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Evaluation of the Health Rocks! Program: The Association of Youth Engagement with Program Outcomes

Yan Xia
Department of Child, Youth & Family Studies
University of Nebraska-Lincoln
rxia2@unl.edu

Sarah Taylor
Department of Child, Youth & Family Studies
University of Nebraska-Lincoln
sarah.taylor@huskers.unl.edu

Maria Rosario T. de Guzman
Department of Child, Youth & Family Studies
University of Nebraska-Lincoln
mguzman2@unl.edu

Abstract: This evaluation research examined the relationship between program process and program outcome, specifically, youth engagement in the national 4-H Council *Health Rocks!* program and their program outcomes. Based on program evaluation surveys completed after the program by participants, youths' engagement in the program was associated with their gains in knowledge and skills about substance use, and personal assets related to avoiding risks. When youth participants find a program interesting, are actively engaged in the program, and find the program staff friendly, they benefit more from the program. Findings underscore the importance of engaging curriculum and friendly staff to the success of extension or afterschool youth programs. The evaluation method may offer an example of balancing rigor of evaluation design and feasibility of implementing an evaluation.

Introduction

Youth substance use is a major public health concern in the United States. In a recent study conducted by the Centers for Disease Control and Prevention (CDC) (2014), 41.1% of high school students in the United States report having smoked tobacco in their lifetime, while 8.8% of students report smoking tobacco daily. Additionally, 66.2% of high school students report having tried alcohol in their lifetime, 40.7% having tried marijuana, and 17.8% having tried illegal prescription drugs.

Majority of adults who engage in substance abuse report that they first used when they were in their youth (Becker, 2013). The earlier an individual starts smoking tobacco, the more likely they are to develop a dependence on nicotine, which makes cessation more difficult (Breslau & Peterson, 1996). Heavy alcohol consumption during youth is linked to mental health problems, drinking and driving, intimate partner violence, and risky sexual behaviors (Miller, Naimi, Brewer & Jones, 2007). Additionally, youth marijuana use can interrupt brain development and lead to mental health problems (e.g., Gonzalez, et al., 2012). Overall, substance use can negatively impact youth development and have lasting negative consequences.

Health Rocks! Curriculum

Given the high prevalence rates and detrimental impacts of youth substance abuse, the *Health Rocks!* program, a national 4-H curriculum, was developed to promote positive knowledge and attitudes toward substance-related risky behaviors. *Health Rocks!* aims to reduce youth risk behaviors by promoting healthy decision-making skills, stress coping, and socio-emotional skills that all bring to bear on risk engagement. The curriculum was premised on current research and theory on Positive Youth Development (PYD), including the Risk and Protective Framework. The *Health Rocks*! program focuses on guiding youth to establish beliefs in positive social norms, as well as develop healthy behaviors and life skills. Funded by 4-H National Council, *Health Rocks!* has been adopted into hundreds of after-school programs and summer camps in 14 states across the country.

The curriculum is comprised of three sections, including, self-reflection, influences on behavior choices, and empowerment of family and community. Each section is comprised of various stand-alone activities that can be conducted by both adult and youth leaders. Activities are intended to be hands-on and active, with specific objectives and reflection questions for processing.

Evidence-Based Youth Programming and Youth Engagement

Evaluation research reveals that evidence-based youth programs successfully aid in the development of positive behaviors among adolescents (Eddy, et al., 2012; Holleran Steiker, Hopson, Goldbach, & Robinson, 2014; Norton & Watt, 2014). Previous research has documented key factors of successful youth programming. For example, incorporating youth participants' interests and hobbies into the program can increase youth engagement. Engaging program activities can foster the bond between youth participants and others in the program (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Duerden & Gillard, 2011), which may encourage youth to remain in the program and, thus, impact the overall outcome of the program on youth.

One especially important aspect of programming is the positive relationship between youth and adults in the program (Bulanda & Mccrea, 2013; Jones & Deutsch, 2011). Research shows that adult leaders who focus, initially, on building relationships with participating youth are more likely to promote positive development and behaviors. The collaborative nature of youth programs and the relationships between adult program leaders and youth can be more important than the activities offered in the programs (Roth & Brooks-Gunn, 2003; Yohalem, Granger, & Pittman, 2009;). Even in settings outside of youth programs, research has indicated that relationships between staff members and individuals receiving services impacts the outcomes of the services. For example, a positive therapeutic relationship between a therapist and client has been found to impact change in the client's psychological functioning (Martin, Garske, & Davis, 2001). Furthermore, a positive therapeutic relationship between mental health nurses and patients contributes to the patients' recovery (Hewitt & Coffey, 2005).

Notwithstanding these strong theoretical supports for the role of youth engagement in program outcomes, few studies have specifically examined the association between youth program engagement with program outcomes. The current evaluation study aims to address this research gap by reporting the relationship between the engagement level of the *Health Rocks!* program participants and their program outcomes. This evaluation research addresses the following research questions:
1.) Is there a significant difference between Health Rocks! participants' pre-tests and post-tests measuring program outcomes?;
2.) To what extent are youth reports of their program engagement associated with program outcomes?

Methods

Evaluation Design

Post-and-then-pre survey design was used for *Health Rocks!* program evaluation. This design was chosen for two considerations. Youth participants with limited knowledge might not be able to accurately assess baseline knowledge and behavior in self-report, and therefore might compromise the validity of data (Rockwell, 1989). Another consideration was to balance rigor of the design and feasibility. With limited resources and staff, it was challenging to administer the survey twice. Therefore, a retrospective self-report survey was administered to program participants who completed 10 hours of *Health Rocks!* training.

Youth Program Outcome Measure

The survey consisted of 13 items that measured three specific program outcomes: *knowledge* of substance use consequences, coping *skills*, and other *assets* related to healthy decision-making. These three domains served as the outcome variables in this study. The items were assessed using a 4-point Likert scale, with anchors representing 'strongly agree,' 'agree,' 'disagree,' and 'strongly disagree.' After responding to these 13 items following the program, participants were asked to reflect back to their knowledge, skills, and assets prior to the program and respond to the same 13 items. This study used evaluation data from the 2014 program cycle. Only post-survey data were used to answer the second research question. The University Institutional Review Board approved this study prior to participant recruitment and data collection.

Ratings of knowledge, skills, and assets were recoded as binary variables for data analysis. Responses of 'strongly disagree' and 'disagree' were recoded as '0' to represent participants who did not report knowledge, skills, or assets. Responses of 'strongly agree' and 'agree' were recoded as '1' for participants who reported knowledge, skills, or assets. Binary data provided a meaningful way to compare students who did report knowledge, skills, or assets, the overall goal of Health Rocks!, to students who did not report knowledge, skills, or assets (Clark-Carter, 2009, p. 337). In addition, the data was not normally distributed, making binary data appropriate for this study (Streiner, 2002, p. 265). Once recoded into binary data, researchers were able to determine which program engagement items predicted the likelihood of reporting knowledge, skills, or assets after completing Health Rocks!

Program Engagement Measure

Four additional items on the post-test assessed youths' program engagement by asking participants to rate the degree to which "The training was interesting," "The staff members were friendly," " I learned a lot during the training," and "I actively participated in training activities." These items were also assessed with a 4-point Likert scale using anchors of "strongly agree," "agree," "disagree," and "strongly disagree." Each of these items separately served as a predictor variable for this study.

Sample Description

A total of 103,774 participants from 13 different states completed the *Health Rocks!* program. Participating states included Alabama, Delaware, Georgia, Illinois, Kentucky, Maryland, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia. Of the 103,774 youth participants, 27,774 completed Health Rocks! surveys. For the purpose of this study, the authors selected a random sample of 2,792 (approximately 10% of the total sample) survey respondents. Demographics of the sample can be viewed in Table 1.

Table 1

Demographic Information of Participants Region wide

Variables		N	Percent
Gender	Boys	1250	44.8
	Girls	1288	46.1
	Unreported	254	9.1
Age	10 and younger	669	24.0
	11	541	19.4
	12	554	19.8
	13	384	13.8
	14	310	11.1
	15	113	4.0
	16 and older	74	2.7
	Unreported	147	5.2
Race	Caucasian American	1395	50.0
	African American/Black	684	24.5
	Native American	59	2.1
	Asian American	27	1.0
	Multi-Racial	179	6.4
	Unknown	135	4.8
	Unreported	313	11.2
Ethnicity	Hispanic	272	9.7
	Non-Hispanic	2302	82.5
	Unreported	218	7.8
Residence	Urban	571	20.5
	Suburban	724	25.9
	Rural	1436	51.4
	Unreported	61	2.2
Total random sample of survey respondents who completed 10 hours or more of programming		2,792	

Results

To address the first research question, this study tested whether there was a significant increase in youth program outcomes using a multivariate analysis of covariance (MANCOVA). Then, the second research question was addressed by testing whether or not program engagement predicts youth program outcomes using logistic regression.

Youth Program Outcomes

A repeated measures multivariate analysis of covariance (MANCOVA) was conducted to determine if participants reported an increase in knowledge, skills, and assets after completing *Health Rocks!* MANCOVA controls for type 1 error rate and allowed for a "detailed and informative breakdown of the differential effects of the treatment methods" (Stevens, 1992, p. 152). Because adolescents retain information differently depending on their stage in development (e.g., Droit-Volet, Wearden, & Delgado-Yonger, 2007), age was a covariate in the analysis as a control. Results from the MANCOVA indicate that *Health Rocks!* significantly impacts program outcomes of knowledge $F(1, 2283) = 54.094$, $p < .0001$, skills, $F(1, 2283) =$

23.850, p < .0001, and assets, F(1, 2283) = 7.314, p < .01. The MANCOVA also indicates that age does not significantly interact with the program to impact the program outcomes for knowledge, F(1, 2283) = 3.784, p > .05, or skills, F(1, 2283) = .031, p > .05, or assets, F(1, 2283) = 3.750, p >.05. These results suggest that the impact of *Health Rocks!* on participants' knowledge, skills, and assets towards healthy behaviors does not depend on the age of participants.

Program Engagement Associated with Program Outcomes

Next, binary logistic regression analyses were conducted to predict the participants' outcomes of knowledge, skills, and assets using the four program engagement scale items as predictors. Each program engagement item was used as a separate predictor in each of the three analyses predicting knowledge, skills, and assets. Statistics can be viewed in Table 2.

The logistic regression model for knowledge was statistically significant, $\chi^2(4) = 23.318$, $p < .000$, indicating that the predictors as a set distinguished between participants who did report knowledge after the program and participants who did not report knowledge after the program. The model explained 11% (Nagelkerke R^2) of the variance in knowledge and correctly classified 98.3% of cases. "The staff members were friendly" was the significant predictor for the model. Participants who reported "the staff members were friendly" were 82% more likely than participants who did not report the staff members as friendly to report knowledge after the program.

The model for skills was statistically significant, $\chi^2(4) = 55.959$, $p < .000$, indicating that the predictors as a set distinguished between participants who did report skills after the program and participants who did not report skills after the program. The model explained 24% (Nagelkerke R^2) of the variance in skills and correctly classified 97.8% of cases. Significant predictors were "The training was interesting" and "The staff members were friendly." Participants who reported "the training was fun" were 92% more likely to report high skills after the program compared to participants who did not report "the training was fun." Participants who reported "the staff members were friendly" were 81% more likely than participants who did not report the staff as friendly to report high skills after the program.

The model for assets was statistically significant, $\chi^2(4) = 46.382$, $p < .000$, indicating that the predictors as a set distinguished between participants who did report assets after the program and participants who did not report assets after the program. The model explained 25% (Nagelkerke R^2) of the variance in assets and correctly classified 98.8% of cases. Significant predictors were "The staff members were friendly" and "I actively participated in training activities." Participants who reported "the staff members were friendly" were 89% more likely to report assets after the program compared to participants who did not report the staff as friendly. Participants who reported "I actively participated in training activities" were 81% more likely than participants who did not report actively participating in training activities to report skills after the program. Predicted probability percentages were calculated using the formula: odds ratio/(odds ratio +1) (Australian Bureau of Statistics, 2012; Allison, 1999).

Table 2

Binary Logistic Regression Coefficients of Program Outcomes on Engagement

Predictor	β	SE	Wald	df	p	Odds Ratio
Knowledge						
Training was interesting	.120	.772	.024	1	.876	1.128
Staff were friendly	1.541	.667	5.331	1	.021*	4.670
Learned a lot	.585	.721	.658	1	.417	1.795
Actively participated	1.187	.654	3.293	1	.070	3.276
Constant	1.036	.511	4.119	1	.042*	2.819
Skills						
Training was interesting	2.412	.563	18.391	1	.000***	11.161
Staff were friendly	1.475	.600	6.037	1	.014*	4.369
Learned a lot	.203	.618	.108	1	.743	1.225
Actively participated	.132	.660	.040	1	.841	1.141
Constant	.455	.450	1.020	1	.312	1.575
Assets						
Training was interesting	1.075	.769	1.957	1	.162	2.931
Staff were friendly	2.052	.704	8.487	1	.004**	7.783
Learned a lot	.110	.795	.019	1	.890	1.116
Actively participated	1.479	.725	4.163	1	.041*	4.388
Constant	.540	.460	1.378	1	.240	1.715

Note: * $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

The present study examined program outcomes of the curriculum, *Health Rocks!,* with a specific focus on the role of youths' program engagement and their reported knowledge, skills, and assets related to avoiding risk behaviors after the program. This study linked the process of program delivery to the program outcomes by assessing the extent to which the curriculum was engaging and youth were actively engaged in the program.

Findings reveal significant gains in youths' knowledge and skills about substance use, and personal assets related to avoiding risks between the pre- and post-test. Additionally, findings show youths' engagement in the program was associated with their self-reported gains in program outcomes. Findings are consistent with previous research that suggests on the positive impact of youth relationships with program staff members on youths' program outcomes (e.g., Bulanda & Mccrea, 2013). Youth who viewed the Health Rocks! staff as friendly were more likely to report knowledge, skills, and assets after the program. This finding reveals that the connection youth have with program staff can positively impact the extent of youths' program gains.

It should be noted that because this evaluation study did not use a control group, the increase in the youth's reported knowledge and skills from the pre- to post-test should not solely be attributed to the program. In addition to no control group, the non-normal distribution of data was a limitation to this study. The majority of youths' program outcome responses were "strongly agree." On one hand, this is positive, as the goal of the program was for youth to report the program outcomes. On the other hand, the skewed distribution of the data

warranted an analysis that fit the data structure. Nevertheless, findings have several implications for youth extension and afterschool programs that we detail below.

First, scholars have long acknowledged the important role that adult leaders and program staff play in the quality of youth programming (Hutchins, Van Leeuwen, & Seevers, 2002; Rhodes, 2005; Jones & Deutsch, 2011). This study has provided empirical support to this notion. Future youth extension and afterschool programs should emphasize the role of staff. Including staff members in the program that fully engage with youth participants may optimize program outcomes for youth. Additionally, staff member training prior to the program should detail the importance of staff-youth participant relationships and emphasize professionalism and empathy.

Second, findings reveal that when youth find a program interesting and they are actively engaged in the program, they benefit more from the program. Indeed, youth's perception of programs has been linked to their likelihood for engagement and retention (Greene, Lee, Constance, & Hynes, 2013). Youth learn better when they find program activities meaningful and fun. Therefore, extension youth programs should integrate engagement as an essential part of curriculum development.

Finally, with increasing recognition for the importance of rigorous program evaluation of youth programs, it is important to measure not just objective outcomes but also youths' subjective perceptions about their experiences. Future research should continue to examine how youths' engagement in positive youth programming impacts their program outcomes. Specifically, future studies should examine what specific aspects of program staff members youth participants appreciate and find attractive. Qualitative research methods may shed light on these specifics.

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