

Reducing Rural Youth Substance Abuse by Educating Parents Through Nontraditional Technology-Based Methods: A Focus On Parental Acceptance of the Online *Parenting Wisely* Program

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Abstract

Purpose: To examine acceptance of technology-based substance abuse prevention programming involving use of the Internet in a rural parent population.

Methods: Rural parents from a southern state in the east central part of the United States were recruited through local advertisements to participate in two study-related tasks: a brief survey and an online parenting skills educational program entitled *Parenting Wisely*.

Findings: Recruitment efforts yielded a total of 39 initial contacts. Of these potential subjects, 25 completed surveys and five requested online program access. Findings demonstrated parents were more likely to indicate a plan to participate in the online program if they cited a primary reason of perceived benefit, whereas parents were more likely to not participate if they selected a lack of time for task commitment as their emphasized motive. Of the five participants who requested online program access, only two of them actually attempted any modules. Neither of them successfully finished any module.

Conclusions: While rural parents indicated some degree of acceptance to an online parenting educational program through survey responses, those indications did not translate to actual completion of the *Parenting Wisely* program. Recruitment methods seemed to be most effective with flyer distribution and word-of-mouth social networking strategies, while the cost of newspaper advertisements seemed to greatly outweigh any perceived benefit. Also, the window for potential subject recruitment was most optimal in a four to six week timeline. More research with a larger sample size is needed in order to help identify and validate demographic characteristics leading to increased likelihood of online program participation. In addition, expanded follow-up research is needed to determine as to why parents do or do not complete such programming.

Keywords: Adolescent, Access to Care, Parents, Substance Abuse Prevention, Technology, Rural

Reducing Rural Youth Substance Abuse by Educating Parents Through Nontraditional Technology-Based Methods: A Focus On Parental Acceptance of the Online *Parenting Wisely* Program

Adolescent substance abuse has been long considered an urban problem in the United States of America, but epidemiological data demonstrates a worsening trend for rural populations which parallels or even surpasses that of their urban counterparts. These numbers indicate both alcohol and illegal drug usage to be an ever increasing challenge in rural areas (Schoeneberger, Leukefeld, Hiller, & Godlaski, 2006). Alcohol and methamphetamine usage is greater in rural youth when compared to urban adolescents, and this substance usage increases as population decreases (Lambert, Gale, & Hartley, 2008). These findings are consistent with the Substance Abuse and Mental Health Services Administration's (SAMHSA) results from the 2008 *National*

Survey on Drug Use and Health (SAMHSA, 2009). Results from the National Survey demonstrated alcohol binge drinking rates for young persons ages 12 to 17 to be greatest in nonmetropolitan areas at 9.8%. In addition, illicit drug usage in completely rural counties rose almost 50% from 4.1% in 2007 to 6.1% in 2008 (SAMHSA, 2009). An analysis of SAMHSA's data also revealed that rural youth were 26% more likely to have abused prescription drugs than teens from urban areas (Havens, Young, & Havens, 2011).

Clinical evidence in substance abuse prevention efforts indicates best methods to be those which include parents in the education process. Petrie, Bunn, and Byrne (2007) concluded in a systematic review of the literature that substance abuse reduction outcomes were most beneficial when prevention education focused on parental involvement. This finding was also consistent with SAMHSA's 2008 *National Survey on Drug Use and Health* (SAMHSA, 2009). Adolescent responses on this National Survey demonstrated that adolescents were less likely to use substances if they believed their parents would strongly disapprove of substance usage. On the other hand, those who sensed a lesser degree of parental disapproval were more likely to use substances. In addition, young people ages 12 to 17 were significantly less likely to use substances when parents exhibited more oversight and control of adolescent activities (SAMHSA, 2009). With this in mind, it is critically important to incorporate parents into rural adolescent substance abuse prevention efforts.

Research findings demonstrating the beneficial influence of parents in adolescent substance abuse prevention are consistent with the underpinnings of Problem-Behavior Theory (Jessor, 2008), a conceptual framework designed to explain why some older children engage in risk behaviors. A major premise of Problem-Behavior Theory is that "all behavior is the result of person-environment interaction" (Jessor, 2008, para. 1). Such interaction is examined through three systems of explanatory variables: the perceived-environment system (peer and parental influences); the personality system (academic achievement); and the behavioral system (substance abuse and other risk behaviors). "Each system is composed of variables that serve either as instigations for engaging in problem behavior or controls against involvement in problem behavior" (Jessor, 2008, para. 3). The ability to maintain a balance between instigations and controls determine the likelihood of problem behavior within each system (Jessor, 2008). Through the application of this theory, positive parenting skills, along with expanded oversight of child activities, help reduce adolescent substance abuse risk within the perceived-environment system.

While inclusion of parents in rural adolescent substance abuse prevention efforts is necessary for optimal reduction outcomes, a disparity in resources often suppresses the ability to effectively reach these parents in large numbers (Havens, Young, & Havens, 2011). Such geographical disparities include a lack of adequate funding, number of health care professionals, infrastructure, and facilities. Cost-effectiveness is further lessened due to decreased access issues resulting from rural populations being less in number and more widely dispersed (SAMHSA, 2007).

In developing and implementing suitable plans to reach parents in rural substance abuse prevention efforts, one may want to consider recommendations from the Institute of Medicine (IOM) (IOM, 2001). The IOM has identified six core needs in the development and implementation of quality health care interventions: safe, effective, patient-centered, timely, efficient, and equitable. The IOM also maintains that these concepts can be satisfied by applying evidence to health care delivery and utilizing information technology (IOM, 2001). When

applying these concepts to prevention strategies, real progress can be made by using technology in the provision of evidence-based substance abuse prevention programming to rural populations.

In recent years, the Internet has become increasingly popular for its ability to provide evidence-based prevention programming. This growing demand for Internet access has led to alternative delivery method considerations for mental health services (Calam, Sanders, Miller, Sadhnani, & Carmont, 2008). Parallel with traditional face-to-face approaches for prevention education, nontraditional web-based prevention methods have demonstrated key abilities to improve child behavior, parenting skills, and cost-effectiveness (Feil, Baggett, Davis, Sheeber, Landry, Carta, & Buzhardt, 2008). Cost-effectiveness is fostered by making programs more accessible and acceptable along with tailoring them to cultural and community norms by allowing participants to integrate programming into their daily schedule. In addition, web-based methodology helps adapt to financial limitations by utilizing preexisting community assets that are sustainable (SAMHSA, 2007).

Expansion of the Internet, particularly broadband service, has seen rapid growth in rural populations during recent years. The United States Department of Agriculture (USDA) Economic Research Service (2009) currently estimates that more than 70% of individuals in rural areas use the Internet with greater than 50% maintaining home Internet service. With this in mind, utilization of web-based substance abuse prevention programming provides a realistic opportunity to reach rural parents in larger numbers through cost-effective, technology-based methods.

An advanced search of the SAMHSA's National Registry of Evidence-based Programs and Practices (NREPP) for evidence-based substance abuse prevention programs meeting basic appropriateness for rural communities (SAMHSA, 2010) yielded one web-based delivery option with a focus on parents: *Parenting Wisely*. *Parenting Wisely* (2010) is comprised of eleven interactive modules: Helping Children to do Housework; Helping Children Do Better in School; Curfew; Step-parenting; School, Homework, and Friends; Loud Music, Chores Incomplete; Sharing the Computer; Sibling Conflict; Getting up on Time; Finding Drugs; and Composite Skills Practice. For each module, parents watch video simulations of situations typically encountered by families. Throughout these scenarios, parents are provided with interactive questions and answers along with rationales for both appropriate and inappropriate responses to these situations. At the conclusion of each module, parents answer a brief quiz of approximately five questions to demonstrate knowledge retained. Skills learned through successful completion of the aforementioned modules are as follows: active listening, assertive discipline, job compliance, consequences, consistency, point systems, contracting, problem solving, I statements, role modeling behavior, school and homework monitoring, specific commands, and praise (Family Works, 2010).

The *Parenting Wisely* program also attempts to satisfy the three systems of explanatory variables comprising Problem-Behavior Theory: the perceived-environment system, the personality system, and the behavior system (Jessor, 2008). While all modules within the *Parenting Wisely* curriculum are directed at improving parental influence, some of the modules directly impact each of these system domains. For example, the Curfew and School, Homework, and Friends modules focus on limiting negative influence of peers within the perceived-environment system. The Helping Children Do Better in School and School, Homework, and Friends modules address academic achievement within the personality system, while the Finding Drugs module speaks to substance abuse within the behavioral system.

The question at hand is not focused on whether online programs such as *Parenting Wisely* are effective in improving outcomes, as research has already demonstrated the ability of such programming to reduce adolescent substance abuse risk (Family Works, 2010). Instead, attention was given to the determination of how best to apply substance abuse prevention programming through optimal recruitment and implementation strategies. Feil, Gordon, Waldron, Jones, and Widdop (2011) demonstrated successful recruitment and high satisfaction with an online version of *Parenting Wisely*; however, this study was specific to ethnic minority rather than rural populations. Due to minimal research in the approval of Internet-based substance abuse prevention programming with rural populations, the overall purpose of this research study was to examine rural acceptance of a web-based course in order to identify characteristics which may predict participation status. Attention was also given to an analysis of costs related to implementation of the *Parenting Wisely* program in this rural population.

Methods

This study used a descriptive research design for the purpose of examining acceptance of technology-based substance abuse prevention programming involving use of the Internet in a rural parent population. The study was approved by the relevant institutional review boards at the University of Kentucky.

Sampling

Eligible subjects were parents or guardians who had a child enrolled for the 2010-2011 academic year in fourth, fifth, and/or sixth grades of a rural county school system in a southern state located in the east central region of the United States. The number of student households encompassing fourth, fifth, and sixth grades of the rural county school system for the 2010-2011 academic year was approximately 600. Of these 600 hundred households, the range of homes maintaining Internet access is between 62 and 69 percent (M. Bromley, personal communication, October 4, 2010). An application of this percentage range finds the estimated number of student households maintaining Internet access is between 372 and 414.

Identification and recruitment of potential study participants was conducted utilizing three primary methods of advertising: flyers, local newspaper advertisements, and word-of-mouth strategies. Advertisement flyers were distributed in both public and private places throughout this rural community where contact with the aforementioned subjects was likely to occur (e.g., schools, churches, grocery stores, gas stations). Newspaper advertisements were placed weekly over an eight week period in a publication limited to local distribution. Word-of-mouth strategies included verbal advertisement through social networking structures.

Once advertisement began, subjects who desired complete study information contacted the Principle Investigator (PI) through personal, telephone, or e-mail communication. The PI provided potential subjects with study information via postal delivery to an address provided by these persons. Materials provided were as follows: an informed consent letter describing two tasks comprising the study (a survey and web-based educational program), a brief survey focused mostly on demographic data, and a stamped security envelope addressed to the PI for survey return. If the parent or guardian decided to participate in the survey task of the study, they simply completed the form and returned it to the PI via postal delivery in the provided envelope. However, those also desiring to participate in the web-based educational program needed to contact the PI once again via telephone or email in order to request online participation access. The PI then provided through an e-mail address provided by the study subject a web link to the online educational program, an unidentifiable username, and an access code.

Measures

In order to satisfy the overall study purpose of determining parental acceptance of web-based programming in a rural population, *acceptance* is demonstrated by two measures: indication of plan to participate via survey and actual participation in the web-based program entitled *Parenting Wisely* (*Parenting Wisely*, 2010). In regard to the survey, study subjects completed the form based on whether they planned or did not plan to participate in the online educational program. A plan to participate demonstrates a degree of acceptance thus providing information on the demographic characteristics associated with likely participation. Therefore, demographic characteristics (age, gender, race, marital status, educational background, employment status, and computer and/or Internet access) were included as components of measure. In addition, reasons (convenience, time commitment, belief of benefit, prior computer and Internet experience, and other) for participation designation were included as elements of measure. Demographic categories and participation status reason options were selected on the basis of demonstrated influence in the research literature (Gordon & Rolland-Stanar, 2003). In regard to actual participation, measures included total participant numbers along with completion rate of each module in the *Parenting Wisely* curriculum.

Attention was also given to costs associated with implementation of the *Parenting Wisely* program. Financial measures were in U.S. dollars and broken down into three factors: cost per unit, cumulative unit cost, and percentage of total costs for each study component unit.

Analysis

Acceptance was evaluated by examining actual participation numbers including that related to survey completion and online *Parenting Wisely* involvement. Comparisons were made between those who indicated via survey a plan to participate and those who did not plan to participate. These comparisons included use of descriptive statistics (percentages, median, mean, standard deviation, and range) along with non-parametric evaluation using Chi-square test for independence and the Mann-Whitney U test. Also, the number of those participating in this web-based program was analyzed in terms of total participant numbers and completion rate for each of the 11 modules in order to describe partial versus full-program acceptance. In addition, a breakdown descriptive analysis of costs related to implementation of the *Parenting Wisely* program in this rural population was examined.

Results

Recruitment yielded a total of 39 initial contacts requesting study-related information materials via postal mail. During this initial contact, all potential study participants requested this information through either phone or in-person conversations. These conversations revealed they were aware of the study via flyers and/or word-of-mouth social networking methods with none referring to newspaper advertisements. Contacts also trended downward as the study timeline progressed: 21 contacts during the last two weeks of December; 18 contacts during the first three weeks of January; and no contacts throughout the last five weeks of the study. Of these 39 initial contacts, 25 returned surveys while five requested online access to the *Parenting Wisely* program.

Acceptance (Survey)

Demographic characteristics of survey respondents are depicted in Table 1. The age of survey respondents ranged from 31 to 56 with a mean age of 38.8 years (SD 6.021). These

respondents also had a range of one to three children enrolled in fourth through sixth grades of the rural county school system with a mean number of 1.44 children (SD 0.651).

Table 1

Demographic Characteristics of Survey Respondents

Demographic Component	Number of Respondents	Percentage of Respondents
Participation Indication		
• Plan to participate	15	60%
• Do not plan to participate	10	40%
Gender		
• Male	9	36%
• Female	16	64%
Race		
• Caucasian/White	23	92%
• Race not reported	2	8%
Marital Status		
• Married	21	84%
• Not Married	4	16%
Highest Level of Education		
• No high school graduation	1	4%
• High school graduate/GED	11	44%
• Associate Degree	7	28%
• Bachelor Degree	4	16%
• Master Degree	2	8%
Own a Home Computer		
• Yes	23	92%
• No	2	8%
Maintain Home Internet Subscription		
• Yes	21	84%
• No	4	16%
Employment Status		
• Full-Time	19	76%
• Part-Time	4	16%
• Unemployed	2	8%

Reasons provided by survey respondents for planned participation status are depicted in Table 2. In regards to the selection of *Other* as a participation status reason, two respondents specified either slow streaming Internet or lack of interest as a reason for their planned participation status designation. Non-parametric testing confirmed a statistically significant difference in the primary reason between subjects indicating a plan to participate and those not planning to participate ($p = .002$). An evaluation of gender and planned participation status also yielded a significant probability ($p = .041$); however, when applying Yates' Correction for Continuity, the value changes to a statistically insignificant probability level ($p = .106$). Other categorical variables similarly evaluated with participation status which approached borderline significance included: marital status ($p = .075$), owning a home computer ($p = .071$), and age of parent/guardian ($p = .066$).

Table 2*Reasons Provided by Survey Respondents for Planned Participation Status*

Participation Reason Plan to Participate (n = 15)	Number (Percentage) of Responders Selecting as a Reason	Number (Percentage) of Responders Selecting as a Primary Reason
Convenience (have home computer and Internet access)	11 (73.3%)	2 (13.3%)
Time commitment of 3-3.5 hours for program completion permits me to work it into my schedule	7 (46.7%)	0 (0%)
Belief that this research study will benefit me, my family, and/or others	15 (100%)	8 (53.3%)
Have computer and Internet experiences which permit me to complete online education programs	10 (66.7%)	2 (13.3%)
Other (specified by respondent)	0 (0%)	0 (0%)
No selection made	0 (0%)	3 (20%)

Participation Reason Do Not Plan to Participate (n = 10)	Number (Percentage) of Responders Selecting as a Reason	Number (Percentage) of Responders Selecting as a Primary Reason
Inconvenience (do not have home computer and/or Internet access)	3 (30%)	1 (10%)
Time commitment of 3-3.5 hours for program completion prevents me from working it into my schedule	8 (80%)	6 (60%)
Belief that this research study will not benefit me, my family, and/or others	0 (0%)	0 (0%)
Limited computer and Internet experiences prevent my completion of online education programs	0 (0%)	0 (0%)
Other (specified by respondent)	2 (20%)	1 (10%)
No selection made	0 (0%)	2 (20%)

Acceptance (*Parenting Wisely* Intervention)

Of the 15 subjects who indicated a plan to participate in the online *Parenting Wisely* program, five persons including four females and one male requested information to access the course. Three of these five parents did not attempt any of the 11 modules in the online educational curriculum for *Parenting Wisely*. One parent attempted a single module, *Helping Children to do Housework*, but the individual did not complete module requirements. Another parent attempted two modules, *Helping Children to do Homework* and *Helping Children Do Better in School*, but this person did not complete module requirements either.

Cost Analysis

As depicted in Table 3, total costs for implementation of study procedures was slightly less than \$1200. Advertising was associated with the largest cost component accounting for

approximately 85% of total study implementation cost. Over 75% of these advertising costs were concentrated in local newspaper advertisements. Study supplies accounted for eight percent of study-related costs, while the smallest cost factor involved the online *Parenting Wisely* intervention which accounted for seven percent of all costs.

Table 3

Costs Associated with Study Implementation

Study Component	Unit Cost	Number of Units	Total Cost	Percent of Total Cost
Advertising				
• Advertisement flyers • 5.078" x 4" advertisement in local newspaper	\$0.25/flyer \$95.00/week	1000 8	\$250.00 \$760.00	21% 64%
Study Supplies				
• Includes study cover letter, survey, envelopes for mailing materials and survey return, mailing labels, and postage	\$2.32/participant	39	\$90.48	8%
Intervention				
• <i>Parenting Wisely</i> subscription	\$16.50/participant	5	\$82.50	7%
		TOTAL	\$1182.98	100%

Discussion

A rural parent population demonstrated some degree of acceptance to an Internet-based parenting educational program. Survey responses strongly indicated a difference in primary reason as to why a parent did or did not plan to participate in the online *Parenting Wisely* program. Parents who responded positively to planned participation selected a belief in benefit with the study program, while parents who responded negatively to planned participation cited an inability to work the program into their daily schedule due to the 3-3.5 hour time commitment for program completion. In addition, borderline trends were observed with gender (female), marital status (married), owning a home computer (yes), and age of parent/guardian (older) in relation to a positive planned participation response; however, statistical significance was not demonstrated largely attributed to small sample size.

Based on verbal reports from the initial contact with 39 potential subjects, advertising methods that were most successful were distribution of flyers and word-of-mouth social networking strategies. There is strong indication that newspaper advertisements were not beneficial in attracting subjects to this study. This is important to note because newspaper advertisements accounted for almost 65% of total study-related costs. In addition, the number of initial subject contacts trended downward as the study timeline progressed. In fact, there were no new contacts during the last 5 weeks of the study. This suggests the advertisement window for recruiting subjects in the study population to be shorter in duration (4-6 weeks) than that provided with this study (10 weeks).

Another interesting note is the demographic makeup of survey respondents in comparison to recorded characteristics of this local population. Comparable to census data (U.S. Census Bureau, 2010), survey respondents were overwhelmingly white; however, there are some noticeable disparities observed. Census data demonstrates the percentage of females in this rural

community to be slightly less than half, but female survey respondents accounted for 64% of those received. Census data also finds those with a Bachelor's degree or higher at 9.7%, yet survey respondents demonstrated a 24% rate of holding a Bachelor's degree or higher. In addition, more survey respondents were married and employed than the number in this local segment of the general population.

Although 60% ($n = 15$) of survey respondents indicated a plan to participate in the online *Parenting Wisely* program, only one-third of these persons requested program access information. Of the five persons who requested online access, only two parents attempted any module work. Neither of these two parents attempted more than two of the 11 modules nor finished any of the modules attempted. This study is restricted in its ability to determine why survey indications did not translate into actual online program attempt and completion due to a lack of coding survey respondents. In addition, the lack of follow-up ability prohibited the researcher from being able to provide completion reminders to those who requested online program access.

It is plausible financial incentives may be beneficial in boosting participation and/or completion rates. Limited research has demonstrated the ability to increase participation numbers in rural, Appalachian communities through some sort of financial reward. Woodruff, Gordon, and Lobo (1999) found that an increase in completion of the *Parenting Wisely* program was observed in home-based methods utilizing the provision of CD-ROM software on a laptop computer or written materials by providing a financial incentive to those who followed through on study program participation.

Rural populations are often disadvantaged primarily due to geographic seclusion. This isolation can create barriers including a lack of fiscal resources (Hardy-Brown, Miller, Dean, Carrasco, & Thompson, 1987). As a result, this population is adversely affected in access to prevention programming due to limitations in dependable transportation and availability of trained professionals (Gordon, 2000). While Internet-based programming such as *Parenting Wisely* affords the benefit of low implementation cost (Gordon & Rolland-Stanar, 2003), it also helps overcome the aforementioned barriers by increasing access to rural persons of interest (Gordon, 2000). Since *Parenting Wisely* requires no specialized training for program content delivery and evaluation (Gordon, 2003), healthcare professionals including community health, school, and advanced practice nurses are at the forefront of ability to design and implement effective recruitment strategies for primary prevention education programs.

Limitations

Study limitations primarily involved convenience sampling methods and small sample size resulting in a lack of generalizability of study findings. The limitation in sample size may have been most affected by information contained within advertising methods. It was well noted within these advertising methods that one of the major study-related tasks was related to a web-based educational program. It is plausible that this may have limited potential subject contact with those who did not maintain access to an Internet subscription. This assumption is further validated with the survey response rate of those maintaining a home Internet subscription being significantly greater than those who did not, respectively 84% and 16%. In addition, another hindrance to a larger sample size may have been the attachment of the PI's name to advertisements. The PI resides within this rural community thus having name recognition with those that live in the area resulting in potential concerns with anonymity.

Conclusion

Rural parents indicated some degree of acceptance to an online parenting educational program through survey responses. Non-parametric testing (Chi-Square) found parents more likely to indicate a plan to participate in such a program cite perceived benefit as a primary reason, while parents were more likely to indicate a plan to not participate in a similar program if they cited time commitment as an impediment to working the intervention into their daily schedule. Other factors which may affect a participation decision include gender, marital status, owning a home computer, and parental age, but due to limited sample size and variability, findings were marginal with borderline statistical insignificance.

Additional research is needed to expand on findings from this study including validation of demographic characteristics which increase the likelihood of rural participation in an online program. Follow-up assessments need to be incorporated in order to determine why an indication of planned participation may or may not translate into actual partaking in such a program.

More research is needed on implementation of technology-based prevention methods in rural populations, as this parallels recommendations from the IOM (IOM, 2001). Web-based technology permits communities to utilize preexisting resources (i.e., Internet) thus requiring less upfront money for investment, reduced cost of program implementation by lessening labor-intensive components and other more costly resources, and increased accessibility to prevention methods. Such a call for using technology-based methods in health care prevention efforts is the cornerstone of recent funding initiatives by the U.S. Department of Health and Human Services (DHHS) (U.S. DHHS, 2010). The U.S. DHHS recently announced an allocation in millions of dollars for local prevention efforts and health initiatives. With secured funding approved for such efforts, initial parental interest in Internet-based education methods demonstrates the need for expanded monies to fund research focused on understanding how to ensure greater participation and program completion rates of rural parents.

While findings from this research study are limited, the information provided helps lay the foundation for theoretical testing of the aforementioned conclusions within larger sample sizes along with other methods to increase program participation and completion rates. Potential information from this future research recommendation will help identify a marketing schema which optimally attracts program participants in rural populations. As a result, an increase in participation numbers could translate to an improvement in adolescent substance abuse reduction outcomes.

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