

# Technology and Web-based intervention strategies for changing physical activity behaviour.

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# Focus on...

- \* Try to get ideas about your program plan...
  - \* Are you going to use any of them?

# Mediated interventions

- \* Interventions that are delivered through means other than face-to-face media, such as *print*, *telephone*, or the *Internet*, have been referred to as **mediated interventions**.
- \* They offer the potential for greater participant adherence, because participants are often able to engage in the intervention at their own convenience.

# Print and Web-based Media

## **Print media can promote PA in:**

- \*Booklets
- \*Brochures & handouts

## **It is available from:**

- \*Recreational centres
- \*Regional Sports Assemblies
- \*Health care centres
- \*School and workplaces
- \*Mail outs

Doesn't require internet access.

## **Web based media promotes PA through:**

- \*Interactive websites
- \*Great short term value – not long term

# Reviews show:

- \* Reviews of mediated interventions that use **print-based programs** indicate moderate efficacy in increasing physical activity behavior, although further evidence is required to support longer-term maintenance of behavior change.
- \* Evidence in support of **telephone and Internet programs** has been mixed.

# Messages that promote physical activity

- \* Recent interventions have used expert systems, which are **computer-generated messages** created by physical activity promotion experts that are designed to respond to individuals on the basis of their responses to theory-based questionnaires.
- \* These expert systems have been **used successfully** to promote physical activity through print media.

# Messages that promote physical activity

## Campaigns

- \* Reviews have generally shown that **they can produce consistent recall** of campaign messages, but they have shown mixed results in terms of attitude change and have not impacted behavior change in the targeted populations.
- \* More positive effects if there are **large budget** for purchasing ads, combined with **coordinated community events**.

# Telephone deliver programs

- \* Similar physical activity counseling programs have been delivered over the telephone, offering an alternative for those who may not have Internet access or those who prefer “human” contact.
- \* After initial costs to develop these expert systems, such programs, especially when delivered over the Internet, incur little incremental cost with the addition of each new user and thus have the potential to reach large numbers of individuals with personalized interactive materials.

# Computer-tailoring programs

- \* There is growing evidence that behavior change programs using computer-tailoring **can be effective in changing lifestyle** risk factors (Kroeze, Werkman, & Brug, 2006).

# Computer-tailoring programs

- \* **Computer-tailoring refers** to the documentation of participant information using a computerized expert system, which then generates feedback and advice based on such information.
- \* Computer tailored interventions have been classified into three generations, according to their mode of delivery.

# Classification

- \* **First generation** interventions are delivered through printed materials such as *letters, reports and pamphlets*.
- \* **Second generation** interventions are delivered through interactive technology or desktop applications such as *websites, email and CDROM programs*.
- \* **Third generation** interventions are relatively new and include mobile and remote devices such as *mobile phones and handheld computers* which may enhance the potential for timely feedback and assessment (Norman , Zabinksi, Adams, Rosenberg, Yaroch, & Atienza, 2007; Brug, Oenema, Kroeze, & Raat, 2005).

# Computer-tailoring is promising as a strategy for health education

- \* Like personal counseling, participants' behaviors are assessed and the results then used to generate **individualized feedback** and advice.
- \* Participant's **behaviors can be compared** with current recommendations, the behaviors of peers and previous assessments.
- \* Computer tailoring has potential for **wide distribution** due to its application to electronic non-print media such as the Internet, providing an opportunity for remote access to the intervention.

# Limitations of computer-tailored interventions

- \* The participant must answer **many questions to be assessed accurately**, allowing for the provision of reliable and individualized advice.
- \* Feedback is based on the participant's **self-reported behavior**, which may result in incorrect estimates of behavior and mismatched feedback and advice.
- \* These limitations may be minimized through the use of a combination of **validated self-reports with more objective measures** of physical activity behavior.

# Mass Media & Participation

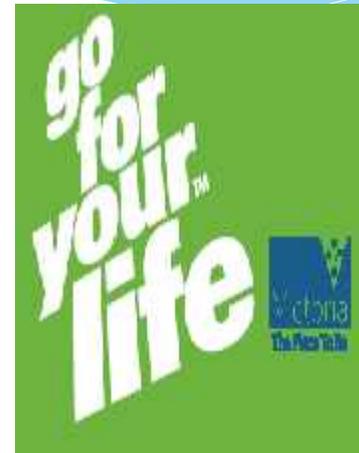
## Mass media can influence participation by:

- \*Providing information on its health and non-health benefits
- \*Encouraging public participation
- \*Providing information regarding access to community based programs
- \*Motivating individuals to take action



# Mass Media Campaigns

- [Go for Your Life \(VIC\)](#)
- [Find 30 \(WA\)](#)
- [10,000 Steps \(QLD\)](#)
- [Smartplay \(SA\)](#)
- [Get Moving \(National\)](#)
- <http://www.getirelandactive.i>



More Studies ...

# A Comparison of Face-to-Face or Internet-Delivered Physical Activity Intervention on Targeted Determinants

Steele, Mummery, & Dwyer (2009)

- \* Testing results of a 12-week behavior change program
- \* Participants (n = 192) were randomized to *face-to-face*, *combined Internet and face-to-face*, and *Internet-only* groups
- \* Measures: social support, self-efficacy, perceived health status, and motivational readiness for PA.
- \* Participants were assessed at baseline, post-intervention, and 2 and 5 months post-intervention.
- \* **Motivational readiness for PA increased across all groups.**
- \* The face-to-face and combined groups showed changes in social support; however, they were not statistically different and were equivalent.
- \* There were no changes in self-efficacy or physical health status.
- \* Overall face-to-face and the Internet delivery modes show similar results.
- \* If Internet-based programs can be shown to be as effective as face-to-face, they may in turn be a more efficient and cost-effective delivery method.

# Computer-tailored physical activity behavior change interventions targeting adults: a systematic review

Neville, O'Hara & Milat (2009)

- \* A systematic review describing the range of evidence on 'second' and 'third' generation computer-tailored primary prevention interventions for physical activity.
- \* Computer-tailored intervention studies published from January 1996–2008 were identified
- \* Ten of them **found significant positive effects** of the computer-tailored interventions on physical activity or weight reduction outcomes.
- \* The evidence of effectiveness for computer-tailored physical activity interventions is inconclusive.
- \* They have potential to reach large groups of people however there is uncertainty whether reported effects are generalizable and sustained.

# Computer- and web-based interventions to increase preadolescent and adolescent physical activity: A systematic review

Hamel, Robbins & Wilbur (2010)

- \* Computer- and web-based interventions can promote physical activity among preadolescents and adolescents, particularly in schools.
- \* However, further efforts are needed to sustain positive changes
- \* Suggestion: Conducting the interventions at school, using a theory or model as a framework, and supplementing with **individual tailoring and parental involvement.**

# Effectiveness of a Web-based Intervention Aimed at Healthy Dietary and Physical Activity Behavior: A Randomized Controlled Trial About Users and Usage

Kelders, Van Gemert-Pijnen, Werkman, Nijland, & Seydel (2011)

- \* Respondents **did not use the application** as intended.
- \* A social and economic factor (**age**) and a condition-related factor (**chronic condition**) **predicted usage**.
- \* **Users were healthier** and more knowledgeable about healthy behavior than nonusers.
- \* No apparent effects of the intervention, although exploratory analyses showed that **choosing to use or not to use** the intervention **led to different outcomes**.

# Using the Internet to Promote Health Behavior Change: A Systematic Review and Meta-analysis of the Impact of Theoretical Basis, Use of Behavior Change Techniques, and Mode of Delivery on Efficacy

Thomas L Webb; Judith Joseph; Lucy Yardley; Susan Michie(2010)

- \* 85 studies; 43,236 participants
- \* Interventions had a statistically small but significant effect on health-related behavior ( $d_+ = 0.16$ , 95% CI 0.09 to 0.23).
- \* More extensive use of theory was associated with increases in effect size ( $P = .049$ )
- \* Interventions based on the theory of planned behavior tended to have substantial effects on behavior ( $d_+ = 0.36$ , 95% CI 0.15 to 0.56).
- \* Interventions that incorporated more behavior change techniques also tended to have larger effects compared to interventions that incorporated fewer techniques ( $P < .001$ ).
- \* Finally, the effectiveness of Internet-based interventions was enhanced by the use of additional methods of communicating with participants, especially the use of short message service (SMS), or text, messages.
- \* The review provides a framework for the development of a science of Internet-based interventions, and our findings provide a rationale for investing in more intensive theory-based interventions that incorporate multiple behavior change techniques and modes of delivery.

# Future Directions and Research Recommendations

- \* Test the most effective channel or combination of channels (eg, print, telephone, or Internet) for intervention delivery, including examination of what delivery channel works best for whom and whether preference for a particular delivery channel impacts effectiveness.
- \* Researchers should further explore the efficacy of theory-based individual tailoring of mediated motivational messages.
- \* Further research is necessary to test their efficacy, cost-effectiveness, and reach, especially to underserved populations.

# Group work

**Would you consider to use any mediated intervention method for your project?**

Thank you