

A Computerized Smoking Cessation Intervention for High School Smokers

Deborah J. Fritz
Sally B. Hardin

Paul A. Gore, Jr.
Douglas Bram

This study evaluated a computerized intervention designed to assist high school-aged smokers to consider not smoking and move forward in the "Stages of Change." A pretest-posttest pilot was conducted with 121 high school students who completed self-reported questionnaires that provided information about smoking history and exposure, smoking dependence, stage of change, and social support. Following baseline assessment, the experimental group ($n = 61$) completed four, 30-minute computerized sessions known as the Computerized Adolescent Smoking Cessation Program (CASCSP). Immediately following completion of the program and 1 month later, the experimental subjects were reassessed. Control subjects completed baseline assessment and were reassessed 4 to 5 weeks later.

CASCSP increased the number of quit attempts. At 1 month after the intervention, 20% of the experimental group quit smoking. Of those subjects who did not quit smoking, nicotine dependence and the number of cigarettes smoked daily decreased, which decreased their nicotine dependence. Overall, there was a forward movement in the experimental group's stage of change.

CASCSP was found to be an effective and inexpensive intervention that motivates adolescent smokers to consider smoking cessation, move forward in the stage of change, and decrease nicotine dependence.

Tobacco use is a pediatric epidemic with 90% of all smokers initiating and continuing to smoke before the age of 21 years (Mowery, Brick, & Farrelly, 2000). According to the Centers of Disease Control and Prevention (CDC), 22% of high school students and 10% of middle school children smoke (CDC, 2004). Although this rate reflects a 40% 10-year decline in smoking rates among high school students, it is still estimated that each year 757,000 children under 18 will become regular smokers (CDC, 2003).

Tobacco use was responsible for nearly one in five deaths during 1995-1999, and is attributed to at least 30% of all cancer deaths (CDC, 2004). Because tobacco use is the only modifiable risk factor to developing lung cancer, a reduction in the number of adolescent smokers was identified as a national health goal in Healthy People 2010 (U.S. Department of Health and Human Services, 2001, 2002). Yet, current research indicates that if interventions continue to focus solely on smoking initiation, and not

on smoking cessation, the nation will fall short of this goal (Mendez & Warner, 2000).

Much of the current research on smoking cessation uses the "Stage of Change" theory. This theory had an impact on the framework for this study because it predicts the systematic change required to adopt a health behavior (Prochaska & Prochaska, 1999). The theory identifies five stages of change: (a) precontemplation, (b) contemplation, (c) preparation, (d) action, and (e) maintenance. In precontemplation, smokers have no thought of quitting or cutting down smoking within the next 6 months and

anticipate more cons than pros regarding changing their behavior. The contemplation stage is characterized by intense ambivalence. The pros of quitting and the cons against quitting are more equal in balance. These smokers are intending to change within the next 6 months, but have not had a serious quit attempt. In preparation, smokers see themselves as more prepared for action and are more confident that they can control their behavior. These smokers have a much higher self-efficacy regarding smoking. The action stage actually involves quitting smoking, and lasts at least 6 months. However, when quitting

Deborah J. Fritz, PhD, FNP, RN, is Family Nurse Practitioner, VA Medical Center, and retired Associate Professor of Nursing, Maryville University, St. Louis, MO. She disclosed that the research presented was supported in part by a Lung Research Dissertation Grant from the American Lung Association.

Sally B. Hardin, PhD, RN, is Dean and Professor, Hahn School of Nursing and Health Science, University of San Diego, San Diego, CA.

Paul A. Gore, Jr., PhD, is an Associate Professor, University of Utah, Salt Lake City, UT.

Douglas Bram, PhD, was an Assistant Professor, Psychology, Maryville University, St. Louis, MO, at the time this article was written.

Note: All authors other than Dr. Fritz reported no actual or potential conflict of interest in relation to this continuing nursing education article.

The *Pediatric Nursing* Editorial Board members reported no actual or potential conflict of interest in relation to this continuing nursing education article.

Sally S. Russell, MN, CMSRN, Education Director, Anthony J. Jannetti, Inc., has no actual or potential conflict of interest in relation to this continuing nursing education article.

Objectives and the
CNE Posttest can be
found on pages 26-27.

smoking, it is typical for adolescent smokers to cycle many times between the precontemplation, contemplation and preparation stages depending on their level of readiness to quit. Prior to and following the completion of the intervention, progress in the stage of smoking behavior change was assessed, as were other outcomes including pros and cons of smoking, quit attempts, smoking self-efficacy, and nicotine dependence.

The "Computerized Adolescent Smoking Cessation Program" (CASCP) was formatted by the primary investigator and was designed to increase smoking self-efficacy and support to quit, and to decrease the pros of continuing to smoke, thereby increasing intent to quit. The program's content was based on the American Lung Association's (ALA) Not on Tobacco ("N-O-T") program. The "N-O-T" program was developed to improve self-esteem, stress management, and smoking cessation. It was aimed specifically for teenagers from diverse backgrounds and showed a 22% quit rate with 64.5% of participants greatly reducing the number of cigarettes smoked 6 months post-program (ALA, 2006). The CASCP content was modeled on the aforementioned ALA smoking cessation programs because research has shown that these programs have been effective when facilitated in a live group format (Horn, Dino, Kalseker, & Mody, 2005).

Although CASCP was not a stage-matched intervention, the first two modules targeted smokers in the precontemplation and contemplation stages, where the smoker is most likely to benefit from information designed to increase the knowledge of the positive outcomes associated with smoking cessation. Activities in modules three and four focused on increasing self-efficacy to improve confidence in coping with risky situations. Increased confidence or self-efficacy has been shown to move smokers to the preparation and or action stages (Dijkstra, Tromp, & Conijn, 2003).

The CASCP intervention included video clips, audio clips, and animated figures. Using a cognitive-behavioral approach to understanding nicotine addiction, the harmful effects of smoking, and coping strategies to combat the urge to smoke, adolescents were encouraged to move forward in the stage of change. The CASCP consisted of four, 30-minute, computerized sessions designed to increase peer support to quit smoking, increase behavioral and verbal

Table 1
Design for the Intervention Trial of CASCP

Intervention Group:	O ₁	X	O ₂	O ₃
Control Group:	O ₁		O ₂	

Where:

O₁ = Baseline assessment 1 O₃ = Follow-up assessment 2
O₂ = Follow-up assessment 1 X = CASCP intervention

intention to quit smoking, and to improve smoking cessation self-efficacy. The program requires minimal facilitation and is inexpensive to run. The purpose of this study was to evaluate if CASCP helped high school smokers consider quitting smoking and move toward smoking cessation.

Methods

A pretest-posttest quasi experimental design (see Table 1) was used to determine the effect of the CASCP on adolescent smoking, number and duration of quit attempts, degree of nicotine dependence, and forward movement in the Stage of Change. A power analysis revealed that a sample of 128 subjects, 64 in the experimental group and 64 in the control group, was required to achieve an acceptable level of power of 0.80. Upon institutional review board approval, subjects (*N* = 135) were recruited from three separate settings. Eligibility criteria included high school smokers who could read and communicate using the English language and independently use the computer. Two high schools in a large Midwestern metropolitan area allowed access to their student body. These suburban schools enrolled between 1000 and 1100 students each. One school was randomly designated as an intervention school and the remaining school served as the control school. A total of 24 students from the control school and 37 students from the intervention school participated. A third sample of students was from area high schools in the same county who were enrolled in an alternative curricular program for students at academic risk. Students from this program were randomly assigned to intervention (*n* = 28) and control (*n* = 41) conditions.

At baseline, there were no significant differences between the intervention and control groups. While these students attended either a morning or afternoon session, they may have interacted. This third sample was necessary as it was difficult to recruit enough subjects from the traditional high schools, as many of the students

in the traditional high schools expressed a concern that they would be identified as smokers to school administration or their parents. Because smoking in the alternative curricular program was more accepted, students did not fear reprisal.

The overall attrition rate for the study was 13.8%. Financial incentives, flyers, and announcements over the schools' public address systems were used to recruit subjects. In addition, letters were sent to all parents from each high school inviting their children to take part in this research. Attached to each letter were parental consent and participant assent forms. Participants were included in the study if they self-identified as a smoker and could read and understand English.

Demographic data, including age, grade in school, gender, race, and family composition, were collected. An inventory of the number and duration of quit attempts and the smoking status of parents, other family members, and close friends also was taken. Both experimental and control groups then completed a questionnaire with five subsets aimed at determining smoking dependence, stage of change, self-efficacy or the belief that quitting was possible, and social support. The instruments used to measure these variables are found in Table 2.

The experimental group completed all four CASCP sessions over a period of 4 to 6 weeks. Completion was verified by the primary investigator following completion of each module session. The posttest questionnaire was administered immediately upon completion of the CASCP and again in 1 month. In an effort to minimize the dropout rate, \$5.00 per CASCP computer session, and \$5.00 for completing each series of questionnaires was awarded. The control group completed two series of questionnaires, 1 month apart. And again, in an effort to minimize the drop-out rate, controls were given \$5.00 for completing each series of questionnaires. All students who completed the four intervention sessions and who completed at least

Table 2
Instrument Summary

Name of Tool	Variable	Abbreviation	# Items	Alpha
Fagerstrom Tolerance Test	Smoking Dependence	FTQ	7	0.75
Transtheoretical Model of Change	Stage of Change	TMC	5	0.92
Smoking Self-Efficacy Questionnaire	Intention to quit smoking	SSEQ	15	0.90
Pros and Cons Scale	Intention to quit smoking	P & C	12	0.82-0.98
Carolina Adolescent Social Support Inventory	Support to quit smoking	SSI	10	0.90

Table 3
Demographic Characteristics of Adolescent Smokers

	Intervention (n = 61)		Control (n = 60)	
	n	%	n	%
Age				
14	0	0	1	1.7
15	3	4.9	7	11.7
16	9	14.8	8	13.3
17	19	31.1	22	36.7
18	24	39.3	17	28.3
19	6	9.8	5	8.3
Grade				
9 th	3	4.9	6	10
10 th	6	9.8	7	11.7
11 th	18	29.5	22	36.7
12 th	34	55.7	25	41.7
Gender				
Male	29	47.5	37	61.7
Female	32	52.5	23	38.3
Race				
Caucasian	55	90.2	57	95
African-American	4	6.6	1	1.7
Hispanic	1	1.6	1	1.7
Asian	1	1.6	0	0
American Indian	0	0	1	1.6
Living with both parents	24	39.3	37	60.7

one postintervention measure were included in the analyses as intervention subjects. All students who completed the initial survey and the survey 4-6 weeks later were included in the analyses as control subjects.

General linear models were used to test for differences between control and intervention groups. Specifically, ANCOVAs were used to determine between group differences following the CASC intervention while controlling for baseline scores. Chi-square analyses were used to test for differences between the experimental and control group for categorical variables.

Results

There were no significant differences between intervention and control students on demographic variables. Additionally, no differences were observed between control or intervention students drawn from traditional or the alternative curricular program.

Of the 121 who were included in the final analysis, half were male and half, female. Nearly 82% of participants were in the 11th and 12th grades. The mean age in years was 17.7 with a range of 14 through 19. All but 8% of the sample was Caucasian. Demographics are displayed in Table 3.

Smoking behaviors. Exposure to

smoking was defined as having parents, siblings, and friends who smoked. Forty-five percent of the sample had mothers that currently smoked $X^2(1, n = 130) = .498, p = .06$ while 36% had fathers who smoked $X^2(1, n = 130) = 4.03, p = .07$. There was no significant difference between the groups in reported parental smoking. Forty-five percent of the sample reported they had siblings who smoked. There was not a significant difference in total exposure to sibling smoking $X^2(1, n = 130) = .03, p = .95$. On average, each subject reported 3.6 friends who smoked. Only one subject in the intervention group did not have friends who smoked.

Greater than 70% of the subjects were daily smokers, and over 69% had smoked everyday in the past 30 days. On initial survey, six subjects had not smoked in the previous 24 hours, but considered themselves current smokers. Seventeen of the subjects smoked one pack or more of cigarettes per day. Typically, subjects smoked less than four packs of cigarettes per week with more than 50% smoking longer than 1 year. There were no significant between group differences regarding prevalence of cigarette smoking on all of the measures. Ninety-four percent had smoked over 100 cigarettes in their lifetime. Chi-square analysis confirmed no significant difference between the groups $X^2(1, n = 130) = .680$.

Quit attempts, duration of quit attempts, and nicotine dependence. Following the CASC intervention, a significant difference between groups was found on the number of attempted quit attempts ($F[1,114] = 3.70, p = .05$). Subjects in the experimental group had an average of 1.7 quit attempts compared to the controls who reported an average of 1.4 attempts. There was no significant difference between groups on the duration of quit attempts ($F[1,99] = 2.91, p = .09$). Differences between the groups were found, however, in the number of cigarettes smoked per day ($F[1,113] = 7.70, p = .006$), with experimental subjects reporting significantly fewer cigarettes than the controls. Between group differences were also found on overall nicotine dependence ($F[1,114] = 3.97, p = .049$) with subjects in the experimental group reporting overall lower levels of nicotine dependence ($M = 3.95$) compared to the controls ($M = 4.45$) on the Fagerstrom Tolerance Questionnaire measure.

Self-efficacy, social support, and cons of smoking. The experimental group exhibited significantly higher levels of postintervention self-efficacy beliefs ($M = 82.74$) compared to the controls ($M = 69.28; F[1, 114] = 11.08,$

Table 4
Smoking Quitters

	Baseline				5-6 Weeks				9-10 Weeks	
	Intervention		Control		Intervention		Control		Intervention	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Quitters	5	8.2	3	5.1	8	14.0	3	5.0	12	23.1

Table 5
Stage of Change Distribution Over Time

	Baseline				5-6 Weeks				9-10 Weeks	
	Intervention		Control		Intervention		Control		Intervention	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Precontemplation	20	34.4	26	41.9	10	18.5	25	46.2	5	10.2
Contemplation	18	31	22	35.4	19	35.1	17	31.4	19	38.7
Preparation	15	25.8	11	17.7	17	31.4	9	16.6	13	26.5
Action	5	8.6	3	4.8	8	14.8	2	3.7	12	24.4

$p = .001$). In contrast, there were no differences between groups in their self-reported levels of social support ($F[1,114] = .635, p = .427$).

Significant differences between groups were found on a measure of participants' perception for the negative aspects ($F[1,110] = 4.56, p = .035$), but not the positive aspects of smoking ($F[1,112] = .007, p = .934$). Specifically, the experimental group perceived significantly more negative aspects to smoking ($M = 27.22$) compared to the controls ($M = 26.07$).

Differences in the number of cigarettes smoked per day were determined using a chi-square analysis. The experimental group smoked significantly fewer cigarettes following the CASC intervention as compared to the controls ($X^2(1, n = 117) = 8.92, p = .030$).

Quitters and stage of change. Participants who smoked less than one cigarette per day were considered to have quit smoking. Sixty intervention participants completed the 1-month postintervention survey and of these, 12 or 23% quit smoking (see Table 4).

Stage of change was analyzed by identifying three levels of change. Participants whose baseline stage of change was more advanced than their score at postintervention measurement were considered as negative (-1), Participants whose stage of change did not change from baseline to postintervention measurement were considered unchanged (0), and subjects whose stage of change at postintervention measurement was higher than their baseline stage were considered positive (+1). Significant differences in stage of change were found between groups.

Table 6
Movement Across Stages of Change at Time 5-6 Weeks

	Intervention		Control	
	<i>n</i>	%	<i>n</i>	%
Negative (-1)	6	12.5	12	23.5
Unchanged (0)	23	47.9	31	58.8
Positive (1)	19	41.3	10	19.2

Note: Pearson chi-square = 5.57; $df = 2; p < .06$

The experimental group was more likely to exhibit positive change compared to the control group ($X^2(1, n = 98) = 6.65, p = .036$). The frequency distribution for stage of change by intervention versus control group is displayed in Tables 5 and 6.

Discussion

The experimental group, for the most part, smoked less than one package of cigarettes per day and had been doing so for 6 months to a year. They responded to the CASC by having more quit attempts both during and after the program. Moreover, 16% of the CASC group already had four or more smoking quit attempts at baseline, which was the highest number they could report, and hence, may have had additional quit attempts. Twelve (23.1%) out of 60 who completed the final posttest questionnaire, actually quit smoking. Of the 7 adolescents who said they quit smoking immediately post CASC intervention, 2 were heavy smokers, and 5 were light smokers. Of the 12 adolescents who said they had quit smoking 1 month postintervention, 2 were heavy smokers, 9 were light smokers, and 1 was

likely an inconsistent smoker. It is noteworthy that those who did not quit were able to cut down the number of cigarettes smoked, which decreased their nicotine dependence. Because they were able to sustain the intervention effects, they may have been less likely to smoke in social situations. All but 5 out of 61 experimental group subjects moved out of the precontemplation stage and were considering quitting smoking.

These findings are consistent with the ALA's "N-O-T" 10 session program that showed a 22.4% quit rate among teens. Their results were self-reported but were also validated biochemically. Also reported were a reduced number of cigarettes smoked following the "N-O-T" intervention (ALA, 2006). This is in contrast to the *Breathe Easy!* program, which had no significant differences between the control and experimental groups at 1 month, yet had a 3% -12% cessation rate at 6-month follow-up (Higgs, Edwards, Harbin, & Higgs, 2000). This program was also 10 sessions long. Nicotine patch therapy and minimal behavioral intervention for adolescent smoking cessation has had lim-

ited success with a 5% quit rate (Hurt, Croghan, & Beede, 2000). The *Start to Stop* program also did not demonstrate significant differences in cessation rates at posttest or on follow up (Robinson, Vander Weg, Riedel, Klesges, & McLain-Allen, 2003). These results support the need to continue to develop and evaluate youth smoking cessation interventions that are convenient, inexpensive, and appealing to adolescents (Milton, Maule, Backinger, & Gregory, 2003).

Limitations of this study were the use of self-reported data without biochemical validation. However, self-report methods with adolescents are considered to be reasonably reliable. Some experts maintain that test-retest reliability of self-reported tobacco behaviors is very high, in fact, higher than any other health-risk behaviors (Brenner, Billy, & Grady, 2003; Brenner, Kann, & McManus, 2002). In support of this position, a meta-analysis of 26 studies that validated self-reported smoking behavior compared with biochemical measures found high levels of specificity and sensitivity for absence of smoking (Patrick, Cheadle, & Thompson, 1994). Hence, there is some evidence that adolescents provide accurate self-reports of their smoking behavior. This may be important when verifying adolescent smoking cessation.

Another limitation is the possibility that the experimental subjects were biased in terms of wishing to fulfill the researcher's expectations, the Hawthorne effect (Burns & Groves, 2006). This possibility was minimized by telling the adolescents that they were recruited to evaluate the computer program, rather than specifically to evaluate their ability to quit smoking. Another limitation is that this study included a predominantly White sample. It will be important in the future to assess the effect of CASC on a more diverse population.

In an effort to recruit sufficient numbers of participants, it was necessary to use a third setting. Although the subjects from this setting attended classes at different times of the day, it is possible that they interacted with one another. Both experimental and control groups were recruited from the alternative curricular program. Finally, this study used a one month follow-up to determine CASC effects over time. A longer follow-up interval may provide far different results.

Conclusion

Although it is encouraging that smoking prevalence was unchanged between 2003 to 2005 and appears stable, to achieve the goal of less than 16% of high school smoking, the rate of decline experienced from 1997-2003,

must resume (CDC, 2006). Because smoking is already an established behavior for many adolescents, the scope of smoking research needs to expand beyond primary prevention. It is essential that nurses involved with adolescents become active in smoking-cessation efforts to extinguish this pediatric epidemic. Adolescents need to be assessed for their current smoking status and stage of readiness to quit smoking in primary care settings and in schools. Intervention programs that encourage smoking cessation and maintaining abstinence need to be continually developed and evaluated, incorporating program components that have been shown to be effective. The present research showed that the CASC computer intervention program is effective, inexpensive, and easily operationalized in schools. Because this program is computer based, it is cost-effective, time efficient, consistent in its delivery of content, and requires no administrative facilitator. CASC also could be incorporated into clinic office settings via lap top computers.

Nurses can assist in the recruitment of adolescents into this type of smoking-cessation program and/or refer adolescents to agencies such as the American Lung Association for assistance. School nurses should advocate for smoking-cessation programs similar to CASC as part of the curriculum, possibly incorporated into mandatory health classes for health promotion. Furthermore, it is possible to institute the CASC program in schools where there is not a volunteer for a live session. In addition, because CASC can be administered at any time in the school day, it is a viable alternative to student suspension for violators of school policy.

Targeting adolescents who want to quit smoking, rather than volunteers to evaluate the program, may also yield even more robust results. Computer-assisted smoking cessation interventions may be key to the implementation of innovative, inexpensive programs designed to move adolescents forward from precontemplation to action and maintenance.

References

- American Lung Association (ALA). (2006). *Not-On-Tobacco (N-O-T) background*. Retrieved July 19, 2006, from <http://www.lungusa.org>
- Brenner, N., Billy, J., & Grady, W. (2003). Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents: Evidence from the scientific literature. *Journal of Adolescent Health, 33*, 436-457.

- Brenner, N., Kann, L., & McManus, T. (2002). Reliability of the 1999 Youth Risk Behavior questionnaire. *Journal of Adolescent Behavior, 31*, 336-342.
- Burns, N., & Grove, S. (2006). *Understanding nursing research: Building an evidence-based practice* (4th ed.). St. Louis, MO: Saunders.
- Centers for Disease Control and Prevention (CDC). (2003). Tobacco use among middle and high school students—United States, 2002. *MMWR, 52*(45), 1096-1098.
- Centers for Disease Control and Prevention (CDC). (2004). Cigarette use among high school students—United States, 1991-2003. *MMWR, 53*(23), 499-502.
- Centers for Disease Control and Prevention (CDC). (2006). Cigarette use among high school students—United States, 1991-2005. *MMWR, 55*(26), 724-726.
- Dijkstra, A., Tromp, D., & Conijn, B. (2003). Stage-specific psychological determinants of stage transition. *British Journal of Health Psychology, 8*, 423-437.
- Higgs, P., Edwards, D., Harbin, R., & Higgs, P. (2000). Evaluation of a self-directed smoking prevention and cessation program. *Pediatric Nursing, 26*(2), 150-153.
- Horn, K., Dino, G., Kalsekar, I., & Mody, R. (2005). The impact of Not On Tobacco on teen smoking cessation: End-of-program evaluation results, 1998-2003. *Journal of Adolescent Research, 20*, 640-641.
- Hurt, R., Croghan, G., & Beede, S. (2000). Nicotine patch therapy in 101 adolescent smokers. *Archives of Pediatric and Adolescent Medicine, 154*, 31-37.
- Mendez, D., & Warner, K. (2000). Smoking prevalence in 2010: Why the healthy people goal is unattainable. *American Journal of Public Health, 90*(3), 401-403.
- Milton, M.H., Maule, C.O., Backinger, C.L., & Gregory, D.M. (2003). Recommendations and guidelines for practice in youth tobacco cessation. *American Journal of Health Behavior, 27*, S159-S169.
- Mowery, P.D., Brick, P.D., & Farrelly, M.C. (2000). *Legacy first look report 3. Pathways to established smoking: Results from the 1999 National Youth Tobacco Survey*. Washington, DC: American Legacy Foundation.
- Patrick, D., Cheadle, A., & Thompson, D. (1994). The validity of self-reported smoking: A review and meta-analysis. *American Journal of Public Health, 84*, 1086-1093.
- Prochaska, J., & Prochaska, J. (1999). Why don't continents move? Why don't people change? *Journal of Psychotherapy Integration, 9*(1), 83-102.
- Robinson, L.A., Vander Weg, M.W., Riedel, B.W., Klesges, R.C., & McLain-Allen, B. (2003). "Start to stop." Results of a randomized controlled trial of a smoking cessation programme for teens. *Tobacco Control, 12*, 26-33.
- U.S. Department of Health and Human Services. (2001). *Healthy People 2010*. Centers for Disease Control and Prevention National Center for Health Statistics, 2001 (DHHS Publication No. Health, US, 2001). Washington, DC: Author.
- U.S. Department of Health and Human Services. (2002). *Healthy People 2010* (2nd ed.). McLean, VA: International Medical Publishing.

The purpose of this continuing education series is to increase the pediatric nurse's understanding of selected issues related to adolescents.

Adolescence presents many challenges as children transition from child to adult. Increased independence offers a plethora of opportunities for adolescents to make choices about many matters, some of which are fraught with serious consequences, without appropriate information or guidance. Furthermore, many youth are prevented from receiving appropriate information, such as through comprehensive sexuality education in school, while simultaneously being exposed to such issues addressed in the media and through real-life experiences. Nurses often are critically situated to provide guidance to assist youth in protecting themselves as well as to offer interventions when poor choices, such as initiating smoking, have been made. Keeping updated on methods to identify and address concerns increases pediatric nurses' ability to promote healthy adolescent development.

This continuing education series consists of two articles that address adolescence issues. The first article presents findings from an evaluation of a computerized intervention designed to assist high school-aged smokers to consider not smoking and move forward in the "Stages of Change." The second article discusses factors that place youth at risk for abusive sexual experiences and early sexual activity and presents strategies that can protect them from these potentially harmful experiences.

ASSIGNMENT

Fritz, D., Hardin, S., Gore Jr., P., & Bram, D. (2008). A computerized smoking cessation intervention for high school smokers. *Pediatric Nursing, 34*(1), 13-17.
 Rew, L., & Bowman, K. (2008). Protecting youth from early and abusive sexual experiences. *Pediatric Nursing, 34*(1), 19-25.

OBJECTIVES

1. Discuss the importance of providing guidance to youth to counter negative influences in the media.
2. Describe the components of a computerized intervention designed to assist high school-aged smokers to consider not smoking.
3. List three factors that place youth at risk for abusive sexual experiences and early sexual activity.
4. Identify opportunities for pediatric nurses to keep current on adolescent issues.

This offering for 1.6 contact hours is provided by Anthony J. Jannetti, Inc.

Anthony J. Jannetti, Inc is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation (ANCC-COA).

Anthony J. Jannetti, Inc. is an approved provider of continuing education by the California Board of Registered Nursing, CEP No. 5387.

Articles accepted for publication in the continuing education series are refereed manuscripts that are reviewed in the standard *Pediatric Nursing* review process with other articles appearing in the journal.

This test was reviewed and edited by Judy A. Rollins, PhD, RN, *Pediatric Nursing* associate editor, and Veronica D. Feeg, PhD, RN, FAAN, *Pediatric Nursing* editor.

Earn 1.6 Contact Hours

QUESTIONS

1. **In the transtheoretical model of change, precontemplation is characterized by**
 - a. intense ambivalence.
 - b. no thought of quitting.
 - c. preparation for action.
 - d. high self-efficacy.
2. **A computerized smoking cessation program may**
 - a. encourage quit attempts.
 - b. increase self-efficacy to avoid smoking in risky situations.
 - c. decrease nicotine dependence
 - d. all of the above
3. **The Hawthorne effect is**
 - a. when subjects try to please the researcher.
 - b. a method to determine power.
 - c. a biochemical measure.
 - d. an evaluation tool.
4. **Adolescents typically provide accurate self-reports of their smoking behavior.**
 - a. True
 - b. False
5. **Healthy People 2010 has a goal to decrease adolescent smoking to less than**
 - a. 30%.
 - b. 16%.
 - c. 22%.
 - d. 40%.
6. **Youth who engage in sexual activity prior to age 13 years are more likely to be**
 - a. Asian rather than Hispanic.
 - b. male rather than female.
 - c. living with both parents rather than a single parent.
 - d. part of a small rather than a large family.
7. **A factor known to protect children from early and abusive sexual experiences is**
 - a. having older friends.
 - b. being a racial or ethnic minority.
 - c. participating in team sports.
 - d. having authoritarian parents.
8. **Youth who were sexually abused as children are more likely than non-abused children to**
 - a. avoid pregnancy.
 - b. have a history of sexually transmitted diseases.
 - c. use condoms consistently.
 - d. initiate sexual intercourse at an early age.
9. **Comprehensive sexuality education in schools**
 - a. contributes to youth becoming effective decision-makers.
 - b. encourages youth to engage in early sexual intercourse.
 - c. prevents youth from developing open attitudes about sexuality.
 - d. leads to high rates of unplanned pregnancies.
10. **Community factors that increase the risk for early and abusive sexual activity include**
 - a. poverty and social capital.
 - b. large minority populations and positive role models.
 - c. dense populations and few extracurricular activities.
 - d. comprehensive sexuality education and religious sanctions.

Answer Form: Issues in Adolescence

*PED J0801

Check the box next to the correct answer.

1. A 2. A 3. A 4. A 5. A 6. A 7. A 8. A 9. A 10. A
 B B B B B B B B B B
 C C C C C C C C C C
 D D D D D D D D D D

COMPLETE THE FOLLOWING:

This test may be copied for use by others.

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

POSTTEST INSTRUCTIONS

1. Select the best answer and check the corresponding box on the answer form. Retain the test questions as your record.
2. Complete the information requested in the space provided.
3. Detach the answer form or a copy of the answer form and mail to: *Pediatric Nursing*, CNE Series, Jannetti Publications Inc.; East Holly Avenue Box 56; Pitman, NJ 08071-0056 with a check or money order payable to Jannetti Publications Inc. for \$10.00 (subscriber) or \$15.00 (nonsubscriber).
4. Test returns **must** be postmarked by February 15, 2010. If you pass the test (70% or better), a certificate for 1.6 contact hours will be awarded by Anthony J. Jannetti, Inc.

Please allow 6–8 weeks for processing. For recertification purposes, the date that contact hours are awarded will reflect the date of processing.

Test Scoring, CNE Awarding/Recording fees:

- PN Subscriber \$10.00
 Nonsubscriber \$15.00
 Expir. Date _____

Evaluation	Strongly disagree				Strongly agree
1. The objectives relate to the overall purpose/goals of the education activity.	1	2	3	4	5
2. The activity met the stated objectives.					
a. Discuss the importance of providing guidance to youth to counter negative influences in the media.	1	2	3	4	5
b. Describe the components of a computerized intervention designed to assist high school-aged smokers to consider not smoking.	1	2	3	4	5
c. List three factors that place youth at risk for abusive sexual experiences and early sexual activity.	1	2	3	4	5
d. Identify opportunities for pediatric nurses to keep current on adolescent issues.	1	2	3	4	5
3. Home study format was appropriate.	1	2	3	4	5
4. The content was relevant to my practice.	1	2	3	4	5
5. The content met my needs.	1	2	3	4	5
6. How much time was used to complete reading assignment and posttest:					
a. Less than 1 hour _____					
b. 1-2 hours _____					
c. 2-3 hours _____					
d. 3 hours or more _____					
Comments _____					
Signature _____					

Pediatric Nursing Journal CNE Articles Now Available Online!

Continuing nursing education (CNE) articles published in the *Pediatric Nursing Journal* are also available for download on the *Pediatric Nursing Journal* Web site. On the web, go to www.pediatric-nursing.net and click on the Online CNE link to access the articles (see below) currently available for CNE credit.

You must have Adobe Acrobat Reader 3.0 or later to use these files. If you don't, you may download Acrobat Reader directly from the *Pediatric Nursing Journal* site by clicking on the icon that is available in that section.

