Cultural Tailoring and Feasibility Assessment of a Sexual Health Middle School Curriculum: A Pilot Test in Puerto Rico

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ABSTRACT

BACKGROUND: To assess the need for cultural tailoring of an effective sexual health middle school curriculum, “It’s Your Game: Keep It Real” (IYG), prior to implementation in Puerto Rican (PR) middle schools.

METHODS: Seventy-three seventh-grade bilingual students participated in IYG curriculum activities (both group-based and computer-based) in two 2-hour testing sessions in spring 2008. Rating scales of acceptability, understandability, credibility, ease of use, and motivational appeal and qualitative feedback via open-ended responses and group process provided insight into needed surface and deep structure cultural tailoring.

RESULTS: Students rated IYG highly on cultural tailoring and motivational parameters and were highly engaged by the lesson content. School personnel rated IYG as a feasible strategy for use in PR middle schools. While surface cultural elements (eg, characters, attire, body language) were identified as important foci for adaptation, content related to deeper cultural elements such as core behaviors, risky situations, attitudes, and specific skills were considered as relevant to PR youth as to their US counterparts.

CONCLUSION: Effective human immunodeficiency virus, sexually transmitted disease, and pregnancy skills training prevention programs such as IYG that are developed for minority US youth may offer a feasible option for international implementation when extensive cultural adaptation is not a viable option.

Keywords: youth; Puerto Rico; HIV; STD; pregnancy; adaptation; IYG.


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The human immunodeficiency virus (HIV), sexually transmitted diseases (STDs), and teen pregnancy are serious health problems for Puerto Rican (PR) youth. In 2010, the Office of Epidemiology and Research reported 34,193 confirmed AIDS cases in Puerto Rico.1 Youth under 25 years of age is the fastest growing group of new HIV infections. As of April 2010, there were 259 HIV-infected adolescents (10-19 years), representing 3.5% of all HIV cases. The greatest risk factor for infection was heterosexual contact without protection (35%).1 Youth (15-19 years) are also at high risk of contracting STDs2 with cases of chlamydia, gonorrhea, and syphilis among this group rising significantly from 1134 in 2005 to 2064 in 2008.3 For the academic year 2006-2007, there were 875 PR youth attending school while pregnant and of these 155 were either in elementary or in middle schools.4 More PR high school students report having initiated sex before 13 years (7%) than their US counterparts (6.2%)5 as well as...
lower use of condoms during last sexual intercourse (41.8% vs 62.5%) and of birth control pills (4.9% vs 17.6%).

Effective sexual health programs are needed to mitigate the growing public health challenges of teen HIV and STD transmission and pregnancy in Puerto Rico. Programs are required that can be readily adopted by the PR education system and that are effective for PR youth. The development, implementation, and evaluation of such programs represent a costly and time-consuming endeavor. The adaptation of an empirically validated program developed in the United States that is effective in impacting the sexual behavior of Latino youth could provide a more cost-effective and immediate solution.

“IT'S YOUR GAME: KEEP IT REAL” (IYG) is an effective HIV, STD, and pregnancy prevention intervention for middle school students, evaluated in a randomized controlled trial in 10 Texas urban middle schools with a predominantly African-American and Latino population. The intervention (12 seventh-grade and 12 eighth-grade lessons), based on Social Cognitive Theory,7 social influence models,8 and the theory of triadic influence,9 included group-based classroom activities with personalized journaling and individual tailored activities delivered on laptop computers designed to influence psychosocial variables related to healthy friendships, dating relationships, and sex including peer norms, beliefs, self-efficacy, refusal, and communication skills. “IT'S YOUR GAME: KEEP IT REAL” was effective among low income, urban Latino middle school students.10 By ninth-grade follow-up, Latino youth in the comparison (usual care) condition were 1.64 times more likely to initiate sex than students who had completed IYG (95% CI, 1.09, 2.47). “IT'S YOUR GAME: KEEP IT REAL” also impacted psychosocial variables among Latino students including enhanced beliefs about abstinence, greater perception that friends held more positive beliefs about not having sex, greater confidence in refusing sex and using condoms, greater knowledge about HIV and STD signs and symptoms, and less exposure to risky situations. Likewise, African-American youth in the comparison group were 1.84 times more likely to have initiated oral sex and 3.12 times more likely to initiate anal sex than students who had completed IYG (95% CI, 1.04, 3.25 and 95% CI, 1.21, 8.06, respectively). “IT'S YOUR GAME: KEEP IT REAL” has since been identified by Mathematica Policy Research Inc. and the US Department of Health and Human Services (HHS) as an evidence-based program that has been proven to be effective through rigorous evaluation.11

Adaptation of a program for new populations and contexts requires the retention of the core elements of the original program that made it effective while addressing the needs of the new target population.12 Adapting effective US HIV, STD, and pregnancy prevention programs for Latino populations outside the United States involves founding the intervention on theory and empirical evidence to ensure determinants of sexual behaviors are addressed12 and ensuring that the intervention is feasible for use by the target population. Optimal adaptation requires that programs be culturally tailored through attention to surface and deep structure.13 Surface structure involves matching intervention materials and messages to observable, “superficial” characteristics of a target population (eg, people, places, language, music, food, locations, and clothing familiar to, and preferred by, the target audience) while deep structure involves incorporating cultural, social, historical, environmental, and psychological influences of the targeted health behavior.13 Among Latinos this can be exemplified through cultural values such as familismo (the importance of the family, the sense of belonging, pride, and obligation to the members of the family),14-16 gender roles (ie, machismo and marianismo), personalismo (the importance of personal relationships, expression of affection and appreciation), respeto (the importance of adherence to authority, based on age or social position),16,17 and religion.18

An apparent paradox emerges. While surface and deep cultural tailoring is desirable to optimize relevance for use of effective programs, there is also a need to maintain operational fidelity of the original program, preserving its core elements to maintain its original effectiveness. When core elements are adapted or even omitted, often as a result of adding additional components, the program fidelity is compromised.19 Ideally, program facilitators should assess the feasibility of the effective program with the local target population to minimize the cultural tailoring required and to optimize the operational fidelity. Such an “adaptation triage” would be particularly valuable in facilitating the international export of effective domestically produced programs that have benefited from years of development and evaluation studies.

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The purpose of this pilot study was to assess the need for cultural tailoring of an effective sexual health middle school curriculum, IYG, and to assess its feasibility prior to implementation in PR middle schools. The study has broader implications with respect to minimal tailoring requirements for successful international dissemination of effective, locally produced, health interventions, especially those involving a technology channel.

METHODS

Subjects
Pilot testing was conducted in spring 2008 in 2 San Juan middle schools (School A and School B) with a convenience sample of 73 seventh-grade students. Students were bilingual and representative of varied socioeconomic backgrounds. Trained research staff described the purpose of the pilot test to seventh-grade classes, and teachers provided parents with recruitment packets comprising a Spanish language introductory letter and parent consent form. The response rate of returned parental consent was 100%. Student assent was obtained prior to the pilot test, and students were provided with refreshments during their participation. The study was approved by University of Texas Health Science Center at Houston Committee for the Protection for Human Subjects (HSC-SPH-08-0031) and by the University of Puerto Rico-Rio Piedras Institutional Review Board (CIPSHI).

Students in School A (n = 28) and School B (n = 45) participated in 10 seventh-grade IYG curriculum lessons (4 classroom lessons and 6 computer-based activities previously approved by school teachers) during their regular science class (School A) or in the library during regular school hours (School B). All students attended two 2-hour sessions on 2 separate week days. Classroom lessons were presented in Spanish and computer-based activities were provided via laptop or desktop computers. Computer-based activities were presented in their original English language format to preclude translation and production costs. Classroom lessons were translated into Spanish by a native bilingual Spanish speaker with expertise in youth HIV prevention. After translation, the Spanish wording was revised by PR teachers to guarantee that words used were understandable; motivational appeal and ease of use.

Intervention
Four classroom and 6 computer-based lessons were selected for testing on the basis of their representativeness of the IYG activities (Figure 1a and b). Classroom activities consisted of role plays and journal activities designed to address peer norms, beliefs, self-efficacy, refusal skills, and communication skills related to healthy relationships, dating, and sexual risk-taking behavior. The classroom lessons presented were (1) “Keeping It Real... among Friends” where students listed qualities of “real” friendships and demonstrated how to evaluate friendship via role plays; (2) “It’s Your Game... Playing by Your Rules” where students recognized the need to select their personal rule, detect challenges to their rule, and protect their (and other people’s) rules; (3) “Protecting Your Rules... a Clear No” where students discussed and practiced a half-scripted role-play to distinguish between ineffective and effective “No” statements and actions; (4) “Protecting your Rules... Regarding Sex” where students re-examined characteristics of clear “No” statements and alternative actions and reviewed the select-detect-protect paradigm in the context of sexual situations.

Computer-based components comprised FLASH-based interactive activities reflecting the main genres used within IYG (Figure 1a). These activities focused on skills training regarding selecting, detecting, and protecting personal rules about sex, classifying and using refusal skills, and role model videos (talking head and serials) depicting minority youth discussing or negotiating social issues.

Instruments
“It’s Your Game: Keep It Real” was assessed on constructs relevant to cultural tailoring adapted from existing usability surveys.20 The 16-item self-report survey using a Likert scale response format was provided to students immediately following exposure to IYG activities.

Cultural Components
Surface cultural parameters were assessed by ratings of how youth liked the computer-based activities as a whole, the story (treatment), and the characters from the videos and contexts using 5-point Likert scale ratings of “dislike a lot,” “dislike a little,” “not sure,” “like a little,” “like a lot.” Deep cultural parameters were assessed by ratings of credibility, acceptability, understandability, motivational appeal, and ease of use. Credibility was based on the perceived correctness of the content presented using a 3-point Likert scale rating of “right,” “wrong,” and “don’t know” and whether the content could be trusted using ratings of “can be trusted,” “can’t be trusted,” and “don’t know.” Acceptability was based on the pace of IYG activities using ratings of: “too fast,” “just right,” or “too slow.” Parameters of understandability, motivational appeal, ease of use, and perceived impact were rated using a 3-point Likert scale of “yes,” “no,” or “don’t know.” Understandability was based on whether the words used were understandable; motivational appeal was based on whether students would use IYG again and whether they would recommend it to others; ease
of use was based on whether students needed help from the teacher or another adult to play IYG; and perceived impact was based on whether students thought it would help them make healthy decisions about friends and sexual relationships.

Open-ended responses were used to assess language understandability, and likeability of characters, scripts, and lesson content (what they liked the best and the least), social norms, knowledge, and feasibility of program implementation in PR schools, recommendations for adaptation, and to provide qualification for quantitative ratings. Student demographic data regarding sex, grade, age, place of birth, and religion was also collected using previously validated items.12

Procedure

Students completed paper and pencil demographic and usability surveys in a 5-minute period after concluding the classroom lessons and the computer-based activities. The evaluation session concluded with a 20-minute class discussion focused on the relevance of the IYG activities for PR youth. Reactions and opinions from 2 teachers, a librarian and a social worker, were also collected after they read the teachers’ manual and observed the delivery of the IYG lessons. These discussions were tape-recorded.

Data Analysis

All 5-point Likert scales were reduced to 2-point dichotomies and an exact binomial probability for each was calculated based on the assumption that each response choice was equally likely. Open-ended questions were reviewed for content and categorized by topic areas. Audiotapes were transcribed, translated into English, and analyzed by a researcher in Houston and a researcher in Puerto Rico. Results were collated and summarized.

RESULTS

A total of 73 seventh graders participated in the study. The student sample (n = 73) was mainly PR-born (85%), female (65.7%), with ages of 12 (47.9%), 13 (38.4%), and 14 (13.7%) (Table 1).
Most ratings of surface cultural parameters were significantly higher than 50% (p < 0.001). Students liked the computer-based activities and video serials that presented opportunities to learn how to manage and to respond to risky situations. However, they recognized that the videos were made in the United States and did not identify with the appearance and dress of the teenagers presented. Moreover, even bilingual students said that the pace of the spoken English in the computer activities was too fast and that the program needed to be in Spanish.

Ratings of deep cultural parameters were high (all >60%): credibility—the majority of the students perceived the content of the information received via computer-based activities as correct (97%) and trustworthy (98%); understandability—almost 92% of the students said that they knew or understood most of the words from the IYG computer activities; acceptability—64% of the students reported that the pace of computer activities was “just fine”; motivational appeal—68% of the students reported that they would like to play the game again, and 81% said that they would tell a friend to try the game; ease of use—19% reported that they needed help from an adult to play some of the activities; and perceived impact—94% of the students said that the information they received from the computer-based activities would help them make healthy choices regarding friendship and sexuality (Table 2).

Qualitative feedback indicated that students enjoyed the classroom lessons and computer activities and were excited about having a program like this in Puerto Rico, saying: “we are very much in need of knowing about these topics” (relationships, smoking, alcohol use, ways to say no, friendships, sexual relationships, etc) and “the technology [we were using] was a very good way to learn”; “it is better than hearing a teacher saying the things.” The students said that they enjoyed the classroom lessons, particularly the role plays and the journals. In response to questions about knowledge learned from the activities, student responses included: “I learned about how to respect,” “I learned how to know if I have a good friend,” “how to say ‘no,’” “how to select, detect, and protect,” “alternatives . . . to use to say no.” They also reported that the classes allowed them “to get to know more about . . . classmates.”

The deep cultural values of religion and respeto emerged as important in assessing the appropriateness of the videos. Some students felt uncomfortable when they saw clips that addressed smoking and alcohol use as risk factors for sexual behaviors. They reported that these were offensive because their parents and their religions have stressed to avoid people who smoke or drink. Familismo, gender roles, and personalismo did not emerge during the discussion. While the videos embedded in the computer activities were not considered, in general, as adequately representing the PR cultural environment though the topics, examples, and situations used in the activities were considered similar to those experienced by PR adolescents.

The teachers and school staff were favorably disposed to the IYG curriculum and its feasibility for PR middle schools. They stated that the situations presented to the students were very real and appealing. “The way the program is set up gives students several opportunities to think and rethink about their response and action.”

Table 1. Demographic Characteristics of Puerto Rican Middle School Students (n = 73)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>32.8</td>
</tr>
<tr>
<td>Female</td>
<td>48</td>
<td>65.7</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 years old</td>
<td>35</td>
<td>47.9</td>
</tr>
<tr>
<td>13 years old</td>
<td>28</td>
<td>38.4</td>
</tr>
<tr>
<td>14 years old</td>
<td>10</td>
<td>13.7</td>
</tr>
<tr>
<td>Place of birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>62</td>
<td>84.9</td>
</tr>
<tr>
<td>United States</td>
<td>3</td>
<td>4.1</td>
</tr>
<tr>
<td>Other countries</td>
<td>5</td>
<td>6.8</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>31</td>
<td>42.5</td>
</tr>
<tr>
<td>Catholic</td>
<td>20</td>
<td>27.4</td>
</tr>
<tr>
<td>Others</td>
<td>4</td>
<td>5.5</td>
</tr>
<tr>
<td>None</td>
<td>6</td>
<td>8.2</td>
</tr>
</tbody>
</table>

*Total percentages may not add up to 100 due to missing values.

Table 2. Ratings of Cultural Tailoring of It’s Your Game Program. Results From Puerto Rican Pilot Study (n = 73)

<table>
<thead>
<tr>
<th>Ratings of Cultural Tailoring</th>
<th>Like</th>
<th>Dislike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal rules comic book</td>
<td>48</td>
<td>6</td>
</tr>
<tr>
<td>Reel World Serial</td>
<td>39</td>
<td>8</td>
</tr>
<tr>
<td>Scoops</td>
<td>63</td>
<td>4</td>
</tr>
<tr>
<td>Cyber Café—Graffiti Wall</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td>Information was correct</td>
<td>71</td>
<td>97.2</td>
</tr>
<tr>
<td>Acceptability</td>
<td>47</td>
<td>644</td>
</tr>
<tr>
<td>Work pace just right</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understandability</td>
<td>72</td>
<td>98.6</td>
</tr>
<tr>
<td>Information was credible</td>
<td>67</td>
<td>91.8</td>
</tr>
<tr>
<td>Words were understandable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivational appeal</td>
<td>50</td>
<td>685</td>
</tr>
<tr>
<td>Would use again</td>
<td>59</td>
<td>80.8</td>
</tr>
<tr>
<td>Would tell others about program</td>
<td>14</td>
<td>19.2</td>
</tr>
<tr>
<td>Ease of use</td>
<td>56</td>
<td>76.7</td>
</tr>
<tr>
<td>Need help from adult—Yes</td>
<td>69</td>
<td>94.5</td>
</tr>
<tr>
<td>Need help from adult—No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes about impact</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Based on responses of likability from a 5-point Likert scale dichotomized as dislike a little/a lot, like a little/a lot. Not sure, did not use, and refuse are not included.
DISCUSSION

Cultural adaptation is important when exporting domestically produced and evaluated evidence-based programs.\textsuperscript{21,22} “It’s Your Game” is an evidence-based program that has proven to be effective among Latino youth in the United States,\textsuperscript{10} which suggests it may have potential for dissemination to Latin American youth internationally. A consistently expressed and pragmatic view is to build upon “what works”—\textsuperscript{23} rather than taking the costly and time-consuming option to create a new program.\textsuperscript{24}

It is recognized that adaptation and dissemination of effective public health interventions for international use require that programs address an acknowledged public health problem, are potentially effective, have sufficient evaluation trials and positive results, can be generalized to, and implemented in, the international situation.\textsuperscript{25} Initial assessment of IYG on these parameters indicated its potential for PR dissemination but the question of adaptation requirements and feasibility remained.

Compelling support for cultural influence on sexual identity, expression, and behavior was provided in a meta-analysis of 20 extracurricular interventions that reduced sexual risk among sexually experienced youth. Protective outcomes were associated with social-behavioral interventions conducted in groups with 100% ethnic similarity,\textsuperscript{26} reinforcing the importance of detailed cultural adaptation in producing maximally relevant, inclusive, and engaging programs for youth.\textsuperscript{27}

The qualitative and quantitative techniques applied in this study further confirmed the necessity of attending to surface and deep cultural parameters. A well-adapted IYG program will require translation to Spanish, inclusion of expressions (slang, sayings or “dichos,” and body language) particular to PR youth, inclusion of role models who represent PR youth in appearance, and attention to dress codes for video role models that conform with local PR convention (PR students follow school uniform dress codes and considered the IYG video role models inappropriately dressed). More challenging are the recommendations to embed cultural concepts, specifically religion and respeto which were raised by students. Several HIV/STD prevention studies have reported religion as either a protective factor (emphasizing abstinence)\textsuperscript{28} or a risk factor (the belief that the individual can do little to alter fate [fatalism]).\textsuperscript{29,30} Including activities that explore how religion may affect sexual decision-making together with information about STD transmission, prevention, and treatment, may address this issue. Regarding respeto, enhancing parents’ active participation in IYG through workshops or other activities, may allow parents to serve as experts on their children’s health and may enhance open and honest communication about sexual topics.\textsuperscript{31} Although specific issues related to gender roles were not raised by students or adults, it may be important to include condom negotiation skills into the program to counteract the expectation that Latinas be submissive to male partners (marianismo) precluding refusal of unwanted sex or condom negotiation, and that Latinos are unable to control sexual impulses compromising their ability to stop when aroused (machismo).\textsuperscript{32}

Results from this study suggest that IYG would be a feasible HIV, STD, and pregnancy prevention intervention for PR middle school youth. A high consent return rate, students’ enthusiasm (high participation in the role plays and class discussion), and teacher and administrators’ cooperation and feedback exemplified a high degree of support for the program. Whether this would generalize to other schools and school districts in Puerto Rico remains to be determined.

Students perceived the computer-based activities to be an engaging method by which to learn life skills necessary to have successful interactions with friends. Students expressed that this was a superior method of learning sexual health material compared to their teacher delivering the material in a classroom setting. The dissemination of computer-based applications offers numerous advantages including tailored educational experiences, high program fidelity, the potential of broad Internet-based reach, the application of multimedia strategies that are motivational for youth, and the potential of cost-effectiveness.\textsuperscript{33} While intuitively appealing to intervention developers, this study highlights potential barriers for cultural adaptation of technology-based applications as well as potential solutions. A principal barrier is development cost. Even surface cultural adaptation of a character’s attire and language in video and multimedia activities can necessitate extensive re-production involving illustration, voice-over recording, video-production, and reprogramming, in addition to the challenge of back-translation of materials. This is considerably more involved (in cost and time) than the translation of a written curriculum, for example.

A solution to enable circumventing extensive production costs and timelines could be achieved by “triaging” cultural adaptation to determine core cultural elements that must be addressed for a meaningful educational experience, prioritizing these, and seeking parsimonious production solutions. For example, a FLASH-based interactive computer activity in English that contains English language video role models may require translation into Spanish. The optimal solution is to reproduce this activity in Spanish. However, less optimal solutions (ie, Spanish language subtitles and dubbing) may still have acceptance, appeal, and impact for an audience that does not typically have access to this technology. The production time and cost of this
“triaged” version will significantly enhance the potential of short-term dissemination over a prolonged and resource intensive adaptation effort.

Limitations

The results from this pilot study need to be considered in the light of study limitations that include the use of an English language program necessitating the recruitment of English-speaking PR students, the use of only a portion of the IYG curriculum (monologue bias) and limited sample size of students and teachers that limits generalizability of study findings, the adaptation of usability constructs as approximation measures of surface and cultural adaptation, and the lack of any quantitative measures of familiarismo, gender roles, respeto, and personalismo.

IMPLICATIONS FOR SCHOOL HEALTH

The impact of HIV/AIDS, STDs, and adolescent pregnancy on the PR adolescent population is a major public health concern. Effective cultural- and theory-based HIV, STD, and pregnancy prevention programs are needed for PR students to help delay early sexual activity. “It’s Your Game: Keep It Real” provides a protocol for staff in Spanish-speaking schools to select and adapt (if necessary) evidence-based English language sexual health education programs. Given the dearth of evidence-based Spanish language sexual health programs, this is a more effective use of resources than developing new sexual health programs from scratch. IYG was well received by PR middle school students and teachers, offering a potential intervention, operational and feasible for use in PR middle schools. Despite this, several surface and cultural adaptations were identified and this study highlighted the particular challenges for even minor adaptations of computer-based programs.

Human Subjects Approval Statement

This study was approved by the University of Texas Health Science Center at Houston Committee for the Protection for Human Subjects (HSC-SPH-08-0031) and by the University of Puerto Rico-Rio Piedras Institutional Review Board (CIPSHI).

REFERENCES


