Review Article

Preliminary Examination of WebSafe: A Structured Parent Training about Drug Threats on the Internet

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Abstract

Research has demonstrated the high prevalence of pro-drug use misinformation and propaganda. Adolescents may be particularly susceptible to these drug-related threats given their high rates of drug use, extensive Internet use, and the age-related limits to their executive functioning. The current study evaluates WebSafe, a structure training designed provide parents with the awareness, knowledge, and practical strategies necessary to help protect their children from these threats. Findings support the acceptability of the WebSafe training and its preliminary efficacy

INTRODUCTION

In the new age of technology where teenagers and adolescents spend more and more time online and "plugged in" to social networking sites [1], it's not surprising they are going online to search for information about things they may not be comfortable talking about with their parents or peers. This includes issues related to sexual relationships, general health concerns, and drugs of abuse [2-4]. Unfortunately, the Internet is a generally unregulated source of information rampant with misinformation and exaggeration of the facts. This is particularly true when it comes to information about drugs and drug use.

Many websites present drugs of abuse in a glorified manner offering misleading information about the dangers associated with drug use [5,6]. Researchers have documented the results from Internet searches of illicit and pharmaceutical drugs including anabolic steroids [7], ecstasy [8], hallucinogens [9], prescription opiates [10], and prescription stimulants [11] and found that a substantial proportion of the search results could be considered pro-drug sites that promoted non-medical use of these drugs and downplayed the harms associated with their use. Compounding the problem is the fact that these studies and others [12-15] identified a large number of websites offering illicit substances and prescription drugs for sale without a valid prescription.

ADOLESCENCE AND DRUG USE

According to recent estimates from the 2013 Monitoring the Future study [16], 27% of 8th-12th graders reported using illicit drugs in the past year. Approximately 25% reported having used marijuana, 6% amphetamines, 5% inhalants, 4% tranquilizers, 3% hallucinogens, 2% cocaine, 3% OxyContin, 4% Vicodin, and 1% heroin. Among 12th graders, narcotics other than heroin constitute the second most frequently reported drug class with a 12% lifetime prevalence rate. Among this group, 4% reported OxyContin use and 8% reported Vicodin use. Importantly, non-prescription use of opioids, sedatives and tranquilizers by adolescents has increased substantially over the years [17-19]. Finally, results from a national survey indicate that less than 50% of adolescents perceived weekly marijuana use as a great risk and only 20% perceived weekly heroin or cocaine as a great risk [20].

ADOLESCENCE AND INTERNET USE

At the same time that drug use and experimentation has increased among adolescents, so has the use and availability of the Internet. According to the Pew Research Center's Internet and American Life Project [1], adolescent use of the Internet has risen steadily over the last decade with current rates reaching 95%. Approximately 37% of all teens have smart phones compared to 23% in 2011. Likewise, nearly one quarter (23%) have a tablet computer and 93% have a computer or have access to one at home. Notably, 74% of teens access the Internet through mobile devices. This greater access to the Internet through mobile devices may result in great rates of unsupervised and unmonitored Internet use.

ADOLESCENCE AND SUSCEPTIBILITY TO INTERNET DRUG THREATS

Research has now established that teens are more likely

to engage in high risk behaviors and ignore the potential consequences of their actions [21] and that this may be the case because the regions of the brain that are responsible for executive functioning including the ability to consider options and anticipate consequences are not fully developed [22-25]. In fact, brain imaging studies have provided visual evidence that the brain is not fully developed until approximately age 25 [26]. This, of course, makes adolescents particularly susceptible to misinformation about drug use. Rogue pharmacies, message boards, chat rooms, and other Internet sites often glorify drug use, diminish their harmful effects, teach kids how to manufacture and sell drugs, and provide easier access to illegal drugs.

WEBSAFE: A STRUCTURED PARENT TRAINING

In response to these Internet drug threats and the particular vulnerability of adolescents, we developed WebSafe, a structured parent training designed to (1) alert parents about the prevalence of pro-drug use information and drug retailers on the Internet, (2) provide parents with practical strategies they could implement to protect their children from these threats, and (3) teach parents how to address problems if they are identified. This preliminary study evaluates acceptability of the training to parents and examines the effects of the training in increasing parental awareness of the issue, knowledge of effective prevention and intervention techniques, and implementation of these identified strategies.

METHODS

Participants

A total of 34 parents participated in the study. They were recruited using flyers that advertised a free parent workshop and provided a toll-free number for interested parents to call. When parents called the toll-free number, the Research Assistant (RA) gave a brief overview of the workshop and informed the potential participant of the eligibility criteria for the study. To be eligible to participate, the parent had to (1) have a child between the ages of 7 and 18 who resided with them at least 4 days per month, (2) have Internet access at their home, (3) have an email address or telephone number, and (4) be an English speaker. Only one parent per family was eligible to participate. Individuals meeting these criteria were scheduled for an intervention session. Groups were randomly determined to be either a WebSafe workshop (*n* = 18; 3 workshops with 8, 8, and 2 parents) or an Awareness Only (AO) workshop (*n* = 18; 2 workshops with 11 and 6 parents each).

Workshop procedures

Workshops were held in meeting rooms at our facility and in local community centers in the Philadelphia metropolitan area. The trainers began each workshop by welcoming parents and obtaining their written informed consent to participate. Next, trainers distributed the paper-and-pencil pre-workshop assessment which took parents approximately 20 minutes to complete. The trainers then distributed session handouts and delivered the corresponding 60 minute WebSafe or AO presentation. Following the presentation, participants in both groups completed a paper-and-pencil post-workshop assessment that took approximately 25 minutes. Parents received $10 in cash for their participation in the workshop. Approximately one month later, RAs contacted participants by telephone to complete the follow-up interview which took approximately 15 minutes. Participants received a $10 gift card via mail for the follow-up interview.

Study conditions

WebSafe: This 60-minute didactic workshop consisted of separate modules. The first module was designed to increase parental awareness about (1) drug use among adolescents and (2) Internet-based drug threats (i.e., pro-drug use websites and no-prescription pharmacies. The second module teaches parents easy-to-implement prevention and monitoring strategies to protect their children from these threats and to prevent Internet misuse (e.g., checking history lists, installing parental controls, establishing clear rules for Internet use). Finally, the third module provides information on how to respond to Internet misuse and where to turn if they suspect that their child has a more serious drug problem.

Awareness only (AO): Parents in this condition received a 60 minute workshop that presented the awareness component that was presented in the WebSafe workshop (i.e., module 1). The goal of this workshop was to increase parental awareness of Internet drug threats. To ensure that the workshops were approximately equal in length, supplemental slides (e.g., additional examples of pro-drug use sites and no-prescription pharmacies) were added. Importantly, we mailed a packet containing the practical strategies and all remaining information from the full WebSafe workshop to all AO parents upon their completion of the follow-up assessment.

Instruments

Contact form (Pre-workshop): This 8-item form collects the participant's contact information and contact information for people who would help us to locate the participant at follow-up.

Marlowe-Crowne Social Desirability Scale – 8 Item (M-C (8); Pre-workshop): This 8-item scale [27] is a shortened version of the original 32-item Marlowe-Crown Social Desirability Scale [28]. It assesses an individual's tendency to act in a way that is socially acceptable or desirable. The shorter version of the instrument has similar reliability to the original version [27].

Participant characteristics and internet access scale (PC-IAS; Pre-workshop): The PC-IAS was designed to collect demographic information including educational level, household income, and the number of children in the household along with information related to Internet access and usage within the household.

Internet drug awareness questionnaire – (IDAQ; Pre- and post-workshop): The IDAQ is an 11-item assessment designed to measure knowledge of the Internet and associated drug-related threats ($\alpha = .90$). The multiple choice items assess general knowledge about adolescent Internet use, adolescents' perceptions about the harmful effects of drugs, and the availability of illicit drugs and pro-drug use information on the Internet. Scale scores are calculated by summing the number of correct responses.

Workshop satisfaction questionnaire (WSQ; Post-

workshop): The WSQ measures parents' perceptions of satisfaction with the workshop (α = .93). The measure contains 8 statements about the workshop (e.g., "The workshop covered information that was important to me."), and respondents indicate the extent to which they agree with each statement on a 4 point Likert-type scale ranging from 1 (strongly agree) to 4 (strongly disagree).

Prevention intervention knowledge acquisition (PIKA; 30-day follow-up): The PIKA is a 12-item quiz that evaluates parents' knowledge of prevention and intervention techniques that can be used to monitor computer use and prevent computer misuse. We identified the key prevention/intervention strategies presented in the WebSafe training and created a series of multiple choice questions pertaining to each strategy. Knowledge scores are computed by summing the number of correct response. Importantly, the instrument was not administered at the post-workshop assessment to prevent contamination of the control condition as these prevention strategies are a key component of the WebSafe workshop but not the AO workshop.

Parent Prevention Activities Checklist (PPAC; 30-day follow-up): This checklist contains a list of 18 prevention activities that are addressed in the WebSafe workshop. Parents check the boxes of the prevention strategies they have implemented since the workshop. Again, the PPAC was not administered at the post-workshop assessment to avoid contamination of the control condition.

Data analysis

The WebSafe and AO groups were compared on baseline status variables (as a check on randomization) and outcome measures using chi-square tests for binary variables and t-tests and non-parametric Wilcoxan tests for continuous variables.

RESULTS

Randomization check

Demographic characteristics of parents in the two groups are presented in Table 1. There were no significant differences between parents in the two groups. Although a greater percentage of individuals in the WebSafe group were college educated, this difference did not reach statistical significance. Across the two conditions, the large majority of parents were female and married. They had two kids on average and 2-3 computers in their homes that had Internet access. Importantly, the groups did not differ in social desirability scores at baseline.

Workshop Satisfaction (post-test)

Following the workshop, parents in both groups reported similarly high levels of satisfaction based on Workshop Satisfaction Questionnaire scores (Wilcoxon non-parametric test Z=0.26, p = 0.79). Mean satisfaction scores were 28.06 *(SD* = 3.15) and 28.25 (*SD* = 3.57) for the WebSafe and AO groups, respectively.

Awareness (post-test): Post-workshop IDAQ scores for parents in the two groups were relatively high and did not differ significantly between the two groups. (Wilcoxon non-parametric test Z= -1.51, p=0.131). Average scores for the WebSafe group were 7.44 (*SD* = 0.704) out of 8 and average scores for the AO group were 7.00 (*SD* = 0.894).

Knowledge (follow-up): Parents in the WebSafe group had significantly higher PIKA scores than those in the AO group, (Wilcoxon Z= 2.63, p = 0.01, d=1.23). Average scores for the WebSafe group were 9.28 out of 10 (SD = 0.73) and average scores for the AO group were 7.33 (SD = 2.12).

Engagement in Prevention Strategies (follow-up): Parents in the WebSafe and Awareness group did not differ

Table 1: Participant Demographics.

	WebSafe N/M (%/SD)	AO N/M (%/SD)	*p*
Gender: Female	16 (88.8%)	15 (93.8%)	0.98
Marital Status: Married or Living with Another	16 (88.8%)	12 (75%)	0.29
Education: College Graduate or higher	16 (88.8%)	9 (56.3%)	0.08
Household Income: $100,000+	11 (61.1%)	7 (43.8%)	0.31
Average Hours Spent on Computer Daily	6.76 (SD = 3.11)	5.38 (SD = 3.57)	0.21
Average Number of Computers in Household	2.83 (SD = 1.15)	2.69 (SD =1.30)	0.73
Number of Computers with Internet Access	2.72 (SD = 1.13)	2.63 (SD = 1.20)	0.89
Number of Computers with Internet Access & children have access	1.88 (SD = 1.18)	2.25 (SD = 1.24)	0.37
Number of Children Residing in home at least 4 days per month	1.67 (SD = 0.685)	2.12 (SD = 0.957)	0.09
Social Desirability Score	4.39 (SD = 1.79)	5.81 (SD = 2.04)	.06

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in engagement in the 18 prevention activities at follow-up, Wilcoxon $Z=0.27$, $p=0.78$, $d=0.05$. The WebSafe group engaged in an average of 14.28 ($SD = 4.79$) activities compared to 14.06 ($SD = 4.69$) activities in the AO group.

DISCUSSION

Findings from this preliminary research provide initial support for the utility of the WebSafe parent training. Results indicated that parents in the two workshop groups displayed similarly high levels of workshop satisfaction and awareness of drug-related threats on the Internet at the post-workshop assessment. These findings were expected given that both groups received the awareness component of the intervention and that both groups were similarly structured. As hypothesized, parents who received the WebSafe workshop displayed higher levels of knowledge about prevention and intervention techniques to monitor computer use and prevent computer misuse than those who received the AO workshop. Contrary to our hypothesis, parents in the WebSafe condition did not report greater levels of engagement in prevention activities at the one-month follow-up. Importantly, parents in both groups reported relatively high levels of engagement in these activities. Given that these types of behaviors represent socially desirable parenting behaviors, the equivalence of the two groups coupled with the high endorsement rates overall is not surprising. This idea is further substantiated by the high correlation ($r = .50$, $p < .0001$) between social desirability scores and PIKA scores.

There are several limitations that should be considered when interpreting these findings. First, the size and scope of this pilot study prevented us from evaluating the WebSafe workshop using a more representative and diverse sample of parents. As such it is impossible to know whether these findings would generalize to parents with different demographic, educational, and socioeconomic characteristics and from different geographical areas. Second, the scope of the study did not permit the longer-term follow-up of parents which would have allowed us to determine whether the full range of prevention strategies was eventually implemented. Finally, engagement in prevention strategies was measured via self-report. Future examination of the efficacy of the WebSafe training should incorporate more objective, verifiable outcomes. For example, future projects could incorporate collateral interviews with the adolescents and/or other members of the household.

Despite its great utility, the Internet represents a new and dangerous source of misinformation about and promotion of drug use. Adolescents may be particularly influenced by these drug-related threats given their high rates of drug use, the fact that they are the primary users of the Internet, and their age-related limitations to executive functioning. For these reasons, it is important to arm parents with the awareness, knowledge, and practical strategies necessary to help protect their children from these threats. This study demonstrates the acceptability and utility of the WebSafe curriculum in addressing this aim.

ACKNOWLEDGEMENT

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Cite this article

Festinger DS, Dugosh KL, Marlowe DB, Harron A, Clements N, et al. (2014) Preliminary Examination of WebSafe: A Structured Parent Training about Drug Threats on the Internet. J Subst Abuse Alcohol 2(2): 1014.