHB
- “Designer” stimulants and hallucinogens
In this scene, prescription drugs
- opioids
- benzodiazepines (BZDs)
- amphetamines
are increasingly used in combination with alcohol and traditional club drugs.
BACKGROUND

The intensity and complexity of club-goers’ substance use puts them at high risk for numerous health and social problems.

Clubbers tend to be suspicious of or disinterested in drug use and sexual risk prevention messages delivered by governmental or health authorities.

Efficacious interventions to reduce drug use and its consequences for club drug using populations are not apparent in the literature.
THE SOUTH BEACH STUDY

RCT of behavioral interventions to reduce substance use and HIV transmission risk among young adults.
Study arms:

1) interviewer-administered (CAPI)
   and
2) self-administered (ACASI)

comprehensive health and social risk assessments
   and
3) waitlist control
OUTCOME MEASURES

Primary Outcomes:

1. Days drug use: sum of days using cocaine, ecstasy, Rx opioids and benzodiazepines in the past 90 days.

2. Abstinence: Number of days without using drugs or getting drunk in the past 90 days.

Measured at baseline and 3-, 6- and 12-months post intervention.
Eligibility criteria:

1) Ages 18-29

2) Past 90 day behaviors
   - Heterosexual sex
   - Used “club drugs” at least 3 times
   - Misused a scheduled Rx drug
   - Attends large EDM clubs
THE SOUTH BEACH STUDY

Respondent Driven Sampling

N=750

Enrollment 2011-2014
MEASURES

The Resilience Research Centre’s Adult Resilience Measure (RRC-ARM)

- 28 item screening tool designed to measure the resources (individual, relational, communal and cultural) available to individuals that bolster their resilience.
- High Cronbach alpha values (0.89 in the current study).
- RRC-ARM is best suited for use with adults facing significant levels of adversity and social marginalization.
- For this analysis, dichotomized at the median
MEASURES

**Substance dependence:** 3 or more of 7 DSM-IV items, including withdrawal symptoms and tolerance.

**Severe mental distress:** 7 or more of 24 DSM-IV items assessing past year anxiety, depression and somaticism.

**Victimization:** attacked with a weapon, physically beaten, sexually or emotionally abused
MEASURES

Severe traumatic stress: 5 or more of 13 items about distress over events in the past, including nightmares, guilt, and having no feelings (Dennis 2002).

Low social support: Lowest quartile on a scale (range 0-36) of 9 items from the MOS Social Support Survey (Shelbourne and Stewart 1991).

Coping behaviors: From the Brief Cope Scale (Carver 1997), endorsements of 5 positive (e.g., taking action) and 5 negative (e.g., self-criticism) coping behaviors.
Hierarchical linear models (HLM) examined the effect of high vs. low resilience on the primary outcome measures.

- controlled for gender, race/ethnicity and age
- constructed separately for participants with severe traumatic stress versus those without.
PAST 90 DAY DRUG USE

* Alcohol and Marijuana not shown, as both approach 100%
## DEMOGRAPHICS BY RESILIENCE LEVEL

<table>
<thead>
<tr>
<th></th>
<th>High resilience</th>
<th>Low resilience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (283)</td>
<td>% (47.0)</td>
</tr>
<tr>
<td>Age (mean; SD)</td>
<td>25.8 (5.4)</td>
<td>25.8 (5.5)</td>
</tr>
<tr>
<td>Gender male</td>
<td>153 (54.1)</td>
<td>190 (59.6)</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>191 (67.5)</td>
<td>194 (60.8)</td>
</tr>
<tr>
<td>Black non-Hispanic</td>
<td>59 (20.8)</td>
<td>79 (24.8)</td>
</tr>
<tr>
<td>White non-Hispanic</td>
<td>26 (9.2)</td>
<td>39 (12.2)</td>
</tr>
<tr>
<td>Other</td>
<td>7 (2.5)</td>
<td>7 (2.2)</td>
</tr>
<tr>
<td>High school graduate</td>
<td>249 (88.0)</td>
<td>271 (85.0)</td>
</tr>
<tr>
<td>Study arm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPI</td>
<td>110 (38.9)</td>
<td>103 (32.3)</td>
</tr>
<tr>
<td>ACASI</td>
<td>87 (30.7)</td>
<td>107 (33.5)</td>
</tr>
<tr>
<td>Waitlist control</td>
<td>86 (30.4)</td>
<td>109 (34.2)</td>
</tr>
</tbody>
</table>
## RISK AND PROTECTIVE FACTORS BY RESILIENCE LEVEL

<table>
<thead>
<tr>
<th>Factor</th>
<th>High resilience</th>
<th>Low resilience</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Severe mental distress</td>
<td>117 41.3</td>
<td>159 49.8</td>
<td>.033</td>
</tr>
<tr>
<td>Severe traumatic stress</td>
<td>68 24.0</td>
<td>160 50.2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>DSM-IV Substance dependence</td>
<td>180 63.6</td>
<td>227 71.2</td>
<td>.042</td>
</tr>
<tr>
<td>Victimization history</td>
<td>200 70.7</td>
<td>247 77.4</td>
<td>.058</td>
</tr>
<tr>
<td>First abused before age 18</td>
<td>145 51.2</td>
<td>206 64.8</td>
<td>.001</td>
</tr>
<tr>
<td>Unprotected sex /casual partner</td>
<td>137 48.4</td>
<td>199 62.4</td>
<td>.001</td>
</tr>
<tr>
<td>Employed</td>
<td>235 83.0</td>
<td>209 65.5</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Low social support</td>
<td>23 8.1</td>
<td>118 37.0</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Positive coping behaviors (M/SD)</td>
<td>3.8 (1.4)</td>
<td>2.9 (1.5)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Negative coping behaviors (M/SD)</td>
<td>1.0 (1.2)</td>
<td>1.6 (1.4)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
# RESULTS – PRIMARY ANALYSES

<table>
<thead>
<tr>
<th>Outcomes (M, SD)</th>
<th>BL (N=750)</th>
<th>12M (N=602)</th>
<th>BL-12M</th>
<th>ES</th>
<th>95% CI of ES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Substance use (# days in the past 90 days)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Club drugs composite</td>
<td>CAPI</td>
<td>128.7 (90.8)</td>
<td>61.3 (77.1)</td>
<td>-62.1 (83.3)</td>
<td>0.89****</td>
</tr>
<tr>
<td></td>
<td>ACASI</td>
<td>129.9 (85.3)</td>
<td>60.0 (72.4)</td>
<td>-65.7 (83.0)</td>
<td>0.82****</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>113.8 (83.7)</td>
<td>65.0 (66.5)</td>
<td>-48.2 (66.8)</td>
<td>0.70****</td>
</tr>
<tr>
<td>Days without drugs or 5+ alcoholic drinks</td>
<td>CAPI</td>
<td>9.7 (17.0)</td>
<td>22.7 (30.7)</td>
<td>12.2 (28.2)</td>
<td>0.41***</td>
</tr>
<tr>
<td></td>
<td>ACASI</td>
<td>13.1 (16.9)</td>
<td>19.4 (28.3)</td>
<td>5.9 (28.0)</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>11.5 (15.9)</td>
<td>17.0 (25.6)</td>
<td>5.6 (25.4)</td>
<td>0.09</td>
</tr>
</tbody>
</table>
RESULTS – PRIMARY ANALYSES

Days drug use outcome: Both intervention groups showed efficacy over control by a small ($d=0.2$) effect size.

Abstinence outcome:
- CAPI > ACASI $d=0.3$
- CAPI > Control $d=0.4$
- ACASI > Control $d=0.2$
## HLM: RESILIENCE EFFECT ON OUTCOMES

<table>
<thead>
<tr>
<th></th>
<th>Days drug use</th>
<th></th>
<th>Abstinence days</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low R</td>
<td>High R</td>
<td>Low R</td>
<td>High R</td>
</tr>
<tr>
<td><strong>CAPI vs. ACASI</strong></td>
<td>0.19</td>
<td>0.95</td>
<td>2.35</td>
<td>2.38</td>
</tr>
<tr>
<td><strong>CAPI vs. Control</strong></td>
<td>1.36</td>
<td><strong>9.57</strong>**</td>
<td>6.31**</td>
<td><strong>17.04</strong>**</td>
</tr>
<tr>
<td><strong>ACASI vs. control</strong></td>
<td>2.92</td>
<td>3.39</td>
<td>1.12</td>
<td><strong>6.19</strong>*</td>
</tr>
</tbody>
</table>

*F score and p value*

* p<.05; ** p<.01; *** p<.001
RESULTS – RESILIENCE AND OUTCOMES

Days drug use outcome:
- Those with low R scores did not improve; intervention condition made no difference.
- Those with high R responded well to CAPI only.

Abstinence outcome:
- Those with low R responded well to CAPI only.
- Those with high R responded well to CAPI and ACASI but much better to CAPI.
# HLM: Outcomes for Those Without Severe Trauma

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Days Drug Use</th>
<th>Abstinence Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPI vs. ACASI</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>CAPI vs. Control</td>
<td>0.3*</td>
<td>0.4***</td>
</tr>
<tr>
<td>ACASI vs. control</td>
<td>0.2*</td>
<td>0.2*</td>
</tr>
<tr>
<td>High vs. Low R</td>
<td>0.2*</td>
<td>ns</td>
</tr>
</tbody>
</table>

*Effect size (d) and p value*  
*p<.05; **p<.01; ***p<.001
RESULTS – OUTCOMES FOR THOSE WITHOUT SEVERE TRAUMA

Days drug use outcome:
- Both intervention approaches are efficacious compared to control.
- Those with high R respond better than those with low R.

Abstinence outcome:
- Both intervention approaches are efficacious compared to control, although CAPI is stronger.
- Resilience scores had no effect on outcomes.
## HLM: OUTCOMES FOR THOSE WITH SEVERE TRAUMA

<table>
<thead>
<tr>
<th></th>
<th>Club drug use days</th>
<th>Abstinence days</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPI vs. ACASI</td>
<td>ns</td>
<td>0.2*</td>
</tr>
<tr>
<td>CAPI vs. Control</td>
<td>ns</td>
<td>0.4***</td>
</tr>
<tr>
<td>ACASI vs. control</td>
<td>ns</td>
<td>0.3*</td>
</tr>
<tr>
<td>High vs. Low R</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

Effect size \( (d) \) and \( p \) value

\*\( p<.05 \); \**\( p<.01 \); \***\( p<.001 \)
RESULTS – OUTCOMES FOR THOSE WITH SEVERE TRAUMA

Club Drug use outcome:
- Participants respond moderately to study participation (no difference across conditions) and regardless of resilience level.

Abstinence outcome:
- CAPI is moderately efficacious.
- ACASI and Control participants report FEWER days abstinent after intervention, with Controls doing much worse.
- Resilience scores had no effect on outcomes.
DISCUSSION

- Resilience as measured by the RRC-ARM was relatively stable within individual between BL and 12 months ($R=.601; p<.001$).

- Demographics were unrelated to resilience level among this sample.

- The RRC-ARM was strongly associated with risk and protective factors in the expected directions.
The trial results, unadjusted for resilience or trauma, showed both interventions to be efficacious in reducing drug use compared to controls, but that interaction with an interviewer had an important therapeutic effect.

Those with low R scores did not respond to the interventions, except that those in the CAPI arm reported increases in abstinent days.

Those with high R scores responded much more strongly to the interventions, with the CAPI intervention clearly the most efficacious.
DISCUSSION

- For participants without severe trauma, both interventions are efficacious compared to control; CAPI produces the strongest results.

- Those with high resilience levels respond better than those with low R.
For participants with severe trauma, intervention condition made little difference to changes in drug use. There was some evidence of CAPI performing better than ACASI.

Participants in the ACASI and control arms experienced fewer days abstinence post intervention.

Resilience had no effect on study outcomes.
LIMITATIONS

- Data are self reported
- Eligibility criteria limit generalizability
- Diagnostics not clinician-administered
- Resilience was measured at 12 months because of the lack of complete data at baseline
CONCLUSIONS

Although the study found clearly ordered effects of intervention conditions for the sample as a whole (CAPI > ACASI > Control):

- Participants with high scores on the RRC-ARM had much higher response to the interventions compared to those with low scores, and especially to the CAPI condition.

- Severe trauma overwhelms resilience and limits response to these brief interventions.
Thank you

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