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## Contextualization of HIV and HPV risk and prevention among Pacific Islander young adults in Southern California

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### Abstract

HIV and sexually transmitted human papillomavirus (HPV) are associated with each other and with the development of comorbid cancer. Current epidemiology indicates that among Pacific Islanders in the United States, young adults are at highest risk of HIV and HPV. In our inductive community based participatory research study, we used focus groups and key informant interviews (March – August 2010) with young adults, parents, community leaders, and providers (n = 95) to identify and contextualize factors that shape HIV and HPV risk and prevention among young adults in Chamorro and Tongan communities in Southern California. We identified nine themes that incorporated the following principal factors: misinformation and otherization; dominant concerns regarding premarital pregnancy; restricted intergenerational communication; family shame and privacy; gendered manifestations of religio-cultural norms; barriers impeding access to sexual health resources; parents' role in prevention; community vs. individual responsibility; and family and ethnic pride. Our thematic findings fit well with Rhodes' "risk and enabling environment" heuristic (2009), which we used to contextualize risk and prevention at micro and macro levels of physical, social, economic, and policy environments. We propose the addition of a separate cultural environment to the heuristic and conclude that a focus on applying individual and community agency at the micro-level would be an approachable starting point for intervention for our local Pacific Islander communities and groups in similar ecological contexts globally. Enhanced community-led education programs and engagement of religious and other community leaders to facilitate intergenerational communication could counteract taboos that obstruct prevention.

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## Keywords

USA; HIV; Human papillomavirus (HPV); Pacific Islanders; Tongan; Chamorro; Young adults; Community Based Participatory Research; gender

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## Introduction

HIV and human papillomavirus (HPV) are linked medically and epidemiologically. It is well documented that persons living with HIV/AIDS are at increased risk of oral and anogenital HPV infection (Palefsky, 2006; Didelot-Rousseau et al., 2006). Relatively new evidence indicates that HPV also increases the risk of HIV acquisition (Smith-McCune et al., 2010). In addition to the significant morbidity and mortality associated with each infection individually, both HIV and HPV are independently associated with the development of comorbid cancer (National Cancer Institute, 2011). As a result of their bidirectional relationship with each other, their association with cancer risk is synergistic, as well. HIV and HPV also share common risk behavior profiles, particularly in youth and young adulthood (Kreimer et al., 2004).

As with other behaviorally mediated infections, the vulnerability of different groups to HIV and sexually transmitted HPV, and these groups' relevant health seeking behaviors, are contingent upon multilayered context (Rhodes & Simic, 2005; Goldenberg et al., 2011). Rhodes' "risk and enabling environment" heuristic (Rhodes, 2009) provides a useful framework for understanding HIV and HPV risk and responses to risk. Similar to other social ecological models (Bronfenbrenner, 1974; Sallis & Owen, 2002), the heuristic involves examination of a problem from micro and macro levels of various environment types (physical, social, economic, policy) in which individuals and groups are embedded. The framework resonates most strongly with a sociology of health perspective overall and thus the three nonphysical types of environment are weighted toward the sociostructural. However, the heuristic is also explicitly multidisciplinary and informed by several overlapping theoretical perspectives. The incorporation of political economy (e.g., Bourgois, 1998), situated rationality (Moore, 2004), and logics of practice (Bourdieu, 1990; Duff, 2007), in particular, shield against structural determinism in favor of a nuanced integration of structuralism and post-structuralism from the sociological perspective while drawing also from anthropology.

Pacific Islanders (PIs) are indigenous people from Micronesia, Melanesia, or Polynesia; they historically have faced multiple socioeconomic and health disparities in their countries and in the continental United States (Chang Weir et al., 2009). The combination of theoretical positions in Rhodes' heuristic is useful for framing HIV and HPV vulnerabilities among PIs in the U.S., because it acknowledges the critical importance of culture and its interplay with socioeconomic conditions. This is essential to understanding PI risk because, like any other group, culture is central to PIs' interactions with their environment (Jemmott et al., 1999), especially in the context of a legacy of colonialism and migratory encounter in the U.S. (Funaki & Funaki, 2002). Moreover, the heuristic allows for assessment of not only how socio-environmental conditions shape PI HIV/HPV risk, but also how the presence or absence of enabling environments influence prevention and treatment. Though one of the original conceptualizations of the heuristic was harm reduction related to drug use, the meaning of "enabling" in "enabling environment" is positive, supporting systems and skills that help elicit healthy behaviors. Previous research on PIs indicates that social ecological factors are strongly linked to access to and engagement with health resources (Special Service for Groups, 2001).

Though recent research has suggested that medically underserved and ethnic minority groups in the U.S. are at significant risk of the intersections of HIV, HPV, and cancer (e.g., Palefsky et al., 1999), little is known about how these synergistic connections affect PIs. A growing literature on cancer among PIs has documented low rates of screening and other prevention strategies (Chen et al., 2004) and disparities in cancer incidence and mortality (Miller et al., 2008). However, there has been little research on HIV and HPV among PIs. Results from a recent survey of PIs in Southern California (Takahashi et al., 2011), with half the sample over age 40 and 77% over age 25, found that 32% of respondents had been tested for HIV. This is lower than the 45% of adults in the general U.S. population who have ever tested for HIV (Satcher Johnson et al., 2010). The PI survey also found that HIV knowledge was low among respondents, especially regarding effective risk reduction practices during sex and injection drug use. There have been no similar studies examining HPV vulnerabilities or protections among PIs, nor any research focusing on young adults in these communities, whom current epidemiologic data indicate are at highest risk of both HIV and HPV (Centers for Disease Control and Prevention [CDC], 2011a, 2011b; Giuliano et al., 2009; Dunne et al., 2007). Our objective was therefore to identify and contextualize factors that shape HIV/HPV risk and prevention among young adults by describing the risk and enabling environments in two Southern California PI communities: Chamorros, who are Micronesians born or tracing their ancestry to the U.S. territory of Guam and surrounding islands; and Tongans, who are Polynesians born or tracing their ancestry to the sovereign island nation of Tonga.

The most recent disaggregated data on PIs indicate that 87.6% of Chamorros were “native” to the U.S., compared to 48.6% of Tongans. This is mainly because persons born in Guam are automatically U.S. citizens, whereas those born in Tonga are not. The majority of foreign-born Tongans do not become naturalized citizens. Migration to the mainland U.S. for Chamorros and Tongans occurred mainly in the 1980s and 1990s. More Tongans work in the service industry than in other occupations, whereas Chamorros are more likely to be employed in sales and office jobs (U.S. Census Bureau, 2005).

## Methods

Our study was a mixed-method community based participatory research (CBPR) collaboration among California State University, Fullerton (CSUF) in Orange County and two community based organizations (CBOs) in Los Angeles County: Tongan Community Service Center (TCSC) in Hawthorne, serving the Tongan community, and Guam Communications Network (GCN) in Long Beach, serving the Chamorro community. CBPR is an approach involving equal partnership between community and university researchers in study design, implementation, data analyses, and dissemination (Minkler & Wallerstein, 2003). Our partnership was formed out of a previously existing research and training network of CSUF and eight PI-serving CBOs representing five different PI populations in Southern California. GCN and TCSC were the only CBOs with active HIV or sexual health education programs, and thus feasible capacity to engage their staff and their communities in the study. We convened a Community Advisory Board (CAB) to guide us throughout the study. Research protocols were approved by the CAB, which was comprised of 8 members from the local Tongan and Chamorro communities, and by the institutional review board (IRB) at CSUF.

## Participants and Data Collection

To gain a holistic understanding of HIV/HPV risk and prevention among Tongan and Chamorro young adults from key perspectives, we used purposive sampling (Patton, 2002) to recruit participants from four study groups:

1. Young adults aged 18-29 years (n = 34)
2. Parents with at least one child 11-29 years old (n = 35): We extended the age range of these parents' children to include 11-17-year-olds because previous research suggested they likely would be already sexually active or approaching the age of sexual debut (Cavazos-Rehg et al., 2009).
3. Tongan and Chamorro community leaders from faith-based groups (n = 4), youth groups (n = 4), or other social groups (n = 5)
4. Providers who worked directly with members of the two communities in medical care (n = 4), mental health care (n = 5), or social services (n = 4)

TCSC and GCN led recruitment from their communities in Los Angeles, Orange, and San Diego Counties. The study sample (n = 95) comprised 56 persons from the Tongan community (58.9%) and 39 persons from the Chamorro community (41.1%). Most of the young adults considered themselves second-generation, meaning their parents were born in Guam or Tonga. Selected participant sociodemographic characteristics are presented in Table 1.

From March through August 2010, we conducted eight focus group interviews (n = 69): two with young adults and two with parents in each community, stratified by gender, consistent with Chamorro and Tongan social norms as advised by our CAB. The focus groups (FGs) had 5 to 12 participants each and were moderated by GCN and TCSC staff. Following recommendations from the CAB, the Chamorro FGs and Tongan young adult FGs were conducted in English; the Tongan parent men's FG was conducted in Tongan; and the parent women's focus FG was half in Tongan and half in English. During the same period, GCN and TCSC staff acquired data from community leaders and providers by conducting 13 one-on-one key informant interviews (KIIs) in each community (n = 26). KIIs were completed in English, except for one conducted mainly in Tongan with a Tongan social group community leader. Moderators/interviewers followed one of four semistructured interview guides developed specifically for each study group. The guides contained open-ended questions and probes developed from a review of relevant studies and in consultation with the CAB. We gave participants \$20 gift cards as compensation.

The FGs and KIIs were recorded and transcribed verbatim. Narratives in Tongan were first transcribed in Tongan, then translated into English. Interviews yielded 17 transcripts for analysis in each community. We reached thematic saturation in the data (Office of Behavioral and Social Science Research, 1999) with the 14<sup>th</sup> coded Tongan transcript and the 10<sup>th</sup> coded Chamorro transcript. We used English and Tongan versions of a pre-interview questionnaire to acquire sociodemographic data.

## Analyses

Our analytic approach was inductive, consistent with our investigation in a novel domain of inquiry among PIs. Instead of testing an existing theory deductively, we considered extant concepts critically (Charmaz, 2006) and followed Glaser's (1978) recommendations that such concepts must earn their way into final accounts of findings. We analyzed the data in a five-phase process: (1) initial coding with interrater reliability; (2) focused coding; (3) merging coded documents; (4) thematic analysis; and (5) theory building. Each transcript was analyzed by a coding team of two analysts: one from GCN (Chamorro data) or TCSC (Tongan data), and one from CSUF. By analyzing the data for each community separately, we avoided bias that might otherwise have been introduced due to the larger number of Tongan FG participants.

Given that CBO staff were heavily involved in data collection and in reading and coding transcripts; and because they were members of the relatively small PI communities at the center of the study, concerns regarding confidentiality were significant. This issue was important to the degree that it warranted a detailed discussion in a separate article about ethical challenges and collaborative solutions during the study (under review). To protect participant privacy, the CBO researchers used intensive advisement of participants and research staff before, during, and after FGs and KIIs to emphasize confidentiality. We additionally required all persons who worked on the study to acquire IRB certification through CSUF's online training program.

**Phase 1**—We measured interrater reliability (IRR) using Cohen's Kappa ( $k$ ; Cohen, 1960). In our study,  $k$  measured how closely the two coders in each coding team coded the same transcript, taking chance agreement into account. The equation is:

$$k = \frac{p_o - p_c}{1 - p_c}$$

where  $p_o$  = proportion of observed agreement and  $p_c$  = proportion of expected chance agreement. We considered several valid critiques of IRR and  $k$  (e.g., Strijbos et al., 2006), especially when used in inductive analyses (Morse, 1997). We were thus cautious with IRR and avoided using it as one would in deductive hypothesis testing. Instead, we used IRR as a training device for previously uninitiated teams on the systematic process of coding, particularly in terms of defining code boundaries and maximizing parsimony in the coding scheme.

Coding teams used ATLAS.ti 6 to code three randomly selected transcripts (17.6%) from each team's total set of 17 (e.g., Hruschka et al., 2004). Each transcript was then divided into segments of text with defined boundaries. We randomly selected 17.6% of coded text segments from each set of three transcripts on which to calculate IRR using SPSS 18. We set the cutoff for substantial agreement at  $k = .70$  (Landis & Koch, 1977). After three rounds, both teams surpassed threshold agreement (Table 2). Between rounds, teams met with the first author for additional training, and met with each other to revise coding strategies.

**Phase 2**—Focused coding was conducted on the remaining 28 transcripts, during which teams continuously updated codebooks as meaningful categories emerged from the data. Analysts also used memoing to write up ideas about relationships among the categories represented by codes (Glaser, 1998); and they used ATLAS.ti to construct network models that visually organized codes' connections and hierarchal relationships.

**Phase 3**—We merged the community analyst's and academic analyst's version of each coded transcript for each team. When a segment of text was coded differently by two analysts, the teams met to resolve discrepancies and apply consensus codes. In this way, a single, unified coded transcript for each FG or KII, representing both the community and academic perspectives, moved forward to Phase 4.

**Phase 4**—We combined codes that were sufficiently related to form themes; and conversely, data attached to a single code were sometimes partitioned into different themes. The net result was significant data reduction. Thematic analysis involved triangulation of all qualitative sources: coded transcripts; memos; and notes from interviews, post-FG debriefing meetings, CAB meetings, and weekly analysis meetings.

**Phase 5**—We produced a preliminary theoretical model grounded in the relationships among our themes. We compared our theoretical model with extant theories with two potential outcomes in mind: generation of new theory, or identification of a “best fit” with an existing theory from the literature.

Lastly, we used SPSS 18 to calculate descriptive statistics on sociodemographic variables.

## Results

Seven themes emerged from the Tongan data and seven themes were derived from the Chamorro data for a total of 14 themes. We report 9 in this article because four pairs of themes were nearly identical for both communities. We combined those as four “common community themes.” We then describe the remaining five “unique Tongan” and “unique Chamorro” themes.

### Common Community Themes

**Misinformation and otherization mask community vulnerabilities**—Chamorro and Tongan young adults, parents, and community leaders had some knowledge about HIV and certain other sexually transmitted infections (STIs; e.g., herpes, gonorrhea), but their knowledge of HIV contained several misperceptions and there was very limited community awareness of HPV. A common perception, especially among young adults, was that they were protected against HIV by not being part of the gay population. HIV tended to be perceived as a “homosexual disease” only and gay persons were understood as “other,” separate from both communities. Young adults associated heterosexuality with monogamy and a reduced need for safer sex. Some participants also believed that they were protected because they perceived that Chamorros and Tongans had a lower risk of STIs compared to non-Pacific Islander races. This belief was inaccurate according to recent epidemiology (CDC, 2011b; Giuliano et al., 2009) and contrasted sharply with participants’ reports that risky behaviors were common among young adults in both communities. There was also no knowledge of the links between HIV and cancer.

[They think] it’ll never happen to them ... I know my kids grew up like that ... “All I gotta say is I’m not gay, you know?” I’m like, “Yeah, you don’t know ... you gotta use protection.”

Chamorro female parent

HPV was perceived as a female concern only that did not affect men, and the health consequences of infection were not well understood. Women’s knowledge of HPV was based mainly on the pharmaceutical company Merck’s “One Less” advertisement campaign for their GARDASIL vaccine, and men had almost no understanding of HPV. Although there was some knowledge that pap smears screened for cervical cancer, the connection between pap smears and HPV was typically not made, and the communities were unaware of other cancer risks deriving from HPV.

**Community concerns regarding premarital pregnancy dominate at the cost of HIV/HPV prevention**—Participants reported that Tongan and Chamorro young adults were having sex with little concern for risk of STIs. They engaged in safer sex inconsistently and “prevention methods” were used primarily to avoid premarital pregnancy, which was a major issue in both communities. The contraceptive pill, for example, was used as a prevention method by young adults, though it offers no protection against HIV or HPV. Young women did not seek regular pap smears, nor did young adults receive regular STI screenings of any sort. When they did occur, clinician visits tended to result from fear of pregnancy, not out of concerns about STIs. STI diagnoses were generally learned by

accident while receiving pregnancy tests or regular medical checkups, which also were rarely sought.

The only time ... a Tongan will actually go to a clinic is if they feel like they are pregnant. I mean, if they are sexually active and don't feel like they are pregnant, they are not going to go; that's it!

Tongan young adult female

**Intergenerational communication is greatly restricted**—Sex and sexual health are taboo (*tapu*) subjects across generations; this carried significant weight in Chamorro and Tongan communities. Parents' lack of knowledge about HIV/HPV amplified the problem, and the cultural requirement of gender separation during any discussion of taboos added an additional layer of difficulty. Tongan parents had difficulty discussing sexual health topics with their children even when they reached young adulthood, and youth were unable to openly communicate with parents about sexual health without fear of being culturally sanctioned via verbal/emotional and physical punishments. This precluded trust by Tongan youth and young adults to confide in older generations.

We wait for our kids to fall into something dangerous, and then we learn ... We'll just remain silent until one of our daughters gets pregnant, and then we talk about pregnancy; for one of our sons to get AIDS, and then we talk about AIDS.

Tongan female parent

Similar to Tongans, Chamorro youth and young adults did not talk to their parents about these topics because of fear of strong disapproval. Chamorro parents tended to be very strict and they worried that discussing sexual health might contradict abstinence messages, thereby undermining their authority. Chamorro parents typically left discussions about sexual health to health care providers.

Participants observed that acculturation promoted communication. Although discussion of taboo subjects was hindered even in acculturated families, the communities noted that most parents in the U.S. were more aware of sexual health and open to discussing it compared to their counterparts in or recently from Guam or Tonga. Both communities also expressed that they would value a third party – someone other than parents or their children – to help overcome these barriers to effective intergenerational communication and supplement the sexual health education received by youth.

**Family shame and privacy concerns inhibit sexual health seeking**—According to participants, a family's reputation is very important in both communities. Whereas pressure to maintain this reputation could decrease risk, mainly for young women by delaying sexual debut, it also increased risk by discouraging health seeking behaviors related to HIV/HPV. Young adults' seeking sexual health screening or treatment services was perceived to threaten their families' reputations, causing them shame in the community. The principal concern was that other community members would assume young adults had a disease if they went to a clinic. Fear of retribution for tarnishing a family's reputation in the form of verbal/emotional and corporal punishment was thus a barrier to seeking sexual health services, as it was to intergenerational communication. As a result, screening, in particular, was a rare occurrence. This was linked to concerns about loss of privacy and community gossip. Community members lacked knowledge of legal protections of provider-client/patient confidentiality and, when this did not prevent them from seeking services outright, it led to avoidance. For example, some young adults described visiting clinics a few cities away to avoid being recognized by members of their own community.



## Unique Tongan Themes

**Gendered manifestations of religio-cultural norms affect risk**—Religion is inseparable from the local Tongan culture. Religion for the community in this study meant Christianity, mainly the Church of Jesus Christ of Latter-day Saints (LDS) and Methodists, but also Seventh-Day Adventists. The community perceived that young adults' maintenance of religio-cultural norms regarding sexual abstinence until marriage was protective against HIV and HPV, whereas acculturation away from norms increased risk.

These norms tended to manifest in gendered ways. Young men were believed to be at higher risk of infection compared to young women, because they started having sex earlier (at approximately 13 – 14) and had multiple sex partners. They also engaged in interracial relationships more often, which was viewed as high-risk compared to sexual relationships exclusively within the Tongan community. Additionally, the community paid less attention to males' sexual behavior, affording them more freedom, but concurrently degrading the protection conferred by close community scrutiny.

Nobody is really watching the boys. There's not that much pressure on the boys culturally, and that's increasing the risk of transmitting ... They do whatever they want to do and then they end up coming back or marrying a Tongan girl, and that gets passed on.

Tongan social group community leader

In contrast, there were several perceived risk-reducing behaviors for young men and women. For Tongan young men, the most prominent was the required missionary work that must be completed by all LDS males before age 21. The community estimated that approximately 40% of local Tongan young men were LDS, a greater proportion than in Tonga (16.8%; Tonga Department of Statistics, 2006). Those who engaged in missionary work reportedly delayed sexual debut until marriage, thus reducing their number of sexual partners. Another protective tradition for both young women and men was *palafa*. The Tongan word means roughly "to pretend" and referred in this context to bluffing by youth and young adults to their same-gender peers that they were sexually active when they were still virgins. This cultural practice, which was endorsed and encouraged by Tongan parents, was used to deflect peer pressure to initiate sex or have multiple partners.

Participants credited young women's lower risk to a high level of community attention to their sexual behavior and pressure to abstain from sex until marriage. As an example, a major event in the Tongan community is the 21<sup>st</sup> birthday celebration of female virgins. The strong religio-cultural expectation for young women to reach this milestone with their virginity intact was viewed as protective against HIV/HPV. However, the community noted that recently fewer young adults recognized the value of postponing sex, so the protection conferred by this custom was thus perceived to be diminishing. Nevertheless, the community's perceptions regarding differential risk by gender were consistent with recent epidemiologic data, at least for HIV for which such data are available: HIV incidence among PI males is significantly higher compared to PI females (CDC, 2011b).

**Community barriers impede access to sexual health resources**—Six factors specific to the Tongan community obstructed young adults from acquiring needed HIV/HPV screening and treatment services. First, they did not know the locations of clinics with sexual health services (e.g., Planned Parenthood) in their community. Second, they had misperceptions about the procedures involved in HIV/HPV testing. For example, a common belief was that virgins could not have pap smears or they would lose their virginity. Third, economic challenges, such as paying for health services and transportation to clinics, impeded access. Getting rides from family or community members to offset transportation

costs was identified with loss of privacy and therefore was rarely a viable solution. Fourth, compounding the economic barrier was Tongan community pride in not using services for which they could not pay themselves. The community explained that this led to avoidance of accessing needed services if it involved free or subsidized aid. Fifth, preventive health care in general (e.g., annual check-ups) was not highly prioritized in the community. It was not affordable for many parents and young adults who work in the service sector with no insurance, and it ranked below other more immediate concerns such as food and transportation. Consequently, Tongans tended not to seek services until they were symptomatic, whether with an STI or other health problem. Sixth, limited English language meant that recently immigrated young adults and parents faced barriers to navigating clinical visits.

**Parents' role is key to prevention**—A common belief among Tongan participants was that parents should be doing more to assist in HIV/ HPV prevention among young adults. A major hindrance, however, was that they had limited time with their children. Low incomes in the community often required both parents to work, sometimes in multiple jobs. Participants criticized fathers in the community for spending too much time engaging in the common PI practice called *faikava*. Men gathered in a community member's home where elders shared stories, younger men learned how to be men, and they all drank *kava*, an herbal drink, from a large bowl. Although the practice was credited with helping maintain the Tongan language and male socialization, the community also denounced it for taking fathers away from their children. The community concluded that because parents could serve as a gateway or barrier to communication with their children and to young adults' seeking sexual health education, screening, and other services, parental buy-in would be critical to prevention efforts.

What is important is ... to make the Tongan society and Tongan family to see their children and take care of them, to prevent them from early involvement in these kind of dreadful decisions. And you have to plan your time ... It's worth it to do something rather than do nothing.

Tongan faith-based community leader

### Unique Chamorro Themes

**HIV/HPV risk and prevention are individual responsibilities**—Chamorro participants assigned some accountability to the community for young adults' HIV/HPV risk and measures to prevent infection; however, they assigned more responsibility to individuals. A Chamorro male young adult stated, "It's like your life, you know, like what you do with it. I guess it's up to you if you want to have safe sex or unprotected sex."

**Religiosity and pride can increase and decrease risk**—For Chamorros in our study, religion meant Catholicism. Whereas Catholicism was tied to Chamorro culture, our analysis indicated that the two were separable and religion's influence was not as dominant as for Tongans. Nevertheless, participants described how strict adherence to Catholic doctrine increased young adults' HIV/HPV risk by discouraging condom use and inhibiting screening and other health seeking. A Chamorro youth group community leader described the Church as an "institution that prevents or has a barrier [against] seek[ing] out other information or prevention methods outside of abstinence." Similar to the family reputation issue, a broader "Chamorro pride" sometimes had a chilling effect on seeking sexual health services. A Chamorro social group community leader stated, "Chamorros, you have to understand, are really proud and having to be branded with the disease is not going to make them want to go and be tested. They will keep it in the dark." However, the community also

emphasized how family pride and religion encouraged chastity until marriage; and that to the extent this was followed by young adults, it was protective against HIV/HPV.

Because of the strength of the family unit in our Pacific Island cultures, ... family tend to stay together more ... The family network and the risk of disappointing them is instilled in you ... The risk [of HIV/HPV] would be lower because you wouldn't want to subject the family name to negativity.

Chamorro youth group community leader

In addition, participants delineated how Chamorro pride optimizes the culture of sharing through “talk story” (i.e., informal chats with a high degree of communal participation) among youth, parents, and community mentors. They explained how talk story applies key components of Chamorro culture that are based on social protocols of respect, trust, acceptance, and *ina'famaolek* (translated as “getting along with others,” or “interdependence”); and how this could be leveraged to counteract the taboos around sex, thus increasing intergenerational communication and potentially decreasing HIV/HPV risk.

### Contextualization in Risk and Enabling Environments

We discovered a best fit theoretical framework in Rhodes' (2009) heuristic, which accommodated our thematic results to a significant degree. The heuristic thus replaced our preliminary grounded theoretical model, and we proceeded to use the heuristic as an analytic lens to further contextualize our emergent themes. In Table 3, we present salient results from our thematic analysis in the context of findings from the literature and other public information sources to exemplify micro and macro levels of Rhodes' four risk and enabling environments as they existed during the study period.

### Discussion

In this analysis, we described key factors that shaped HIV/HPV risk and prevention among Chamorro and Tongan young adults in Southern California through identification of common and unique community themes. By examining these factors in the framework of risk and enabling environments (Rhodes, 2009), we gain a contextualized understanding, which is prerequisite to informed, appropriate action and research. Although HIV and HPV are not the same thing, the risk and enabling environments around PI young adults shape their vulnerabilities to and protections against HIV and HPV in similar ways.

Rhodes' heuristic acknowledges the importance of culture by incorporating logics of practice (Bourdieu, 1990), political economy (e.g., Bourgois, 1998), and situated rationality (Moore, 2004) – each of which includes culture in epistemological assumptions – and by integrating aspects of culture into the social environment. However, culture is implicit in the framework. Because this could be misinterpreted as reducing culture to something embedded in and subordinate to social structure, we propose that adding a separate and explicit cultural environment to the heuristic would contribute to a better understanding of how culture mediates the other layers of ecology, and would enhance an already good fit to our specific thematic findings.

In our study, key cultural factors were linked with both risk and enabling environments depending on the issue. At the macro-level, ethnic pride and the importance of family reputation in Chamorro and Tongan communities were associated with concerns about community gossip, loss of privacy, family shame, and the gendered *tapu* surrounding sex and sexual health. These factors obstructed HIV/HPV related health seeking in several cases. However, ethnic pride and family reputation also inhibited premarital sex to some degree, particularly in young PI women; and it was associated with talk story, contributing

to the enabling environment. Talk story, which both creates and symbolizes solidarity, is originally a Hawaiian expression (Boggs, 1985), but the narrative practice is common to several PI cultures, including both Chamorros and Tongans. Both communities could use it as a means to counteracting *tapu* around sexual health topics, including not only HIV/HPV, but also cancer, which is a particularly taboo subject when it overlaps with sexual health (e.g., cervical cancer; Tsui & Tanjasiri, 2008). However, outside of pan-PI cultural events, such as festivals, and collaborative participation in PI research and training projects, such as that represented by our study, the two communities do not interact very much. This might be because Tongan social groups are dictated largely by religious denomination. Whereas many Chamorros are Catholic, most Tongans are not, and this likely contributes to insularity. Accordingly, talk story intervention approaches probably would be most acceptable if conducted in each community separately.

The primacy of religion in culture had a similar dual function: it contributed to the enabling cultural environment through encouraging delay of sexual debut and monogamy thereafter; but it also discouraged condom use and constrained screening and other sexual health seeking, thus adding to the risk environment. Colonialism in the Pacific Islands played a role. The history and extent of colonialism was different in Guam and Tonga (Campbell, 1989), but the legacy has similarities. Though it is debatable to what degree European and American proselytizing determined the level of Christianity's embeddedness in Tongan and Chamorro cultures, it did determine the types of religion that predominate, and therefore the doctrines and their attendant influence on HIV/HPV risk and prevention. There were also differences in the degree to which religion dominated life in the two PI communities in Southern California. Tongans credited religion as being the strongest influence on their views about sex and sexual health; and religion was inseparable from culture in their view. Chamorros also cited religious beliefs and values as having a significant impact on attitudes and behavior regarding sexual health; however, they articulated that culture, though linked to religion, was an independent force and more influential in their community.

Tongans articulated a perception that protection against HIV/HPV was associated with the preservation of religio-cultural traditions and that acculturation in the U.S. away from those traditions conferred increased risk. This fits within a broader Tongan understanding of cultural pluralism in health and medicine that takes two primary forms: Tongan health issues (*mahaki faka Tonga*), which are caused by infractions of tradition and curable by traditional healers; and western health issues (*mahaki faka palangi*), which are only curable by *palangi* (western) doctors and are largely associated with the introduction of Westerners in Tonga (McMullin et al., 2008). HIV and HPV seem to reference both types of health issue, which might explain the perceived association of risk and cultural exposure. Conversely, Chamorro study participants, who were typically more acculturated compared to Tongan participants, emphasized that acculturation worked more to promote intergenerational communication about sexual health, in defiance of the *mamahlaho*, or sense of shame (Rosario, 2010) traditionally associated with this cultural *tapu*. Acculturation from this perspective thus exemplified the enabling cultural environment at the micro-level. The effects of these tensions between traditional culture and acculturation on second- and subsequent-generation PIs' risk and enabling environments should be researched further.

There is a clear need for enhanced education on HIV, and especially on HPV and the links of both infections to cancer, in both communities. However, health education alone will not be enough to change behaviors or keep community members from harm; and we do not endorse a paternalistic or overly prescriptive approach. Comprehensive, community-led solutions will be needed to augment existing enabling environments and reduce the impact of risk environments on youth and young adults. Both communities expressed that they would value someone other than parents to intervene in an effort to overcome barriers to

effective intergenerational communication and supplement the sexual health education currently accessed by community youth. Accordingly, in the Tongan community, religious leaders could consider having sexual health referral information on hand in case young adults approach them to talk about such issues. This would allow young adults to maintain confidence in their religious leaders without demanding that clergy give advice that they feel is compromising to their views. Furthermore, religious leaders could mentor parents on how to have these sensitive talks with their children. In the Chamorro community, community leaders from social groups and youth groups could serve a similar role and facilitate similar solutions in the face of cultural *tapu*. These recommendations were grounded in our interviews with religious and other community leaders; and they were endorsed by the religious and other community leader representatives on our CAB. However, given the religio-cultural emphasis on abstinence, additional research with leaders in both communities should be conducted to gauge the appropriateness and acceptability of using this approach; and a pilot intervention will need to test feasibility before any large-scale programs of this sort are implemented.

Additionally, both communities might reflect on confidentiality issues that can deter young adults from accessing sexual health screening and services. Considering the general concern over lack of privacy and gossip in both communities, fostering a sense of confidence in speaking about these issues will be critical to making positive change. Willingness to fully engage with the topic of sexual health will require dedicated community support and ownership.

Beyond health education and intergenerational communication, our findings on risk and enabling environments suggest several additional points of entry for intervention. For sustainable changes to occur, it is clear that macro-level factors that create HIV/HPV risk environments for PIs must be transformed into enabling environments. Many of the macro-level factors that contribute to physical, social, economic, and policy risk environments for PIs (See Table 3 and Supplementary Data) – uninsured status, low incomes, and language barriers, for example – are largely the same across several subaltern, post-colonial, immigrant, and ethnic minority populations in the U.S.: Southeast Asians, Latinos, Native Americans, and African Americans, to name a few (Liao et al., 2011; Nguyen et al., 2011). In the long term, community organizing that draws PIs together with these other affected populations is one way to transform macro-level environments.

In the immediate term, however, we propose that HIV/HPV intervention efforts are probably best approached, at least initially, at the micro-level where individual and group agency can be more easily leveraged. Though we have emphasized the influence of environments in which PI young adults are embedded, it would be unwise to ignore the internalization of structural and cultural limits in the daily practices of individuals (Fitzgerald, 2009), or conversely in a more optimistic light, the power of individuals to alter their environments in positive ways. The direct transformation of macro-level environments is a daunting, long-term goal; and micro-level changes, when they occur in sufficient numbers of groups and communities, can lead to macro-level shifts over time (Pilisuk et al., 1996). Accordingly, a focus on applying individual and community agency at the micro-level would be an approachable starting point both for our local PI communities and groups in similar ecological contexts globally.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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### Highlights

- The first study to examine factors shaping risk and prevention of HPV among Pacific Islanders in the United States.
- One of the first investigations in the U.S. of factors shaping HIV risk and prevention among Pacific Islanders.
- HIV and HPV vulnerabilities and protections are embedded in micro- and macro-level risk and enabling environments.
- Micro-level interventions on sexual health education and intergenerational communication are approachable next steps.
- Engagement of Pacific Islander religious and other community leaders shows promise for effective prevention.

**Table 1**

## Participant Sociodemographic Characteristics (n = 95)

	Tongan % (n = 56) <sup>a</sup>	Chamorro % (n = 39) <sup>a</sup>	Total % (n = 95)
Gender (n = 93; % female) <sup>b</sup>	48.1	64.1	53.7
Age (n = 92; $\bar{x}$ = 36.9; SD = 14.6)			
18-24	41.5	17.9	30.5
25-29	3.8	17.9	9.5
30-49	34.0	41.0	35.8
50+	20.8	23.1	21.1
Education (n = 94)			
High School	52.7	33.3	44.2
Some College	36.4	48.7	41.1
University Degree	3.6	12.8	7.4
Graduate Degree	7.3	5.1	6.3
Student (n = 95; % yes)	26.8	20.5	24.2
Employment (n = 90)			
Not in Labor Force	13.7	17.1	14.7
Unemployed, Looking for Work	29.4	20.5	24.2
Employed <40 h/wk	23.5	15.4	18.9
Employed 40 h/wk	33.3	43.6	36.8
Yearly Individual Income (n = 71) <sup>c</sup>			
\$11,138 <sup>d</sup>	36.6	16.7	21.1
\$11,139-\$29,899	29.3	23.3	20.0
\$29,990-\$45,270	19.5	23.3	15.8
\$45,271	14.6	36.7	17.9
Marital Status (n = 92)			
Never Married	45.3	30.8	37.9
Married/Domestic Partner	47.2	59.0	50.5
Divorced/Separated/Widowed	7.5	10.3	8.4
Sexual Orientation (n = 92)			
Heterosexual	96.2	94.9	92.6
Gay/Lesbian/Bisexual/Other	3.7	5.3	4.2
Birth Place (n = 94)			
U.S. State	43.6	48.7	45.3
Guam	--	41.0	16.8
Tonga	50.9	--	29.5
Other	5.5	10.3	7.4

<sup>a</sup>Valid %, calculated separately for each community.

<sup>b</sup>Except for "Student," all variables have 1 missing cases; sample size for each variable is noted.

<sup>c</sup>Categories based on the two U.S. federal poverty measures: the Census Bureau's (2011) poverty threshold and HHS (2011d) poverty guidelines.

<sup>d</sup>Poverty threshold for individuals.

**Table 2**

Interrater Reliability in Coding between Community and Academic Analysts

Coding Round	Coding Teams			
	Chamorro Data		Tongan Data	
	No. of Codes	<i>k</i>	No. of Codes	<i>k</i>
1	19	.487	16	.175
2	16	<b>.862</b>	14	.529
3	--	--	12	<b>.772</b>

Note:  $p < .001$  for all  $k$  values. Boldface:  $k > .70$ .

Table 3

## HIV/HPV Risk and Enabling Environments of Pacific Islanders in Southern California

	Micro-environment	Macro-environment
<b>Physical</b>		
<i>Risk</i>	Distance to local sexual health services and underdeveloped public transportation system Limited sexual health education resources in local schools Lack of PI providers, services in PI languages <sup>a</sup>	Urban sprawl in Southern California <sup>b</sup> Migratory encounter: mixing with a general population with high HPV prevalence <sup>c</sup> Syndemic intersections of violence, HIV, and other STIs in urban areas <sup>d</sup>
<i>Enabling</i>	CBOs dedicated to PI communities Churches, community events and leadership High local concentration of infectious disease specialists <sup>e</sup>	Developed physical infrastructure in high-income country Current preventive modalities, advanced medical technology Geographic foci of PI immigration, concentrated communities generating social capital <sup>f</sup>
<b>Social</b>		
<i>Risk</i>	Low level of community HIV/HPV knowledge Chamorro view of individual responsibility: less community buy-in in prevention Community gossip	Limited English proficiency Otherization: homophobia, racial xenophobia Stigmatization of HIV/HPV, other STIs
<i>Enabling</i>	Tongan view of prevention as collective community obligation <sup>g</sup> Community understanding of parents' critical role in prevention and willingness to engage	Developed state, market, and civil society institutions in U.S. (Social) marketing campaigns for vaccines, stigma reduction <sup>h</sup>
<b>Economic</b>		
<i>Risk</i>	(Transportation to) health services unaffordable for PIs with low incomes, no health insurance Tongan community pride impeding access to needed services if free or subsidized Labor pressures on both parents limit time with children	Low PI incomes Unemployment, lack of insurance among PIs <sup>i</sup> Reductions in public health workforce due to U.S. recession <sup>j</sup> Sluggish recovery of economy from recession <sup>k</sup>
<i>Enabling</i>	Free/low cost sex education, screening, treatment Free/low cost transportation to health services Distribution of free condoms, other prevention materials	Entitlement programs –e.g., Medicaid (Medi-Cal), AIDS Drug Assistance Program <sup>l</sup> Grant funding of PI CBOs U.S. health care reform: expanded preventive services with no copay/deductible <sup>m</sup>
<b>Policy</b>		
<i>Risk</i>	Variability in school districts' implementation of California's sex education requirements <sup>n</sup> Lax clinical policies regarding HPV detection, treatment at local facilities <sup>o</sup>	National sex education policies (1996 – 2010) funding abstinence-only programs <sup>p</sup> Exclusions in CDC guidelines for HPV testing of women < 20 years old and men <sup>q</sup> Limited implementation of CDC recommendations for routine HIV testing <sup>r</sup>
<i>Enabling</i>	California's sex education requirements <sup>s</sup> Language access mandates in local hospitals/clinics <sup>t</sup> Hospital/clinic and CBO-based policies governing PI health navigators <sup>u</sup>	National sex education policy (2010 –) requiring curricula to address increasing condom use <sup>p</sup> National HIV/AIDS Strategy <sup>v</sup> Legal protections of provider-client/patient confidentiality U.S. health care reform: expanded insurance coverage for young adults <sup>w</sup>

Note: Additional data on factors in each environment are provided in an accompanying supplementary file.

<sup>a</sup>Dang et al., 2010.

<sup>b</sup>Wolch et al., 2004.

<sup>c</sup>CDC, 2009.

<sup>d</sup>Singer et al., 2006; DiStefano & Cayetano, 2011; Federal Bureau of Investigation, 2009; Long Beach Police Department, personal communication, July 22, 2011.

<sup>e</sup>Infectious Disease Association of California, 2011.

<sup>f</sup>Fukuyama, 1999.

<sup>g</sup>Toafa et al., 1999.

<sup>h</sup>Merck & Co., 2011; Savage Love, LLC, 2011.

<sup>i</sup>HHS, 2011a;

<sup>j</sup>Morrissey, 2011.

<sup>k</sup>U.S. Federal Reserve, 2011.

<sup>l</sup>California Department of Public Health, 2011a,b;

<sup>m</sup>HHS, 2011b.

<sup>n</sup>Public Schools Project, 2011.

<sup>o</sup>DiStefano, Unpublished results.

<sup>p</sup>HHS, 2010.

<sup>q</sup>CDC, 2010.

<sup>r</sup>Branson et al., 2006; Korthuis et al., 2011.

<sup>s</sup>California Department of Education, 2011.

<sup>t</sup>HHS, 2007.

<sup>u</sup>Nguyen et al., 2008.

<sup>v</sup>Office of National AIDS Policy, 2010.

<sup>w</sup>HHS, 2011c.