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Introduction

A national Australian survey conducted in 2009 found that 5.5% of 14-17 year olds reported cigarette smoking in the last year compared to 13% reporting cannabis use in this time period (AIHW, 2010).

Reductions in cigarette use may be due to increased awareness of the dangers of tobacco smoking, brought about through extensive public health campaigns, such as mandated graphic warning imagery.

Previous research suggests that warning imagery has strong potential to deter adolescent substance use.

Aim

The objectives of this study were to:

- Develop and pilot test an automated web-based cannabis prevention program employing warning imagery.
- Determine which kinds of images are likely to be most effective.

We tested the hypothesis that adolescents exposed to the intervention would report significantly greater reductions in cannabis use following the six-month intervention period than would a control group of adolescents not exposed to the intervention.

Method

Participants

156 adolescents aged 14-18 were recruited into the study.

The study employed a cluster randomised design. Students from two private schools and one Technical and Further Education (TAFE) centre were randomly assigned to the intervention condition ($n = 88$), and students from two private schools and one TAFE were randomly assigned to an assessment only condition ($n = 68$).

Intervention

The intervention group received 13 automatically generated emails, sent fortnightly, containing links to graphic and emotion provoking warning images about cannabis use. Each warning contained (a) a graphic or otherwise emotion provoking image; (b) a brief factual statement relating to the image; and (c) more detailed information written below the main statement in smaller text. Images addressed potential social, mental and physical health effects of cannabis. All warnings had been associated with cannabis use in at least one study.

Measures

- Basic demographic information (age and gender).
- Ever tried cannabis?
- Past-month and past week frequency
- Past-week quantity
- Intervention group: Effectiveness rating out of 10 for each image.

Procedure

All participants were sent an initial email containing a link to the assessment questions. Participants in the intervention group were then sent an automatically generated email each fortnight, containing a different warning image. Participants in the control group received no further contact from us until the post-intervention assessment. All participants were sent an automatically generated email containing a link to the post-intervention assessment six months after completing the baseline assessment.

Results

Table 1.
Means (SD) and percentages for cannabis-related variables at pre-intervention, and six-months follow-up

Variable	Intervention Group	Control Group
Age	15.69 (0.99)	15.82 (1.23)
Male	76.1%	55.9%
Pre-intervention		
Ever tried cannabis	16%	20%
Used in the last month	8.0%	11.8%
Past month use (days)	0.44 (1.95)	0.63 (2.20)
Past week use (days)	0.10 (0.48)	0.13 (0.45)
# Cones (or equivalent) past week	0.40 (2.31)	0.86 (3.07)
Post-intervention		
Used in the last month	2.7%	8.2%
Past month use (days)	0.07 (0.42)	0.63 (3.01)
Past week use (days)	0.10 (0.18)	0.14 (0.64)
# Cones (or equivalent) past week	0.01 (0.12)	0.61 (2.67)

Cannabis Use

Very few adolescents in either group used cannabis. Participants in the intervention group reduced their past month ($t(121) = 2.31, p = .02$) and past week ($t(121) = 1.90, p = .03, 1$ tailed) frequency of cannabis use, as well as their past week quantity of cannabis use ($t(121) = 1.71, p = .047, 1$ tailed), significantly more than did participants in the control group.

There was a 30.5% reduction of participants reporting use in the past month in the control group compared with a 66.3% reduction in the experimental group.

No participant in either group reported cannabis use initiation during the course of the study.

Images

A brief description and average rating for each warning is provided in Table 2. Negative social and mental health effects generally received low ratings of effectiveness as cannabis use deterrents, whereas graphic images of physical health effects received higher ratings.

Results

Table 2.
Participant ratings of image effectiveness

Image	Brief statement	Mean rating
Yellowing teeth/gum disease	Smoking cannabis can cause dental decay and gum disease	5.93
Inflamed bronchi	Cannabis smoke inflames the respiratory system	5.03
Metastasising cancer cell	Cannabis smoke can cause cell mutation	4.43
Hallucination	Cannabis smoke can cause psychotic symptoms	5.70
Panic attack	Cannabis use can cause extreme anxiety and panic	3.88
Nasopharyngeal cancer	Cannabis smoking is associated with increased risk of nasopharyngeal cancer	7.93
Tongue cancer surgery	Cannabis smoking is associated with increased risk of oral cancers	8.91
Intoxicated girl at party	Cannabis use can negatively affect your social behaviour	3.85
Neck cancer	Cannabis smoking is associated with increased risk of neck and throat cancer	8.61
Depressed girl	Cannabis use can affect your mood	3.68
Poisoned rat	Cannabis smoke contains more toxic chemicals than tobacco smoke	6.12
Morning joint	Cannabis use can be addictive	2.83
Isolated boy	Cannabis can make you isolate yourself	3.57

Conclusions

• Findings provide support for further testing of the effectiveness of web-delivered warning imagery in deterring adolescent cannabis use.

• Graphic images of physical health outcomes may be more effective than images of negative social and mental health outcomes.

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