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LARS eNews eHealth Current Events

Introduction to LARS

by Lawrence M. Scheier, PhD

LARS Research Institute, Inc. is a non-profit research and development company engaged in program development, program evaluation, and behavioral science technology transfer. We are leaders in the field of eHealth combining the latest cutting edge findings in prevention science with technical developments in wireframe technology for the Internet and Smartphone applications. Our specific interests include chronic illness, self-management training, and developing educational programs targeting community-based health care workers, patients, and health care providers. We focus primarily on programs for youth and young adults emphasizing health promotion activities that have tremendous societal ramifications (i.e., drug use, violence, underage drinking, and smoking cessation). We also empower children by developing educational programs to reduce the impact of pediatric chronic diseases and target self-management training for adolescents transitioning to adult care. We engage in developing a full line of interventions ranging

from "broad-brush" universal programs and including secondary or "indicated" programs as well as developing tertiary care programs targeting individuals at highest risk or those living with disease. Our eHealth programs capitalize on the latest virtual technology, including multimedia strategies that use video instructional technology and virtual reality 'avatars' to assist learning. We design interventions for implementation using the web but that can be delivered to children and youth in schools, community-based organizations, hospitals, and other healthcare or educational settings.

In addition to our focus on virtual instructional programs, we have substantive, methodological, research and statistical expertise (multivariate and longitudinal data analysis techniques) that can assist clients in all phase of program development from conceptualization and design concerns to project execution. Our work includes key dissemination activities targeting both lay audiences and we collaborate on scientific

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publications that are earmarked for peer review journals (www.larsri.org). Our track record spans over 25 years working with many top flight evidence-based programs in adolescent drug and violence prevention. We augment this focus by developing educational applications and community training programs for healthcare workers.

We also engage in survey development using a wide range of in-person and electronic data collection platforms and we assist clients with subject recruitment, longitudinal tracking, and developing creative ways to improve subject retention.

This issue of the LARS e-newsletter describes cutting-edge "virtual" education training methods, addressing the conceptual, logistical, and scientific issues relevant to eHealth drug prevention programs. It is our sincere hope that the information contained in the LARS eNews will be useful to current and future clients, revealing the complexity of eHealth programs and the difficult strategic decisions that parallel their design and implementation.

eHealth Alcohol and Drug Prevention

by Amy M. Custer, MPH and Lawrence M. Scheier, Ph.D.

The "digital" age is changing the way we communicate, convey information, and learn. Manifestation of these technological innovations are apparent in the "Net" generation of youth who eagerly participate in social media and access troves of information using the Internet. Many youth rely heavily on search engines like Google's Wikipedia to complete homework assignments as well as obtain information that fuels personal growth and awareness. Educators now realize the Internet has endless pedagogical potential and can be used as an effective "learning tool." This is particularly true for video instructional technology including virtual reality programs, which can be used to teach higher-order reasoning and problem-solving skills. In many cases, youth become immersed in virtual instructional reality programs that use digital representations called "avatars" to navigate various challenges. The word avatar is a Hindu term meaning incarnation of a deity, or a personal

representation of a higher order "self." Avatars provide youth with social presence and identity, taking on the "persona" of the individual and allowing them to engage risk free in situated learning. Avatars can be used to guide youth through various learning paradigms, many of which engage them in "stealth learning," in other words, absent any overt teaching actions. Students can be taught abstract reasoning skills, problem solving strategies, and become engrossed in course content for a wide range of academic disciplines using self-regulated and self-paced learning. Serious educational gaming provides drug prevention with new opportunities and delivery platforms to convey anti-drug messages. New synergies now exist that combine video educational programming and health promotion strategies that capitalize on various design and cost efficiencies. These include the ability to cost-effectively engage demographically and racially diverse populations thus negating the digital divide,

efficiently implement both universal and indicated programs with tiered targeting and varied dose, provide on-demand convenience with self-defined pacing, offer rapid feedback, ensure high fidelity and consistent delivery (program adherence), readily update (and expand) curriculum, and high quality data collection that benefits from cost-effective subject recruitment, retention, and program delivery.

Smoking. Despite the novelty and rapid growth of virtual instructional technology games, there is not a great deal of evidence regarding the efficacy of web-based smoking drug prevention programs. Only a handful of these programs have been rigorously evaluated, especially with youth, and the findings are somewhat mixed[§]. One Canadian smoking prevention and cessation program targeting youth (N=1402) in grades 9-11 (http://www.smokingzine.org) found that youth who were smokers at baseline and randomly assigned to participate in Smoking Zine, a multi-theory, web-based educational program[¥], reported fewer behavioral intentions to smoke cigarettes, greater resistance to continued cigarette use, and less heavy cigarette use compared to control students (who also used a web-based program to evaluate climate change and kept journals, which were discussed in small groups)[4]. Smoking Zine included five modules to calculate costs of cigarettes and allow users to spend this money in a virtual shopping mall, self-assessments that provide information for tailoring of program content, a readiness to change assessment, decision balances for smokers to consider quitting, and personalized quit programs based on ongoing online assessments. Intervention students also participated in a single motivational interviewing session, kept journals, which they discussed, and also

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[§]A good resource of youth-based computer and Internet-based smoking interventions can be found in a review by Walters and colleagues[1] although the review stops with programs developed through 2004.

[¥]Only youth based programs are reviewed here. Examples of programs targeting college-age students can be found in Hustad,

Barnett, Borsari, and Jackson (2010)[2] and Bersamin, Paschall, Fearnow-Kenney, and Wyrick (2007)[3].
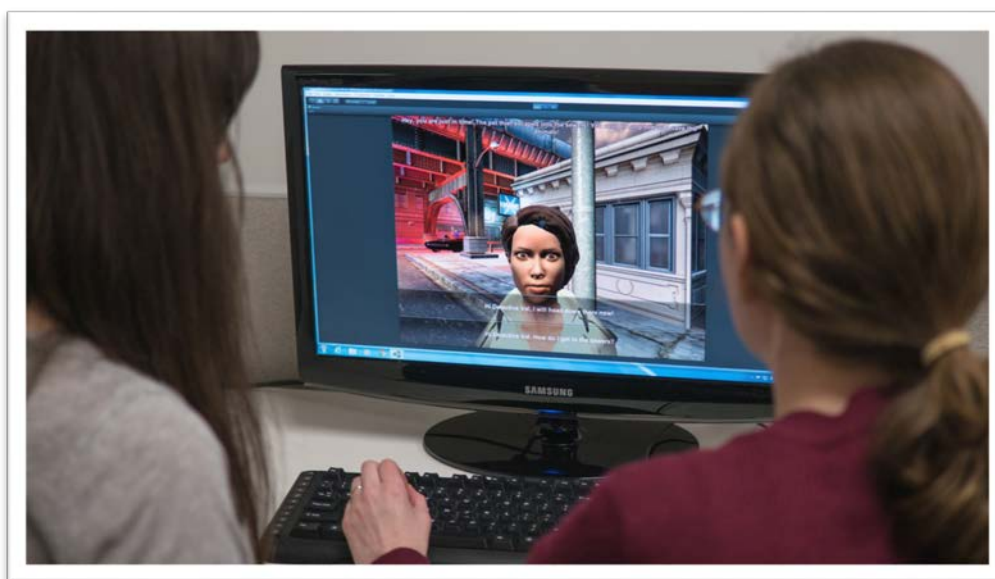
received monthly tailored email reminders to participate in Smoking Zine for 6 months.

A study of smoking cessation with Taiwanese students[5] reported that students participating in an Internet-assisted program for 2 hours a week over a six-week period reported higher anti-smoking attitudes, decreased daily cigarette consumption, and increased smoking cessation attempts and increased self-efficacy to resist smoking compared to control students. However, this quasi-experimental study involved a relatively smaller sample (N=77) and suffered from the possibility of contamination as students were from the same school. Woodruff and colleagues[6] developed an "Internet chat room" for smoking cessation among rural youth. The study combined virtual reality world training with motivational interviewing sessions using N=136 adolescent smokers (16 years of age) recruited from 14 high schools located in Southern California. The web-based counseling program (Breathing Room) involved 45-minute "virtual world" sessions with a trained cessation counselor that transpired over a 7-week period. A proprietary software called "ActiveWorlds" allowed participants to view each other as 'avatars' in a virtual chat session that included peer-to-peer interactions. The program involved multiple theoretical influences including stages of change, social learning, relapse prevention, and social support, all delivered with client-centered motivational interviewing techniques. Several Intervention effects were noted at the immediate posttest including abstaining during the past week, smoking fewer cigarettes and fewer days in the past week, and having smokers consider themselves a "former" smoker. However, these effects did not extend to the subsequent follow-ups at 3 and 12 months. The authors conclude that booster sessions may help reinforce skills acquisition and prepare youth to deal with potential relapse. Strengths of this study included the use of randomization by school to avoid contamination, and rigorous evaluation of program effects including calculation of design effects (clustering) and utilization of advanced multivariate statistical modeling techniques.

Alcohol and Drugs. Similar progress has been made in studies of alcohol and drug prevention using virtual reality 'edutainment' programs that are based on video instructional technology delivered using the web. To illustrate, Vogl and colleagues[7] tested a 6-session, computer-delivered harm minimization program in Australia with N=1466 13-year-old students. The program

was structured to offset factors that can contribute to implementation failure, by standardizing delivery, avoiding program adaptation (all students receive the same content), and capturing the imagination of hard-to-reach males. Based on social learning theory, the CLIMATE Alcohol Program consists of cartoon-based clips depicting alcohol-related scenarios staged as teenage dramas. The program also blends classroom activities involving role plays, group discussion, decision-making and problem-solving activities that build off the computer program. Control students received alcohol education as usual for approximately the same duration. Evaluation findings show favorable effects were obtained for females but not males. Intervention females showed increased knowledge of harm minimization (decreasing the deleterious effects of alcohol) at posttest, with program effects diminishing over time (6 and 12 months follow-up) compared to control females. Intervention females also reported less binge drinking in the past 3 month period at the 6-month and 12-month follow-up and fewer harms from excessive drinking at the 12-month follow-up compared to control females. Intervention females also reported less favorable social expectancies from drinking compared to control females, with these effects prominent at both 6- and 12-month follow-up. Male students exposed to the intervention also experienced a significant decline in favorable alcohol-related social expectancies compared to control males who showed an increase in positive alcohol-related expectancies from baseline to posttest.

Newton and colleagues[8-9] tested a revised version of CLIMATE, which included modules targeting cannabis in addition to alcohol harm minimization. This cluster-randomized trial included 12 cartoon-based instructional lessons administered over a 6-month timeframe to N=764 13-year-old Australian students. The interactive program ensures high program fidelity and consistent delivery, two concerns that crop up with school-based programs where teachers can vary implementation and include adaptations that diminish program adherence. The authors implemented the program 6-months after the initial 6-month alcohol-related intervention, creating essentially "boosters" for alcohol and then added an additional module emphasizing cannabis use. The program consisted of 15-20 minute internet-delivered lessons using a cartoon storyline followed by classroom activities to reinforce the anti-drug messages. Control schools received a non-Internet syllabus-based drug education program. Findings indicate the program effectively increased alcohol knowledge from pretest to posttest 12 months later. The program also decreased weekly average alcohol use among intervention youth compared to control youth at the 12 month posttest. Intervention youth also reported less drinking to excess (binge drinking) at 12 months compared to control youth. Among the cannabis outcomes, frequency of cannabis use differed significantly between intervention and control youth at 6-month follow-up but this effect was not sustained at the 12-month follow-up. Interestingly, CLIMATE also had side effects by reducing risk factors related to drug use including truancy, psychological distress, and moral disengagement[10].

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This quarterly newsletter is presented by LARS to showcase our current technology and research projects. We also hope that eNews will stimulate ongoing social dialogue between our clients and colleagues drawing us deeper into meaningful discussion highlighting the intersection of web-based technology and drug prevention. Interested parties can contact LARS using our website (www.larsri.org), phone: (702) 630-7584 or by email (scheier@larsri.org). We look forward to hearing from you, as well as gaining insight into any projects or research findings that you would like to share in future issues of the LARS eNews.

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