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## An Evaluation of the Ho‘ouana Pono Curriculum: A Pilot Study of Culturally Grounded Substance Abuse Prevention for Rural Hawaiian Youth

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### Abstract

This pilot study evaluated the Ho‘ouana Pono curriculum, which is a culturally grounded, school-based, drug prevention curriculum tailored to rural Native Hawaiian youth. The curriculum focuses on culturally relevant drug resistance skills training and is aligned with the State of Hawai‘i academic standards. Six Hawai‘i Island public middle/intermediate schools randomly assigned to intervention or treatment-as-usual comparison conditions (N = 213) were evaluated in this study. Paired sample t-tests separating intervention and comparison groups were conducted, as well as mixed models that adjusted for random effects (nesting) at the school level. Findings suggested that the curriculum was effective in maintaining youths’ use of culturally relevant drug resistance skills, as well as decreasing girls’ aggressive behaviors, at six-month follow up. Unanticipated findings also suggested areas for curricular improvement, including more emphasis on normative drug education. Implications for future research and development of the curriculum are discussed.

### Keywords

Culturally grounded prevention; Native Hawaiian; health disparities; youth; substance abuse

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In numerous studies, Native Hawaiian youth have been found to report the highest rate of gateway drug use among predominant youth ethnic groups in Hawai‘i.<sup>1–9</sup> For example, Wong and colleagues<sup>1</sup> found that Native Hawaiian youth had the highest percentage of lifetime cigarette (64%) and marijuana (52%) use compared with other ethnocultural groups in Hawai‘i. Further, substance use has been related to adverse social and behavioral consequences for Hawaiian youth, such as suicidality,<sup>10</sup> school absences, suspensions, and

infractions,<sup>11</sup> and violence and aggressive behavior.<sup>12</sup> Similar to other indigenous peoples, adverse health consequences for Hawaiians, including disproportionate substance abuse rates and related disorders, have been linked to historical and ecological stressors. Specifically, Helm and colleagues<sup>13</sup> described how forced religious, geopolitical, and socioeconomic colonization of Hawaiians have contributed toward their health disparities, including substance abuse. Despite the demonstrated need, there have been very few studies focused on Native Hawaiian youth and drug use, including those related to drug prevention interventions for these youth.<sup>14–15</sup> Thus, much more research is necessary to elucidate the effective intervention components specific to these youth, in order to eliminate substance-related health disparities for Native Hawaiians.

To address the lack of intervention research focused on Hawaiian youth,<sup>14–16</sup> this pilot study examined the effectiveness of a novel, culturally grounded, school-based drug prevention curriculum for rural Hawaiian youth. The curriculum (Ho‘ouana Pono) was developed from a foundation of pre-prevention and translational pilot/feasibility research funded by the National Institute on Drug Abuse. The present study evaluated the curriculum across three waves of data (pre-test, post-test, and six-month follow up) in order to examine program effects related to substance use, use of drug resistance strategies, and psychosocial risk assessment. The findings have implications for the full-scale development and evaluation of the program, as well as the development of prevention curricula for other indigenous and/or Pacific Islander youth populations.

## Literature review

Culturally grounded prevention. Culturally grounded approaches toward developing prevention interventions reflect the use of collaborative methods to develop intervention components from the “ground up,” or directly from the populations that are the focus of the intervention.<sup>17,18</sup> As a result of this process, the intervention is specifically designed based on the culture and social context of the targeted population.<sup>19</sup> Culturally grounded prevention programs are not to be confused with culturally adapted prevention programs. Cultural adaptations use an already established mainstream intervention as the foundation for another intervention tailored for a cultural group that is different from the group(s) for whom the original intervention was developed. Strengths of culturally grounded approaches to prevention program development include the enhancement of intervention feasibility and cultural “fit”.<sup>17</sup> Further, some have argued that these methods are empowering to historically marginalized and underserved communities, and are essential to promote social justice for them.<sup>18,20</sup>

Several culturally grounded drug prevention programs have been developed over the past decade, such as *keepin’ it REAL*,<sup>21–23</sup> The Strong African American Families Program (SAAF),<sup>24,25</sup> and the Seventh Generation Program.<sup>26</sup> Despite the drug intervention needs of Native Hawaiian youth, there have been no nationally recognized, culturally grounded drug prevention programs developed and evaluated specifically for these populations.<sup>15</sup> This is potentially an issue for health promotion for these populations, as some research suggests that drug prevention programs affect indigenous youth differently than other ethnocultural youth groups,<sup>27</sup> and may therefore need to be grounded rather than adapted for these youth.

There are other reasons that culturally grounded prevention programs are indicated for indigenous youth populations, including Native Hawaiian youth. Because there is an overall lack of research focused on prevention interventions with indigenous youth populations,<sup>15,28</sup> there is a lack of knowledge as to the core cultural constructs and active “ingredients” that are necessary for prevention interventions to exert a positive effect with these populations.<sup>29</sup> Okamoto et al.<sup>30</sup> argue for the use of culturally grounded approaches in the development of prevention programs for indigenous youth populations, in order to form the foundation for an indigenous prevention science. This foundation encompasses indigenous core cultural constructs and active “ingredients,” as well as regional specificity to different indigenous youth. These components are necessary for the development of prevention curricula that address the unique social and cultural contexts of distinct indigenous youth populations.

### The development of the Ho‘ouana Pono curriculum

Ho‘ouana Pono (meaning “to send with righteousness”) is a school-based, culturally grounded drug prevention curriculum, which was recently developed from two studies funded by the National Institute on Drug Abuse. The initial study was a mixed-methods, multiphasic, pre-prevention study, which was used to examine the social and cultural context of substance use for rural Native Hawaiian youth, and the culturally appropriate refusal strategies used in response to drug offers from peers and family members.<sup>30,31</sup> The initial years of the study focused on elucidating situations where drugs and alcohol were offered to youth in the home, at school, or in the community. For example, Helm and colleagues<sup>20</sup> described a typology of drug offers experienced by rural Hawaiian youth, which included *direct-relational drug offers* (offers that were experienced in person-to-person interactions and included an identifiable drug offerer), and *indirect-contextual drug offers* (complex situations with a demand for drug use, despite the lack of an identifiable drug offer or specific offerer). The latter years of the study focused on identifying Hawaiian youths’ refusal strategies used in response to these types of offers, which primarily reflected three categories (“refuse,” “explain,” and “angry refusal”).<sup>32</sup> The social and cultural validity of these youth-generated drug refusal strategies were supported by Hawai‘i Island community stakeholders (e.g., older youth, teachers, social service providers) through an online survey.<sup>33,34</sup>

The findings from the pre-prevention study were the foundation for a translational pilot/feasibility study focused on the development and pilot testing of Ho‘ouana Pono. Specifically, drug offer situations and culturally specific refusal strategies described by the youth in the pre-prevention study were translated into short, narrative film scripts that were validated in a series of focus groups with Hawaiian youth.<sup>35,36</sup> The scripts were used to produce professional-grade short films depicting drug offer situations in rural Hawai‘i, and youths’ use of culturally specific refusal strategies within each situation.<sup>31</sup> Recent formative evaluation research for another school-based prevention program for Hawaiian youth has suggested that these youth respond favorably to prevention videos with culturally familiar characters and images.<sup>37</sup> The Ho‘ouana Pono short films serve as the core components of the curriculum, and are used as the foundation for the classroom-based lessons focused on resistance skills training.

## Relevance of the study

This pilot study helps to fill a gap in the health disparities and prevention literatures by examining the effectiveness of a culturally grounded prevention curriculum for rural Hawaiian youth. Edwards et al.<sup>15</sup> found few published evaluations of prevention interventions for Hawaiian youth through a systematic literature review, and those that were identified focused on post hoc evaluations of community grassroots efforts and/or were preliminary in nature. In contrast, the present study evaluates a curriculum that was developed through a body of empirical research focused on rural Hawaiian youth and substance use. It evaluates a curriculum that relies largely on findings from culturally focused research with rural Hawaiian youth to inform empirically supported prevention practices (e.g., resistance skills training). As a result, the curriculum has cultural and regional specificity within the Pacific region, promoting greater applicability for cultural adaptations to other related youth populations within the Pacific compared with adaptations of programs developed with populations on the Mainland U.S.<sup>30</sup> Ultimately, it contributes to the development of an evidence-based and indigenous prevention science.

## Methods

### Procedures

Six middle, intermediate, or multi-level schools participated in the pilot study, and were randomly assigned to either an intervention ( $n = 3$ ) or comparison ( $n = 3$ ) group. Intervention schools received the Ho'ouana Pono curriculum as part of their health curricula, while comparison schools received their standard drug and alcohol health curricula (treatment-as-usual). The standard drug and alcohol curricula varied from school to school, and was broadly guided by concepts of health promotion and disease prevention (e.g., practicing healthy behaviors and reducing health risk). Schools participating in the study were geographically focused within two of the three school complex areas in the Department of Education on the Island of Hawai'i. These schools constituted 86% of the public middle or intermediate schools within the two participating complexes and 43% of all public middle or intermediate schools on the island. Most of the schools were widely dispersed within small townships with populations of less than 50,000.

All research procedures were approved by the Institutional Review Boards at Hawai'i Pacific University, University of Hawai'i at Mānoa, and the State of Hawai'i Department of Education. The study began in January 2013 with the administration of the pre-test survey, followed by the first lesson of the curriculum one week later in intervention schools. The post-test survey was administered in March 2013 to coincide with the final lesson of the curriculum (lesson 7) in intervention schools. The six-month follow up survey and booster session in intervention schools were administered in late-September and early-October 2013. The booster session was implemented in the intervention schools immediately prior to the administration of the six-month follow up survey and used an interactive format to briefly review several of the drug resistance strategies covered in the Ho'ouana Pono curriculum. All parts of the survey were read aloud to students to aid in the comprehension of the survey items. This may have also had the secondary outcome of mitigating respondent fatigue. Across all schools, there were 331 students eligible to participate in the study, based on

enrollment lists in participating health classes. Active parental consent was required for all youth participating in the survey. Two hundred and fifty seven signed consent forms (77.6%) approving youth to participate in the study were returned, which is a higher-than-average return rate reported for other school-based intervention or prevention studies.<sup>38</sup> Of the youth that returned signed consent forms, 254 of them completed a pre-test, post-test, and/or six-month follow-up survey.

### **The Ho‘ouana Pono curriculum**

Ho‘ouana Pono is a classroom-based, video-enhanced curriculum aligned with the State of Hawai‘i Department of Education Content and Performance Standards in Health (6–8 grade).<sup>39</sup> The pilot version of the curriculum evaluated in this study consists of seven 45-minute lessons primarily focused on resistance skills training. Reviews of youth drug prevention programs have indicated resistance skills training to be the most effective preventative approach, particularly when conducted within a social influence model of prevention.<sup>40,41</sup> Further, a recent study found that preadolescents who were highly competent in using drug resistance skills had a significantly lower probability of recent substance use compared to other sampled youth.<sup>42</sup> Specifically, the curriculum uses video vignettes of Hawaiian youth engaged in realistic drug-related problem situations as the platform for facilitated learning,<sup>43</sup> where youth are able to use life experiences stemming from the vignettes as part of the context for resistance skills training. Each video vignette depicts a situation where drugs and/or alcohol are being offered to a Hawaiian youth by a friend or family member and a matched set of three different resistance strategies (e.g., saying “no,” avoiding or leaving a situation) used by the youth to deal with the situation. The culturally specific drug-related problem situations and resistance strategies depicted in the videos were identified and validated in multiple pre-prevention studies in rural Hawai‘i.<sup>32–34,44–49</sup> Each video focuses on the unique familial and relational context of drug offers on Hawai‘i Island, such as indirectly receiving a drug offer from an older cousin after school as part of an invitation to “hang out” and play music with some of his friends, or directly receiving an offer to drink beer from an intoxicated parent.

Six of the seven lessons incorporate one four to seven minute video vignette. All lessons in the curriculum followed the same basic format—an introduction and/or review of the past lesson, a culture wall activity, a video, one to two interactive activities, and a wrap-up activity.<sup>50</sup> The culture wall activity involved the discussion and application of Hawai‘i Island cultural concepts to drug prevention. For example, the concept of *pu‘uhonua* (place of refuge) is used to introduce the concept of psychosocial “protection” in lesson 2 of the pilot curriculum. The interactive activities following the videos introduce specific resistance skills and relate directly to the characters in the videos. Table 1 briefly outlines the content of each lesson in the curriculum.

### **Training and implementation fidelity**

Intervention school teachers were trained to implement the curriculum through a free, credit-granting course sanctioned through the State of Hawai‘i Department of Education. Given the rural locations of intervention schools, training and implementation fidelity were conducted using a hybrid format, combining in-person and asynchronous virtual support. Teachers

participated in an eight-hour, in-person training, in which the curriculum was described, and several curricular activities were demonstrated by the program developers and role-played by the teachers. Throughout the implementation period, teachers posted their comments and questions related to the curriculum, as well as photos of youth-generated work or youth participating in the lessons, on a discussion board that was facilitated by one of the program developers. The discussion board was accessible via computers and smartphones to promote ease of use for the teachers. The discussion board allowed teachers to receive timely responses to their questions regarding the lessons, while also allowing the curriculum developers to monitor the implementation fidelity of the curriculum. Several teachers also completed a portfolio assignment related to their implementation of the curriculum, which was submitted to the Department of Education for continuing education credits that are required for pay scale increases.

### Instrument

Items used to evaluate the pilot curriculum were drawn largely from validated measures of another evidence-based, culturally grounded drug prevention curriculum (*keepin' it REAL*).<sup>21</sup> In addition to standard demographic items covering areas such as age, grade, gender, family structure, and SES, items related to culture/enculturation, risk and protective factors (including drug use frequency), drug resistance strategies, and risk assessment were included in the survey (see Table 2). Cronbach's Alphas indicated moderate to high internal consistency on all subscales except Risk/Protective Factors (see Table 2). Items related to culture/ethnicity were drawn from the Hawaiian Culture Scale—Adolescent Version (HCS)<sup>50</sup> and the Multigroup Ethnic Identity Measure (MEIM).<sup>52</sup> Separately, both scales have shown good reliability (i.e., subscale alphas above .80), and the reliability of the combination of items from these scales used in the present study is comparable (.79). In the case of the HCS, items have been piloted in prior NIDA-funded research with youth in the sampling frame of the proposed study. Items focused on risk factors (items 12 and 15–20) and protective factors (items 10–11, 13–14, and 21–23) were also used in prior NIDA-funded research with rural Hawaiian youth<sup>44</sup> and American Indian youth.<sup>27</sup> Items focused on drug resistance strategies and risk assessment demonstrated high internal consistency in the present study (.92 and .83, respectively). They were drawn from the evaluation of a culturally grounded prevention intervention in the Southwestern U.S. (*keepin' it REAL*),<sup>21</sup> and adapted to the study population based on prior research.<sup>48,53</sup>

### Data analysis

We examined paired sample t-tests, separating intervention and comparison groups, and then tested whether differences between these groups were statistically significant using mixed models that adjusted for random effects (nesting) at the school level. Specifically, we estimated three different types of models. The first type of model (Overall) predicted each outcome at immediate and six-month post-test, controlling for the parallel pretest measure of that outcome, and entering a dummy variable for intervention versus comparison group. The second type of model (Hawaiian) estimated intervention effects with interaction terms that tested whether those effects were significantly different for Native Hawaiian students (participants who indicated they were Hawaiian or part-Hawaiian on the survey) versus those who were non-Hawaiian. The third type of model (Gender) tested for gender

differences in the intervention effects. Further, we estimated Cohen's *d* as an indicator of intervention effect size by examining the mean change from pre-test to immediate and six-month post-test in the intervention group minus the same changes in the comparison group, and then dividing by the pooled standard deviations.

We used multiple imputation to address issues related to differential attrition.<sup>54</sup> Of the 254 youth that took at least one survey, 160 of them (63%) participated in all three waves of data collection. This attrition rate is consistent with those cited in other school-based drug prevention studies.<sup>27</sup> Multiple imputation was used to estimate data for participants with pre-test data that were missing post-test and/or follow up data ( $n = 53$ ). The majority of these participants were missing only six-month follow up data (64%), followed by participants missing only post-test data (19%), and participants missing both post-test and follow up data (17%). Following the recommendations of Graham and colleagues,<sup>55</sup> post-test and/or 6-month follow up data were multiply imputed 100 times using SAS Proc MI and Proc MIANALYZE for these cases. Upon completion of this process, the overall sample for analysis in this study was 213.

## Results

### Sample Demographics

Among the 213 student participants eligible for evaluation in this study, 83 of them received the Ho'ouana Pono curriculum and completed surveys, and 130 of them completed surveys in the comparison schools. Fifty-five percent of the total eligible sample was female, and the average age was 11.7 years ( $SD = 0.65$ ). The majority of this sample was multi-ethnic, with 70% of the sample identifying with more than one ethnic group. The most frequently identified groups were Filipino (59%), followed by Hawaiian/Part-Hawaiian (49%), and Chinese (31%). Seventy-two percent of all eligible youth received a free or reduced cost lunch through the federally-subsidized school lunch program for low income families, which is in line with the mean percentage for all schools participating in the study ( $M = 74%$ ,  $SD = 11.8$ ).<sup>55</sup> Analyses were conducted to examine pre-test differences in complete cases ( $n = 160$ ) compared to imputed cases ( $n = 53$ ). There were no significant differences between the two groups in major demographic variables (age, gender, and SES) or in the Risk/Protective Factor items on the survey.

### Paired sample t-tests

Selected paired sample t-tests, separated for both the intervention and comparison groups, are presented in Table 3. In order to examine differences in the two groups, the table includes all survey items in which one group demonstrated a significant difference between Wave 1 (W1, pre-test) and Wave 2 (W2, post-test) and between Wave 1 and Wave 3 (W3, six-month follow up) while the other group did not. From W1 to W2, there were only two items in this category (CONCENTRATE and FEEL GOOD). For these items, the intervention group had significant estimated mean differences; however, the changes were not in the expected direction. From W1 to W3, there were 10 items with significant estimated mean differences in either the intervention or comparison conditions. The Risk/Protective Factors items indicated that the comparison group demonstrated a significant

increase in fighting that was not demonstrated in the intervention group from W1 to W3. Further, Cohen's effect size value for the FIGHT variable ( $d = -0.38$ ) suggested its moderate practical significance. However, the intervention group showed a significant decrease in spending time with family or helping a neighbor that was not observed in the comparison condition.

Three of the Resistance Strategies items (AVOID, EXPLAIN, and LEAVE) demonstrated a similar trend. For these items, the comparison group had a significant decrease in the use of these strategies from W1 to W3, while changes in the intervention group were non-significant. Further, Cohen's effect size value for EXPLAIN ( $d = 0.22$ ) suggested a small to moderate practical significance for the variable. Finally, three of the Risk Assessment items (POPULAR, ARREST, and PPUNISH) demonstrated significant estimated mean difference scores in the intervention group; however, the changes were not in the expected direction.

### Mixed models

From W1 to W2, there were no significant intervention effects detected within any of the mixed models (Overall, Hawaiian, and Gender). Similarly, from W1 to W3, there were no significant effects within the Overall model. In the models that tested for significant differences in intervention effects for Hawaiian versus non-Hawaiian youth, there was one significant effect from W1 to W3 (FEEL GOOD); however, change was not in the expected direction ( $Est \beta = 0.95$ ,  $SE = 0.40$ ,  $p < .05$ ). In the models testing for gender differences in the effect of the intervention, there was one significant effect from W1 to W3 (FIGHT), which indicated a significant decrease for girls in the intervention group relative to the comparison group ( $Est \beta = -0.66$ ,  $SE = 0.32$ ,  $p < .05$ ).

### Discussion

This pilot study examined the effectiveness of the Ho'ouana Pono curriculum, which is a school-based, culturally grounded drug prevention curriculum tailored to rural Native Hawaiian youth. There were findings in this study which supported the effectiveness of the curriculum, as well as unanticipated findings which pointed to areas for curricular improvement. The majority of significant findings occurred at the six-month follow up, which is consistent with drug prevention research demonstrating a delayed program effect.<sup>57</sup> The primary focus of the curriculum is to train youth in the use of culturally relevant drug resistance strategies. Consistent with this focus, the findings from the present study suggest that youth exposed to the curriculum maintained or sustained their use of drug resistance strategies (particularly non-confrontational strategies) over the evaluation time period compared with youth in the comparison group. Of particular salience is the use of explanations in the refusal of drug offers. Research has described both the high use and sociocultural functions of explanations for drug refusal for rural Hawaiian youth.<sup>32,45</sup> The findings from this study suggest that the curriculum particularly supports the continued use of this resistance strategy, as well as the use of other indirect means of refusing drug offers in rural Hawai'i.

Differential changes in the use of non-confrontational resistance strategies between the intervention and comparison conditions at six-month follow up, but not at immediate post-



test, could be the result of the duration and timing of the intervention. Specifically, the short duration of the curriculum (seven weeks) provided little opportunity for participants to exercise their use of these strategies between pre- and post-test. Further, the pre-test, curriculum, and post-test were implemented between school breaks, providing little unstructured and unsupervised time for participating youth to receive offers to use substances. However, at six-month follow up, youth participants were surveyed after summer break (which lasted approximately two months), providing youth with ample unstructured time in which to experience substance use offers and subsequently to utilize drug resistance strategies. Under these conditions, intervention youth were able to maintain their use of non-confrontational resistance strategies, while comparison youth were unable to do so.

In terms of other behaviors, t-test analyses indicated a statistically significant increase in fighting in the comparison group, which was not detected in the intervention group. Recent research has described the extent and function of aggressive behavior in the context of drug-related problem situations of rural Hawaiian youth.<sup>12</sup> Increases in fighting within the comparison group in the present study are consistent with these recent research findings, and may potentially be mitigated in the intervention group by exposure to the curriculum. However, upon closer analysis, mixed models based on gender indicated that girls in the intervention group had a statistically significant decrease in fighting (relative to the comparison group) from W1 to W3, which counterbalanced a non-significant increase in fighting in boys in the intervention group from W1 to W3. These findings provide support for the gender-specific, relational content included in the curriculum, including content related to gender socialization in rural Hawai'i and its impact on youths' perceived options for different types of drug resistance strategies. Prior research indicated that Hawaiian girls were exposed more frequently to offers to use drugs and/or alcohol, and found it more difficult to refuse these offers, compared to their male counterparts.<sup>46</sup> Amid these strong situational demands to use drugs and alcohol, the present findings suggest that the curriculum may promote positive interpersonal relationships for Hawaiian girls. More specifically, the focus on non-confrontational resistance skills within the curriculum may provide a means by which rural Hawaiian girls can maintain relational harmony while achieving the goal of drug refusal. Prior qualitative research has described how rural Hawaiian girls balance these two often conflicting goals, and the implications of this phenomenon for culturally grounded drug prevention for Hawaiian youth.<sup>35</sup> Although the increase in boys' fighting was non-significant in the intervention group, it points to the need to develop more relevant applications of drug and violence resistance strategies for rural Hawaiian boys.

There were several unexpected findings in the pilot evaluation of Ho'ouana Pono, which point to areas for curricular improvement or refinement. The majority of these findings occurred in the category of risk assessment. For example, in the short-term, youth exposed to the curriculum indicated that, if someone offered them alcohol, they would consider how drinking alcohol would make them feel good significantly more than youth in the comparison condition before accepting or rejecting the offer. Mixed models based on ethnicity found this to be particularly salient for Hawaiian youth at the six-month evaluation. Broadly, these findings suggest that the curriculum might promote youths' assessment of the

possible consequences that might result from accepting or rejecting drug offers. In other words, they might suggest that the curriculum accelerates intervention youths' consideration of the consequences of accepting or rejecting drug offers that youth in the comparison group do not experience until later in the academic year. Nonetheless, the directionality of these variables suggest that the curriculum may need to focus more on information related to the health consequences of youth substance use and normative drug education (i.e., emphasizing actual versus overestimated substance use rates of rural Hawaiian youth). These components have been found to be effective in preventing youth substance use,<sup>41</sup> and may help to counteract youths' perceived positive short-term physical effects of substance use (i.e., feeling good after drinking alcohol) and perceived peer popularity related to substance-using behaviors found in the present study. Prior to the focus on culturally relevant drug resistance strategies, the curriculum may first need to address the motivations for using those strategies for youth in rural Hawai'i, which include preventing both adverse short- and long-term health and relational consequences of accepting drug offers and using drugs.

### Limitations of the study

There were several limitations in this study. The primary limitation is the lack of power in the study to detect intervention effects. Due to the pilot nature of the study, the number of lessons in the curriculum and the number of enrolled schools (and subsequent sample size) were limited. This prevented the ability to detect several "emerging" findings in the study, including those related to the influence of cousins and adult family members in decisions to accept or reject drug offers. Another limitation of the study is the potential selection effects, due to the requirement of active parental consent for youths' participation in the study. Despite written assurances of confidentiality in the parental consent form (including a description of a Certificate of Confidentiality from the National Institutes of Health that was secured prior to the study), recent research in rural Hawai'i has described how youth in higher-risk environments may be underrepresented in school-based drug and alcohol studies, due to parental concerns that their drug-using behaviors might be exposed.<sup>46</sup> The potential underrepresentation of higher-risk youth may have impacted the generalizability of the research findings in this study. As a result of their potential underrepresentation, the findings may be limited in describing the extent to which the curriculum is effective with higher-risk youth.

### Conclusions

Despite these issues, the present study provides preliminary support for the effectiveness of the Ho'ouana Pono curriculum. Based on the findings of the present study, the curriculum may promote the sustained or maintained use of culturally relevant drug resistance strategies in rural Hawai'i, and may prevent girls' aggressive behavior resulting from dealing with drug-related problem situations. Despite these promising findings, this study also suggests that the curriculum should be further developed to incorporate additional content related to the health consequences of substance use and normative drug education, in order to address potential increases in certain perceived positive attributions to substance use. Future research should examine this expanded and revised curriculum with a larger regional sample, in order to improve the robustness of intervention effects, including effects related to substance-using behaviors.

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**Table 1**

## Ho'ouana Pono Lesson Titles and Primary Content Areas

Lesson	Title	Primary Content Areas
1	Introduction to Ho'ouana Pono	<ul style="list-style-type: none"> <li>• Introduction to the curriculum and to key prevention concepts</li> </ul>
2	Is it Worth the Risk?	<ul style="list-style-type: none"> <li>• Risk assessment</li> <li>• Assertive versus aggressive refusal as a resistance strategy</li> <li>• Empathy toward the drug offerer as a resistance strategy</li> <li>• Health consequences of substance use</li> </ul>
3	Explain Yourself	<ul style="list-style-type: none"> <li>• Assertive versus aggressive refusal as a resistance strategy</li> <li>• Explanations for refusal as a resistance strategy</li> </ul>
4	Solve the Problem	<ul style="list-style-type: none"> <li>• Using resistance strategies within a problem-solving approach to dealing with drug offers</li> <li>• Using avoidance and leaving the situation as resistance strategies</li> <li>• Gender socialization and its effect on drug resistance strategies</li> </ul>
5	Help Your Friend	<ul style="list-style-type: none"> <li>• Involving others in drug-related problem situations as a resistance strategy</li> <li>• Assertive refusal strategies</li> </ul>
6	Is it Normal?	<ul style="list-style-type: none"> <li>• Personal, descriptive, and injunctive norms</li> <li>• Redirection and leaving the situation as drug resistance strategies</li> </ul>
7	Putting it All Together	<ul style="list-style-type: none"> <li>• Summary of the curriculum</li> <li>• Post-test</li> </ul>

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Table 2

## Ho‘ouana Pono Variable Names and Survey Items

<i>Culture/Enculturation (9 Items), <math>\alpha_{(pre-test)} = .79</math></i>		
#	Variable	Item
1	UNDERSTAND	Rate your ability to understand the Hawaiian Language *
2	SPEAK	Rate your ability to speak the Hawaiian language **
3	TRADITIONS	How important is it to you to maintain Hawaiian cultural traditions? ^
4	SENSE	I have a clear sense of my ethnic background. @
5	HAPPY	I am happy that I am a member of the group I belong to. @
6	BELONG	I have a strong sense of belonging to my own ethnic group. @
7	PRIDE	I have a lot of pride in my ethnic group. @
8	ATTACH	I feel a strong attachment towards my own ethnic group. @
9	CULT GOOD	I feel good about my cultural or ethnic background. @
<i>Risk/Protective Factors (including Drug Use Frequency, 14 Items)%, <math>\alpha_{(pre-test, risk)} = .57</math>; <math>\alpha_{(pre-test, protective)} = .50</math></i>		
#	Variable	Item
10	SPORTS	How often, in the last 4 weeks, have you played on a sports team?
11	RELIGION	How often, in the last 4 weeks, have you went to church or religious activity?
12	FIGHT	How often, in the last 4 weeks, have you got in a fight?
13	TEACHER	How often, in the last 4 weeks, have you helped a teacher?
14	FAMILY	How often, in the last 4 weeks, have you spent time at home with your family?
15	OFFER	How often, in the last 4 weeks, have you been offered alcohol, cigarettes, marijuana, or other drugs?
16	ALCOHOL	How often, in the last 4 weeks, have you drank alcohol (beer or liquor)?
17	CIGARETTES	How often, in the last 4 weeks, have you smoked cigarettes?
18	MARIJUANA	How often, in the last 4 weeks, have you smoked marijuana?
19	ICE	How often, in the last 4 weeks, have you used “ice”?
20	HARD DRUG	How often, in the last 4 weeks, have you used hard drugs other than “ice” (like crack, cocaine, speed, ecstasy, sniffing glue or paint)?
21	VOLUNTEER	How often, in the last 4 weeks, have you volunteered in the community?
22	CLUB	How often, in the last 4 weeks, have you spent time at the Boys & Girls Club or a place like that?
23	NEIGHBOR	How often, in the last 4 weeks, have you helped someone in your neighborhood?
<i>Resistance Strategies (6 Items)#, <math>\alpha_{(pre-test)} = .92</math></i>		
#	Variable	Item
24	AVOID	In the last 30 days, how often have you avoided people or places because you might be offered alcohol, cigarettes, marijuana, or other drugs?
25	SAY NO	When alcohol, cigarettes, marijuana, or other drugs were offered to you in the last 30 days, how often did you say “no” without giving a reason why?
26	EXPLAIN	When alcohol, cigarettes, marijuana, or other drugs were offered to you in the last 30 days, how often did you give an explanation or excuse to turn down the offer?
27	LEAVE	When alcohol, cigarettes, marijuana, or other drugs were offered to you in the last 30 days, how often did you decide to leave the situation without accepting the offer?



**Resistance Strategies (6 Items)<sup>#</sup>,  $\alpha_{(pre-test)} = .92$** 

#	Variable	Item
28	ANGER	When alcohol, cigarettes, marijuana, or other drugs were offered to you in the last 30 days, how often did you express extreme anger as a response to the person offering you drugs?
29	MOVE	When alcohol, cigarettes, marijuana, or other drugs were offered to you in the last 30 days, how often did you move to another location or next to another person to discourage the drug offer from occurring?

**Risk Assessment (14 Items),  $\alpha_{(pre-test)} = .83$  (If someone offered you alcohol, how much would you consider each of the following before accepting or rejecting the offer? I would think about...)&**

#	Variable	Item
30	HEALTH	...what it might do to my health.
31	FRIENDS	...how many of my friends drink alcohol.
32	MAD	...the possibility that the person who offered me alcohol might get mad if I said no.
33	POPULAR	...whether drinking alcohol would make me more or less popular.
34	PARENT	...how my parent(s) would feel if they found out I drank alcohol.
35	AUNT/UNCLE	...how my auntie(s) or uncle(s) would feel if they found out I drank alcohol.
36	COUSIN	...how my cousin(s) would feel if they found out I drank alcohol.
37	CONCENTRATE	...how drinking alcohol might mess up my concentration.
38	ARREST	...the possibility that I might get arrested.
39	FUN	...the possibility that I will have fun while drinking alcohol.
40	PPUNISH	...the possibility that my parents might find out and punish me.
41	AUPUNISH	...the possibility that my auntie(s) or uncle(s) might find out and punish me.
42	CPUNISH	...the possibility that my cousin(s) might find out and punish me.
43	FEEL GOOD	...the possibility that drinking alcohol might make me feel good.

\* "I don't understand Hawaiian" to "I understand Hawaiian very well"

\*\* "I can't speak Hawaiian" to "I can speak Hawaiian very well"

^ "Not Important" to "Very Important"

@ "Strongly Disagree" to "Strongly Agree"

% "Never" to "Almost Every Day"

# "Never" to "4 or more times"

& "Not at All" to "A Lot"

Table 3

## Selected Paired Sample T-Tests

Waves	Variable	Category	Intervention (n = 83)		Comparison (n = 130)		d
			Est M <sub>diff</sub>	SE	Est M <sub>diff</sub>	SE	
W1→W2 <sup>†</sup>	CONCENTRATE	RA <sup>‡</sup>	-0.36**	0.13	-0.23	0.13	-0.10
W1→W2	FEEL GOOD	RA	0.56**	0.17	0.13	0.15	0.28
W1→W3	FIGHT	RPF	0.25	0.17	0.80**	0.14	-0.38
W1→W3	TEACHER	RPF	-0.25	0.17	-0.36**	0.13	0.08
W1→W3	FAMILY	RPF	-0.33*	0.14	-0.15	0.11	-0.15
W1→W3	NEIGHBOR	RPF	-0.39*	0.17	-0.16	0.14	-0.15
W1→W3	AVOID	RS	-0.09	0.18	-0.37*	0.16	0.17
W1→W3	EXPLAIN	RS	-0.01	0.20	-0.36**	0.14	0.22
W1→W3	LEAVE	RS	-0.05	0.20	-0.37*	0.16	0.18
W1→W3	POPULAR	RA	0.47*	0.20	0.08	0.16	0.23
W1→W3	ARREST	RA	-0.61**	0.17	-0.26	0.15	-0.23
W1→W3	PPUNISH	RA	-0.46**	0.17	-0.17	0.12	-0.21

<sup>†</sup>Note: W1 = Wave 1 (Pre-test), W2 = Wave 2 (Post-test), W3 = Wave 3 (six-month follow up)

<sup>‡</sup>Note: RA = Risk Assessment, RPF = Risk/Protective Factors, and RS = Resistance Strategies

\* p < .05,

\*\* p < .01