Motivational Incentives: From Research to Practice

Maxine L. Stitzer, Ph.D.
PI, Mid Atlantic Node
NIDA CTN

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Outline

• History of Motivational Incentives in drug abuse treatment

• Results of CTN MIEDAR study
  – main findings, subgroup analyses

• Dissemination implications
Behavior is changed by consequences

- Rewards increase desired behavior
- Punishment and sanctions decrease undesired behavior
Motivational Incentives

Making treatment a more attractive option through positive reinforcement of behavior change
Origin of Incentives Research

• Stitzer and colleagues in 1980’s demonstrate that methadone take-home incentives and monetary rewards, when delivered contingent on desired behavior change, could improve outcome of methadone maintenance patients.
  – Counseling attendance
  – On-going drug use
  – On-time fee payments
Voucher Reinforcement: Making sustained abstinence an attractive option

• Points earned for cocaine negative urine test results
  – Trade in points for goods
  – Escalating schedule with reset penalty
  – $1000 + available over 3 months

Steve Higgins
Voucher Reinforcement

- Elegantly incorporates behavioral principles designed to initiate & sustain abstinence
- Substantial efficacy demonstrated in controlled trials
- Sample sizes were small
- Intervention costs are high
Nancy Petry’s Fishbowl Method Reduces Cost

Incentive = draws from a bowl

- Draws earned for each negative urine or BAC
- Not all draws earn prizes
- Prize values are inversely related to draw probability
CTN MIEDAR Study in Outpatient Psychosocial Counseling Treatment

• Randomized controlled trial completed at 8 clinics nationwide

• Sample = 415 stimulant abusers (cocaine; methamphetamine)

• 3-month evaluation of usual care with and without added incentive program
Draws Escalate with
Stimulant and Alcohol-Free Test Results
Bonus draws for opiate and marijuana-negative

Weeks Drug Free

# Draws

1
2
3
4
5
Fishbowl Method: Half the chips are winners

- **42%**
  - SMALL
    - ($1 items)

- **8%**
  - LARGE
    - ($20 items)

- **JUMBO**
  - ($80-$100 items)
Total Earnings

• $400 in prizes could be earned on average
  – If participant tested negative for all targeted drugs over 12 consecutive weeks
PARTICIPANT DEMOGRAPHICS (N = 415)

FEMALE 55%
MINORITY 58%
AGE (mean yrs) 36
EDUC (mean yrs) 12
EMPLOYED 35%
PROB/PAROLE 36%
CONTROLLED ENV 29%
Outpatient Psychosocial Treatment: MIEDAR Study Results

Petry et al., Archives of General Psychiatry 62, 1148-56, 2005
Incentives Improve Retention in Counseling Treatment

Study Week

Percentage Retained

Incentive (n = 209)
Control (n = 206)

RH = 1.6  CI=1.2,2.0

50%
35%
Percent of Submitted Samples Stimulant and Alcohol Negative

Study Visit

Percentage negative samples

Abstinence Incentive

Usual Care
## Effects on Abstinence Duration

<table>
<thead>
<tr>
<th></th>
<th>Incentive</th>
<th>Control</th>
<th>Stats</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDA (mean wks)</td>
<td>4.4</td>
<td>2.6</td>
<td>p&lt;.001</td>
</tr>
<tr>
<td>Consecutive Weeks of Abstinence (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 4</td>
<td>40</td>
<td>21</td>
<td>2.48 (1.6-3.8)</td>
</tr>
<tr>
<td>≥ 8</td>
<td>26</td>
<td>12</td>
<td>2.69 (1.6-4.6)</td>
</tr>
<tr>
<td>≥ 12</td>
<td>19</td>
<td>5</td>
<td>4.48 (2.2-9.2)</td>
</tr>
</tbody>
</table>
Psychosocial Counseling Study

- Abstinence incentives were effective in treatment of stimulant abusers
  - Better retention
  - Prolonged durations of in-treatment abstinence
New Analyses

1) Did incentives work with the methamphetamine abusers?

2) What characteristics predicted outcome?

3) Was there any adverse impact on gambling behavior?
Methamphetamine Subsample (n = 113)

Roll et al. Am. J. Psychiat, in press

Effects on retention

<table>
<thead>
<tr>
<th>Outcome measure</th>
<th>Incentive (N = 51)</th>
<th>Control (N = 62)</th>
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</thead>
<tbody>
<tr>
<td>Retained 12 weeks (%)</td>
<td>55</td>
<td>39</td>
</tr>
<tr>
<td>Cox survival ns</td>
<td>HR = 1.51 (CI = .90-2.54)</td>
<td></td>
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</tbody>
</table>
# Methamphetamine Users: Effects on Drug Use

<table>
<thead>
<tr>
<th>Outcome measure</th>
<th>Incentive (N = 51)</th>
<th>Control (N = 62)</th>
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</thead>
<tbody>
<tr>
<td>Negative samples (%)</td>
<td>58</td>
<td>42*</td>
</tr>
<tr>
<td>LDA (mean wks)</td>
<td>4.6</td>
<td>2.8*</td>
</tr>
<tr>
<td>Abstinent throughout (%)</td>
<td>18</td>
<td>6*</td>
</tr>
</tbody>
</table>
Methamphetamine Users: Percent stimulant negative samples

Week

% of negative sample

Incentive
TAU
Which patients did well on incentives?

• Variables that made no difference:
  – gender, race, age
  – employment, CJ referral, psych history

• Variables that did make a difference:
  – Urine positive versus negative at intake (stimulants, cannabis)
Analysis Objective

• Examine overall impact of intake stimulant urine test result on treatment outcome

• Determine whether incentive effects differ for those who enter the study with stimulant positive vs negative urines
Methods

• Group participants according to first study urine result
  – stimulant (meth or coc) positive $N = 108$
  – stimulant negative $N = 306$
Overall Effect on Retention

At study intake:
- Stimulant Negative (n = 306)
- Stimulant Positive (n = 108)

HR = 1.71
(1.26-2.31)
Effect of Incentives

Stimulant Negative (n = 306)

HR = 1.86 (1.35-2.56)

Stimulant Positive (n = 108)

HR = 1.19 ns
Treatment Implications

• Importance of initial urinalysis results in psychosocial counseling programs
  – Positive urine confers poor prognosis
• Why no effect in urine positive clients?
  – No exposure to reinforcers
  – Removed from treatment
  – Zero tolerance clinic culture
• Implications for treatment selection
  – Interventions other than abstinence incentives may be needed for those entering tx stimulant positive
Concerns About Incentive Programs

- Internal vs external motivation
- Long-term benefits?
- Are there adverse side-effects?
Influence on Gambling Behavior
from Petry et al. Drug & Alcohol Dependence, 2006

• Concern: Does exposure to prize draw procedure stimulate gambling behavior of substance abusers?

• Data collection (intake, 1, 3, 6 months)
  – number of days gambling (past 30 days)
  – amount spent (among those gambling)

• Analysis
  – methadone vs psychosocial counseling
  – incentive vs control
## Gambling Behavior

<table>
<thead>
<tr>
<th></th>
<th>Methadone</th>
<th>Psychosocial</th>
</tr>
</thead>
<tbody>
<tr>
<td>% with any gambling</td>
<td>37</td>
<td>26</td>
</tr>
<tr>
<td>Mean days per month</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>$ spent per month</td>
<td>$20</td>
<td>$10</td>
</tr>
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</table>
Non methadone patients (N=415)

Methadone patients (N=388)

Study Month

% Gambling
Gambling Conclusions

• Amount of gambling modest in both methadone and psychosocial counseling samples

• No adverse impact of exposure to prize draw incentive procedures
Conclusions from the Research

- Abstinence incentives are safe and effective for cocaine and methamphetamine abusers being treated in community programs.
Incentives Recognized as an Evidence-Based Practice

• Have been “endorsed” by NIDA (1999)

• Appear on most every list of evidence-based practices for treating substance use disorders (e.g., ADAI, 2005)

• Has been singled out, along with CBT and MI as being an effective behavioral therapy (Carroll & Onken, 2005)
Moving Incentives Into Practice

NIDA/ATTC Blending Team
Awareness Enhancement Campaign

Goal is to fertilize ground for adoption of this evidence-based practice and stimulate innovation
Acknowledgements

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