


Protective Effect of Biculturalism for Health Amongst Minority Youth: The Case of Pacific Islander Migrant Youths in Hawai'i

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Abstract

This study investigates the mechanisms by which biculturalism impacts various health outcomes amongst youth migrants to Hawai'i who are from the US-Affiliated Pacific Islands jurisdictions. Using purposive sampling, 284 males and females (twelve to nineteen years old) of Pacific Islander ethnicities in Hawai'i completed a survey. Results from path analysis showed that biculturalism significantly and positively affected self-esteem that, in turn, improved eating attitude, body satisfaction and perceived well-being. Further, eating attitude increased healthy eating behaviour and body satisfaction that, in turn, positively affected general health perception and body satisfaction. Positive smoking attitudes increased smoking activities, which negatively affect general health perception. The study demonstrated that self-esteem impacted overall health through its influence on enhancing positive perceptions about the importance of healthy eating, body satisfaction and well-being. Biculturalism indirectly led to increased self-esteem, which in turn directly influenced attitudes about healthy eating, body satisfaction and perceived well-being. Our study provides strong evidence that addressing the problem of health disparities for minority populations in the USA has to start with reaffirming the value of diversity and multiculturalism and embracing an

individual's historic cultural identity. Specific implications for funding agencies and researchers of minority health programs are discussed.

Keywords: biculturalism, body satisfaction, Pacific Islander, perceived well-being, self-esteem, youth

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Introduction

In studies of minority health, acculturation is considered as a crucial factor contributing to the psychological well-being, maladaptation and other aspects of health amongst immigrants (Acevedo-Garcia *et al.*, 2010). Research suggests that biculturalism, defined as the combining and practising of customs from two nations, peoples or ethnic groups, may be a healthy approach to acculturation. Biculturalism may be especially relevant for youth immigrants, as their cultural identities are still developing and are more malleable than those of adult immigrants (Schwartz *et al.*, 2015). This study investigates the process through which biculturalism influences various health-related constructs, behaviours and overall health amongst youth migrants in Hawai'i who are from the US-Affiliated Pacific Islands (USAPI) jurisdictions.

Pacific Islanders are one of the fastest growing populations in the USA, growing at a rate three times faster than the total US population, with 1.2 million people identifying themselves as Pacific Islanders according to the 2010 US Census (United States Census Bureau, 2012). The term 'Pacific Islander' is a broad category of ethnically and culturally diverse groups. Native Hawaiians and Samoans comprise 58 per cent of the total US Pacific Islander population while Micronesians, which include Marshallese and Chuukese, represent the third largest (15 per cent combined) Pacific Islander population living in the USA (United States Census Bureau, 2012). In Hawai'i, Marshallese (33 per cent), Samoan (20.3 per cent) and Tongan (14.1 per cent) are the largest Pacific Islander populations (United States Census Bureau, 2012).

The current health indicators for US Pacific Islander populations are best understood in the context of the socio-political history of colonisation within the USAPI jurisdictions, beginning with Spain in the 1,500s, continuing with Japan and Germany through WWII and ending with the USA in 1944 (Riklon *et al.*, 2010). The US military's strategic presence in the Pacific began during WWII and continued after the war when the USA was awarded military oversight within Micronesia as a Strategic Trust by the United Nations (Saunders *et al.*, 2010). In return for strategic military jurisdiction over the region, the USA promised to develop

the infrastructure, health and education of the islands with a goal of creating self-reliant Micronesian nations. The US Compacts of Free Association (COFA) were negotiated beginning in 1977 and will continue through 2024 in response to the United Nations criticism of the US failure to uphold any efforts to build self-governance and political determinism in Micronesia (Saunders *et al.*, 2010). Through COFA, the USA offered citizens of these jurisdictions economic development, grant support and unlimited, unrestrained travel to Hawai'i and the continental USA without the need for visas or labour certifications (Riklon *et al.*, 2010). COFA was originally intended to spur the growth of Western economies within the region but inadvertently had the opposite effect. Many COFA migrants returned to their homelands and garnered few jobs, driving an increasing need for others to migrate to the USA in order to find work. Inadequate employment and educational opportunities, combined with inadequate health-care systems within the USAPI jurisdictions, continue to drive migration to the USA, specifically to Hawai'i and Guam (Riklon *et al.*, 2010). In Hawai'i, there are an estimated 355,816 people from the USAPI (United States Census Bureau, 2012).

The political and economic disparities that fuelled migration from the USAPI of these migrants have become rooted in USAPI populations now living in the US inadequate housing, reduced vocational and educational opportunities are compounded by lifestyle changes, including obesity and tobacco use, which were initiated by the transitions from subsistence economies within the USAPI jurisdictions. Poor health indicators, including lower life expectancies and high rates of chronic and infectious diseases, are found in these groups both within their homeland and within USAPI migrant communities in Guam, Hawai'i and the continental USA. The adoption of unhealthy Western behaviours, such as tobacco, alcohol and drug use, and poor diets, is also seen in increasing rates amongst migrant youth (Okamoto *et al.*, 2014; Riklon *et al.*, 2010).

These patterns illustrate the uneven success rates of the Millennium Development Goals (whose target completion was in 2015), particularly the sixth goal to combat HIV/AIDS, malaria and other diseases ('Millennium Development Goals': World Health Organization, 2018). Understanding how upstream factors and characteristics like biculturalism could impact the successful achievement of the new Sustainable Development Goals (whose target completion is in 2030), particularly the third goal to achieve 'good health and well-being' (United Nations Organization, 2018). Specifically, if this goal is not met, the treatment of non-communicable diseases alone, including cancer, is estimated to cost more than \$7 trillion in the next fifteen years ('Sustainable Development Goals').

The USAPI populations in Hawai'i are experiencing discrimination in the health-care system and in society at large (Yamada, 2011). As the most recent migrant group, many of the USAPI populations have

limited English proficiency, limited education and are employed as unskilled labourers. In the past, the state of Hawai'i discriminated against Micronesians by attempting to disenroll them from Medicaid, an action that was found unconstitutional in federal court (Riklon *et al.*, 2010; Yamada, 2011). Authorities in Hawai'i maintain that these Micronesian migrants utilised resources that were out of proportion to their numbers, and a similar sentiment is also prevalent in popular discourse (Yamada, 2011). Furthermore, tension remains amongst the different marginalised Pacific Islander groups, including Polynesians (Yamada, 2011).

There are an estimated 105,150 youth with USAPI heritage in the USA, with a little over half (56,533) residing in the state of Hawai'i (United States Census Bureau, 2018). These youth are at various levels of their acculturation depending on their specific ethnic backgrounds, migration history and residence. Unlike adults—who primarily speak their native language, have limited English proficiency, and firmly maintain their ethnic identity—migrant youth speak English and are acculturated to the dominant American culture (Okamoto *et al.*, 2014). Moreover, these migrant youth continually navigate between two cultural identities: (i) their native culture, as they live in a close-knit community that still maintains strong cultural norms and values and (ii) the dominant American culture that they face once they step outside their community (Okamoto *et al.*, 2014). Studies with other minority youth populations have demonstrated that the process of acculturation can produce a form of stress (acculturative), which often has a negative impact on health (Sirin *et al.*, 2013). However, there are limited studies that examine the relationship between acculturation and health outcomes for Pacific Islander youth.

Biculturalism, self-esteem and health

While the main focus of culture acquisition research has been on assimilation and acculturation, there has been a push to also examine enculturation (i.e. culture-of-origin identity) independent of assimilation or acculturation (LaFromboise *et al.*, 1995; Gonzales *et al.*, 2004). Several studies have evaluated the influence of integrating assimilation and enculturation to form biculturalism (Rust, 2008). Acculturation is traditionally viewed as a process of second culture acquisition where one's identification with one's culture of origin and mainstream American culture varies along a single continuum. It is seen as a unidirectional process that involves giving up some aspect of one's culture of origin while taking on aspects of mainstream American culture. In contrast, biculturalism is defined as one's sense of belonging to two different cultures without losing the sense of one's origin cultural identity (LaFromboise *et al.*, 1995). This definition includes one's ability to differentiate

between the rules, norms and values of both cultures and one's ability to interact in both cultures (LaFromboise *et al.*, 1995). Thus, in biculturalism, the relationship between the two cultures is seen as bidirectional, orthogonal and nonhierarchical. Instead of viewing the mainstream culture as more powerful, valid or useful than the origin culture, the two cultures can affect each other in different ways (LaFromboise *et al.*, 1995).

The concept of biculturalism has important implications for the development of programs or interventions that serve minority populations. It means going beyond simple linguistic 'adaptation' of programs designed around the mainstream culture to 'culturally grounded' programs designed around the values, worldviews, norms and behaviours of the origin culture (Okamoto *et al.*, 2014). Innovative programs that use culturally grounded approaches often emphasise cultural and ethnic identification as integral parts of their programs. Biculturalism may be the reason such programs are often more effective compared to programs that are transferred from one population to another.

Acculturation and biculturalism are important concepts to examine in migrant youth given that adolescence when a sense of self in all domains of life is being developed, and ethnic and cultural identity formation is a function of self-identity development. The development of a strong ego identity entails having a secure sense of self as a member of one's cultural group, and holding a positive sense of one's cultural identity is related to one's overall sense of self (Gonzales *et al.*, 2004). Biculturalism and cultural identity are closely linked because one's cultural identity is the basis of biculturalism, and the development of bicultural competency is related to ego strength or personality integration (LaFromboise *et al.*, 1995). Being bicultural may provide more internal emotional support for migrant youth than just having a positive cultural identification with one culture alone because it enables these individuals to interact with two different cultures without the negative consequences of acculturative stress.

Researchers have consistently found positive relationships between ethnic identity and self-esteem (Phinney *et al.*, 1997; Bracey *et al.*, 2004; Gonzales *et al.*, 2004). An investigation with 669 Latino, African American and white high school students born in the USA identified ethnic identity as a cultural asset that predicted higher self-esteem (Phinney *et al.*, 1997). Y. Bat-Chava and E. M. Steen (unpublished data) further confirmed this association in a meta-analysis by showing that ethnic identity has a moderately strong and positive relationship with self-esteem across ethnicities, gender and age groups. Overall, the literature demonstrates that when migrants identify strongly with their own ethnic group, they feel better about themselves.

Given the link between biculturalism and a strong sense of self and confidence, we hypothesise that the main mechanism by which

biculturalism influences an individual's behaviour is through self-esteem. Self-esteem is generally defined as a person's overall evaluation or appraisal of his/her own worth (Rosenberg, 1965). Research consistently supports the idea that biculturalism is linked to self-esteem (LaFromboise et al., 1995; Phinney et al., 1997; Grantham and Ford, 2003). Biculturalism is associated with a greater social and emotional adjustment, stronger social skills in interactions with diverse groups, and a heightened psychological well-being (Domanico et al., 1994). Biculturalism is also related to positive self-perceptions of global self-worth, low levels of acculturative stress and higher family pride (Birman, 1998). A meta-analysis of 83 studies looking at the relationship between biculturalism and psychological, sociocultural and health adjustment found that these constructs were strongly associated (Nguyen and Benet-Martínez, 2013). More specifically, this analysis showed that biculturalism was associated with higher psychological scores (e.g. high self-esteem, low anxiety), higher sociocultural performance (e.g. good academic performance, few behavioural problems) and health adjustment scores (e.g. less negative somatic symptoms, increased healthy eating and physical activity). Thus, having social support networks in both origin and mainstream cultures may buffer individuals from the negative psychological and sociocultural maladjustments associated with negative acculturation experiences such as feelings of rejection and discrimination (Okamoto et al., 2014; Riklon et al., 2010).

Self-esteem, risk behaviours and smoking

There is convincing evidence that high self-esteem has a protective effect against risk-taking behaviours amongst young people (Peterson et al., 2010). For example, youth with low self-esteem have been found to consume more alcohol, have more sexual partners, engage in sexual risk-taking behaviours and were more likely to use illicit drugs and to smoke than those with high self-esteem (Byrne and Mazanov, 2001; Fisher et al., 1991; Sterk et al., 2004). Saari et al. (2015) recently found that individuals who suffer from low self-esteem during adolescence were more likely to be smokers in adulthood. Apparently, low self-esteem is a sign of vulnerability when it comes to affective disorders, and those who have low self-esteem are more susceptible to depression and are less capable of regulating negative emotions.

Self-esteem and healthy eating

High self-esteem has been found to have a positive influence on healthy behaviours, including healthy eating (Narayan et al., 1998). People who

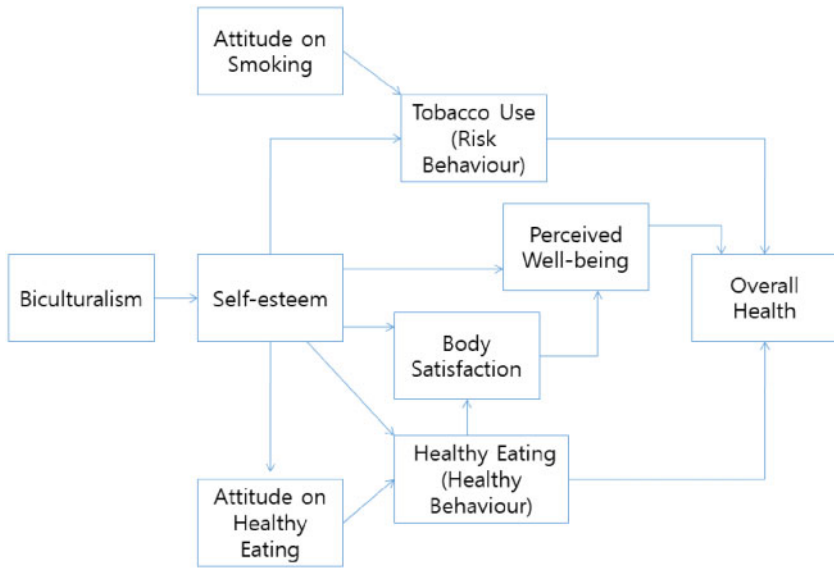


Figure 1: Theoretical model depicting the hypothesised relationship amongst study variables

have high levels of self-esteem are more likely to take care of themselves physically and emotionally and to persist in the face of a challenge. Studies show that abnormal eating attitudes and eating disorders are prevalent amongst adolescents with low self-esteem (Narayan *et al.*, 1998), whereas high levels of self-esteem are associated with healthy eating behaviours. Several studies have reported that interventions designed to enhance self-esteem are effective in changing attitudes and behaviours related to healthy eating amongst adolescents (McVey *et al.*, 2004; O'Dea and Abraham, 2000). However, the duration of the effectiveness differs. While O'Dea and Abraham (2000) reported that the program effect was maintained at the twelve-month follow-up, this was not true for McVey *et al.* (2004). Nonetheless, these studies show that self-esteem is positively related to eating attitudes and behaviour, as well as body image perceptions. For this reason, we hypothesise that self-esteem will influence attitudes about healthy eating and healthy eating behaviour, as well as body satisfaction (Figure 1).

Self-esteem, body satisfaction and perceived well-being

Body image and body satisfaction are usually conceptualised as incorporating body size estimation, and evaluating body attractiveness and the emotions associated with body shape and size. While individuals with a

negative body image perceive their bodies as being unattractive, individuals with a positive body image accept their bodies in their current form. Negative body image is prevalent in the USA, particularly amongst young women (Neighbors and Sobal, 2007). About 50 per cent of American women evaluate their appearance negatively and express concern about their weight (Thompson *et al.*, 1999). Body dissatisfaction can lead to low psychological well-being, stress, increased depressive symptoms and psychopathology such as eating disorders (Johnson and Wardle, 2005).

The influence of body image and satisfaction towards self-esteem and perceived well-being (PWB) in Pacific Islanders may be somewhat unique due to phenotypical, cultural and historical influences within this group. A 'thrifty gene' is hypothesised to be operational in Pacific Island cultures due to the selection of archetypical migrants who would have the ability to survive the open cabin seafaring voyages required to reach and settle in newly found island territories. Descendants of these individuals appear to have a highly efficient fat storage system needed for survival in these extreme conditions. These efficient metabolic profiles also support traditional Pacific Islander cultural and dietary practices, including communal sharing of food and other subsistence needs as an important means of survival and relationship maintenance. These and other factors have contributed to the historic appreciation of larger body sizes amongst members of this group (Dai *et al.*, 2007; Keighley *et al.*, 2007). As such, Pacific Islander populations traditionally find fuller figured body sizes more attractive as it is believed to represent high status, power, authority and wealth in these populations (Ohtsuka and Ulijaszek, 2007). However, several recent studies illustrate that Pacific Islanders, particularly migrant populations, may no longer venerate these larger body sizes (Brewis *et al.*, 1998). Nowadays, similar to Westernised perspectives, many Pacific Islander groups desire slim bodies. Brewis *et al.* (1998) used body mass index measurements, combined with a survey about perceptions of normal body weights in Pacific Islanders and reported that while these individuals displayed high rates of obesity, their concept of ideal body sizes was of individuals classified as slim. While many women reported making several attempts to lose weight, it was also noted that the overweight women and men did not possess a diminished self-perception about their current body size, which differs from the pattern found in Western populations. These evolving perceptions about desirable body shape present a unique challenge for acculturated Pacific Island adolescents. One's evaluation of his/her own physical appearance is strongly associated with self-esteem (Mellor *et al.*, 2010; Webster and Tiggemann, 2003). This phenomenon has been consistent across cultures (e.g. The United Kingdom, Italy, Japan, etc.). Body dissatisfaction is often highly correlated with lower self-esteem in many

population groups (Shin and Shin, 2008). Thus, we hypothesise that self-esteem will influence body satisfaction (Figure 1).

In this study, we will also explore whether biculturalism contributes to the PWB. Research shows that body satisfaction impacts well-being. Body image evaluation influences the overall perceptions of global self-esteem, which then subsequently influences one's PWB (Lee *et al.*, 2014). PWB reflects the eudaimonic perspective and refers to perceived self-actualisation and optimal functioning of one's life (Ryff, 1989). Previous research has shown that self-assessment of one's own body image is related to PWB (Lee *et al.*, 2014). Donaghue (2009) reported a positive relationship between body satisfaction and satisfaction with life. Also, negative perception of body image is associated with low self-esteem (Tiggemann, 1994) and negative effect (Rierdan and Koff, 1997). Similar findings have also been documented amongst Korean female college students; body dissatisfaction was related to depression, and body-esteem was related to subjective well-being (Lee, 2009). Thus, one's self-esteem may be a significant factor that mediates the relationship between body image evaluation and PWB.

In sum, we hypothesise that biculturalism will have a positive influence on general health through a complex process mediated by self-esteem. Specifically, we posit that biculturalism will enhance self-esteem amongst Pacific Islander youth and, in turn, will lead to reduced risk behaviour (i.e. tobacco use) and increased healthy attitude and behaviour (i.e. healthy eating). A reduction in risk behaviour and an increase in healthy behaviour will then lead to improved general health. Further, we hypothesise that healthy eating behaviours, as well as increased self-esteem, will lead to increased body satisfaction and enhanced psychological well-being, which, in turn, will contribute to better general health. Figure 1 illustrates the proposed model that depicts the hypothesised relationship amongst the study variables.

Methods

Participants

Two hundred eighty-four (284) Micronesian youth (mean 16.19 ± 1.97 years, range 12–19, 46.1 per cent male) were recruited in Hawai'i. Participants included eighty-nine Chuukese (32.6 per cent), eighty-three Samoan (30.4 per cent), thirteen Marshallese (4.8 per cent), twenty-three other Pacific Islander (8.34 per cent) and sixty-five interethnic Pacific Islander (23.8 per cent). Participants self-identified their demographics, so interethnic Pacific Islanders include both those who migrated to the USA as children or youth from the USAPI and those who self-identified

as interethnic Pacific Islanders (28.6 per cent) who were born and raised in the USA as descendants of immigrants from the USAPI.

Procedures

The survey items were developed based on related literature and validated with two focus groups with the target youth. Items on health information and health behaviours were based on questions in the Health Information National Trends Survey ([HINTS, 2018](#)).

Each focus group had four boys and eight girls aged twelve to nineteen, respectively, and our community contact obtained prior parental or legal guardian consent using standard forms for their participation. Each session was moderated by a trained research assistant who had done a similar focus group with adult participants in the past. One of the researchers monitored the sessions and had a chance to meet the community leaders to explain the purpose of the study. The survey items were revised for sociocultural appropriateness using the results from the focus groups.

Once the survey was finalised, participants who were Micronesian youth aged twelve to nineteen were recruited using purposive sampling at the University of Hawai'i at Manoa. Four undergraduate and graduate students who were able to recruit Pacific Islander youth were hired after being trained about appropriate participant recruitment; they then reached out to their Micronesian community leaders with a research invitation letter written by the research team. The Micronesian community leaders included church leaders and school teachers. Once the community leaders agreed to participate in the project, their adult and youth members were told about the project. If a legal guardian gave consent for his or her child to participate in the research, and if the participant provided their assent to join the study, then the survey was given. According to the 2010 Census, Marshallese, Samoan and Tongan are the largest Pacific Islander populations in Hawai'i ([United States Census Bureau, 2012](#)). Since it was very difficult to recruit youth after getting their parent/legal guardian's consent, our research team did our best to increase participation. Since there were no available community liaisons for Marshallese and Tongan for data collection, the ethnic composition of the participants did not represent the actual Pacific Islander population in Hawai'i. Completing the survey took about thirty to forty minutes. Each participant received a \$15 gift card for participating in the study. The study procedures were approved by the Human Studies Program at the University of Hawai'i at Manoa.

Measures

The following survey measures used in the study included a five-point Likert scale response format (1 = 'strongly disagree', 5 = 'strongly agree') unless the response format was specified.

Biculturalism: Four items were used. They were 'I am very involved in my ethnic culture and lifestyle', 'I am very involved in the American/Western culture and lifestyle', 'I mostly hang out with other youth of my ethnicity' and 'I mostly hang out with other American youth'.

Self-esteem: Participants' self-esteem was measured with four items originally developed by [Rosenberg \(1965\)](#): 'On the whole, I am satisfied with myself', 'I feel I have much to be proud of', 'I try hard to achieve the goals I set for myself' and 'People usually like me'.

Attitude on healthy eating: Two items were asked to measure participants' attitudes on healthy eating: 'Eating healthy is important to my health' and 'I enjoy eating healthy'.

Healthy eating (healthy behaviour): Six items were used to assess participants' healthy eating practices. The items were 'Eat 5 or more servings of fruits and vegetables a day', 'Include fiber (whole grains) in my diet', 'Eat three meals a day', 'Try to eat a well-balanced diet', 'Watch the amount of fat I eat' and 'Watch the amount of sugar I eat'. Five response options were given from 1 = 'Never' to 5 = 'Almost always'.

Body satisfaction: Three items were asked to measure participants' body satisfaction: 'I am satisfied with my weight', 'I like the way I look' and 'People my own age like my looks'.

Attitude on smoking: Four items were asked to evaluate positive expectancy for smoking. The items were 'Smoking can help people relax', 'Boys that smoke are attractive', 'Girls that smoke are attractive' and 'My parents would not mind me smoking after I grow up'.

Tobacco use (risk behaviour): Six items were asked to measure participants' smoking behaviours. Cigarettes, snuff, cigars, e-cigarettes, betel nut with tobacco and betel nut without tobacco were included. Nine response options were provided to evaluate their smoking activities during their past one month. Responses ranged from 0 = 'Never' to 8 = 'Everyday within the past 30 days'. Out of the total, 142 participants (56.3 per cent) never tried any kind of tobacco.

PWB: Four items were selected from scale of [Ryff \(1989\)](#). The items were 'My daily life is full of things that keep me interested', 'I enjoy trying new foods I have never tasted before', 'I like most of the people I meet' and 'I like to do new and different things'.

Overall health: A single item was asked to participants' overall health: 'In general, would you say your health is ___?' The response options ranged from 1 = 'Bad' to 5 = 'Very good'. Correlations amongst variables and descriptive statistics of each variable are shown in [Table 1](#).

Table 1 Reliabilities (in parentheses), correlations, means, standard deviations and range of variables

| | B | SE | AE | E | BS | AS | TU | PWB | OH |
|---------------------------------|--------|---------|--------|--------|---------|---------|--------|--------|------|
| Biculturalism (B) | (0.61) | | | | | | | | |
| Self-esteem (SE) | 0.33** | (0.79) | | | | | | | |
| Attitude on healthy eating (AE) | 0.30** | 0.34** | (0.72) | | | | | | |
| Healthy eating (E) | 0.24** | 0.20** | 0.34** | (0.73) | | | | | |
| Body satisfaction (BS) | 0.11* | 0.42** | 0.19** | 0.12* | (0.65) | | | | |
| Attitude on smoking (AS) | 0.20 | 0.13* | 0.20** | 0.13* | 0.12* | (0.77) | | | |
| Tobacco use (TU) | -0.06 | -0.11* | -0.12* | -0.08 | -0.09 | -0.16** | (0.79) | | |
| Perceived well-being (PWB) | 0.35** | 0.60** | 0.33** | 0.27** | 0.37** | 0.12* | -0.07 | (0.78) | |
| Overall health (OH) | -0.06 | -0.19** | -0.10 | -0.09 | -0.35** | 0.06 | 0.17** | -0.10 | n.a. |
| Mean | 3.45 | 3.95 | 4.10 | 2.80 | 3.34 | 4.36 | 0.30 | 3.87 | 2.52 |
| Standard deviation | 0.43 | 0.47 | 0.56 | 0.60 | 0.65 | 1.00 | 0.42 | 0.34 | 0.75 |
| Range ^a | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 | 0-48 | 1-5 | 1-5 |

n.a., not applicable.

^aThe measures used a five-point Likert scale response format (where 1 = 'strongly disagree' and 5 = 'strongly agree') unless the response format was specified. Smoking was measured with two items and their response format ranged from 0 = 'Never' to 8 = 'Everyday within the past thirty days'.

* $p < 0.05$; ** $p < 0.01$.

Results

A path model was tested using the AMOS 7.9 computer program, which utilises the maximum likelihood estimation method. Goodness of fit between the path model and the data was assessed with four criteria including: (i) a non-significant chi-square value at $p < 0.05$; (ii) a comparative fit index (CFI) of 0.95 or greater; (iii) a Tucker-Lewis or non-normed fit index (NNFI) of 0.95 or greater and (iv) a root mean square error of approximation (RMSEA) of 0.05 or lower.

The theoretical model in Figure 1 did not show an acceptable fit of the data. The use of model generating applications is reasonable (Jöreskog, 1993) when the initial model does not fit the data and is modified based on theoretical sense and reasonable statistical correspondence to the data. Figure 2 shows a modified model that displayed an excellent fit of the data: $\chi^2(25) = 1.54$, $p < 0.05$, CFI = 0.96, NNFI = 0.90, RMSEA = 0.04. All path coefficients were significant at $p < 0.05$. Post-hoc modification indices did not detect any unspecified direct paths that would contribute significantly to the model. Using the modified model (Figure 2), biculturalism significantly and positively affected self-esteem ($\beta = 0.39$, $t = 6.96$, $p < 0.001$) which, in turn, increased eating attitudes

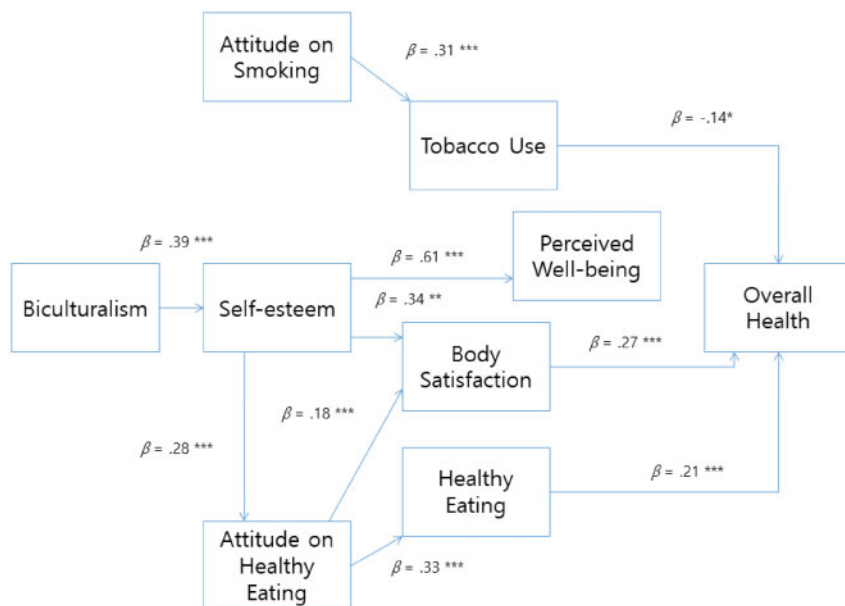


Figure 2: Modified model depicting the hypothesised relationship amongst study variables

($\beta=0.28$, $t=4.89$, $p<0.001$), body satisfaction ($\beta=0.34$, $t=6.13$, $p<0.001$) and PWB ($\beta=0.61$, $t=12.85$, $p<0.001$). Further, eating attitude increased healthy eating behaviour ($\beta=0.33$, $t=5.75$, $p<0.001$) and body satisfaction ($\beta=0.18$, $t=3.30$, $p<0.001$), which positively affected general health perception (eating behaviour; $\beta=0.21$, $t=3.82$, $p<0.001$) and body satisfaction ($\beta=0.27$, $t=4.87$, $p<0.001$). Positive smoking attitude increased tobacco use activities ($\beta=0.31$, $t=5.09$, $p<0.001$), which negatively affect general health perception ($\beta=-0.14$, $t=-2.42$, $p<0.05$).

Discussion

This study investigated the mechanisms through which biculturalism impacts health amongst migrant adolescents in Hawai'i who are from the USAPI jurisdictions. The results of our study map the process of influence that links biculturalism to increased self-esteem, attitudes and behaviour related to healthy eating, body satisfaction, PWB and, finally, overall health. Our study also demonstrates that self-esteem serves as an important mediator connecting biculturalism to overall health. While biculturalism did not have a direct influence on health behaviours and outcomes, it led to increased self-esteem that, in turn, directly influenced

attitudes about healthy eating, body satisfaction and PWB. Self-esteem also indirectly influenced healthy eating behaviour and body satisfaction through healthy eating attitudes. These variables, in turn, contributed to a general health outcome. Although we initially hypothesised that self-esteem would influence risk behaviour (tobacco use in this study), our results did not support this hypothesis. In our study, tobacco use was not related to self-esteem, although it did influence general health. Thus, amongst our study population, self-esteem impacted health by enhancing positive perceptions about the importance of healthy eating, body satisfaction and well-being.

While numerous studies have shown links between biculturalism and health, there are limited studies focusing on the specific process through which the influence is exerted. This study provides an important insight into the process through which biculturalism impacts health amongst minority youth in America.

Findings from our study have several important implications for the field of social work and health promotion for minority populations. First, our results demonstrate that ‘upstream’ variables such as biculturalism and self-esteem influence ‘downstream’ variables such as specific health behaviours, PWB and general health. This means that any program that narrowly focuses on changing specific health attitudes and behaviours may not be effective in producing the ultimate outcome of improved health for minority populations if it only looks at the more immediate antecedents of health behaviours and outcomes. That is, it is necessary to start our interventions upstream to cultivate biculturalism through healthy identification of both host culture and culture of origin. The enhanced self-esteem that results from biculturalism is likely to lead to a host of health-related attitude and behaviour changes, and to an enhanced sense of well-being and health.

Relatedly, the finding that biculturalism influences PWB and general health serves as a strong basis for the argument that culturally grounded programmes that emphasise cultural and ethnic identification will be far more effective in improving health outcomes of minority populations, compared to programmes that are simply adapted from other populations. [Okamoto *et al.* \(2014\)](#) point out that there is a dearth of research directed towards the development of culturally grounded interventions. Government and other funding agencies need to recognise that while developing a culturally grounded intervention may be initially more costly and time-consuming, such a program is necessary for better outcomes. Decisions for funding programmes and interventions for minority populations should duly incorporate this recognition. Furthermore, researchers and professionals who work with minority populations also need to be mindful about the value of culturally grounded programs and make more efforts to design more innovative programmes and interventions

that are developed from the ground up by working closely with the community.

Retrospectively, consideration of this finding could have impacted the extent to which social work initiatives focused on combating certain diseases and were able to achieve the Millennium Development Goals. Looking ahead to the successful achievement of the new Sustainable Development Goals, with target completion in 2030, particularly the third goal (good health and well-being), the insights about ‘upstream’ factors like biculturalism could contribute to more effective programmes, especially those aimed at reducing the burden of non-communicable diseases.

Limitations and future directions

There are several limitations in this study that should be addressed. First, the causal relationship implied in this study cannot be claimed with a high degree of certainty by exclusively relying on cross-sectional data. Though we have a strong theoretical basis for believing that the direction of causality is as stated (McVey *et al.*, 2004; O’Dea and Abraham, 2000), we cannot completely rule out the possibility that the hypothesised direction may be reversed. For example, it is possible that people who have positive attitudes about healthy eating and a high level of body satisfaction may develop a high level of self-esteem. Future longitudinal studies should investigate this to elucidate the causal direction further.

Second, we used a simple measure of biculturalism and therefore were not able to assess the heterogeneity within this category, which may have affected our outcomes. Future studies should utilise more robust and detailed measures of bicultural identity. Biculturalism is a complex construct, and researchers have found that the variation in how individuals combine their two cultures within those that fall under the bicultural category may affect how acculturation affects their behaviours, attitudes and health outcomes (Nguyen and Benet-Martínez, 2013). For example, additional detailed measures, such as the Bicultural Identity Integration construct (Benet-Martínez and Haritatos, 2005), would allow researchers to better understand the nuances amongst those that identify with multiple cultures.

Third, the study used purposive sampling, and it is the most effective way to collect data when a target population is specific. However, the weaknesses of the sampling method should be considered in the interpretations of the study findings. Specifically, the representativeness of the sample could be in question (Teddlie and Yu, 2007). The largest Pacific Islander populations in Hawai’i are Samoan, Marshallese and Tongan, respectively (United States Census Bureau, 2012), but the

current study did not include a representative sample of Marshallese and Tongans. The generalisability of the study findings would be better achieved with randomised sampling methods or other methods to control for biases in purposive sampling, such as respondent-driven sampling (Heckathorn and Cameron, 2017), for future research praxis.

Fourth, the measures used to assess key study constructs, such as body satisfaction, self-esteem, PWB and health, are standardised measures that were developed largely based on studies conducted in Western countries. Using these standardised measures does provide the benefit of an easy comparison with other published studies on the topic. However, we note that these measures may not fully capture how our study populations view these concepts given their unique cultural and historical contexts. For future studies, additional efforts to test and validate the study measures are needed to ensure that they are more culturally appropriate.

Finally, our analysis was not able to capture differences between individuals who migrated to the USA as children or youth from the USAPI and those who self-identified as interethnic Pacific Islanders (28.6 per cent) who were born and raised in the USA as descendants of immigrants from the USAPI. Given the small sample size, it was not possible to specify unique characteristics of each Micronesian group. Although recent studies suggest that there is no difference in terms of certain attitudes and cultural practices amongst Pacific Islander youth (Somera et al., 2016), future studies using larger samples may be better able to distinguish these differences.

Conclusions

Data from our study showed a clear relationship between biculturalism, self-esteem, specific health behaviours and perceptions of health amongst Pacific Islander youth living in the USA. Further research is needed to better understand the operational mechanisms contributing to these relationships amongst Pacific Islander subgroups such as those differentiated by nativity and gender. However, our data provide insights into why effective programmes and interventions to improve health amongst minority populations need to be firmly grounded in the culture of their origin. Our study provides strong evidence that addressing the problem of health disparity amongst minority populations in the USA has to start from the reaffirmation of the value of diversity and multiculturalism, which encourages embracing an individual's historic cultural identity while simultaneously adopting US cultural norms.

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