Using Image to Influence Smoking and Other Health Behaviors among Adolescents and Emerging Adults

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Today’s Questions

1. Is there a need for brief multiple behavior interventions (BMBIs)?

2. What is the emerging Behavior-Image Model (BIM)?
Today’s Questions

3. What are some components, content and means to deliver BMBIs?

4. Is there evidence supporting the efficacy of BMBIs?
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“Man is what he believes.”

-Anton Chekhov
Is there a need for Multiple Behavior Interventions?
The CDC cites that of adolescents:

- 43% currently use alcohol
- 10% drive after drinking
- 19% carry a weapon
- 8% attempt suicide
- 22% currently use marijuana
- 37% did not use a condom last
- 23% currently smoke cigarettes
- 64% did not engage in recommended physical activity
- 80% did not eat 5 or more servings of fruits & vegetables
- 13% are overweight (Eaton, et al., 2006).
Of 4 key risk behaviors, most adults had 2 (41%), and another 17% had 3 or more (Fine, et al., 2004).

Among 451 adolescents, 88% had 2 or more risk behaviors (see Chart).
Number of Risk Behaviors among Adolescents

- (3) 37.3%
- (2) 29.9%
- (1) 11.1%
- (5) 6.0%
- (6) 3.5%
- (7) 1.3%
- (0) 0.9%
- (4) 9.5%
- (0) 0.9%
Health behaviors are often established during adolescence, are interrelated, and share common determinants.

Major health risk behaviors tend to cluster (Poortinga, 2007).

National data indicate 15 of 20 health behaviors worsened from adolescence into young adulthood (Harris, et al, 2006).
Recent calls for an integrative approach to health behaviors (Wiefferink, et al., 2006).

Yet, many if not most interventions target single health behaviors, e.g., substance abuse.
Both the World Health Organization and the U.S. Institute of Medicine identify BIs effective for improving health.

One of the highest rankings among preventive services for both impact and cost-effectiveness (Solberg, Maciosek, & Edwards, 2008).
BIs: Widely Studied for Efficacy & Effectiveness

- Have influenced a range of health behaviors, but highly studied for treating alcohol and cigarette use (Dunn, Deroo, & Rivara, 2001).

- BIs have also enhanced health and quality of life outcomes (e.g., Clark, Hampson, Avery, & Simpson, 2004).
BIs: Widely Applied

- More easily used because of their adaptability and lower cost.
- Widely translated for treating alcohol and cigarette use (e.g., SBIRT, 5 A’s).
The Promise of Brief Interventions for Prevention

- A recent review called for more research on BIs among younger people (Kaner, et al., 2007).

- Our research suggests BIs involving structured, one-on-one consultations and print materials are transportable, efficacious prevention technologies (Werch, et al., 1996; 2000; 2003; 2005; 2007; in press).
Is there a need for both Multiple and Brief Behavior Interventions?
YES!
Could you combine Brief AND Multiple Behavior Interventions = (BMBIs)
The Behavior-Image Model
The Behavior-Image Model (BIM)

- An emerging paradigm for planning brief, multiple behavior interventions linking the prevention of harmful behaviors with the promotion of health habits (Werch, 2007).
- Asset-based, holistic health interventions emphasizing positive behavior and image content.
- It evolved from the development and testing of a number of brief interventions for adolescents and young adults.
Image in Practice & Theory

- The use of appealing images has a practical foundation in marketing and advertising communications.

- Image has a conceptual foundation in:
  - Social Cognitive Theory (Bandura, 1986).
  - Prototype/Willingness Model (Gibbons, Gerrard, & Lane, 2003).
Theory and research supports social image or prototypes for influencing youth substance use and health behaviors (Gerrard, et al., 2005; Rivis & Sheeran, 2003).

Research supports future self-image or possible selves as influencing youth substance use and health behaviors (Freeman, Hennessy, Marzullo, 2001; Ouellette, et al., 2005).
Using positive image messages with health promoting behavior and negative image messages with health risk behavior impacts behavior (Blanton, et al., 2001; Ouellette, et al., 2005).

Image appeals may be expressed through visual, prose, and verbal means (Kelly, Slater, & Karan, 2002).

Little research has examined image in prevention interventions.
• Activating existing, or creating new, prototypes and self-images can integrate and motivate change in divergent health risk and health promoting behaviors via social/self-comparison processes.

• Gain framed (i.e., benefits) messages are cast showing that engaging in health promoting behaviors, and avoiding risk behaviors, results in salient social and self-images.

• Loss framed (i.e., costs) messages are cast showing health risk behaviors interfere with favorable social and self-images.
• **BIM interventions provide feedback on participants’ concrete health behaviors as possible action goals.**

• **The relationship between these behaviors and abstract prototypes and future self-images are highlighted as possible higher level self goals.**

• **This increases awareness of discrepancies between self and prototypes, and self and future self.**
A planning model for constructing brief multiple behavior interventions (BMBIs) using image and self-regulation processes.
Examples of Brief Multiple Behavior Interventions (BMBIs)

- **Sport** (versions 1 & 2) for younger and older adolescents
- **Fitness** for college-aged emerging adults
- **Fitness** multi-media CD-ROM
- **Success** for older adolescents transitioning from HS
- **Active!** new generation BMBI for adolescents
BMBI Components & Strategies

• Screening instrument
• In-person consultation
• PowerPoint slides/charts
• Public commitment/goal setting
• Multiple behavior calendar log
• Print materials for parents and youth
• Multi-media (Computer & DVD)
BMBI
Content
On most days of the week, do you engage in 
moderate physical activity for at least 30 minutes, such as fast 
walking, slow bicycling, skating, pushing a lawn mower, or mopping 
floors?

a. ☐ Yes
b. ☐ No
During the past 30 days, have you smoked one or more cigarettes?

a. Yes
b. No
Screening Instrument Items: Future Self-Images

- If you had a choice, would you like to look, feel, or be more...

<table>
<thead>
<tr>
<th>A. Physically Fit &amp; Athletic</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Fit/in-shape?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2) Athletic?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3) Rich/wealthy?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4) Healthy?</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
I see that you engage in at least 30 minutes of moderate physical activity on most days of the week. Congratulations, you are physically active! What types of moderate physical activity do you do?

I see that you may not have been getting 30 minutes of moderate physical activity on most days of the week. This can prevent you from being physically fit.
• Young adults who engage in regular physical activity tend to feel energetic, sleep better, and look more attractive, slim and physically fit.

• Regular physical activity can enhance your mental well-being, self-esteem, and confidence, while easing anxiety and mild depression.
Meanwhile, using too much alcohol and smoking cigarettes interferes with creating a physically active lifestyle.

Alcohol misuse can get in the way of your fitness goals by decreasing your energy level, and directly harming your fitness level and compromising your goals of being in-shape, looking good, and feeling strong.
Consult Behavior-Image Coupling Message

- Regularly engaging in moderate physical activity, while avoiding too much alcohol and cigarettes, will help you continue to be a physically active young adult, and reach your fitness goals of keeping slim and trim.
Consult Self-image Feedback Message

• In support of leading an active lifestyle you seem to:
  1) □ Be a physically active person
  2) □ Avoid cigarette smoking

• Interfering with your being fit and active you seem to:
  1) □ Not be a physically active person
  2) □ Be a cigarette smoker
Participate in moderate physical activity for at least 30 minutes on most days of the week, such as fast walking, slow bicycling, or skating, if you want to be a more physically active young adult.

Most importantly, to achieve each of your fitness goals, avoid heavy drinking and stop smoking cigarettes.
Physical Activity & Exercise: (Choose one)

☐ a. I will start getting 20 minutes of **vigorous exercise** on most days of the week.

☐ b. I will start getting 30 minutes of **moderate physical activity** on most days of the week.

☐ c. I’m already getting 20 minutes of **vigorous**, and/or 30 minutes of **moderate physical activity** on most days of the week.

☐ d. None of the above.
Goal Setting: Health Risk Behaviors

Cigarette Use: (Choose one)

☐ a. I will stop smoking all cigarettes.
☐ b. I will cut down on smoking cigarettes.
☐ c. I never smoke cigarettes.
☐ d. None of the above.
BMBI Delivery Modes

- Self-administered (Screening)
- In-person (Consultations, slides & goal setting)
- Print (Mailed parent and youth)
- Computer-based (Individual self-administered)
- DVD/booklet (Group-based)
What are the components, content and means to deliver BMBIs?
Multiple versions being developed and tested!
Trials and Research Examining BMBI Efficacy

- Three Sport trials
- Two Fitness trials
- One Success trial
- Fitness multi-media pilot study
- Active! message testing pilot study
- On-going trials of Active, Success and Fitness
Sport Trial: II (Werch, et al., 2005)

- 604 high school students, with 3 and 12-month follow-ups, randomized to:
  1) image-based consult with mailed follow-up flyer, or
  2) wellness brochure control.
## Sport Trial II

<table>
<thead>
<tr>
<th>Measure</th>
<th>Entire Sample</th>
<th>Drug Users</th>
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<tbody>
<tr>
<td></td>
<td>3-Month</td>
<td>12-Month</td>
</tr>
<tr>
<td></td>
<td>584</td>
<td>514</td>
</tr>
<tr>
<td></td>
<td>118</td>
<td>104</td>
</tr>
<tr>
<td><strong>Effect Size</strong></td>
<td><strong>d</strong></td>
<td><strong>d</strong></td>
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<tr>
<td><strong>Effect Size</strong></td>
<td><strong>d</strong></td>
<td><strong>d</strong></td>
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<tr>
<td><strong>Alcohol Use</strong></td>
<td></td>
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</tr>
<tr>
<td>30-Day Alcohol Frequency</td>
<td>0.31</td>
<td>0.58</td>
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<td>30-Day Alcohol Quantity</td>
<td>0.32</td>
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<td>30-Day Heavy Drinking</td>
<td><strong>0.29</strong></td>
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<tr>
<td><strong>Alcohol Initiation</strong></td>
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<tr>
<td>Length of Alcohol Use</td>
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<td>Alcohol Initiation</td>
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<td>Effect Size</td>
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<tr>
<td></td>
<td>d</td>
<td>d</td>
</tr>
<tr>
<td><strong>Drug Use</strong></td>
<td></td>
<td></td>
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<tr>
<td>30-Day Cigarette Freq.</td>
<td>0.21</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td>0.26</td>
<td>0.44</td>
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<tr>
<td>30-Day Marijuana Freq.</td>
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<td></td>
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<tr>
<td></td>
<td>0.45</td>
<td>0.38</td>
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<tr>
<td><strong>Drug Initiation</strong></td>
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<td></td>
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<tr>
<td>Cigarette Initiation</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exercise Behavior</strong></td>
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<tr>
<td>Vigorous Physical Activity</td>
<td>0.34</td>
<td>0.34</td>
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<tr>
<td>Moderate Physical Activity</td>
<td>0.23</td>
<td>0.43</td>
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</table>
Fitness multi-media pilot study: (manuscript in development)

- 200 college students, with immediate post feedback, randomized to:
  - 1) image-based CD-ROM intervention, or
  - 2) computer placebo control.

Fitness multi-media pilot study: (manuscript in development)
## Measures

<table>
<thead>
<tr>
<th>Measures</th>
<th>Intervention M</th>
<th>Control M</th>
<th>p</th>
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<tbody>
<tr>
<td>Plan to Drink alcohol</td>
<td>2.42</td>
<td>2.79</td>
<td>.03</td>
</tr>
<tr>
<td>Smoke cigarettes</td>
<td>1.30</td>
<td>1.55</td>
<td>.04</td>
</tr>
<tr>
<td>Use marijuana</td>
<td>1.63</td>
<td>1.90</td>
<td>.09</td>
</tr>
<tr>
<td>I best describe myself as</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fit in shape</td>
<td>1.81</td>
<td>2.02</td>
<td>.06</td>
</tr>
<tr>
<td>An alcohol user</td>
<td>2.73</td>
<td>2.35</td>
<td>.02</td>
</tr>
<tr>
<td>How many friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drink a lot of alcohol</td>
<td>2.74</td>
<td>3.12</td>
<td>.01</td>
</tr>
<tr>
<td>Smoke cigarettes</td>
<td>2.09</td>
<td>2.39</td>
<td>.03</td>
</tr>
<tr>
<td>Use marijuana</td>
<td>2.38</td>
<td>2.72</td>
<td>.04</td>
</tr>
</tbody>
</table>
Is there evidence supporting the efficacy of BMBIs?
YES, there is accumulating evidence over multiple trials.
In summary, we addressed . . .

1) The need for brief multiple behavior interventions (BMBIs).

2) A brief description of the emerging Behavior-Image Model for planning multiple behavior interventions.

3) Examples of components, content, and means to deliver BMBIs.

4) Evidence supporting the efficacy of BMBIs.
Conclusions

- Research examining the use of social and self-image in brief interventions is in its early stages.

- Initial results suggest BMBIs using social and self-images hold exciting promise to simultaneously link and motivate multiple health behaviors among adolescents and emerging adults.
“Only the mediocre can always be at their best.”
- Unknown