



Evaluation of *Vision of You* in the Commonwealth of Virginia

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Evaluation Abstract

The Evaluation of Vision of You in the Commonwealth of Virginia

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Intervention Name

Vision of You (VoY)

Intervention Description

The Vision of You program is an interactive, self-paced online curriculum addressing comprehensive sexuality education, as well as healthy life skills and relationships. VoY utilizes engaging video, animation, interactive components, and gamification principles. The program consists of nine 45-minute units over four to six weeks for a total of 6.75 hours of programming. The units cover the following topics: (1) concepts of identity; (2) healthy relationships and red flags for unsafe relationships; (3) communication with trusted adults; (4) providing and requesting consent; (5) reproductive anatomy and medical treatment; (6) STI prevention; (7) clinic visits; (8) methods of protection; and (9) setting and achieving future goals.

The target population for this evaluation study was youth between the ages of 13 and 19 who were being educated in non-traditional settings, including: (1) Virginia's juvenile detention centers, (2) alternative education programs and/or night school programs, (3) Community Services Board (CSB) programs and (4) third-party service provider programs. The VoY curriculum was delivered online to participants. It is self-paced but trained proctors were present to assist with any technological issues (while maintaining participant privacy). The proctors were staff from the partner sites, who had participated in a training focused on the operation of the curriculum. Partner sites also had a VoY staff member assigned to them to help them with any questions or issues that arose.

Comparison Condition

Eat, Move, Win (www.healthyeating.org) was an optional program for the comparison condition (control) group. The control group is a combination of youth who chose to participate in the Eat, Move, Win program and youth who did not.

Comparison Condition Description

Site partners had the option of utilizing a short nutrition program to engage the control group youth during programming time. The nutrition program is called Eat, Move, Win (www.healthyeating.org). The program is delivered online, over five sessions, with no prescribed number of program hours. Students complete this program at their own pace. The five topics covered are: Food and You, Optimal Nutrition, Nutrient Gaps, Eating Patterns, and Taking Action. None of the content overlaps with either the adult preparation topics or other topics covered in the VoY curriculum.

Behavioral Outcomes

The evaluation of Vision of You (VoY) aimed to assess the following behavioral outcomes, as measured by self-report at a 9-month post-program data collection point: Occurrence of sexual activity (vaginalsex), number of sexual partners, and occurrence of contraceptive use (including condoms and other contraceptives).

Non-behavioral Outcomes

Additionally, the study included the impact evaluation of a non-behavioral outcome related to future orientation (goals, planning, and foresight), as measured by a 10-item scale. The following implementation measures were also collected and analyzed: Number of youth completing all lessons of VoY, average duration of the program, time it takes for individual lesson completion, and students' comparison of VoY with other sexual health education programs.

Sample and Setting

The youth in the target populations were already involved with the partner site, and all eligible youth were invited to participate in the study. Partner site staff identified eligible youth according to the following criteria 1) they are in 9th through 12th grade and between the ages of 13 and 19, 2) they have sufficient time left in their educational program, CSB participation, or detention facility to complete the curriculum, 3) they have not had any prior participation in the study, and 4) they have at least a 5th grade reading level. All participants gave written assent or consent (if over 18) and their parent/guardian gave consent (for participants under age 18). The VoY project staff expected to enroll at least 720 students into the study from a minimum of 14 partner sites across Virginia. Over the project period, 23 site partners were engaged in enrolling youth and assisting with program implementation: seven alternative education programs, nine juvenile detention centers, one community service board, and six third-party service providers. The final number of enrolled students was 790, but the final sample (due to the impact of the COVID-19 pandemic on programming) was 626.

Research Design

This study is a randomized control trial (RCT) with randomization occurring at the individual level. JMU staff worked with contacts at each site to assist in identifying potential participants. Staff at each site gathered parental consent (or consent from youth over 18) and youth assent. Consent was obtained in person (at schools, service provider program sites, and CSB offices) and by mail or an electronic platform (at juvenile detention sites). Youth assent was obtained in person via paper and pencil. Once consent was obtained, site staff called JMU staff to determine if the participant had already been involved in the study at any site. If they have not previously enrolled in the study, the participant was randomly assigned using a random number generator during the phone call. After completing the baseline survey, youth were told of their assigned condition.

Data Collection

Youth in both groups were surveyed four times: at baseline, immediately post-program completion (or 5-6 weeks post-baseline for control group youth), 3-months post-program (approximately 4 months post-baseline for control group youth), and 9-months post-program (approximately 10-months post-baseline for control group youth). All survey data was collected using a web-based survey. If utilization of the web-based survey was not possible, a paper-based instrument was provided by site partner staff. The impact analysis focuses on the data collected at the 9-month post-program timepoint.

For the implementation study, data on fidelity, attendance, duration of lessons and overall program were obtained by the program software, and youth perception of the program was collected via survey instruments. This data was collected through fidelity tracking within the online program and constructed response questions on the surveys.

Methods

To analyze the multivariate data for the behavioral outcomes, logistic regressions (LR) and a zero-inflated negative binomial regression model were conducted. Effect sizes, where appropriate, were also calculated and a simple t-test of group means was implemented for the analysis of the non-behavioral outcome regarding future orientation. Descriptive statistics are reported for implementation analysis measures.

Findings

The results of the randomized control trial conducted over the past four years indicate the Vision of You program had a positive effect on two of the three main behavioral outcomes of interest: number of sexual partners and occurrence of contraception use. Regarding both of these outcomes, the treatment group youth engaged significantly less in these risky behaviors than youth in the control group. A third behavioral outcome, rate of recent sexual activity, was not found to be significantly impacted by participating in the VOY program. Regarding the non-behavioral outcome, future orientation, there was a small but significant difference between treatment group and control group at the 9-month data collection mark.

The Vision of You program was implemented with near-target fidelity. In all, 71% of the youth completed all nine units of the curriculum, with 83% completing at least 78% (7 units) of the program. Further, as the program was intended to be completed in 4-6 weeks, another fidelity measure of program duration was collected: Over the three years of program implementation, 82% of youth completed the program within six weeks. To gauge the program satisfaction of Vision of You, youth were asked how much they liked the Vision of You program compared to other, similar programs. Overall, 82% of the youth who responded to the item liked the program “much better” or “a little bit better” than other programs. Further, the majority of the youth (78%) reported liking it “much better.”

THE EVALUATION OF VISION OF YOU IN THE COMMONWEALTH OF VIRGINIA

I. Introduction

A. Introduction and study overview

The state-wide “Virginia Personal Responsibility Education Program Innovative Strategies” (VPREIS) project served youth residing in rural areas of Virginia with high teen birth rates, that demonstrate elevated risk factors for experiencing or causing a teen pregnancy, and contracting sexually transmitted infections (STI), including HIV/AIDS. The VPREIS initiative is a comprehensive, collaborative effort that emphasized both abstinence and contraception and addressed the adulthood preparation subjects of healthy relationships, healthy life skills, adolescent development, and parent-child communication in order to increase knowledge and skills, and change behaviors among vulnerable populations.

The VPREIS initiative adapted the promising Vision of You (VOY) curriculum into an interactive, self-paced online intervention that was implemented and rigorously evaluated using a random controlled trial (RCT) design with the following vulnerable high-school aged youth populations: 1) youth serving sentences in Virginia’s juvenile detention centers; 2) youth attending alternative education and/or night school programs; 3) youth referred to Community Services Board programs; and 4) youth receiving services from third-party service providers. The project involved 23 sites and 790 youth across the Commonwealth of Virginia.

B. Primary research question(s)

For the impact analysis of Vision of You, there were three Primary Research Questions and one Secondary Research Question.

Primary research questions

PQ1. What is the impact of VOY relative to business-as-usual services on rates of participants’ recent sexual activity* as reported nine months after ending the program?

PQ2. What is the impact of VOY relative to business-as-usual services on the number of participants’ vaginal intercourse partners as reported nine months after ending the program?

PQ3. What is the impact of VOY relative to business-as-usual services on rates of participants’ unprotected sex as reported nine months after ending the program?

**In the original research design, the intent was to measure rates of vaginal, oral, and anal sexual activity. The current analysis focuses only on vaginal sexual activity.*

C. Secondary research question(s)

For the impact analysis of Vision of You, there was one exploratory Secondary Research Question.

Secondary research question

SQ1. Will the implementation of the VoY program affect participants' level of future orientation as reported nine months after ending the program?

II. Program and comparison programming

The VPREIS research project is a randomized control trial (RCT), with assignment to either the treatment or the control group occurring at the level of the individual participant. The following section outlines the program details and settings, as well as provides some information regarding the comparison group experience.

A. Description of program as intended (treatment group)

The Vision of You program is an interactive, self-paced online curriculum addressing comprehensive sexual education, as well as adulthood preparation subjects (future orientation, communication, self-efficacy), healthy life skills and relationships. The program consists of nine 45-minute units over four to six weeks for a total of 6.75 hours of programming. VoY utilizes engaging video, animation, interactive components, and gamification principles. The topics, duration, and intended dosage of the units are presented in Table 1.

Table 1. Description of units in Vision of You

A: Component	B: Amount, duration, intended dosage	C: Content
Overall Vision of You Program	Nine 45-minute Units (including one introductory session) over four-six weeks for a total of 6.75 of programming. The units must be completed in order and they may not revisit a unit once it is completed.	The curriculum addresses multiple adulthood preparation topics: healthy life skills, healthy relationships, adolescent development and parent-child communication.
Introductory Session	One 45-minute session: Introduction	The program goals, overarching structure, and high-level introduction to how the program works
Unit 1	One 45-minute lesson: Identity	Future orientation, self-identity, peer and media influences
Unit 2	One 45-minute lesson: Communication with Peers and Partners	Peer influences, central support mechanisms, communication about sex, negotiating safer sex, sexual refusal and self-efficacy
Unit 3	One 45-minute lesson: Communication with Adults	Strong social support mechanisms, foster open communication about sex
Unit 4	One 45-minute lesson: Consent	Skills to enhance sex refusal and self-efficacy, develop learning techniques that teach self-control, help students identify situational factors and make decisions that allow them to take protective action
Unit 5	One 45-minute lesson: Anatomy	Adolescent development, reproduction, reproductive anatomy, human sexual response, reproductive health, pregnancy
Unit 6	One 45-minute lesson: Sexually Transmitted Infections (STI)	Self-efficacy, negotiation of safer sex, perceived susceptibility, perceived severity, perceived benefits, cues to action
Unit 7	One 45-minute lesson: Birth Control and Methods of Protection	Skills to enhance sexual refusal actions and self-efficacy, perceived benefits, perceived barriers, negotiate condom use and how to use a condom,

		perceived behavioral control, attitudes toward condom use
Unit 8	One 45-minute lesson: Identity 2 - Be who you want to be	Consequential-content, promote optimism for the future and structure success for goals, future orientation

The VoY curriculum was delivered online to participants. It was self-paced but trained proctors were present to assist with any technological issues (while maintaining participant privacy). The proctors were staff from the partner sites, who had participated in a training focused on the operation of the curriculum. Partner sites also had a VoY staff member assigned to them to help them with any questions or issues that arise.

Once recruited, it was intended that each participant began the program within two weeks. Youth would engage in the program individually, although it may have been in an environment (classroom, computer lab) where other youth were participating at different workstations. Each participant would progress through the curriculum completely at their own pace, and site proctors were trained in guiding the youth through any technological issues that arose. Youth were not able to access the curriculum from their home or mobile device, because a trained proctor would not be available. These processes were in place for all youth, regardless of the type of site (juvenile detention center, alternative education program, community services board). Further detail is provided in Table 2.

Table 2. Description of program settings

A: Component	B: Who will deliver?	C. Setting
All Vision of You program sessions	<p>The VoY curriculum is delivered online to participants. It is self paced but trained proctors were present to assist with any technological issues (while maintaining participant privacy).</p> <p>The proctors were staff from the partner sites, who had participated in a training focused on the operation of the curriculum.</p>	<p>CSB youth engaged in the program during appointments with their case worker. The curriculum was accessed via a laptop, and the case worker was the trained proctor for the participants.</p> <p>JDC youth engaged in the program during computer lab sessions within their facility. A trained proctor was present to assist with any technological or logistical issues, such as connectivity problems or accidental log outs.</p> <p>Alternative education youth engaged in the program during existing school hours in the computer lab at their school. A trained proctor was present to assist with any technological or logistical issues, such as connectivity problems or accidental log-outs.</p> <p>Third-party service provider youth engaged in the program during normal program hours in the computer lab their club / meeting location. A trained proctor was present to assist with any technological or logistical issues, such as connectivity problems or accidental log outs.</p>

The logic model for the VPREIS study is included in Appendix A.

B. Description of comparison condition (control group)

If they chose, site partners could utilize a short nutrition program to engage the control group youth during programming time. The nutrition program is called Eat, Move, Win (www.healthyeating.org). The program was delivered online, over five sessions, with no prescribed number of program hours. Students could complete this program at their own pace. The five topics covered are: Food and You, Optimal Nutrition, Nutrient Gaps, Eating Patterns, and Taking Action. None of the content overlapped with either the adult preparation topics or other topics covered in the VoY curriculum.

III. Impact evaluation design

The VPREIS research project is a randomized control trial (RCT), and the following paragraphs detail the research design for the study.

A. Identification and recruitment of the study participants

Partner sites were recruited from multiple regions in Virginia. To be recruited, sites needed to be alternative education programs, community service board (CSB) organizations, juvenile detention facilities, or receiving programming from third-party service providers. Over the course of the study, 269 sites were contacted regarding participation. Of these, 23 agreed to participate and became site partners.

JMU staff worked with site partner staff to identify eligible youth according to the following criteria: 1) they were in 9th through 12th grade and between the ages of 13 and 19, 2) they had sufficient time left in their educational program, CSB participation, or detention facility to complete the curriculum but would be released during the early follow-up data collection period, 3) they had not had any participation in this study, and 4) they had at least a 5th grade reading level. In total, 790 youth were recruited for the study, with 401 assigned to the treatment group and 389 assigned to the control group.

B. Research design

This study is a randomized control trial (RCT) with randomization occurring at the individual level and a probability of 0.50 for condition assignment. Consent and assent, as well as baseline survey data, were collected prior to random assignment. Further, there was no overlap in content between the treatment and control group experiences.

C. Data collection

Youth in both groups were surveyed four times: at baseline, immediately post-program completion (or 5-6 weeks post-baseline for control group youth), 3-months post-program (approximately 4 months post-baseline for control group youth), and 9-months post-program (approximately 10-months post-baseline for control group youth). Details of the data collection waves are presented in Table 3.

Table 3. Data collection waves

Wave of data collection	Timing of data collection	Method of data collection	Who was responsible for data collection
Baseline (Wave 1)	At baseline	Online administration of survey at partner site	Site partners with continuous support from VPREIS data collection specialist
Post-program (Wave 2)	Intervention: Immediately following conclusion of 9th lesson Control: 5-6 weeks post-recruitment	Online administration of survey at partner site	Site partners with continuous support from VPREIS data collection specialist
Short-term follow-up (Wave 3)	Intervention: 12-14 weeks after conclusion of the program Control: 12-14 weeks post Wave 2 measurement	Online administration of survey (desktop or mobile) done at site or at home	VPREIS data collection staff with support from site partners
Long-term follow-up (Wave 4)	Intervention: 34-38 weeks after conclusion of the program Control: 34-38 weeks post Wave 2 measurement	Online administration of survey (desktop or mobile) done at site or at home	VPREIS data collection staff with support from site partners

For youth in both the treatment and the control group, contact information (phone numbers [cell, home, work], mailing address) for all youth and their legal guardians was collected upon recruitment and confirmed at the conclusion of the program. The site partners also had contact information that is regularly updated, due to the nature of their relationship with the youth (as case managers, administrators). Many of the youth were still involved with their case managers (site partners) for the duration of the evaluation, and JMU staff worked closely with them to keep abreast of any changes. For those that left their site, the VPREIS team maintained contact with them and their legal guardians (monthly text messages to verify contact information and phone calls one week prior to survey administration) to ensure timely administration of the follow-up data collections.

Incentives were offered to participants for survey completion. For taking the surveys, youth received up to three gift cards in the mail: A \$10 gift card for Wave 2, a \$20 gift card for Wave 3, and a \$30 gift card for Wave 4. Additionally, a \$10 gift card was used as an incentive for parents to return consent forms (regardless of their choice to give consent or not).

D. Measures

The four measures used to operationalize the three primary outcomes and the one secondary outcome were collected via the online survey instruments at four points in time. For the impact analysis, data from the fourth wave of survey administration (long-term follow-up data, approximately 9-month post-program completion) was utilized. The first and third measures were constructed to be binary measures to indicate occurrence of the behavior rather than frequency, for the sake of analysis.

These four measures are outlined in Tables 4 and 5.

Table 4. Outcome measures used for primary impact analyses research questions.

Behavioral outcome measure	Source item(s)	Constructed measure	Timing of measure relative to program
Occurrence of recent sexual activity	In the past three months, how many times have you had vaginal intercourse?	Single binary item (1 = Once, 2-3 times, 4 or more times; 0 = Never, not in the past three months; MISS)	9-month post-program
Number of recent sexual partners	In the past three months, with how many people have you had vaginal intercourse?	Single continuous item (0 to x; MISS)	9-month post-program
Occurrence of unprotected sexual activity	In the past three months, how many times have you had unprotected vaginal intercourse?	Single binary item (0 = None of the time, ELSE = 1; MISS)	9-month post-program

Table 5. Outcome measures used for secondary impact analyses research question

Outcome measure name	Source item(s)	Constructed measure	Timing of measure relative to program	Cronbach's Coefficient Alpha (internal consistency)
Future orientation scale	10 Likert-scale items (see Appendix D)	Mean score 1 – 5, with recoding conducted so that higher values indicate more positive future orientation	9-month post-program	$\alpha = 0.69$

E. Study sample

Over the three years of enrollment, there were 1242 consent forms distributed, with 821 being returned. A total of 817 youth consented to the study, and 790 of those completed the baseline survey and were randomly assigned to a group. The impact of the COVID-19 pandemic resulted in youth who had been enrolled and had participated in the baseline survey, but were unable to complete any programming.

Three sites were closed in March of 2020, making access to desktop computers and reliable internet an impossibility for the youth enrolled in the study at those sites. Due to the inability of these youth (77 in the control group and 87 in the treatment group) to participate in the program itself due to its online nature, they were then excluded from the study but not considered as attrition. The same cutoff date was used to determine which youth (control or treatment) would be included in the final sample.

Although it is suspected that attrition for follow-up data collection may have been lower if the pandemic was not occurring, there is no way to quantify that impact on attrition rates. Fortunately, because of the online / mobile-friendly nature of the follow-up survey instruments and the extensive efforts of the VPREIS data collection team, attrition rates were able to be maintained within conservative guidelines (What Works Clearing House, 2020). The response rates are presented in Table 7 on the following page.

The final analytic sample size for each key measure is presented in Table 6.

*Table 6. Final sample size for each key measure **

Key Measure	Follow-up (9-month) n	
	Treatment	Control
Occurrence of recent sexual activity	213	219
Number of vaginal sex partners in the past three months	213	219
Has had unprotected sex in the past three months	213	219
Future Orientation Scale	204	216

**This results in a an overall attrition of 31% for the primary research questions, and 2.4% differential attrition. This assumes that the participants affected by COVID-related school closings (which prevented programming for reasons unrelated to the study) are not considered attrition. If these students were to be considered attrition, then overall attrition would be 34.8% and the differential would be 4.3%.*

Table 7. Youth sample sizes by intervention status

Number of youth	Time Period	Total sample size	Intervention sample size	Comparison sample size	Total response rate	Intervention response rate	Comparison response rate
Assigned to condition		626 ^a	314	312			
Completed a baseline survey		626	314	312	1.00	1.00	1.00
Completed a follow-up survey	<i>Immediately post-programming</i>	539	259	280	0.86	0.83	0.90
Completed a follow-up survey	<i>9-months post-programming</i>	461	226	235	0.74	0.72	0.75
Included in the impact analysis sample at follow-up (accounts for item non-response and exclusion due to pandemic) ^a	<i>9-months post-programming</i>	432	213	219	0.69	0.68	0.70

^a A group of 164 youth, enrolled in the study after March 1, 2020, were excluded from the study due to the COVID-19 pandemic.

F. Baseline equivalence and sample characteristics

The demographics of the final analytical sample are equivalent across groups, with an average age of 16.48 overall at the final data collection point (9 months post baseline). Slightly more than half (58%) of the sample is female (reported as their biological sex, assigned at birth). There were no youth included in the final sample that were missing any data on any of the primary outcome variables or the covariates (age, gender, race).

To establish baseline equivalence of the final sample on key measures and demographic variables, group proportions and means were compared and tested against a significance level of $p = 0.05$ (two-tailed). The summary statistics of these tests are presented in Table 8.

Table 8. Summary statistics of key baseline measures for youth completing the 9-month post-program follow-up survey

Baseline measure	Intervention proportion or mean (standard deviation)	Comparison proportion or mean (standard deviation)	Intervention versus comparison difference	Intervention versus comparison p -value of difference
Age	15.76 (1.544)	15.94 (1.567)	0.18 (t 1.202)	0.230
Gender (female %)	58%	58%	0%	1.000
Race/ethnicity				0.386
Hispanic	5.9%	5.4%	0.5%	
Non-Hispanic White	61.5%	59.2%	2.3%	
Non-Hispanic Black	26.2%	31.8%	5.6%	
Other race-ethnicities	6.3%	3.6%	2.7%	
Has ever had sex	38.7%	45.2%	6.5%	0.172
Has had vaginal sex in the past three months	22.2%	26.9%	4.7%	0.257
Number of vaginal sex partners in the past three months	0.35 (0.893)	0.49 (0.992)	0.14 (t 1.540)	0.124
Has had unprotected vaginal sex in the past three months	9.4%	10.9%	1.5%	0.606
Future Orientation Scale	3.643 (0.437)	3.594 (0.5097)	0.049(t 1.059)	0.290
Sample size*	213	219		

*The analytic sample for the secondary outcome also has no statistically significant differences across baseline variables (age, gender, race, and key behavioral outcomes). See Appendix E.

G. Methods

The analytic methods, including how missing data was handled and / or imputed, are discussed in this section. Each research question is addressed separately. This information is also summarized in Table 5. If a participant was missing the answer to any of the questions used to answer the primary RQs (after factoring in logical imputation), they were excluded so that a unified analytic sample was established. A Benjamini-Hochberg correction was applied to control for inflated Type I error rates across the Primary Research Questions.

Primary Research Question 1:

What is the impact of VoY relative to business-as-usual services on rates of participants' recent sexual activity as reported nine months after ending the program?

The first primary research question was assessed using a logistic regression model (LR) with the occurrence of vaginal sexual intercourse in the past three months (yes, no) as the binary dependent variable, group membership as the independent variable, and controlling for covariates (age, gender, race, and the outcome measure at baseline).

Primary Research Question 2:

What is the impact of VoY relative to business-as-usual services on the number of participants' vaginal intercourse partners as reported nine months after ending the program?

The second primary research question was assessed using a zero-inflated negative binomial regression model with number of sexual partners as the dependent variable, group membership as the independent variable, and controlling for covariates (age, gender, race, and the outcome measure at baseline). This model, instead of a traditional OLS, was used due to the dependent count variable having a large number of zeros in the data. Due to skip logic in the survey, if a teenager had never had sex or had not had sex in the past three months, this question was not presented to them. In these cases, zeros were imputed for this measure of number of sexual partners in the past three months.

Primary Research Question 3:

What is the impact of VoY relative to business-as-usual services on rates of participants' unprotected sex as reported nine months after ending the program?

The third primary research question was assessed using a logistic regression model (LR) with the occurrence of unprotected vaginal sexual intercourse in the past three months (yes, no) as the binary dependent variable, group membership as the independent variable, and controlling for covariates (age, gender, race, and the outcome measure at baseline).

Secondary Research Question 1:

Will the implementation of the VoY program affect participants' level of future orientation as reported nine months after ending the program?

The measure used to assess the exploratory secondary research question is the mean score on a subscale of 10 survey items. Youth who have responded to at least 8 of the items did not have imputed data. If there were more than two missing responses, data were imputed utilizing last

observation carried forward (LOCF) for the 9-month data points. If the participant had no responses for an item from any of the three prior survey administrations, and they had more than two items missing, they were deleted from the analytic sample.

Table 9. Outcomes and model specifications

Outcome	Model
Primary 1, Binary Occurrence of participants' recent sexual activity	Logistic regression model (LR) including baseline covariates
Primary 2, Continuous Number of participants' sexual partners*	Zero-inflated negative binomial regression
Primary 3, Binary Occurrence of participants' unprotected sex	Logistic regression model (LR) including baseline covariates
Secondary 1, Continuous Level of future orientation	<i>t</i> -test, Cohen's <i>d</i>

IV. Implementation evaluation

The implementation evaluation focused on four research questions. They are presented in this section, along with the measures used to assess them and the associated analysis methods. This information is also summarized in Table B.1 in Appendix B.

Implementation Research Question 1: How many participants completed all nine lessons of the Vision of You program?

This research question, aiming to address fidelity of the program, was measured by the number of participants who complete the nine units of the VoY curriculum. The data for this measure was collected continuously during the study implementation, as youth completed the program on a rolling basis.

Implementation Research Question 2: What is the duration of the program from first to last lesson?

The second implementation research question was measured by counting the days between (and including) the first day of program engagement and the last day of program completion (Unit 9). The data for this measure was collected continuously during the study implementation, as youth began and completed the program on a rolling basis.

Implementation Research Question 3: What is the percentage of the program completed across all participants?

This variable was measured by tracking how many lessons were completed by each participant.

Implementation Research Question 4: Did youth like the curriculum compared to other programs?

The fourth implementation research question, aiming to address program satisfaction, was measured by a Likert-scale item on the immediate post-program survey:

Compared to other programs and lessons you have had about similar topics (for example, in Health Class at school), how much did you like Vision of You?

- I liked it much better.
- I liked it a little bit better.
- I liked it about the same.
- I liked it a little bit less than other programs.
- I liked it a lot less than other programs.

It was coded 1 (“I liked it much better” or “I liked it a little bit better”) and 0 (“I liked it about the same” or “I liked it a little bit less” or “I liked it a lot less than other programs”). The data for this measure was collected as youth finished the VOY program.

Implementation Research Question 5: Were control group youth exposed to other reproductive education or reproductive health services?

The final implementation research question was measured by five multiple choice items on the immediate post-program survey*:

In the past 12 months, how often did you attend any classes or sessions (**other than the Vision of You program**) about the following?

1. Relationships, marriage or dating

2. Abstinence from sex
3. Methods of birth control, such as condoms, pills, etc.
4. Where to get birth control
5. Sexually transmitted infections (STIs), also known as STDs

Never

1-2 times

3-5 times

6-9 times

10 times.

**This set of questions was administered after program implementation had begun and the sample size for this measure is 156.*

V. Study findings

A. Implementation study findings

Overall, the Vision of You program implementation were carried out as planned. Most students were able to finish the program in its entirety, and well within the timeline that was intended. Although some data was not collected due to technical issues, dosage, program satisfaction, and context data were collected and provided positive feedback.

Dosage

The Vision of You program was implemented with near-target dosage. In all, 71% of the youth completed all nine units of the curriculum, with 83% completing at least 78% (7 units) of the program, and the participants completed an average of 76% of the program. Further, as the program was intended to be completed in four to six weeks, another measure of program duration was collected: Over the three years of program implementation, 82% of youth completed the program within six weeks. Although this is slightly longer than the original intention, the program staff and site partners realized that school and programming logistics made the program a bit longer than anticipated.

Program Satisfaction

To gauge the quality of the Vision of You program, youth were asked how much they liked the Vision of You program compared to other, similar programs. Overall, 82% of the youth who responded to the item liked the program “much better” or “a little bit better” than other programs. Further, the majority of the youth (78%) that responded within these two categories reported liking it “much better.”

These results are summarized in Table 11 on the following page.

Context

Vision of You participants were asked if they had previous experience with reproductive education, specifically regarding five topics that are addressed in VoY. Overall, most participants had not received prior programming covering these topics.

Table 10. Results of contextual question on post-program survey (n = 156)

Topic	Never	1-2 times	3-5 times	6-9 times	10 + times
Relationships, dating and marriage	78.6%	13.9%	3.0%	1.3%	3.2%
Abstinence from sex	76.0%	15.4%	2.8%	1.3%	3.2%
Methods of birth control	76.7%	12.6%	4.3%	0.6%	1.9%
Where to get birth control	82.4%	11.3%	3.7%	0.6%	1.9%
Sexually transmitted infections	81.8%	11.3%	4.3%	0.6%	1.9%

Table 11. Targets and findings for each measure used to answer implementation evaluation research questions

Implementation element	Research question	Measure	Target	Results
Dosage	How many participants will complete all nine lessons of the Vision of You program?	Number of youths who completed all units of VOY	80% of youth will complete all units of VOY	71% of treatment group youth received all 9 sessions
Dosage	What is the duration of the program from first to last lesson?	Time lapse (measured in days) between the beginning of the first unit and the completion of the final unit	75% of the youth will complete the program in six weeks.	82% of the youth completed the program in six weeks
Program Satisfaction	Did youth like the curriculum compared to other programs?	Likert item on the post-survey with 5 response options; Binary measure constructed: 0 = "About the same," A little bit less," "Much less"; 1 = "A little bit better," "Much better"	65% of the youth who respond to the survey item will report they liked VOY "A little bit better" or "much better" than other programs covering similar topics	82% of the youth who responded to the survey item reported that they liked VOY "A little bit better" or "much better" than other programs covering similar topics
Context	Were control group youth exposed to other reproductive education or reproductive health services?	Multiple choice items (5) on the immediate post-program survey	Less than 15% of the youth received other content outside of the program	Most youth (76 – 82.4% across topics) did not receive programming outside of the study (Table 10 on the previous page).

B. Impact study findings

This section details the results of the analyses of the primary and secondary research questions. Each question is presented, followed by the results of the analysis and the interpretation.

Primary Research Question 1

What is the impact of VoY relative to business-as-usual services on rates of participants' recent sexual activity as reported nine months after ending the program?

Participation in the Vision of You program did not lead to an effect on recent sexual activity. The difference between the rate of recent sex (vaginal intercourse) among the treatment group ($M = 0.312$) and the control group ($M = 0.266$) was not significant ($p = 0.241$, adjusted $\alpha = 0.050$). The only significant predictor of this behavior is age, with an increase in age leading to an increase in report of recent sexual activity.

Primary Research Question 2:

What is the impact of VoY relative to business-as-usual services on the number of participants' vaginal intercourse partners as reported nine months after ending the program?

Results indicate that participation in the Vision of You program had an effect on participants' number of recent sexual partners. Youth in the treatment group reported fewer partners ($M = 0.39$) in the past three months than those in the control group ($M = 0.57$) (adjusted means), and this difference is statistically significant ($p = 0.013$, adjusted $\alpha = 0.033$). The mean number of sexual partners in the control group is 2.9, among those that reported having at least one sexual partner. The mean number of partners in the treatment group is 1.67 partners, among those that reported having at least one sexual partner.

In the zero-inflated component results, group membership had no significant effect on the outcome ($p = 0.310$, adjusted $\alpha = 0.017$). Age is the only significant independent variable in this model ($p < 0.001$)

Primary Research Question 3:

What is the impact of VoY relative to business-as-usual services on rates of participants' unprotected sex as reported nine months after ending the program?

Participants in the program reported lower rates of unprotected sex. Youth in the treatment group were 45.4% less likely to engage in unprotected sex than those in the control group. This is statistically significant ($p = 0.009$, adjusted $\alpha = 0.017$), and indicates that the Vision of You program has a positive effect on occurrence of unprotected sex.

Secondary Research Question 1:

Will the implementation of the VoY program affect participants' level of future orientation as reported nine months after ending the program?

A small, positive effect on Vision of You participants' future orientation was found. Although the change in raw means for the Future Orientation scale from baseline to 9-month post-program within

each group did not seem notable (the treatment group increased 0.033 and the control group decreased 0.023), the difference across groups at the time of final data collection was enough to be statistically significant ($t(418) = 2.029; p = 0.043$). A small practical effect size (Cohen's d of 0.198) was found.

Table 12. Post-intervention estimated effects using data from 9-month post-program completion to address the primary research questions

Outcome measure	Intervention proportion or mean (standard deviation)	Comparison proportion or mean (standard deviation)	Intervention compared to comparison difference (<i>p</i> -value of difference)	Adjusted <i>alpha</i> value cutoff (Benjamini-Hochberg)
Occurrence of recent sexual activity Logistic regression (LR) with covariates	0.312 (0.028)	0.266 (0.029)	0.06 (<i>p</i> = 0.241)	0.05
Number of recent sexual partners Zero-inflated negative binomial regression with covariates	0.390 (0.065)	0.552 (0.065)	0.19 (<i>p</i> = 0.013)	0.033
Occurrence of unprotected sexual activity Logistic regression (LR) with covariates	0.109 (0.023)	0.195 (0.023)	0.09 (<i>p</i> = 0.009)	0.017
Sample Size	213	219		

Source: Follow-up surveys, administered 9 months post-program completion.

Notes: See Table III.1 for a more detailed description of each measure.

Table 13. Post-intervention estimated effects using data from 9-month post-program completion to address the secondary research questions

Outcome measure	Intervention proportion or mean (standard deviation)	Comparison proportion or mean (standard deviation)	Intervention compared with comparison difference (<i>p</i> -value of difference)
Future orientation scale	3.676 (0.559)	3.571 (0.559)	0.105 (<i>p</i> = 0.043)
Sample Size	204	216	

Source: Follow-up surveys, administered 9 months post-program completion.

Notes: See Table III.2 for a more detailed description of the measure.

VI. Conclusion

A. Summary

The randomized control trial conducted over the past four years has found that the Vision of You program has a positive effect on two of the three main behavioral outcomes of interest: Number of sexual partners and rate of unprotected sex. Both of these outcomes, as measured by self-report at the 9-month post-program timepoint, were significantly less for youth in the treatment group than youth in the control group. Although a third behavioral outcome, rate of recent sexual activity, was not found to be significantly impacted by participating in the VOY program, the non-behavioral, exploratory outcome of future orientation was found to be impacted by the program: The treatment group reported higher scores on the scale.

The Vision of You program was implemented with near-target fidelity. In all, 71% of the youth completed all nine units of the curriculum, with 83% completing at least 78% (7 units) of the program. Further, as the program was intended to be completed in 4-6 weeks, another fidelity measure of program duration was collected: Over the three years of program implementation, 82% of youth completed the program within six weeks. To gauge the program satisfaction of the Vision of You program, youth were asked how much they liked the Vision of You program compared to other, similar programs. Overall, 82% of the youth who responded to the item liked the program “much better” or “a little bit better” than other programs. Further, the majority of the youth (78%) reported liking it “much better.”

B. Limitations

The main limitation to the study is the transient nature of the youth involved, particularly adjudicated youth. Although youth were enrolled only when they had enough expected time remaining at the facility to complete the program, there were instances where unexpected changes occurred and the youth were transferred to a non-partner site, released early, or incarcerated. Further, some participants moved among family members and their contact information was not consistent. Social media was an excellent mitigator of these issues, with VPREIS staff keeping up with youth through social media and text messaging, both of which remain consistent across locations and devices. However, in some cases, all avenues of possible contact were exhausted. Although this led to a higher level of attrition for adjudicated youth, the overall attrition rates are within acceptable ranges.

Adjudicated youth had another limitation regarding key behavioral outcomes. If an adjudicated youth was incarcerated for most of the 9-10 month study period, this could have hindered their opportunity to engage in sexual activity. It is believed that this limitation had minimal effects due to the short nature of most juvenile incarcerations.

The study was implemented with fidelity to the original research design, with the initial sample sizes exceeding planning goals. However, the COVID-19 pandemic which began during the final year of participant enrollment, impacted the final sample sizes and may have had an impact on attrition rates for follow-up data collection. The COVID-19 pandemic led to a wave of students being unable to complete the program, as school districts and community centers closed during March of 2020. Many rural youth did not have access to a laptop or desktop computer during this time, nor to consistent internet capabilities. However, due to both the mobile-friendly survey platform and the consistent and innovative efforts of the VPREIS staff, the effect of the pandemic on follow-up data collection is thought to be minimal. Further, there is nothing about this wave of students that would cause bias in the outcomes. Because the timing of the school closures was random, and the same

across study conditions, there is no reason to expect that there is a difference in the characteristics of youth that were excluded..

A limitation with regard to the implementation portion of the study was the failure of the software application to collect dosage data as planned. It was intended that the application would be able to provide the researchers with information regarding the amount of time each participant spent in each unit, and how often they accessed the program. It was discovered during the reporting phase that this data was not available for analysis.

C. Discussion

This report presents impact results of the rigorous evaluation of Vision of You, an online comprehensive sexual health education program designed specifically for high risk youth being educated in non-traditional educational settings. Prior research indicates that adjudicated youth and youth in alternative education programs, especially in rural areas, are at higher risk for teen pregnancy and STIs (Ng & Kaye, 2015; Sattler, 2017). Results indicate that the VoY program was effective in reducing the number of sexual partners and reducing the rate of unprotected sex as well as increasing future orientation among the target population. The findings of this research support increased reliance on technology-driven and self-paced programs to efficiently implement sexual health education that is impactful, and convenient. An online program is likely less costly to implement than a facilitator-led program, but further research is needed to determine cost-effectiveness.

Further research utilizing the online Vision of You program should be conducted with different subgroups of the target population, such as urban youth in non-traditional educational settings. Additionally, implementation of VoY with high-risk youth in traditional educational settings is also of interest. Further, if time and resources allow, examining the VoY program as a self-paced program in comparison to the same content delivered in-person by a facilitator could yield important information about the effectiveness of technology in teaching sexual health education to youth in today's technology-heavy world.

VII. References

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Appendix A: Logic model

Virginia Personal Responsibility Education Program Innovative Strategies (VPREIS) Logic Model

Goal: To reduce pregnancies, births, and STIs including HIV/AIDS among high-risk youth populations throughout rural Virginia through the implementation and rigorous evaluation of the online interactive Vision of You program in 4 settings with high school aged youth.					
INPUTS	ACTIVITIES	OUTPUTS	SHORT-TERM OUTCOMES	INTERMEDIATE OUTCOMES	LONG-TERM OUTCOMES
Funding -ACF/FYSB Staff -JMU Personnel -Evaluator -FYSB Project Officer Innovative Strategy -Vision of You program Training & TA -TPP Conferences -Topical Trainings -Technical Assistance Implementation Sites -Juvenile Detention Centers -Community Services Boards -Alternative Education & Night School programs -Homebound Instruction programs -Youth participants -Partner Organization Staff -Space Communications -Website, social media, peer-reviewed journals -Dissemination Plan Performance Measures & Evaluation -FYSB Performance Measures -Data Collection tools -Continuous Quality Improvement System	-Revise/adapt Vision of You curriculum -Finalize partnership agreements -Recruit/retain/track intervention and control participants -Implement Vision of You program -Implement fidelity monitoring plan -Participate in FYSB Training and Technical Assistance -IHHS Leadership Team meetings, staff meetings, partner meetings -Facilitate youth referrals to healthcare services -Collect performance measure and evaluation data -Conduct implementation and rigorous outcome evaluations -Report on outcomes and use data for continuous quality improvement -Disseminate findings and contribute to research	-# youth participants -% youth attendance -# Vision of You sessions completed -Fidelity monitoring data -% sessions observed -# referrals to healthcare services -# Trainings conducted -# Trainings attended -Performance measure data collected -Outreach materials developed and disseminated -Implementation and Outcome Evaluation Study reports -Programmatic Reports -# manuscripts submitted to peer-reviewed journals -\$ raised to sustain program -Manualized and packaged Vision of You curriculum	-Increased knowledge of both abstinence and contraception -Increased knowledge of STIs and HIV/AIDS -Increase in parent-child communication -Increased self-efficacy to refuse sexual activity or use contraception -increased knowledge of proper condom use -increased self-efficacy skills to set and maintain personal boundaries -increase in healthy relationship skills Data Sources: -Pre/Post testing instruments	-Decrease in frequency of sexual activity among Vision of You participants -Decrease in the number of sexual partners among Vision of You participants -Increase in the proportion of teens that use contraception among Vision of You participants -Sustained increases in adulthood preparation subject knowledge and skills among Vision of You participants Data Sources: -3-month post-intervention testing instruments	-Sustained knowledge and skills among Vision of You participants -Sustained behavior change among Vision of You participants -A reduction in teen pregnancy and teen birth rates among high-risk rural youth 14-19 throughout Virginia as a result of participating in the Vision of You program Data Sources: -9-month post-intervention testing instruments

Appendix B: Implementation Evaluation

Table 14. Data used to address implementation research questions

Implementation element	Research question	Measure	Data collection frequency/sampling	Data collectors
Fidelity	How many participants will complete all eight lessons of the Vision of You program?	Number of youths who completed all units of VOY	All sessions delivered were captured in the application on a continuous basis	Program staff via the application
Fidelity	What is the average duration of the program from first to last lesson?	Time lapse (measured in days) between the beginning of the first unit and the completion of the final unit	The dates of program access were captured in the application on a continuous basis	Program staff via the application
Dosage	What are the descriptive statistics (mean, SD, min, max) surrounding the time each lesson takes to complete?	Average time spent in each unit, taken across all youth	All unit activity times were captured in the application on a continuous basis	Program staff via the application
Program Satisfaction	Did youth like the curriculum compared to other programs?	Binary item on the post-survey	Once, post-program, for all program participants	Evaluation staff

Appendix C: Model specification

Baseline equivalence equations

Group proportion differences (z-test)

$$z = \frac{\hat{p}_1 - \hat{p}_2}{\widehat{\sigma}_D}$$

Group mean differences (t-test)

$$t = \frac{X_1 - X_2}{S_{\underline{X}_1 - \underline{X}_2}}$$

Impact analysis equations

Primary Research Questions 1 and 3: Logistic Regression (LR)

$$\ln\left(\frac{P}{1-P}\right) = a + bX$$

Primary Research Question 2: Zero-inflated negative binomial regression

$$\mathcal{L} = \begin{cases} \sum_{i=1}^n \left[\ell n(p_i) + (1-p_i) \left(\frac{1}{1+\alpha\mu_i} \right)^{\frac{1}{\alpha}} \right] & \text{if } y_i = 0 \\ \sum_{i=1}^n \left[\ell n(p_i) + \ell n\Gamma\left(\frac{1}{\alpha} + y_i\right) - \ell n\Gamma(y_i + 1) - \ell n\Gamma\left(\frac{1}{\alpha}\right) + \left(\frac{1}{\alpha}\right) \ell n\left(\frac{1}{1+\alpha\mu_i}\right) + y_i \ell n\left(1 - \frac{1}{1+\alpha\mu_i}\right) \right] & \text{if } y_i > 0 \end{cases}$$

Secondary Research Question 1: Group mean differences (t-test)

$$t = \frac{X_1 - X_2}{S_{\underline{X}_1 - \underline{X}_2}}$$

Appendix D: Future orientation survey items

1. It doesn't help to plan for the future because things change so much.
 - Strongly disagree
 - Slightly disagree
 - Neither disagree nor agree
 - Slightly agree
 - Strongly agree
2. People should live every day like it's their last.
 - Strongly disagree
 - Slightly disagree
 - Neither disagree nor agree
 - Slightly agree
 - Strongly agree
3. I try to live my life as fully as possible, one day at a time.
 - Strongly disagree
 - Slightly disagree
 - Neither disagree nor agree
 - Slightly agree
 - Strongly agree
4. Since whatever will be will be, it doesn't really matter what I do.
 - Strongly disagree
 - Slightly disagree
 - Neither disagree nor agree
 - Slightly agree
 - Strongly agree
5. It's more important to enjoy what you're doing right now than to think about what might happen tomorrow.
 - Strongly disagree
 - Slightly disagree
 - Neither disagree nor agree
 - Slightly agree
 - Strongly agree
6. How important is it for you to get a good education?
 - Not important at all
 - Not too important
 - Somewhat important
 - Quite important
 - Very important

7. How important is it for you to get a good job or to be successful in a career?

- Not important at all
- Not too important
- Somewhat important
- Quite important
- Very important

8. How important is it for you to have a good family life?

- Not important at all
- Not too important
- Somewhat important
- Quite important
- Very important

9. How important is it for you to have long-term goals?

- Not important at all
- Not too important
- Somewhat important
- Quite important
- Very important?

10. How important is it for you to know what you want out of life?

- Not important at all
- Not too important
- Somewhat important
- Quite important
- Very important

Appendix E: Baseline Equivalence for the Secondary Research Question Sample

Table 15. Summary statistics of key baseline measures for the sample used to determine the impact on Future Orientation

Baseline measure	Intervention proportion or mean (standard deviation)	Comparison proportion or mean (standard deviation)	Intervention versus comparison difference	Intervention versus comparison <i>p</i> -value of difference
Age	15.73 (1.508)	15.95 (1.571)	0.22 (<i>t</i> 1.463)	0.144
Gender (female %)	58%	58%	0%	1.000
Race/ethnicity				0.274
Hispanic	5.7%	5.5%	0.2%	
Non-Hispanic White	62.4%	59.1%	3.3%	
Non-Hispanic Black	25.7%	32.3%	6.6%	
Other race-ethnicities	6.2%	3.2%	3.0%	
Future Orientation Scale	3.643 (0.437)	3.594 (0.5097)	0.049 (<i>t</i> 0.928)	0.354
Sample size	204	216		