Online motivational decision support for smoking cessation in people with severe mental illnesses

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Objectives

- Identify advantages for using technology in cessation efforts.
- Identify strategies to adapt technology for disadvantaged populations.
Smoking prevalence: NHIS

(Escobedo & Peddicord, 1996)

Smoking and mental illness (Lasser et al, 2000)

2007 Prevalence:
18% without MI
30-60% with MI
(McClave, 2009)
% of people smoking in CMHCs

(Dickerson et al, 2013)

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Data are not shown for the bipolar disorder sample prior to 2007 or for the control group (no psychiatric illness) for 2004 because N<10 for each of these years for these groups. Number of persons in each of the other groups, by year, follows. For schizophrenia: 1999, 15; 2000, 21; 2001,
Heart disease and cancers are primary causes of death in persons with MI.

30 year early mortality

Data from Oklahoma 1996-2000; Colton et al, 2006
Ingredients for cessation
Cessation treatment works:
Bupropion plus NRT plus CBT in schizophrenia

Symptoms remain stable during and after quitting

(Evans et al, 2007)
• 4 studies show efficacy of MI in people with schizophrenia and other SMI compared to education or not intervention
  • (Steinberg 2004; Steinberg 2012; Cather 2010; Williams 2010)

• Motivational interventions are not delivered in typical community mental health treatment settings

• Can websites or other electronic tools improve the reach of smoking cessation engagement interventions?
Different strategies to deliver evidence-based tobacco treatment

- In Person Center
- In person Workplace
- Telephone
- Website

Minnesota’s QUITPLAN programs, Lawrence et al, 2010
### Table 5. Participant usability task scores and perception of four smoking cessation websites

<table>
<thead>
<tr>
<th>Website</th>
<th>Becomeanex.org</th>
<th>Pmusu.com</th>
<th>Smokefree.gov</th>
<th>Whyquit.com</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer use history</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Task 1 (% Achieved)</td>
<td>0%</td>
<td>50%</td>
<td>50%</td>
<td>0%</td>
</tr>
<tr>
<td>Task 2 (% Achieved)</td>
<td>0%</td>
<td>25%</td>
<td>0%</td>
<td>25%</td>
</tr>
<tr>
<td>Easy to understand the information (% Agreed)</td>
<td>40%</td>
<td>50%</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>Easy to get it to work (% Agreed)</td>
<td>40%</td>
<td>50%</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>Easy to Become skillful (% Agreed)</td>
<td>40%</td>
<td>0%</td>
<td>25%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Novice = Used computer <5 times
Casual = Used computer ≥5 times

Task 1  Find information about how smokers can cope without smoking cigarettes
Task 2  Find information about how the medicine varenicline (Chantix) can help a person stop smoking
DARTMOUTH SMOKING CELSSATION
MOTIVATIONAL DECISION SUPPORT
SYSTEM

• Targets:
  • Motivate to quit
  • Motivate to choose evidence-based treatment

• Provide information on treatment options and referral to treatment

• Welcoming to all racial and ethnic groups

• Modifications for those with cog impairments and/or low computer experience
Dartmouth web-based motivational decision support system

- Based on usability testing with 85 SMI smokers (Ferron et al., 2011) and research of others (Rotondi, 2007)
  - Computer mouse tutorial
  - Simple, linear design – only 2 layers deep
  - Large buttons, font
  - Simplified language - 5th grade level
  - Text to Audio (for slow or poor readers)

- Content is based on theory of planned behavior: address attitudes, social norms and perceived behavioral control
  - Video hosts with SMI
  - Quit using treatment testimonials
  - Use of perceived loss and perceived gain framing
  - Guided by focus groups and feedback from user population

- Functionality to enhance engagement
  - Interactivity
  - Input and feedback
  - Reports based on input
TECHNOLOGY-BASED TREATMENTS

• Web-based motivational decision support system

• Computerized CBT for people with psychotic disorders

• Cell phone aps (Ferron et al)
  • Evaluation of usability of current aps
  • Development of ap plus handheld device to help with in-the-moment engagement of user learning cessation skills
Let's Talk About Smoking

Bupropion

- Bupropion is a medicine that helps you quit smoking.
- It is a pill you take once or twice a day for at least two months and up to a year.
- Bupropion also treats depression.

Want to know more

Do not want to know more

Click if you are interested in learning more.
Module 2: Triggers

Welcome back! This lesson is about identifying your smoking triggers. When you started smoking, you began to perfect your smoking behavior by bringing your cigarettes into other situations. Then you began to experience other positive results. You probably found that gave you something to do with your hands when you were on the phone or at a party. Or you found it helped you slow down and take a break when you needed to relax.

Each time you smoked in these situations you reinforced your pattern of behavior. You began to connect the act of smoking with these different activities and emotions.

You no longer think about needing something to do with your hands. Instead, you just smoke when you’re on the telephone, or when driving. The situations became triggers, or cues to light up. What are some of your triggers?

Triggers can be many things. They can be associated with good or bad situations. Different people have different triggers. For some smokers, walking is a trigger, or turning on the computer. For others it isn’t. Some triggers are more important than others. Some activities are strongly connected to smoking that you cannot imagine doing them without a cigarette. Are smoking a habit?

Studying your smoking triggers helps you determine your smoking pattern. You will learn how often the triggers happen. You will learn which triggers are the strongest, or which cigarettes are the “gotta-haves”. With this information, you can begin to break
What are things that make you want to smoke?

Things that make you want to smoke are called **triggers**.
A trigger is when a certain time, place, person or activity makes you want to smoke.

- A trigger can be a certain **time** of day you are used to lighting up a cigarette or cigar, like when you wake up.
- A trigger can be a **place** where you usually smoke, like your kitchen table.
- A trigger might be another **person**, such as a friend you always smoke with.
- A trigger can also be an **activity** during which you usually smoke, like waiting for the bus.
Quasi-exp pilot study: 2 month outcomes

Proportion of 60 participants who started treatment
(Brunette et al 2011, Psych Serv)
RCT 2 versions EDSS (N=140) – 6 Mo FOLLOW-UP DATA

- Treatment initiation – 45 (36% initiated treatment)

- Abstinence (at least 7 days by self report on TLFB)
  - N=36 (29%)

- Predictors of abstinence
  - level of education (OR=1.3, CI=1.1–1.6)
  - any use of quit smoking medications or counseling (OR=4.6, CI=2–10.9).

- Relapse was common
  - 8 (7%) were continuously abstinent, confirmed by CO <6

(Ferron et al, 2012; Brunette et al 2013)
Table 5. Predictors of Smoking Cessation Engagement Behaviors over Two Months (N=119)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>B</th>
<th>SE B</th>
<th>t</th>
<th>p</th>
<th>95% Confidence Interval</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.05</td>
<td>1.13</td>
<td>-0.05</td>
<td>0.96</td>
<td>-2.27 2.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.02</td>
<td>0.01</td>
<td>1.06</td>
<td>0.29</td>
<td>-0.01 0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.05</td>
<td>0.25</td>
<td>-0.21</td>
<td>0.83</td>
<td>-0.54 0.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.11</td>
<td>0.26</td>
<td>0.43</td>
<td>0.67</td>
<td>-0.39 0.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schizophrenia/Schizoaffective Disorder</td>
<td>0.27</td>
<td>0.28</td>
<td>0.96</td>
<td>0.34</td>
<td>-0.28 0.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colorado Symptom Index Score</td>
<td>-0.01</td>
<td>0.01</td>
<td>-1.13</td>
<td>0.26</td>
<td>-0.04 0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BACS Total Z-Score</td>
<td>-0.01</td>
<td>0.11</td>
<td>-0.14</td>
<td>0.89</td>
<td>-0.22 0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WRAT Sentence Comprehension (raw)</td>
<td>0.00</td>
<td>0.01</td>
<td>-0.21</td>
<td>0.84</td>
<td>-0.03 0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Cigarettes Smoked per day</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.61</td>
<td>0.54</td>
<td>-0.03 0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Experience</td>
<td>0.11</td>
<td>0.16</td>
<td>0.66</td>
<td>0.51</td>
<td>-0.21 0.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage of Change***</td>
<td>-0.41</td>
<td>0.11</td>
<td>-3.67</td>
<td>0.00</td>
<td>-0.63 -0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Minutes Spent using the EDSS</td>
<td>0.01</td>
<td>0.00</td>
<td>1.14</td>
<td>0.26</td>
<td>0.00 0.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05; **p<0.01; ***p<0.001; BACS = Brief Assessment of Cognition for Schizophrenia; WRAT = Wide Range Achievement Test

Note.
Trial of program in FQHC disadvantaged primary care pts

Concord Hospital Family Health Center
- Serves thousands of smokers and 300 pregnant women each year
- 30 doctors, family practice residency training program

![Graph showing usage of EDSS, EDSS pregnant, and clinic control for smoking cessation and 6-day abstinence.](image)
• **Computerized CBT for people with psychotic disorders**
  
  - Prototype with 9 lessons tested in 5 smokers with schizophrenia
    - 80% used it at home > 3 times, 60% used the entire program
    - 20% quit smoking
    - Satisfaction was high

• **Cell phone apps (Ferron et al)**
  
  - Evaluation of usability of current apps
  - Development of app plus handheld device to help with in-the-moment engagement of user learning cessation skills
Summary

• People with MI and other disadvantaged groups are at high risk for smoking and consequently have early morbidity and mortality
• Technology is an effective way to deliver tobacco treatments
• But technology-delivered interventions must be adapted to be usable by disadvantaged populations