Mixed Methods Study of Multiple High-Risk Behavior Prevention Program on High School Students

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ABSTRACT

The purpose of this mixed methods research study was to examine patterns of multiple high-risk behavior and the effect of a multiple high-risk behaviors prevention program at a local private high school during a 4-year period. The prevention program was created based upon the key elements of effective prevention programming and the need to address the variety of high-risk behaviors that youth face today. A Chi-Square Automatic Interaction Detection (CHAID) analysis revealed that, in 2009, local students were more likely to engage in drinking and driving, binge drinking, sex/oral sex, and attempt suicide than their national counterparts. Another CHAID analysis revealed that, in 2011, local students were more likely to engage in lifetime marijuana use, current marijuana use, and sex/oral sex. A latent class analysis revealed that, in 2013, students belonged to 1 of 3 distinct clusters of substance use behavior and 1 of 4 distinct clusters of non-substance use and sexual behavior. Qualitative results of 12 students interviewed yielded 12 main themes (and 3 subthemes) regarding student experiences with 15 high-risk behaviors and the school’s prevention efforts. Students reported a predominantly positive experience of the program but complained about the program’s heavy emphasis on alcohol and drugs. Mixed findings indicated that student interview data might be a good representation of the student survey group regarding their reported engagement in high-risk behaviors and their perceptions of the effectiveness of the current prevention program, thereby increasing significance of findings and informing treatment integrity.

KEYWORDS

High school; mixed methods; multiple high-risk behaviors; school-based prevention

The adoption of multiple high-risk behaviors is common among high school students (Coleman, Wileyto, Lenhart, & Patterson, 2014). In addition to the data which indicate that adolescent alcohol and drug use increases each year, the variety of risky behavior high school from which students have to choose also is growing (Centers for Disease Control and Prevention [CDC], 2010; National Institute on Drug Abuse [NIDA], 2012; Sussman, Lisha, & Griffiths, 2011). These risky behaviors include prescription drug abuse (NIDA, 2012), gambling (Powell, Hardoon, Derevensky, & Gupta, 1999), pornography (Braun-Courville & Rojas, 2009), self-injury (Alfonso & Dedrick, 2010), cyberbullying (Agatston, Kowalski, & Limber, 2007), eating disorders (Pisetsky, Chao, Dierker, May, & Striegel-Moore, 2008), video game addiction (Martin & Oppenheimer, 2007), suicide (Pelkonen & Marttunen, 2003), driving while drinking (CDC, 2010), and dating violence (Jouriles, Platt, & McDonald, 2009). Simultaneous engagement in multiple high-risk behaviors has become more common and increases from freshman to senior year in high school (Biglan, Brennan, Foster, & Holder, 2004; Coleman et al., 2014; Fox, McManus, & Arnold, 2010; National Center on Addiction and Substance Abuse at Columbia University [CASA], 2011).
In addition, Biglan et al. (2004) reported that youth with multiple high-risk behavior problems are responsible for a much greater proportion of harmful outcomes than are other youth. According to these authors, the findings suggest that “incremental increases in problem behaviors produce disproportionate increases in negative social and health outcomes” (p. 29). These outcomes include health and academic problems associated with alcohol and drug abuse, arrests, violence, improper needle use, sexual activity, suicide, tobacco use, drunk driving, and adolescent pregnancies (CDC, 2010). Prevention strategies should recognize and address patterns of multiple high-risk behaviors because adolescents engaging in one high-risk behavior are likely to engage in others (Biglan et al., 2004).

Program Description

The Choices program was created utilizing components of previously successful prevention efforts derived from the extant literature, including programming concerning multiple high-risk behaviors that is tailored to fit the school culture (Biglan et al., 2004; Drug Strategies, 1999; Gottfredson & Wilson, 2003; Schinke, Bronstein, & Gardner, 2003; Skara & Sussman, 2003). The Choices programming target audiences correspond to the Institute of Medicine’s (IOM; Mrazek & Haggerty, 1994) three target audience categories: universal, selective, and indicated. For the universal component, student action groups, parent action groups, and faculty action groups assist the Choices counselor in disseminating prevention programming to the entire student body regarding 15 different high-risk behaviors. For selective programming, school counselors, student assistance groups, and the Choices counselor identify and assist specific groups of at-risk students. For students who have indicated one or more problem behaviors, the Choices counselor offers confidential therapeutic services on or off-campus.

Although some researchers have used mixed methodologies to study the implementation and effectiveness of school-based, high-risk behaviors prevention (Fontaine, Debus-Sherrill, Downey, & Lowry, 2010; Hopson & Steiker, 2008), to date, no researcher appears to have examined a multiple high-risk behaviors prevention program applied to a comprehensive target audience involving universal, selective, and indicated levels of high school students. This was the goal of the present research study. Specifically, the purpose of this mixed methods research study was to examine the effect of a multiple high-risk behaviors prevention program applied to a comprehensive target audience involving universal, selective, and indicated levels of students at a local private high school, using five years of existing student survey data collected prior to and during the implementation of the prevention program as well as student interview data that was collected during the last year of prevention programming.

It was hoped that findings from this study would provide information regarding the efficacy of the program and inform the development of an integrated model of prevention for students in high school, a time when high-risk behaviors increases (Fox et al., 2010).

Further, it was hoped that the findings might contribute valuable insights into the successful integration of current, effective prevention techniques with comprehensive, culturally relevant implementation and application strategies.

Method

Utilizing Leech and Onwuegbuzie’s (2009) three-dimensional typology of mixed methods research designs, a partially mixed sequential equal status design was used for this study. Specifically, the quantitative and qualitative phases were conducted sequentially and both sets of data were given equal importance prior to being mixed at the data interpretation stage. The mixed design enhanced and clarified the complex phenomenon of student high-risk behavioral decisions within the context of their school’s implementation of the multiple high-risk prevention program. Multiple high-risk behaviors were measured via archival data from a student survey instrument administered at the end of each of four consecutive school years. By utilizing a descriptive phenomenological approach, qualitative data were collected in the form of interview questions to gain understanding of the lived experiences of students who underwent the Choices programming (Mayoh & Onwuegbuzie, 2014). After data collection and analysis, the methods were mixed to examine treatment integrity and to enhance the significance of the findings (Collins, Onwuegbuzie, & Sutton, 2006).

Quantitative Phase

The quantitative phase of this study involved the use of a quasi-experimental, longitudinal design, with national survey data serving as the non-randomized control group for two of the four years (Gay, Mills, & Airasian, 2009;
Glass & Asher, 1980). The organization conducting the national survey (CDC, 2009) does so every two years, thereby limiting this study to two years of comparison to a non-randomized control group. This study’s design was driven by the postpositivist paradigm that asserts that the truth of reality can only be approximated, never explained completely (Onwuegbuzie, Johnson, & Collins, 2009). Thus, a quasi-experimental design using intact groups was selected due to the inability to conduct a true experiment (Creswell, 2013; Gay et al., 2009; Glass & Asher, 1980).

Sample

Participants were limited to high school (Grade 9-12) students between the ages of 14 and 19. In the 2008-2009 school year, 614 students out of the 659 enrolled completed the pretest measure. In the 2009-2010 school year, 577 students out of the 661 enrolled completed the Year 1 measure. In the 2010-2011 school year, 479 students out of the 664 enrolled completed the Year 2 measure. In the 2011-2012 school year, 590 students out of the 679 enrolled completed the Year 3 measure. Finally, in the 2012-2013 school year, 580 students out of the 673 enrolled completed the Year 4 measure.

Data Collection Procedure

The Youth Risk Behavior Survey (YRBS) was utilized to measure students’ behavioral data at onset of the Choices in 2009 (pre-test) and after the implementation of the prevention program between 2010 and 2013. Developed by the CDC, the YRBS serves as national source of information about risk behaviors among adolescents in Grades 9 to 12 and has been given to randomly selected public and private schools in the United States every two years since 1991 (CDC, 2009). No special permission is required to use or to modify the YRBS (CDC, 2009). The survey consists of 86 multiple-choice or yes/no response format items. To address the specific goals of this study, items pertaining to additional risk behaviors not included in the YRBS were added (e.g., pornography, gambling, video game use, self-injury, and date rape). The additional topic items were constructed in an identical format to the existing YRBS item format. In addition, certain original items in the YRBS that did not apply to the present sample were excluded from the survey (e.g. seatbelt or helmet safety, dietary, or physical activity questions). Table 1 lists the 20 high-risk variables representing the 15 different high-risk behaviors.

<table>
<thead>
<tr>
<th>Table 1. High-risk Behaviors and Corresponding Variables</th>
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<tbody>
<tr>
<td><strong>High-Risk Behavior</strong></td>
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<tr>
<td>1. Alcohol Use</td>
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<td>2. Drinking and Driving</td>
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<tr>
<td>3. Marijuana Use</td>
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<td>4. Heavy Drug Use</td>
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<td>5. Cigarette Use</td>
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<td>6. Eating Disordered Behavior</td>
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<td>7. Bullying</td>
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<td>8. Suicide</td>
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<td>9. Sex/Oral Sex</td>
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<td>10. Dating Violence</td>
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<td>11. Date rape</td>
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<tr>
<td>12. Gambling</td>
</tr>
<tr>
<td>13. Pornography Use</td>
</tr>
<tr>
<td>14. Self-injury</td>
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<tr>
<td>15. Video game overuse</td>
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Analysis

In a previously published study, a chi-square test analysis and logistic regression were performed to examine the differences between the student data and national trends as well as differences between the pre-test year and
subsequent study years (Collier, Onwuegbuzie, LaChapelle, & Davison, 2016). For the present study, the quantitative analysis of data comprised a Chi-Square Automatic Interaction Detection (CHAID; Kass, 1980) and latent class analysis. The CHAID analysis was used to examine the relationships between type of student (i.e., the local students vs. the national students) and the 20 high-risk behaviors variables that might interact themselves. CHAID has been used by prevention researchers to identify unique subgroups and patterns in large data sets (Nickelson et al., 2011). PASW was used to conduct the CHAID analysis (SPSS Inc., 2009).

Additionally, a latent class analysis was utilized to determine the number of clusters (i.e., latent classes) underlying the 20 high-risk behaviors variables during the fourth year of the program. The latent class analysis was conducted under the assumption that a specific number of unique high-risk behaviors prevail. Additionally, it was assumed that the local students could be classified into a small number of distinct clusters known as latent classes based on their profiles of high-risk behaviors, such that each student belongs to only one cluster. The latent class analysis has grown in popularity in recent years to examine classes of student high-risk behavior and their characteristics (Choi, Weston, & Temple, 2017; Lanza & Rhoades, 2013; Rinker & Neighbors, 2015). The Latent GOLD 4.5 software program was used to conduct this analysis (Vermunt & Magidson, 2005).

Results

Quantitative Phase

Chi-Square Automatic Interaction Detection. For 2009, the CHAID analysis revealed four variables that discriminated the two groups (a) drinking and driving, (b) sex/oral sex, (c) binge drinking, and (d) suicide attempts. According to this 2009 analysis, the local student population was more likely to engage in drinking and driving, sex/oral sex, and to attempt suicide. In comparison, the national student population was less likely to engage in drinking and driving, sex/oral sex, and binge drinking. Figure 1 graphically depicts the decision tree that emerged from the CHAID analysis for local versus national students in 2009.

For 2011, the CHAID analysis revealed five variables that discriminated the two groups (a) lifetime marijuana use, (b) sex/oral sex, (c) current marijuana use, (d) lifetime alcohol use, and (e) drinking at least one drink within the past 30 days. According to this 2011 analysis, the local student population was more likely to have used marijuana in their lifetimes but less likely currently to engage in marijuana or alcohol use. The national students who were less likely to have used marijuana in their lifetimes were more likely to engage in sex/oral sex and use marijuana currently. The national students who were less likely to have used marijuana in their lifetimes and less likely to engage in sex/oral sex also were more likely to have used alcohol in their lifetime. Figure 2 graphically depicts the decision tree that emerged from the CHAID analysis for local versus national students in 2011.

Latent class analysis. To determine the number of clusters (i.e., latent classes) underlying the 20 high-risk behavior variables during the fourth year of the program, three latent class analyses were calculated for three groups of variables, comprising (a) eight substance use, (b) eight non-substance, and (c) four sexual variables.

Substance use high-risk behaviors. The latent class analysis revealed a three-cluster solution ($L^2 = 159.16, df = 229, p = .10$). Figure 3 displays these three distinct groups of high-risk behaviors. Cluster 1 (comprising 56.3% of the participants) was moderate or high with respect to all the high-risk behaviors except for lifetime cocaine use. In contrast, Cluster 2 (comprising 25.8% of the participants) was high on lifetime alcohol use, drinking within the past 30 days, and binge drinking within the past 30 days, but relatively low on the remaining five high-risk behaviors. Finally, Cluster 3 (comprising 17.9% of the participants) was moderate on lifetime alcohol use but relatively low on the remaining seven high-risk behaviors.

Furthermore, all eight substance use high-risk behaviors statistically significantly discriminated the three clusters, as follows: lifetime alcohol use (Wald = 11.77, $p = .0028$, $R^2 = 37.88$), drinking within past 30 days (Wald = 16.04, $p = .00033$, $R^2 = 98.99$), binge drinking within the past 30 days (Wald = 31.11, $p < .0001$, $R^2 = 57.51$), drinking and driving (Wald = 46.89, $p < .0001$, $R^2 = 21.72$), lifetime marijuana use (Wald = 13.94, $p = .00094$, $R^2 = 53.21$), marijuana use within the past 30 days (Wald = 70.82, $p < .0001$, $R^2 = 39.13$), lifetime cocaine use (Wald = 17.00, $p = .0002$, $R^2 = 8.79$), and cigarette use within the past 30 days (Wald = 95.60, $p < .0001$, $R^2 = 40.54$). The $R^2$ values revealed that the errors associated with drinking within the past 30 days had by far the most variance explained by the three-cluster model.
Figure 1. Visual representation from the CHAID analysis of the four variables that discriminated the local from the national students in 2009.
Figure 2. Visual representation from the CHAID analysis of the five variables that discriminated the local from the national students in 2011.
Non-substance use high-risk behaviors. For eight of the non-sexual, non-substance use variables, the latent class analysis revealed a two-cluster solution ($L^2 = 232.86, df = 238, p = .58$). Figure 4 displays these two distinct groups of high-risk behaviors. Cluster 1 (comprising 74.9% of the participants) was moderate or high on being bullied, gambling, winning back money, and video game use but relatively low on the remaining four high-risk behaviors. In contrast, Cluster 2 (comprising 25.1% of the participants) was moderate on video game use but relatively low on the remaining seven high-risk behaviors.

Furthermore, five of the eight non-substance use high-risk behaviors statistically significantly discriminated the two clusters, as follows: fasting (Wald = 8.63, $p = .0033, R^2 = 3.85\%$), being bullied (Wald = 17.64, $p < .0001, R^2 = 4.89\%$), gambling (Wald = 61.36, $p < .0001, R^2 = 35.11\%$), winning back money (Wald = 4.17, $p = .041, R^2 = 50.88\%$), and video game use (Wald = 32.03, $p < .0001, R^2 = 9.72\%$). However, the following three high-risk behaviors did not statistically significantly discriminate the two clusters: suicide attempts (Wald = 3.21, $p = .073, R^2 = 11.01\%$), self-injury (Wald = 3.76, $p = .053, R^2 = 2.18\%$), and video game use 5 or more hours per day (Wald = 3.29, $p = .07, R^2 = 3.99\%$). The $R^2$ values revealed that the errors associated with winning back money had the most variance explained by the two-cluster model.
**Sexual high-risk behaviors.** For the four sexual high-risk behaviors, the latent class analysis revealed a two-cluster solution ($L^2 = 5.78, df = 6, p = .45$). Figure 5 displays these two distinct groups of high-risk behaviors. Cluster 1 (comprising 83.3% of the participants) was high on pornography use and sex/oral sex, but relatively low on dating violence and date rape. In contrast, Cluster 2 (comprising 16.7% of the participants) was low on all four high-risk behaviors.

Furthermore, three of the four sexual high-risk behaviors statistically significantly discriminated the two clusters, as follows: pornography use ($Wald = 19.90, p < .0001, R^2 = 26.57\%$), dating violence ($Wald = 23.94, p < .0001, R^2 = 8.46\%$), and sex/oral sex ($Wald = 8.78, p = .0031, R^2 = 38.18\%$). However, date rape ($Wald = 36.76, p = .54, R^2 = 5.32\%$) did not statistically significantly discriminate the two clusters. The $R^2$ values revealed that the errors associated with sex/oral sex had the most variance explained by the two-cluster model.

**Qualitative Phase**

To explore students’ choices regarding high-risk behaviors and their perceptions regarding the impact of the prevention program on those choices, we conducted semi-structured interviews with students who received prevention programming. A phenomenological research perspective was taken during the collection and interpretation of the
interview data in order to allow the essence of the students’ lived experience to materialize into themes (Creswell, 2013; Moustakas, 1994).

Figure 5. Visual display from the latent class analysis of two distinct groups of sexual high-risk behaviors with means between 0-1 for 2013.

Sample. We utilized a combination of stratified purposeful and criterion sampling to select 12 participants for the qualitative phase (Onwuegbuzie & Collins, 2007). All student interview participants received at least one year of prevention programming and were randomly selected each from three grades (sophomore, junior, senior). The sample contained both males and females, with age ranges from 15 to 18 years and ethnicities of White, African American, and Asian-American. Each interview participant selected a pseudonym that was used to identify her/his own qualitative interview data in order to maintain confidentiality. Guest, Bunce, and Johnson (2006) suggest that 12 interviews are sufficient to “understand common perceptions and experiences among a group of relatively homogeneous individuals” (p. 79). Therefore, it was expected that 12 participants would yield saturation from the qualitative data. Table 2 presents descriptions of the 12 student interview participants by pseudonym, including grade, age, number of years in attendance at this school, gender, ethnicity, and number of high-risk behaviors in which they engaged.
Data collection procedures. One formal semi-structured 30- to 60-minute interview was conducted with all 12 students. Moustakas (1994) recommended general questions in regard to what is experienced in terms of the phenomenon and what contexts or situations typically influence participants’ experiences with the phenomenon. Therefore, the interview included the following six open-ended questions: (a) What are your perceptions of how the school historically dealt with high-risk behaviors of the students?, (b) What is your perception of the current prevention program?, (c) What is your perception of the effect of the current prevention program on high-risk behaviors?, (d) What were the reasons why you chose or did not choose to engage in high-risk behaviors?, (e) How many high-risk behaviors did you engage in?, and (f) What role did peers, parents, faculty, the prevention program facilitator, culture/ethnicity, media, and social media play in the decision to engage or not to engage in your high-risk behaviors(s)? Additional questions were asked during the actual interviews to clarify, to add to, or to elicit a deeper understanding of each interviewee’s experience.

Participants were asked to meet in a private office away from their classrooms and administration buildings. The principal investigator (PI) provided a copy of the written informed consent and a verbal description of the contents. Some participants elected to receive an email requesting a review of their transcribed interview. This member check served as a legitimacy strategy by allowing the participants to verify the accuracy of their initial interview and to add additional detail to their experiences (Creswell, 2013). All interviews were audio taped, transcribed for analysis, and imported into the software program, QDA Miner (Provalis Research, 2011).

Analyses. Prior to conducting the student interviews, the interviewer engaged in a self-reflection to bracket her judgments and preconceived notions regarding high-risk behaviors to set aside researcher bias (Moustakas, 1994). Then, preceding the first student interview and throughout the study, the PI participated in three debriefing interviews with professionals not involved in the study who utilized a debriefing interview created specifically to debrief interpretive researchers, including questions that tap into a variety of potential sources of bias (Onwuegbuzie, Leech, & Collins, 2008). The Stevick-Colaizzi-Keen method (Moustakas, 1994) was utilized for the interview data analysis.

Qualitative results. By conducting interviews with a select number of students, we sought to illuminate their choices regarding high-risk behaviors and their perceptions regarding the impact of the prevention program on those choices. Analysis of the interview data yielded 12 themes and three subthemes regarding student experiences with high-risk behaviors and the school’s prevention efforts.

Perceptions of historical prevention efforts. Historically, many students had no prior knowledge at all regarding how the school handled high-risk behaviors but had heard rumors from friends, family, previous students, and current teachers that in previous years, the school administrators had been more lenient on such behaviors and that the school was known for its drinking and party culture. Some students had older siblings who had attended the school and witnessed firsthand the high-risk behaviors of these upperclassmen as well as learning how the school managed these issues. Overall, the main theme that emerged regarding historical prevention efforts was (a) party school reputation, referenced by 75% of the students; and its subtheme was (b) historically more lenient, referenced by 67% of the students.

The following statement from Claire was typical and illustrated students’ belief about the school’s historical culture: “I know the school had a reputation for being the drug and alcohol school.” Another student, John, also experienced an older sibling who attended the school prior to himself and explained, “A lot of people want to say it’s a

### Table 2. Student Interview Participants by Pseudo-name, Gender, Ethnicity, Grade, Age, Number of Years in Attendance at this School, and Number of High-Risk Behaviors Engaged in

<table>
<thead>
<tr>
<th>Student Pseudo-name</th>
<th>Grade</th>
<th>Gender</th>
<th>Ethnicity</th>
<th>Age</th>
<th>Number of Years in Attendance</th>
<th>Number of High-Risk Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna</td>
<td>10th</td>
<td>Female</td>
<td>White</td>
<td>16</td>
<td>2</td>
<td>4</td>
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<tr>
<td>Tyler</td>
<td>10th</td>
<td>Male</td>
<td>White</td>
<td>16</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Peyton</td>
<td>10th</td>
<td>Female</td>
<td>Asian</td>
<td>15</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Jason</td>
<td>10th</td>
<td>Male</td>
<td>Black</td>
<td>16</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Jessica</td>
<td>11th</td>
<td>Female</td>
<td>White</td>
<td>17</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Claire</td>
<td>11th</td>
<td>Female</td>
<td>White</td>
<td>17</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Isla</td>
<td>11th</td>
<td>Female</td>
<td>White</td>
<td>17</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Jimmy</td>
<td>11th</td>
<td>Male</td>
<td>White</td>
<td>18</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Sam</td>
<td>12th</td>
<td>Male</td>
<td>White</td>
<td>18</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Haley</td>
<td>12th</td>
<td>Female</td>
<td>White</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>John</td>
<td>12th</td>
<td>Male</td>
<td>White</td>
<td>18</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Donald</td>
<td>12th</td>
<td>Male</td>
<td>White</td>
<td>18</td>
<td>4</td>
<td>2</td>
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</table>
party school, but it’s really not. It has had the reputation, the reputation of being a larger party school.” Many of the students referred to a more lenient or relaxed disciplinary stance as it related to the high-risk behavior of the students. Jessica explained the concept simply, “They’re pretty relaxed I guess. They were pretty hands off about it.” Isla’s statement concurred, “Like everything was way more lenient and kind of, not necessarily care free but just had more of a blind eye toward things.”

Perceptions of current prevention program. The two main emerging themes regarding perceptions of the current program were (a) never used but know it is there, which was referenced by 90% of the students; and (b) primary focus on alcohol and drugs, which was referenced by 67% of the students; and the subtheme was (c) drug testing as part of the program, which was referenced by 67% of the students. Most of the students described never utilizing the counseling portion of the program but reported feeling glad to know that it was there if they ever needed it. Some students commented on their perceptions of the program counselor and how she had created an inviting atmosphere that allowed for her to be used if problems ever did arise within their lives. John’s following words provide a good summary of this reaction: “I haven’t had too much interaction with it, but I feel like, if you really did need help, they would be here for you. Especially [program counselor name]. She is really nice and easy to talk to.”

The students expressed a belief that the program’s primary focus was on alcohol and drugs and that drug testing was a formal part of the program. Although not directly associated with the prevention program, the school enacted a drug testing policy during the third year of prevention programming. Even though great care was taken not to associate the drug testing with the prevention programming for fear that the program would lose trust and rapport with students, this association had clearly taken place in their minds. Isla reported, “The only prevention thing I know about is just the drug testing that we have going on.” When Jessica was asked what activities she remembered that the program presented, she stated, “There’s drug testing. And then interim, when we had that, they do a lot of talks and they have drinking and driving thing and stuff.” Some students recalled other high-risk behaviors that the program presented and expressed a desire to hear more about other specific high-risk behaviors. For example, Tyler revealed the following:

I think that they do focus on the high-risk things like drugs and alcohol other than bullying. I have been cyberbullied and bullied around the school. Um. I do think there should be more of an effort to try to stop it from the Choices program.

Perceived effect of the current prevention program on high-risk behaviors. The two main emerging themes characterizing how the students thought the program was affecting high-risk student behavior were (a) positive perceived effect of the program, which was referenced by 83% of the students; and (b) complaints about programming, which was referenced by 58% of the students; and a subtheme (c) drug testing effects, referenced by 42% of the students. The students’ comments ranged from general positive feedback regarding shifts in the school culture to specific remarks concerning how the program affected their own choices regarding high-risk behaviors. Many students commented on how the drug testing policy had caused themselves and their peers not to engage in drug use. Even though most students described the positive effects of the program, many expressed complaints about the programming, including feeling lectured to, a narrow focus on drugs and alcohol, and the use of fear as a change agent. Regarding the program’s effect, John stated, “Definitely a positive one. I think that it really shows the negative effects of high risk behavior and what it can do to you long term.” Jason declared, “I think it does a good job. It makes students reflect on their behavior which sometimes that’s all you really need.” Anna reported, “This school really kind of has like introduced me to like staying away from all that. Whereas, like, I don’t know, I think that they do a good job of warning us about it.”

When asked about their perceptions of the effect that the prevention program was having, five out of the 12 students mentioned an effect that they believed was produced by the introduction of drug testing at the school. Sam’s words describe this subtheme well: “The drug testing especially is a big, big change. It definitely works. A lot of kids think it is just too much of a pain to deal with the drug tests. They just chose to not do it.” Anna simply announced, “I’m not really smoking anymore because of the drug testing.” Of the four students out of 12 interviewed who admitted to using marijuana, three cited the school’s new drug testing policy as their reason for discontinuing their use of the drug.

When asked about prevention programming effects, seven out of 12 students interviewed voiced a complaint about the programming. Even though five out of these seven students also produced positive perceptions about the program, their complaints included a variety of responses such as feeling as though they were being lectured to.
Tyler’s complaint centered around the focus on drugs and alcohol, a theme that emerged from the student interviews as a whole: “If it is about Choices people, it’s going to be about drugs and alcohol. I think it would be interesting to see a few more stuff about the other high-risk activities and all those things that Choices deals with.” Anna simply stated, “They commonly lecture us.” Jimmy admitted, “I don’t know if the Choices program has made a huge difference. I think it’s just scared kids. It’s like the kids will still do it and then they get scared when they get here so it just creates more problems, and people aren’t as focused.”

**Number and reason for engagement or non-engagement in high-risk behavior.** Approximately halfway through the interviews, after some rapport had been developed, students were asked to disclose the high-risk behaviors in which they had engaged from a list of 15 different high-risk behaviors. The behaviors in which students admittedly participated were (a) alcohol, (b) marijuana, (c) tobacco, (d) self-injury, (e) drinking and driving, (f) eating disordered behavior, (g) pornography, (h) gambling, (i) winning money back, (j) being bullied, and (k) dating violence. Figure 6 provides a visual depiction of the 11 high-risk behaviors in which students reported participation.

![Figure 6. Number of high-risk behaviors reported by 12 students.](image)

Regarding the reasons why students engage or did not engage in these behaviors, the four main emerging themes were (a) choosing to engage with friends, referenced by 58%; (b) curiosity, referenced by 58%; (c) saying no because of parents, referenced by 33%; and (d) seeing negative effects in others, referenced by 25% of the students interviewed. Students provided the following six reasons for saying yes to high-risk behaviors: (a) for fun, (b) boredom, (c) because their parents condoned the behavior, (d) the inconsistency of laws that govern the behavior, (e) curiosity, and (f) as something they did with friends. Students cited the following five reasons for saying no to high-risk behaviors: (a) receiving positive peer pressure not to use drugs or alcohol, (b) to protect their future, (c) to protect their...
ability to play sports, (d) seeing the negative effects in others, and (e) the influence of their parents. Figure 7 graphically displays these reasons and the number of students who endorsed each reason.

![Figure 7](image)

**Figure 7.** Reasons why students engaged or did not engage in high-risk behaviors reported by 12 students.

Whether it was curiosity, boredom, or just for fun, being with friends emerged as an important theme in students’ behavioral choices. Seven out of 12 students interviewed described their first time as occurring around their friends. Some of them discussed not wanting to feel left out and choosing to engage because their friends were doing so. Anna’s following comment illustrates this sentiment well:

> I chose to engage because it’s what you know my friends do. It’s just a part of our culture. It’s a part of our generation. Really. And it’s gotten to the point, it’s almost sad, that the kids who don’t do it are kind of like the odd ones out. It’s hard not to.

None of the students characterized the experience as having anything to do with negative peer pressure or being coerced or bullied into the behaviors. Some students even made a point to state that peer pressure had nothing to do with their choice even if they endorsed being around friends who were engaging in the behavior as well, such as seen in Peyton’s response:

> This is like an after party and I told one of my good guy friends to make sure, because I knew he didn’t really drink either, just make sure I’m only going to have one. Not that I thought I was going over, just to make sure. And then, I don’t know. It wasn’t like peer pressure or anything it was just like, ‘Why not?’

When it came to saying no, the role of parents was crucial to some students. Even though Anna had tried alcohol and marijuana, she reported choosing not to use regularly, “Because I don’t wanna come home and have my Mom see me in a bad state or something like that.” When asked why Peyton decided not to use alcohol after trying it
once, she simply stated, “It’s mainly because I don’t want to disappoint my parents.” Jason, the only student out of 12 who had never tried alcohol or drugs but did engage in the use of pornography, described an open and influential relationship with his parents that helped shaped his decisions:

When I think about it, it’s like why don’t I? And I think it’s because I understand some of the risk. And they say well how do you understand the risk, what makes you understand the risk? I think it’s mostly my parents. They never let curiosity get the best of me. If I ask them a question, then they answer it no matter how old I was or what I was asking. They told me what it was and told me what it could do. How it could be good, how it could be bad, everything about it. So, I think a lot of that goes to my parents.

The number of students who said no to high-risk behavior was smaller than was those who said yes. However, witnessing the negative effects of engaging in high-risk behavior in others emerged as a reason to stay away. Of the students who chose not to engage in specific high-risk behavior, three out of 12 students interviewed described watching peers or family members deal with the negative consequences associated with high-risk behaviors as their reason for abstaining. John has chosen to drink alcohol but had opposed the use of drugs. His and Anna’s explanation for why he chose to stay away from drugs typifies this theme:

John: Just not for me. I’ve seen what it can do to people and what negative effects it can have on you. It can drive some kids off a cliff, to be honest. I saw how horribly it treated some people; I know and decided not to engage in any of that.
Anna: Um. Yes, because my Dad is an alcoholic. I haven’t really, like I know I need to be very careful about how I drink and how I … I just I don’t want to ever be in a state like he was. Because I don’t ever want to go through what I saw him go through.

Role of others in decision to engage or not to engage in high-risk behaviors. When asked what or who influenced student decisions regarding high-risk behaviors, the three emergent themes were (a) positive parental influence, referenced by 75%; (b) media influence, referenced by 58%; and, (c) self-agency, referenced by 58% of the students interviewed. Jessica’s sentiment regarding parental influence was as follows: “I think my parents are really good. Honestly because they are a very good support system and if I ever tried to, they would know straight away.” Tyler described the importance of the relationships with parents: “Especially because I know that if I did any of those, my parents would probably be very upset at me, and I definitely care about pleasing them.”

Many students also described the powerful influence of media and offered their perceptions regarding the portrayal of the idea that everyone engages in high-risk behaviors in the media and how this normalizes these behaviors for them. Tyler declared, “You see it on TV, people drink. Or, you know, everywhere pretty much. It is just thrown at you. I definitely think that the media played a giant impact.” Many students initially reported that it did not have much of an effect upon them. They seemed to want to be impervious to the effects of media. However, as students continued to discuss their perception of media, a subtle yet powerful influential force began to emerge. An excellent example of this occurrence is Anna’s comment, as follows:

Yes, there is like a bunch of shows. TV shows encourage it. People you know watch it on the Internet or watch it on TV. So, it’s all around. It doesn’t affect me … not that much. Like in the back of your mind. It’s only because it only emphasizes the fact that everyone does it and like hey this is like … this is life. We drink. We drink. We smoke. It’s like the world participates in it, so I should too kind of.

In addition, approximately 60% of the students discussed the authority of their own personal beliefs that ultimately motivates their behavioral decisions. Many students described their own capacity to exercise control over their choices regardless of the external influences. The characteristics described by the students such as the development of intentions and self-regulation matched Bandura’s (2001) definition of self-agency. This self-agency is what Jimmy considered to be his highest degree of influence: “Because I think I’m smart enough and mature enough to handle it, and if I think it’s going to hurt me, then I’m not going to do it.” Sam reported, “I mean I just kind of drew a line in the sand where I drew early on that I would say that kind of directed where my morals go.”

Mixed Methods Phase

The goal of the mixed methods phase of the study was to enhance and to clarify the results of both qualitative and quantitative phases. Employing Onwuegbuzie and Collins’s (2007) framework for mixed methods sampling designs,
a sequential sampling design using nested samples was selected, wherein the qualitative sample was nested within the quantitative sample. The mixed data results enhanced the significance of each quantitative data set and provided information regarding students’ perceptions of the effectiveness of the program.

Sample and data collection procedures. The time orientation of the study is sequential and the same sample members participated in both the quantitative and qualitative phases of the study. The 2013 survey data were used as a comparison to the student interview data because the survey took place within the same semester of the same year. The relationship between these two data sets was complementarity, with the student interview data elaborating and clarifying the survey results.

Analysis. The two data sets were transformed through the process of qualitizing and quantitizing. Qualitizing refers to the process of converting quantitative data to qualitative data, whereas quantitizing involves converting qualitative data to quantitative data (Tashakkori & Teddlie, 1998). To compare students who participated in the qualitative interviews to those who completed the survey, the high-risk behaviors reported by interview participants were quantitized into four high-risk behavior categories according to the number of behaviors in which each engaged including: (a) no engagement, (b) low or those who engaged in 1-2, (c) moderate or those who engaged in 3-4, and (d) high or those who engaged in five or more high-risk behaviors. Next, the 2013 quantitative survey data were qualitized, or converted into the qualitatively defined profiles by counting the number of behaviors out of the same 11 behaviors endorsed in the student interviews in which the survey respondents engaged. Then, the quantitative and qualitative data were descriptively compared. Due to the small number of student interview participants, a statistical comparison of the interview group to the survey group was not undertaken. In addition, students’ perceptions regarding the effectiveness of the program including student quotations describing these perceptions were linked to the quantitative survey results.

Results. A visual comparison the two groups was completed and portrayed in Table 3, which displays the student interview and survey participant high-risk behavior categories including the percentages of students who fall within each category and the percentage difference. Approximately 58% of students interviewed and approximately 48% of students surveyed fell in the low category, meaning that they participated in one to two high-risk behaviors. Students who scored in the moderate category engaged in three to four high-risk behaviors, which comprised approximately 33% of interview participants and approximately 25% of survey respondents. Finally, approximately 8% of student interviewees and 11% of student survey respondents engaged in five or more high-risk behaviors. The higher numbers reported in the low and moderate categories for interview participants might indicate underreporting among the survey respondents. Overall, this visual data comparison yields the determination that the percentage ranges are similar for both groups, except for students who did not engage in high-risk behaviors.

<table>
<thead>
<tr>
<th>Risk Behavior Categories</th>
<th>Student Interviews (n = 12) (%)</th>
<th>Student Surveys (n = 573) (%)</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0.0</td>
<td>16.6</td>
<td>-16.6</td>
</tr>
<tr>
<td>Low (1-2 behaviors)</td>
<td>58.3</td>
<td>47.6</td>
<td>10.7</td>
</tr>
<tr>
<td>Moderate (3-4 behaviors)</td>
<td>33.3</td>
<td>24.6</td>
<td>8.7</td>
</tr>
<tr>
<td>High (5 or more behaviors)</td>
<td>8.3</td>
<td>11.2</td>
<td>-2.9</td>
</tr>
</tbody>
</table>

In addition, the quantitative and qualitative data were descriptively compared. Specifically, the emergent themes regarding students’ perceptions of the effectiveness of the current prevention program and the reported high-risk behaviors survey scores were compared. Table 4 presents students’ perceptions regarding the effectiveness of the program, quotations describing these perceptions, and the quantitative survey results to which these perceptions are linked, as published in a previous study (Collier et al., 2016). This table also can be referred to as a joint display or what Onwuegbuzie and Dickinson (2008) call “crossover (mixed research) graphical displays” or “‘crossover’ visual extensions to summarize and integrate both qualitative and quantitative results within the same framework” in order to “enhance[e] researchers’ understanding (i.e., increased Verstehen) of social and behavioral phenomena in general and the meaning that underlie[e] these phenomena in particular” (p. 204). Thus, the results of the mixed methods portion of this study indicate that the student interview data might be a good representation of the student
survey group regarding their reported engagement in high-risk behaviors and their perceptions of the current multiple high-risk behaviors prevention program.

Table 4. Qualitative Student Perceptions of Effect on High-risk Behaviors of Current Prevention Program Linked to Quantitative Survey Results

<table>
<thead>
<tr>
<th>Qualitative Interview Theme</th>
<th>Quotations from Student Interviews</th>
<th>Manifestations in Quantitative Survey Data</th>
</tr>
</thead>
</table>
| Positive Perceptions        | “This school really kind of has like introduced me to like staying away from all that. Whereas like, I don’t know, um, I think that they do a good job of warning us about it.” “I think, of course you can’t appeal to everyone, I feel there’s always those people who are like, you know, whatever. But I know of people ... It doesn’t make them change but it does make them stop and think. I’ve seen people reflect on it. It served its purpose. Well I’ve seen it first hand at least.” | General Reduction in High-Risk Behaviors  
• 10 high-risk behaviors out of 15 decreased (7 statistically significantly) from pretest to Year 4 |
| Positive Perceptions        | “I think that we that we like this school has cleaned up their act a lot and the students have too. I’m not gonna say that it doesn’t go on but if you’re smart kids encourage each other not to drink and drive. Like it’s. That’s the effect I think the biggest effect that we’ve had.” | Reduction in Drinking and Driving  
• 38.3% in 2009 to 28.0% by 2013 |
| Positive Perceptions        | “It used to be really bad but over the past. It has changed a lot even since I’ve been here. Especially about like I guess a year, a few years before I came here it really started to change. Like everyone talks about it. Like there is the old [school] and there is the new one.” “There is or at least there has been in the past been a problem in the student body with actual high-risk activities. But, the school’s programs and procedures I think are really great for that. I think they do spread awareness and uh do deal with it effectively.” | Historical changes  
• 10 high-risk behaviors out of 15 decreased (7 statistically significantly) from pretest to Year 4 |
| Positive Perceptions        | “and junior year is Choices year and you go through the effects of drugs and alcohol on your brain, high risk behavior, and you go through that whole process which is really interesting to listen to.” “I know whenever we had our grade level learning thing with Choices that kind of scared you with a lot of facts and how your brain stops. And so I really don’t want that to happen. So that’s it.” | Reduction in drugs and alcohol  
• Current Marijuana Use decreased from 24.6% in 2009 to 10.1% by 2013  
• Lifetime Cocaine Use decreased from 7.7% in 2009 to 2.7% in 2013  
• Current Drinking decreased from 54.2% in 2009 to 43.5% in 2013  
• Binge Drinking decreased from 38.3% in 2009 to 28.0% in 2013 |
| Drug Testing Effects        | “I’m not really smoking anymore because of the drug testing.” “The drug testing especially is a big, big change. That really does. It definitely works. A lot of kids think it is just too much of a pain to deal with the drug tests. They just chose to not do it. There is no point in smoking if it is going to be that much of a pain.” | Reduction in marijuana use  
• Current Marijuana Use decreased from 24.6% in 2009 to 10.1% by 2013 |
| Culture Change              | “A lot of people want to say it’s a party school but it’s really not. It has had the reputation, the reputation of being a larger party school. But with the Choices program, with the drug testing it definitely slowed it a bit.” | General Reduction in High-Risk Behaviors  
• 10 high-risk behaviors out of 15 decreased (7 statistically significantly) from pretest to Year 4 |
| Complaints About Program    | “I think that probably is a bit too much focused on the drugs and alcohol because I think it is just beating a dead horse eventually. It is just thrown at us. If it is about Choices people, it’s going to be about drugs and alcohol. I think it would be interesting to see um a bit a few more stuff about the other high-risk activities and all those things that Choices deals with. And, I definitely think some more diversity in the program about those issues would be great. But, the way in which they deal with the issues that are most prevalent by the school is, I think very effective as it could be.” | Reflection of poorer high-risk behavior numbers  
• Use of Pornography increased from 28.3% in 2009 to 29.7% by 2013  
• Date Rape increased from 0.7% in 2009 to 1.1% in 2013 |
| Ways to Improve Program     | “I think we could definitely do better with the other subjects that kids struggle with. Um. Uh for girls. It’d probably be just eating disorders uh. Definitely eating disorders for girls I’d say.” “And you know, I do think there should be more of an effort to try to stop it from the Choices program. But, I mean all of the other stuff is great. I think that if they applied that to the bullying and cyberbullying it would be great. I don’t think they do because it is not a giant issue. It is a little issue but it is not nearly as bad as the other issues that they have to deal with, I think there is only a certain amount of time that they can allocate to things which are the most pressing issues.” | Reflection of poorer high-risk behavior numbers  
• Fasting as a Diet Method increased from 5.4% in 2009 to 7.1% in 2013  
• Bullying increased from 9.9% in 2009 to 20.2% in 2013 |
Discussion

This study set out to examine patterns of multiple high-risk behavior and the effect of a comprehensive, multiple high-risk behavior prevention program. By mixing quantitative and qualitative data, this study paints a promising picture of such an approach at a local private high school. A discussion of the implications of each research phase follows.

Quantitative Discussion

Chi-Square Automatic Interaction Detection. The 2009 CHAID analysis indicated that local students were more likely to engage in drinking and driving than were their national counterparts, and those students were also more likely to engage in sex/oral sex, and binge drinking, and to attempt suicide. By 2011, the CHAID analysis revealed that local students were more likely to engage in lifetime marijuana use, and those who did so also were more likely to engage in sex/oral sex, current marijuana use, and lifetime alcohol use, and to say yes to drinking at least one drink within the past 30 days than were their national students. These CHAID results support tailoring prevention programming to the current needs of the study body and not standardized across each year. Prevention programming should be updated annually as patterns of high-risk behavior change as evidenced by differences among 2009 and 2011 results among local students. The results support the ongoing use of iterative chi-square tests of independence based on analysis of interactions among predictor variables to identify and to target segments of the student population at high risk (Nickelson et al., 2011).

Latent class analysis. This 2013 analysis revealed that the students belonged to one of three distinct clusters of substance use behavior, one of two distinct clusters of non-substance use behavior, and two distinct clusters for sexual behavior. Regarding substance use behavior, homogenous groups comprised the following: (a) moderate to high rates of alcohol, marijuana, and cigarette use (56%); (b) high rates of drinking behavior but low rates of substance use (25%); and (c) tried alcohol or marijuana within their lifetimes and chose not to use again or do so at experimental levels (18%). Of interest is the exceptionally large number of students who engaged in regular alcohol use (81%). Considering previous research regarding the high rate of college drinking and the associated negative outcomes, further study and targeted alcohol use interventions appear crucial within this school environment (Rinker & Neighbors, 2015).

Regarding non-substance use high-risk behaviors, the two distinct clusters were: (a) moderate to high rates of being bullied, gambling, winning back money, and video game use but relatively low engagement in fasting, suicide attempts, self-injury, and video game use 5 or more hours per day (75%); and (b) moderate video game use but relatively low engagement on all other non-substance use high-risk behaviors (25%). Suicide attempts, self-injury, and video game use 5 or more hours per day did not discriminate either cluster and, thus, might represent a small number of individuals who engage in these specific behaviors. Out of four sexual high-risk behavior variables, two clusters emerged: (a) high on pornography use and sex/oral sex (83%) and (b) low on pornography use, sex/oral sex, dating violence, and date rape (17%).

According to these latent class analyses, the multiple high-risk behavior prevention program at this school should place greater emphasis on targeting the large percentage of students who engage in moderate to high drinking, substance use, gambling, video games use, bullying, and pornography use. In addition, the high rates of multiple high-risk behavior seen in the student body suggest that a gateway effect, peer effect, common risk factors or, moderating effects could be occurring (Choi et al., 2017; Cuijpers, 2002; Hale, Fitzgerald-Yau, & Viner, 2014). For example, previous research has indicated the relationship between cyber pornography addiction and sexting is stronger in those who have high levels of alcohol consumption (Morelli, Bianchi, Baiocco, Pezzuti, & Chirumbolo, 2017). In another study, adolescent gamblers who experience high consequences were more likely to engage in alcohol, marijuana use, dating violence, and have more negative peer influence as opposed to low consequence gamblers who endorsed high levels of parental monitoring (Goldstein et al., 2013). Based on these conclusions, we could infer that targeting specific high-risk behaviors might decrease the rate of other high-risk behaviors that are moderated or co-occur in specific groups of students.

Overall, the quantitative analyses reveal patterns of simultaneous engagement in multiple high-risk behaviors, which is consistent with patterns seen in previous research (Biglan et al., 2004; Brener & Collins, 1998; Lindberg,
Boggess, & Williams, 2000). Such subgroup information regarding patterns of multiple high-risk behavior engagement allows for a more targeted intervention approach tailored to each specific subgroup within the student population (Lanza & Rhoades, 2013). Further research could explore the clustering of simultaneous engagement of high risk behaviors to target skill-building prevention activities to increase the students’ social and emotional skills toward reduction of multiple high-risk behaviors considering that multirisk interventions that target multiple substance use are also effective for other risk behaviors (Hale et al., 2014).

Qualitative Discussion

The qualitative interview data portrayed a predominantly positive student experience of the multiple, high-risk behaviors prevention program taking place within their school. However, although students perceived effective programming regarding drugs and alcohol, they noticed insufficient coverage of other significant high-risk behaviors. The results from a previously published work regarding the analysis of this study’s survey data indicated variable rates of non-substance use behavior but statistically significant decreases in substance use rates. When these data are combined with the student reports of heavy program emphasis on substance use, it suggests that the programming dosage levels for substance use behaviors were adequate and might have assisted in achieving the positive outcomes (Collier et al., 2016). These results corroborate the students’ qualitative experiences. One possible implication is that dosage levels for non-substance use behaviors should be increased to at least that of the substance use behaviors.

Furthermore, the qualitative information elucidated the influences on students’ choices regarding high-risk behavior, providing implications for future programming. For example, students considered positive parents, media, themselves, their peers, and social media to have greater impact on their high-risk decisions than prevention programming staff, faculty, negative parental influence, or culture and ethnic factors. This finding coincides with previous research indicating that parents are the greatest influence when it comes to children’s decisions regarding high-risk behaviors (Califano, 2009). In addition, according to McCreanor et al. (2013), although social networking systems are positive and pleasurable for young people, they are likely to contribute to pro-alcohol environments and encourage drinking. The implications are clear: prevention programming must include a parent component as well as an attempt to harness the power of media. In addition, the students interviewed in this study stressed that their self-agency overruled the effects of environmental events. Previous research has indicated that mediating variables such as norms, commitment, and intentions of students have positive effects on prevention program outcomes (Cuijpers, 2002). Thus, utilizing the social influence approach by building on students’ sense of self-agency to change norms might strengthen future prevention outcomes.

The most influential factor that students offered regarding the reason that they chose to engage in high-risk behavior was because they were with friends. This was an interesting finding because students made a point to clarify that they had neither been negatively peer pressured to engage in risky behaviors, but just being in the presence of peers made the behavior seem more enticing. This finding corresponds with previous research which indicates that youth took more risks and focused more on the benefits of risky behavior when in peer groups than when alone (Chein, Albert, O’Brien, Uckert, & Steinberg, 2011; Gardner & Steinberg, 2005). Conversely, the power of positive social influence also is evident in the findings of this study. Three of the six reasons that students offered for not engaging in high-risk behavior involved the influence of others—specifically, positive peer influence, seeing the negative effects in others, and positive parental influence. In addition, students reported that the school’s drug testing policy significantly influenced their behaviors due to witnessing changes in their peers who had been caught via a drug test. These results regarding peer influence appear to be contradictory. On one hand, students report receiving no negative peer pressure to engage in negative behaviors even though they engage in it more often when with peers. On the other hand, students readily admitted being positively influenced not to engage in high-risk behaviors. At this point, it is clear that social influence affects adolescent decision-making regarding high-risk behavior but it is unclear whether or not it plays a moderating or mediating role in their decisions. Further research could evaluate the impact of social influence on adolescent decision-making toward engagement of high-risk behavior and if it is a result of a moderating or mediating role in the decision.
Mixed Methods Discussion

The mixed phase of this study revealed the extent of overlap in the quantitative and qualitative patterns of engagement in high-risk behavior as well as the how accurately the perceptions of students regarding the effect of the prevention program reflect the actual reported results. After quantizing and qualitizing each data set (Tashakkori & Teddlie, 1998), the visual and descriptive comparison of the mixed data yielded similar percentage ranges for each frequency category for both groups except for students who did not engage in high-risk behaviors. The higher numbers reported in the low and moderate categories for interview participants might indicate underreporting among survey respondents. However, the numbers are similar for both groups and might signify a general consistency of the interview and survey results. If that is the case, then the perceptions of the students regarding the effect of the current prevention program gleaned from student interviews might reflect the actual reported survey results. Further information to support this premise was included in the form of a narrative comparison of the emergent qualitative interview themes and the reported high-risk behavior survey scores. Overall, the general reduction in high-risk behaviors seen in the survey data over the four-year study period reflect the students’ positive perceptions regarding the effectiveness of the program and the historical changes and culture shift seen in the population (Collier et al., 2016). Furthermore, the erratic patterns and increases in some of the non-substance use high-risk behaviors reflect the students’ complaints about and suggestions to improve the current program.

Overall, the quantitative and qualitative data were mixed to enhance significance and improve treatment integrity. The results stemming from the mixed analyses supported the validity of each quantitative data set by providing a comparison of reported students’ patterns of use and perceptions of the effectiveness of the program. Because a limitation of this study was that all high-risk behavior measures were self-report and, therefore, subject to bias as well as over- or underreporting, the quantized/qualitized data comparison enhanced the accuracy and significance of both data sets. Treatment integrity was assessed descriptively by asking students what their perceptions were of the current program and its perceived effect on high-risk behaviors of the students. The mixed results indicate that the students’ perceptions, gleaned from qualitative data, might accurately reflect that of the entire student population and lend support to the premise that the program is effective at this school. This conclusion is especially important due to the lack of causal inference that quasi-control group studies, such as this one, allow. This information was provided to stakeholders to assist in refining subsequent phases and delivery of the Choices prevention program at this school (Collins et al., 2006).

Conclusion

Most substance use initiation occurs in adolescence, and early initiation is associated with negative outcomes in physical, mental, sexual, occupational, and educational areas throughout adulthood (Hale et al., 2014). A growing body of evidence suggests that high-risk behaviors occur simultaneously and are mutually predictive (Biglan et al., 2004; Coleman et al., 2014; Fox et al., 2010). Thus, targeting multiple high-risk behaviors through integrated interventions might be more effective and efficient.

The promising results of this mixed methods research study demonstrate the effectiveness of a comprehensive, multiple high-risk behaviors prevention program for substance use behaviors and the potential for success on non-substance use behaviors. However, this study illuminated the ever-changing trajectory of multiple high-risk behavior patterns among different groups of students. Employing statistical techniques that organize students into subgroups according to their risk characteristics allows us to think about these individuals holistically. Accordingly, utilizing mixed methods research approaches throughout an intervention application might be crucial to understanding common factors and peer effects of various groups and trends, information that could be used to tailor the intervention specifically to the changing needs of students.

References


