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*Brigham Young University*

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The Effect of Ethnic Identity on Motivation to be  
Physically Active in Schools in Hawai'i

Nathan A. K. Kahaiali'i

A thesis submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of  
Master of Arts

Keven Prusak, Chair  
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Department of Teacher Education  
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## ABSTRACT

### The Effect of Ethnic Identity on Motivation to be Physically Active in Schools in Hawai'i

Nathan A. K. Kahaiali'i  
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Master of Arts

This cross-sectional study examines if there is a relationship between student ethnic identity and their motivation towards physical activity (PA), with a particular interest with students who self-identify as Hawaiian. Results indicate that there is a small but positive correlation between motivational indices and measures of ethnic identity.

This study surveyed 301 sixth, seventh, and eighth grade students from one of the Hawaiian Islands. The survey consisted of the Situational Intrinsic Motivation Scale (SIMS) instrument (Guay, Vallerand, & Blanchard, 2000) to measure motivation of PA and the Multigroup Ethnic Identity Measure–Revised (MEIM–R) instrument (Phinney & Ong, 2007) to measure ethnic identity. Participants were given a pedometer to measure PA (steps) and a list of sports and activities they participate in outside of school. MANOVA was used to examine significant differences among group variables (gender and ethnic identity) for selected variables (motivational indices, ethnic exploration, ethnic commitment, and steps).

Data analysis reveals significant gender effects for all response variables, notably males being significantly more intrinsically motivated ( $M_{IM} = 5.94$ ), externally regulated ( $M_{ER} = 4.55$ ), and amotivated ( $M_{AM} = 2.77$ ) towards PA than females. Yet, females explore their ethnic identity ( $M_{Explore} = 3.78$ ) and are committed to their ethnic identity ( $M_{Commit} = 4.00$ ) significantly more than males. Significant ethnic identity effects were found for motivational measures amotivation (AM), self-determination index (SDI) score, notably Hawaiian students demonstrating significantly lower AM ( $M_{AM} = 2.18$ ) than Hispanic students, and Asian students. Also, Hawaiian students demonstrate significantly higher SDI scores ( $M_{SDI} = 9.02$ ) than Asian students. Hawaiian students in general explore and commit to their ethnic identity more than not, and are positively motivated towards PA.

Hawaiian students who explore their culture and are committed towards their ethnic identity are more likely to be positively motivated towards PA. Although this indicates a relationship between student ethnic identity and motivation towards PA, future research needs to be made on the relationship of ethnic identity and motivation towards PA with a larger population of Hawaiian students.

Keywords: Hawaiian adolescents, ethnic identity, motivation, physical activity

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I would like to thank the schools, teachers, and students who participated in my study, which without their participation this study would not have been possible. I would also like to thank my family and friends who always gave me the motivation to keep pushing forward whenever I had doubts about myself.

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## DESCRIPTION OF THESIS STRUCTURE

This thesis, *The Effect of Ethnic Identity on Motivation to be Physically Active in Schools in Hawai'i*, is written in a hybrid format. The hybrid format brings together traditional thesis requirements with journal publication formats. The preliminary pages of the thesis reflect requirements for submission to the university. The thesis report is presented as a journal article and conforms to length and style requirements for submitting research reports to physical education journals. The appendix includes the following: (a) review of literature, (b) parental permission form, (c) child assent form, (d) lesson plan for the study, and (e) student survey.

## Introduction

Intrepid, fearless warriors paddled canoes across vast stretches of the Pacific Ocean to inhabit the many islands of Polynesia. Eventually, inter-island migration led to the Hawaiian Archipelago, where the largely agrarian society worked in harmony with land and sea; toiling in paradise for their existence. The cultivation of taro root anchored their culture to the land and the canoe gave access to the bounties of the sea. It was a difficult, and at times dangerous, life. But, in absence of many of today's chronic diseases, it was also largely a healthy existence.

Despite their idyllic lives, the islanders also faced recurring tribal conflicts and wars. Games such as *lono-makaihe* (javelin throwing), *pahukala* (sham battle), and *ma'a* (stone-throwing), used as preparation to become warriors (Kamakau, 1961), required intricate yet powerful manual dexterity to manipulate clubs, spears and the like. The sheer physicality combined with precise and graceful movements is astounding to behold today but served to preserve life and culture in times of tribal conflict. The women practiced and performed the hula as visual poetry (Kaepler, 1972). One only has to watch the dances of these people to see how light on their feet they are. What is now seen as only an artful display of dance with music was once the visual complement of the oral histories passed from one generation to the next.

An explorer named Captain James Cook arrived in Hawai'i in 1778—a day that would forever change the native Hawaiians, their culture, and their behaviors; not always for the better. Under the rule of King Kamehameha and with aid of Western weaponry (Kamakau, 1961), the Hawaiian Islands were united in 1810, creating a common cultural identity. Individualistic, tribal-centered cultural notions gave way to a collectivist unity among the Hawaiian Islands. For centuries, Hawaiians lived in relative isolation and anonymity, cultures, and identity intact. Eventually, however, life in the islands would drastically change with the continued arrival of

foreigners. Western businessmen during the late 19<sup>th</sup> century found the Hawaiian Islands especially alluring as an establishment for sugar mills and plantations, requiring labor that was sourced from places such as Japan, China, and immigrants who were Portuguese, generating an influx of different cultural practices. By the year 1900, immigrant populations had grown to be over 60,000 Japanese, 25,000 Chinese, and 18,000 Portuguese (Kaepler, 1972). This would eventually lead to intermarriage between foreigners and Native Hawaiians (McDermott, Tseng, & Maretzki, 1980) adding to one of the many factors affecting Hawaiians not just physically, but also socially and culturally. Other events impacting the Hawaiians would also be the introduction of Christianity and the change in the law of the land (Kamakau, 1961). This steady chain of events would eventually acculturate Hawaiians evermore away from traditional values of their pure historic cultural identity.

### **Acculturation and the Erosion of Ethnic Identity**

Acculturation has been defined as a cultural change that continues over a period of time between two different cultural groups (Redfield, Linton, & Herskovits, 1936). Often within this process, the original culture is altered through greater acculturation as the dominant culture is imposed on traditional culture (Park, 1928). Based on the outline made for the study of acculturation by Redfield and colleagues (1936), there first must be a form of contact that happens between two different groups (e.g., the arrival of Captain James Cook to the islands of Hawai'i). Next, as new cultures are introduced, some are received voluntarily, others are overwhelmed due to the dominance of a group (such as Christianity being introduced to Hawaiians by the missionaries working on sugar plantations). Subsequent acculturation occurs as aspects of a dominant culture are either accepted or resisted by the receiving group. Thus, individuals or a group develop and employ acculturation strategies to cope with cultural changes

they experience (Berry, 1997). Deciding on a strategy to manage cultural changes depends on the importance of maintaining traditional cultural identity and strengthening the connection with aspects of the dominant culture (Berry, 1992). Four acculturation strategies include (a) assimilation, (b) integration, (c) separation, and (d) marginalization. Assimilation is when maintaining traditional cultural identity is not important but strengthening connection with the dominant culture is (e.g., wearing clothes and speaking the language of the dominant culture). Integration is when both traditional cultural identity and strengthening relations are important (e.g., speaking the language of the dominant culture but also maintaining the native language). Separation (or traditional) is when importance is only given to maintaining cultural identity (only affiliates with others of the same ethnic group). Lastly, marginalization is when both cultural identity and relations with the dominant culture are not important (does nothing to instill either culture into one's identity).

Western influences during the 19<sup>th</sup> century brought many changes to the Hawaiian lifestyle by introducing an array of diverse cultures. The influx of foreigners to Hawai'i brought (a) biological changes, such as a shift in diet and exposure to unfamiliar diseases, (b) economic changes, such as new forms of work and employment, and (c) cultural changes such as clothes, language, and religion (Berry, 1997). Many of these changes that occurred in Hawai'i had varying effects on Hawaiians, with some assimilating with the changes while others chose to remain traditionally (or separation) acculturated. Sometimes the acculturation mode of separation can cause "acculturative stress" due to serious conflicts one may have with the dominant culture and unable to cope with change in the cultural context (Berry, 1997). No matter the mode of acculturation, lifestyle, wellbeing, and identity have been impacted greatly by foreign influence.

Ethnicity is either determined at birth or by others depending on the background of the individual; but how an individual forms their own ethnic identity is developed over time as they build a sense of self and attitudes towards what it means to be a member in that group (Phinney & Ong, 2007). Several components significantly impact one's ethnic identity to a group. The first is self-identification which is how one labels themselves based on their parental ethnicity ("I am Hawaiian because my dad is Hawaiian"). Second, ethnic behaviors and practices which are participating in social activities and cultural traditions of the ethnic group (e.g., hula, singing in Hawaiian). Next is affirmation and belonging, which is feeling they belong to an ethnic group ("I know that I am Hawaiian and I feel that I belong with other Hawaiians). Lastly, ethnic identity achievement is having a "firm commitment to one's ethnicity based on an exploration that has led to a clear understanding of ethnicity" (Phinney & Ong, 2007, p. 275). While Hawaiians could strengthen the commitment to their identity by exploring traditional and cultural practices, exploration in foreign practices introduced an alternative lifestyle that not only impacted the Hawaiian identity but also had an effect on the physical health and wellbeing of Hawaiians.

### **Cultural Association with Chronic Diseases**

Disease such as obesity and diabetes are common among Hawaiian and Pacific Islander populations. According to the State of Hawai'i Behavior Risk Factor Surveillance Survey, 49.3% of Native Hawaiians in Hawai'i are considered obese and have higher rates of chronic diseases associated with obesity in comparison with European Americans (Mau, Sinclair, Saito, Baumhofer, & Kaholokula, 2009). As of 2018 obesity rates of Hawaiians and Pacific Islanders in Hawai'i is at 44.4 % compared to 32.5% of Hawaiians living in the mainland US (America's Health Rankings, 2019). Between 2013 and 2018 prevalence of diabetes among Hawaiians and

Pacific islanders is 15.5% in Hawai'i, compared to 10.3% of Hawaiians in mainland US. A study on modes of acculturation and diabetes found that Hawaiians in a traditional (or separation) mode were 27% more likely to have diabetes compared to Hawaiians with integrated modes (15.4%), assimilated modes (12.5%), and marginalized modes (10.5%) (Kaholokula, Nacapoy, Grandinetti, & Chang, 2008). In Hawai'i during 2018, physical inactivity rates of Hawaiians were at 24.7%, much smaller compared to Hawaiians living in mainland US at 32.1% (America's Health Rankings, 2019). While the inclusion of Western athletics is not detrimental to Hawaiian lifestyle, other Western lifestyle behaviors can be devastating such as alcohol consumption (28.5% among Hawaiian adults) and smoking (20.8% among Hawaiian adults) only inhibiting the health of Hawaiians with other diseases (America's Health Rankings, 2019).

Hawaiians suffering from chronic disease are prevalent in Hawai'i due to foreign influence on culture and lifestyle. A Hawaiian can choose to assimilate or separate from behaviors and practices of Western culture, but the strategy to manage one's culture is independent of how others choose to do so. An individual is in control of how they acculturate and is responsible for the consequences associated with it.

### **Self-Determined Motivation**

According to Self-Determination Theory (SDT) motivation is either self-determined, volitional, and supported by an individual's sense of self; or controlled, dictated by external forces (Ryan & Deci, 2016). Within SDT there are three psychological needs that precede one's motivation: autonomy, competence, and relatedness. Individuals who experience autonomy (a sense of "I can choose"), competence (a sense of "I can do"), and relatedness (a sense of "I belong") are more likely to be motivated in an activity or behavior. When these basic psychological needs are satisfied within the individual, self-determined motivation, mental and

emotional growth, and well-being are expected to improve (Standage, Duda, & Ntoumanis, 2005).

Self-determined behavior can be described by three motivational states: amotivation, lacking motivation; intrinsic motivation, engaging in the activity for reasons within self or in the activity; and extrinsic motivation, engaging for reasons outside of self (Ryan & Deci, 2016). These behaviors fit on a continuum, actuated by either external or internally regulated processes. The low end of the continuum is amotivation which is the absence of motivation in the activity (“Participating in basketball is not important to me”). Next, extrinsically motivated individuals engage in activity to gain or avoid a consequence (“I am participating so I can get a good grade”). Last, intrinsic motivation occurs when individuals engage in activities that are of interest to themselves (“I surf at the beach because it is fun”). Within external motivation are four types of external regulation (Ryan & Deci, 2016): (a) external regulation, an action or behavior is performed in order to gain a reward (participating in PE to get a good grade) or avoid punishment; (b) introjected regulation, internal rewards are sought for pride, gratifying ego (gaining praise from teacher or peers) or because an individual feels guilty; (c) identified regulation, identifying with the value of a behavior and seeing the importance of it (I lift weights to get stronger); and (d) integrated regulation, identifying with the value of a behavior and bringing it into harmony with core interests and values (“Eating vegetables is important for my health and I like them”).

It is important to look at contexts such as PE and the effect it has on one’s motivation towards their own personal physical activity. By incorporating self-determination theory, Standage, Duda, and Ntoumanis (2003) found that adolescents with higher levels of self-determination in PE class were more likely to be physically active outside of class. Several key

findings show that an autonomy-supportive environment positively impacts adolescents' autonomy, competence, and relatedness. When support is given to personally-based competence, and the adolescent's belief that success is obtained with hard work and a desire to learn, adolescents' autonomy of their achievement increases in PE (Treasure & Robert, 2001). Social contexts that are in support of these three psychological needs increase motivated action (Deci, Vallerand, Pelletier, & Ryan, 1991). Studies show the need for autonomy, competence, and relatedness across ethnically diverse cultures is important (Ryan & Deci, 2016). Chirkov, Ryan, and Kaplan (2003) found that internalization of cultural practices predicted greater psychological well-being with observed college students in South Korea, Russia, Turkey, and the United States. Seeking to meet the three psychological needs is important within an educational setting, as well as self-determined motivation in PE and across diverse ethnic and cultural groups.

### **Pedometry**

One of the most well-known forms of physical activity measurement is pedometers which are used to track and monitor an individual's steps during physical activity. They are also cost-effective and convenient in recording step counts. Some pedometers vary in function, either being spring-levered (spring-suspended lever arm that moves vertically during movement) or piezoelectric (beam that presses on a crystal during acceleration). A study by Smith, Egeric, Brambe, and Seich (2017) found reliability and validity of piezoelectric pedometers placed on 4 different location points (hip, pocket, middle of the chest, middle of the back) as individuals walked the length of a mile around a track. A study using spring-levered pedometers found that the pedometers had accurate measures at strides of 100 to 120 steps per minute but not at stride frequencies below 100 (Nielson, Vehrs, Fellingham, Hager, & Prusak, 2011). Graser, Pangrazi,



and Vincent (2009) designed a study to see if moderate-to-vigorous physical activity (MVPA) could be discovered within a range of steps per minute (SPM). Boys and girls between the ages of 10 and 12 wore pedometers and walked on a treadmill for a minute between speeds of 3 and 4 miles per hour as these speeds represented the levels of MVPA. Graser and colleagues (2009) determined that 120 to 140 SPM as reasonable MVPA for youth between 10 and 12 years old.

### **Purpose Statement**

The purpose of this study is to examine the relationship between ethnic identity, motivation profiles, and physical activity rates within Hawaiian school children, specifically with Hawaiian adolescents (between 6<sup>th</sup> and 8<sup>th</sup> grade) in Hawai'i in a Westernized education setting. The hypothesis of the research is that adolescents who have a stronger ethnic identity of being Hawaiian are less likely to be motivated participating in physical activity and less physically active.

### **Methods**

#### **Participants and Setting**

Participants ( $n = 301$ , 165 males, 136 females) comprised of sixth grade ( $n = 76$ ), seventh grade ( $n = 139$ ), and eighth grade ( $n = 86$ ) students from a public school ( $n = 252$ ), and a private school ( $n = 49$ ) both located in the Hawaiian Islands. Both schools were selected for the higher population of Pacific Islanders and a greater likelihood of participants identifying specifically as Hawaiian.

Of the 301 participants, 24.3% identified as Hawaiian ( $n = 73$ ), 6.3% identified as Pacific Islander ( $n = 19$ ), 13.6 % identified as White ( $n = 41$ ), 13.6% identified as Hispanic ( $n = 41$ ), 40.5 % identified as Asian ( $n = 122$ ), 1.3% identified as African American ( $n = 4$ ), and .3% identified as none of the above mentioned ( $n = 1$ ). All procedures received university, district

and school approval before the study began. Parental permission and child assent forms were distributed and signed prior to data collection.

This descriptive/cross-sectional study used convenience sampling as described to examine the effects of (a) personal ethnic identity and (b) gender of Hawaiian school adolescents on motivation, physical activity (pedometer steps) during PE class and participation in a selection of sporting activities.

### **Procedures**

Prior to data collection, a researcher contacted teachers and principals through email and phone calls to gain permission to conduct research with their students. The researcher arrived at the schools one week prior to data collection to explain the procedures to teachers and students including the use of pedometers and completing the survey. All teachers ( $n = 4$ ) taught the same lesson plan adjusting their 60-minute classes allowing for similar dressing time, gave the same instructions for using pedometers during the lesson, and had the same amount of time for gameplay, followed by students taking the 10-minute survey. Private school students held their lesson in a gymnasium while the public-school lesson took place on a large open grass field with optimal weather conditions allowing students to fully engage in the lesson.

At the end of the lesson, students received the surveys, recorded pedometer steps, and answered the questions before dressing. The 10-minute survey consisted of 33 items including gender, 6 ethnic identity choices, 16 motivational items, 6 ethnic identity items, and a list of possible sports and extracurricular activities including traditional Hawaiian activities. Members of the research team and the teacher circulated throughout the class to help clarify or answer questions from students.

## Instruments

**Multigroup Ethnic Identity Measure—Revised (MEIM-R).** The MEIM-R (Phinney & Ong, 2007) consists of six items, three of which pertain to the *exploration* of ethnic identity (“I have often done things that will help me understand my ethnic background better”) and three pertaining to a *commitment* to ethnic identity (“I have a strong sense of belonging to my own ethnic group”). Participants respond on a 5-point Likert scale with 1 point = “Strongly disagree”, 2 point = “Disagree,” 4 points = “Agree,” 5 points = “Strongly agree” and 3 points = neutral response. An ethnic identity score will be calculated by finding the mean of respective subscales items. The MEIM-R has shown reliability and validity among diverse populations such as African American, Asian American, and Latino ethnicities in college but has yet to be used with Hawaiian and Pacific Islander populations, or middle school students (Phinney & Ong, 2007).

**Situational Intrinsic Motivation Scale (SIMS).** The SIMS (Guay, Vallerand, & Blanchard, 2000) is a 16 item, four subscale instrument that measures the motivational constructs of intrinsic motivation (IM), identified regulation (IR), external regulation (ER), and amotivation (AM) and has been found valid and reliable for use in this population (Standage, Duda, Treasure, & Prusak, 2003). Examples of items used include, “Because I think that this class is interesting” and “I do PE but I am not sure if it is worth it.” Adolescents score items using a scale with 1 point = “Corresponds not at all,” 4 points = “Corresponds moderately,” and 7 points = “Corresponds exactly.” Four subscale scores will likewise be calculated by forming means of respective subscale items. Subscale means will be used for all subsequent motivation and ethnic identity analyses.

**Pedometers.** The Yamax Digi-Walker LS 2525 pedometer is a uniaxial, lever-arm pedometer that records step count, distance, and time of being active. For this study, only one pedometer was used and placed on the hip on each student's left side to track their PA and to record on their survey (Vincent & Sidman, 2003). When prompted, students placed their pedometers on their hip and reset it to zero prior to beginning class activities. Pedometer counts were recorded at the end of each class and pedometers were collected by the researchers.

### **Data Collection**

Data was collected one day at the private school while data was collected over a two-day period at the public school to optimize pedometer usage due to a large number of participants. Data collection occurred only once for each participating class within one week. Completed surveys were collected at the end of each class and placed in a large sealable folder, kept under the care of the primary researcher. Survey information contained demographic information such as grade and gender, MEIM-R and SIMS item responses, and extracurricular activities. All identifiers were removed once data input and rechecking were complete.

### **Data Analysis**

Demographic variables include grade (6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup>), gender (male or female), school (private or public), and student ethnicity. All response scores were input into SPSS.25.0 and inspected for input error. Data from MEIM-R was reduced from 6 items to two subscales (exploration and commitment) by finding the means of corresponding items. Similarly, data from SIMS was reduced from 16 items to four subscales (AM, ER, IR, IM). SIMS. A Self-Determination Index score (Pelletier et al., 1995) by weighting subscales as follows:  $2 * IM + IDR - ER - 2 * AM$ . The Self-Determination Index (SDI) score is a useful measure of one's overall degree of self-determined behavior and its interpretation is straightforward—the higher

the score, the more one is influenced by intrinsic motivations than extrinsic or lack of motivation.

All response variables and subscale means were inspected for normality (skewness and kurtosis), and standard deviations were calculated. Correlation analysis was used to examine the strength and direction of selected variables. MANOVA was used to examine significant differences among group variables (gender and ethnic identity) for selected variables (motivational indices, ethnic exploration, ethnic commitment, and steps). Tests of assumptions for MANOVA were conducted. Follow-up comparisons were made as necessary via one-way ANOVA and Tukey's HSD for gender and ethnic identity.

### Field Notes

Anecdotal evidence was collected through observations and written records during the lessons.

### Results

Descriptive statistics for all dependent variables were examined by ethnic group and by gender and are found in Tables 1 and 2. Taken as a whole ( $n = 301$ ), mean scores revealed that the participants were generally (a) intrinsically motivated ( $M_{IM} = 5.73$ ), (b) have good perceptions of identified regulation ( $M_{IDR} = 5.92$ ), (c) driven by moderate levels of external regulation ( $M_{ER} = 4.39$ ), (d) had moderate levels of amotivation ( $M_{AM} = 5.73$ ), and (e) had a positive SDI score ( $M_{SDI} = 7.76$ ). Mean scores also reveal that participants explore their ethnic identity ( $M_{Explore} = 3.62$ ) more than not, have a moderate commitment towards embracing their identity ( $M_{Commit} = 3.86$ ). Further, students step counts during PE averaged  $M_{Steps} = 1984$ . Students also indicated that, on average, they participate in between two to three sports and

physical activities ( $M_{\text{Sports}} = 2.51$ ) outside of PE. Lastly, results indicate that participants engage in one or fewer Hawaiian sports and activities ( $M_{\text{HISports}} = .63$ ).

Bi-variate correlations are found in Table 3 and reveal (a) small to moderate correlations among measured variables, (b) the proposed simplex pattern among motivational subscales is supported with the strongest correlations found in adjacent variables (see Table 3). Notably, the relationships between motivational indices and measures of ethnic identity exhibit small but positive, significant correlations (see Table 3).

MANOVA tests revealed significant gender (Wilks  $\lambda = .934, p = .018$ ) and ethnic identity effects (Wilks  $\lambda = .046, p < .001$ ). Post hoc comparisons revealed gender effects (see Table 1) for all response variables with the exception of IDR. Significant ethnic identity effects were found for AM and SDI, ethnic exploration, and ethnic commitment but not steps (see Table 2). Follow up comparisons are more fully described in the following section. With participants who self-identified as African American given only four students lacks statistical power, so conclusions on findings from this ethnic group cannot be drawn.

### **Motivational Indices**

**Intrinsic motivation.** Significant gender effects were noted in IM ( $F(1,299) = 12.47, p < .001$ ) with male students being significantly more intrinsically motivated towards PA ( $M_{\text{IM}} = 5.94$ ) than female students ( $M_{\text{IM}} = 5.47, \text{Eta}^2 = .04$ ). No significant ethnic identity effect was noted for IM.

**Identified regulation.** No significant gender or ethnic identity effects were noted for identified regulation (IDR).

**External regulation.** Significant gender effects were noted in ER ( $F(1,299) = 5.89, p = .02$ ) with males being significantly more externally regulated towards PA ( $M_{ER} = 4.55$ ) than females ( $M_{ER} = 4.20; \text{Eta}^2 = .02$ ). No significant ethnic identity effect was noted for ER.

**Amotivation.** Significant gender effects were noted in AM ( $F(1,299) = 4.54, p = .03$ ) with males being significantly more amotivated towards PA ( $M_{AM} = 2.77$ ) than females ( $M_{AM} = 2.42, \text{Eta}^2 = .015$ ). A significant difference was noted where Hawaiian students demonstrated significantly lower AM ( $M_{AM} = 2.18$ ) than Hispanic students ( $M_{AM} = 2.96; \text{Tukey}, p = .046$ ) and Asian students ( $M_{AM} = 2.97; \text{Tukey}, p = .002$ ). Significant differences were noted between White students ( $M_{AM} = 1.87$ ) and Pacific Islanders ( $M_{AM} = 3.07; \text{Tukey}, p = .023$ ), Hispanic ( $M_{AM} = 2.96; \text{Tukey}, p = .005$ ), and Asian students ( $M_{AM} = 2.97; \text{Tukey}, p < .001$ ).

**Self-determination index.** No significant gender effects were noted on SDI. There were, however, significant ethnic identity differences noted with Hawaiian students demonstrating significantly higher SDI scores ( $M_{SDI} = 9.02$ ) than Asian students ( $M_{SDI} = 6.59; \text{Tukey}, p = .012$ ). Also, White students ( $M_{SDI} = 9.87$ ) demonstrated higher SDI scores than Asian students ( $M_{SDI} = 6.59; \text{Tukey}, p = .004$ ).

### Ethnic Identity Measures

**Exploration.** Significant gender effects were noted in Exploration ( $F(1,299) = 7.64, p = .01$ ) that female students explore their ethnic identity more ( $M_{Explore} = 3.78$ ) than male students ( $M_{Explore} = 3.50, \text{Eta}^2 = .025$ ). White students explore ( $M_{Explore} = 2.98$ ) their ethnic identity significantly less than students who identified as Hawaiian ( $M_{Explore} = 3.72; \text{Tukey}, p < .001$ ), Pacific Islander ( $M_{Explore} = 3.72; \text{Tukey}, p = .03$ ), Hispanic ( $M_{Explore} = 3.63; \text{Tukey}, p = .01$ ), and Asian ( $M_{Explore} = 3.75; \text{Tukey}, p < .001$ ). No significant differences were noted between other pairings of ethnic identity groups for ethnic exploration.

**Commitment.** Significant gender effects were noted in Commitment ( $F(1,299) = 6.53$ ,  $p = .01$ ) that female students were more committed towards their ethnic identity ( $M_{\text{Commit}} = 4.00$ ) than male students ( $M_{\text{Commit}} = 3.74$ ,  $\text{Eta}^2 = .021$ ). White students ( $M_{\text{Commit}} = 3.36$ ) displayed a significantly lesser commitment to their identity than Hawaiian students ( $M_{\text{Commit}} = 3.94$ ; Tukey,  $p = .009$ ), Pacific Islander students ( $M_{\text{Commit}} = 4.07$ ; Tukey,  $p = .040$ ), and Asian students ( $M_{\text{Commit}} = 3.94$ ; Tukey,  $p = .003$ ). No other significant differences were noted for other pairings of ethnic groups.

### Sports and Physical Activities

**Physical activity in PE (steps).** Step counts by gender are found in Table 1 and by ethnic identity in Table 2. Significant gender effects were noted in steps ( $F(1,299) = 7.05$ ,  $p = .01$ ) with male students having more steps ( $M_{\text{Steps}} = 2072$ ) than female students ( $M_{\text{Steps}} = 1877$ ,  $\text{Eta}^2 = .023$ ) during the lesson. No significant step differences were noted between ethnic groups.

**Sports in general.** Significant gender effects were noted in Sports ( $F(1,299) = 13.47$ ,  $p < .001$ ) in that male students participated in more sports and physical activities ( $M_{\text{Sports}} = 2.88$ ) than female students ( $M_{\text{Sports}} = 2.07$ ,  $\text{Eta}^2 = .043$ ).

**Hawaiian sports and activities.** No significant differences were noted for Hawaiian sports and activity between genders nor among ethnic groups. Participants as a whole participated in one or less Hawaiian sport or activity ( $M_{\text{HISports}} = .64$ ).

### Field Notes

Both school sites had large open grassy areas that provided for physical activities during recess and lunch. Students were playing activities such as ultimate frisbee, volleyball, football, and basketball. A popular activity among boys at the public school was playing with a toy called



a kendama, a traditional Japanese wooden skill toy, that they would play with on their way to classes.

Both male and female students were equally engaged in a co-ed capture the flag lesson and it was interesting to see both boys and girls at both schools taking the lesson seriously but with notable differences. Female students at the private school took time to strategize and were actively engaged in working as a group to defend as well as score, where male students relied more on their own individual speed and agility to score. Some male and female students who were athletically gifted commented on wanting to use sports and their athletic ability as a means to go to college or pursue professional sports. Interestingly the male and female athletes would more often than not get frustrated with their teammates when the other team scored. In several classes at both school sites male students who captured the flag successfully focused the win solely as their own, but when the other team captured the flag successfully the blame was to be placed on others for the loss.

In conversations with the private school PE teacher, it was mentioned that students participate in Makahiki games and compete with other schools. These games are traditional Hawaiian games and sports, some of which were once used as training to become warriors. Students at both the public school and at the private school can choose to participate in this competition and practice these games as part of a curriculum in collaboration with Hawaiian Studies teachers. Not all schools participate and not all schools in Hawai'i hold Makahiki games or have it as part of their curriculum.

Although residing in urban areas, both schools were, in a way, hidden up in the mountains and away from the busier parts crowded from tourists. In these schools are aspects of the Hawaiian culture that are made known to both teachers and students, from having morning

chants to begin the day, classroom agreements represented by Hawaiian words and phrases, and giving simple instructions in Hawaiian to get the attention of students. Where much of what is known about Hawai'i and its culture is commercialized for tourism, some of the culture is being used in helping to reinforce the education of these students.

### **Discussion**

The purpose of the study was to examine if there is a relationship between student ethnic identity and their motivation towards PA and levels of PA, with a particular interest towards students who self-identify as Hawaiian.

#### **Motivational Indices**

Interestingly males were more intrinsically motivated as well as more externally regulated towards PA than females. This could be an indicator that males enjoy participating in PA in general, but also participate of their own volition during PE because participation in PA is being graded in the class, making the connection that their participation in PA will reward them with a grade (Ryan & Deci, 2016). Yet, in contrast, males were also more amotivated towards PA than females. Studies have shown that students who were more externally regulated experienced anxiety and difficulty handling failure (Deci et al., 1991). It could be the same reason males were amotivated because difficulty with aspects of PA in their PE class and knowing they will not meet expectations of the task and gain no reward even if they did participate. During the lesson, some male students made comments of not taking the activity seriously since it would not affect their grade, or make comments of seeing no benefit to themselves if they participated.

However, it could also be that males do not dislike PA within their PE classes, but perhaps having structured lessons on something that they are already intrinsically interested in

can be perceived as limiting to males' athletic capabilities. A study on student motivation towards PA in Singapore (Lim & Wang, 2009) revealed findings where students being amotivated towards PA in PE lead to having increased intentions to be physically active outside of school. Males in the current study significantly participate in more sports than females, which could explain why male participants have greater AM yet participate in more sports and demonstrate more passion for sports than females. Potentially, males experience more AM with PA in PE class because of having a strong athletic identity and passion for sports. Field notes revealed the male athletes being frustrated with other teammates for losing and relying on their own athleticism to win. Being in a PE class where not all students have a similar passion for sports could cause males to experience more AM within school and prefer to participate in sports outside of school with other sport proficient individuals.

Based on the results, the population of participants as a whole was generally intrinsically motivated towards PA with moderate levels of amotivation. SDI scores were positive, revealing that, on balance, students experience greater intrinsic motivation and identified regulation than being amotivated and externally regulated towards PA. In comparison to Asian students, Hawaiian students and White students have significantly greater SDI, indicating that these ethnic groups demonstrate more intrinsic motivation and identified regulation towards PA.

Furthermore, Hawaiian students were significantly less amotivated towards PA than Hispanic and Asian students. White students also were also significantly less amotivated towards PA than Pacific Islander, Hispanic, and Asian students. It is interesting that two ethnic groups (Hawaiian and White) have similar motivational measures with high SDI scores (Hawaiian  $SDI = 9.02$ , White  $SDI = 9.87$ ) and low AM (Hawaiian  $M_{AM} = 2.18$ , White  $M_{AM} = 1.87$ ). Reasons for this could be that Hawaiian adolescents have assimilated to aspects of the dominant culture such as

taking a liking to Westernized sports and activities and are more acclimated with the current PE curriculum that includes those sports as its basis. Results from the current study show students having a greater interest with sports in general ( $M_{Sports} = 2.52$ ) than they do with Hawaiian sports ( $M_{HISports} = .64$ ). Field notes revealed that though participation is not required, many students at both school sites participate in Makahiki games (Hawaiian cultural games offered through Hawaiian Studies class). Although Makahiki games deal with sport and activity that is intended for competition and training, greater awareness and participation in these traditional games could lead to greater participation in Hawaiian sports and activities such as diving, canoe paddling, and surfing.

Given that the study took place in Hawai'i, teachers need to have an understanding of the *Ohana* culture (Handy & Pukui, 1950) that is prevalent among not just Hawaiian individuals but throughout the Hawaiian Islands. Despite the traditional culture of Hawai'i, the demographic make-up of the islands is largely mixed race. Learning how to accommodate for these differences in school can be taxing on teachers to differentiate instruction for every student within such a large variety, which could explain why certain ethnic groups demonstrate more intrinsic motivation towards a class such as PE than another ethnic group.

### **Ethnic Identity Measures**

Females were significantly more likely to explore their ethnic identity and feel more committed to their ethnic identity than males. While males may demonstrate higher levels of motivational indices, females have a significantly stronger connection to their ethnic identity through actively exploring their culture and having an even stronger sense of belonging to their ethnic group. This is interesting to consider how males and females were approaching the lesson in their class in terms of Hawaiian ethnicity and being a collectivist culture (Hui & Triandis,

1986). Individuals belonging to a collectivist culture have more concern for others within their group and taking care of the group instead of taking care of themselves. In most of the classes, it was the females that were developing strategy, keeping the team together by defending or moving offensively as a team, and rescuing group members that have been tagged out. Male students generally acted alone, relying more on their speed and agility instead of strategy. Also interestingly, when males scored for their team, it was because of their own individual effort that they won, but when their team lost it was because of the team members that they lost.

White students explored their ethnic identity significantly less than Hawaiian, Pacific Islander, Hispanic and Asian students. White students also were significantly less committed to their ethnic identity than Hawaiian, Pacific Islander, and Asian students. This is interesting because both Hawaiian and White students had about the same motivational measures and SDI scores, but are at opposite ends in how the students from these groups connect with their ethnic identity. Components of ethnic identity are interaction within ethnic behaviors and traditions, affirmation and belonging to one's own ethnicity (Phinney, 1992), which is actively being involved within one's ethnic culture and also having a sense of belonging with others in the same ethnic group. The reason for White students not exploring or being committed towards their ethnic identity could be because they are in a culture that is not marginalized and don't need to explore or seek affirmation from other people in the same ethnicity, or that White students lack cultural markers to which they associate being White.

### **Physical Activity, Sports, Hawaiian Sports and Activities**

As mentioned previously, females were often strategizing and working as a team more than males who were acting alone for the most part. Although the study shows results of males having significantly more steps than females, it does not show the females working collectively

together and creating defensive strategies. Groups that were able to come up with a group defensive strategy and group offensive strategy were more effective in their scoring.

Although there are no significant differences noted between gender or ethnic groups with Hawaiian sport and activities, the surprising result is that participants as a whole were involved in less than one Hawaiian sport and activity. This could be in large part due to participation in at least two sports and activities, perhaps assimilating to the dominant culture in the aspect of sports and activity, which could be more appealing to adolescents than canoe paddling or hula. In the list of sports and activities, under the section marked 'other,' some students wrote down playing video games as their other activity. The list of sports was to help students identify the physical activities that they participate in freely of their own choice, but it was still surprising how few Hawaiian sports and activities were participated in. With items such as video games, smart mobile devices, and toys like kendamas vying for adolescents' attention and time, it is more likely that students will assimilate to a dominant culture instead of the culture tied to their ethnic identity. A study looking at the use of screen time and changes in moderate to vigorous physical activity in adolescence over three years (Lizandra, Devís-Devís, Valencia-Peris, Tomás, & Peiró-Velert, 2019) had results indicating that screen time increased over a space of three years with males and females and a decrease in time spent on moderate to vigorous physical activity, which could also be a pattern seen among adolescents in Hawai'i.

### **Practical Implications**

Participants showed involvement in at least two sports but less involvement in Hawaiian sports and activities. Although Hawaiian students showed moderate results in being intrinsically motivated towards PA, it is concerning that they participate in less than one Hawaiian sport or activity ( $M_{HISports} = .90$ ); perhaps an indication of ethnic erosion. Although both schools

participate in Makahiki games and compete with other participating schools, not all schools within the state of Hawai'i participate or have a PE curriculum that is culturally grounded. Hawaiian Studies teachers could collaborate more with PE teachers in creating a PE curriculum that infuses culturally grounded activities into the PE program. PE teachers are in a unique position when it comes to creating lessons, in helping students feel successful in the skills they learn. Creating a lesson where students can generate a feeling of success while also understanding the practical application of the skill for themselves will incline them to be more positively motivated towards PA.

### **Limitations**

While this study gave some general ideas of ethnic identity and its relationship with motivation towards physical activity, ethnic identity is of a highly personable nature. Possible future research could include interviewing students to create a definition of what it means to be Hawaiian, and how important that definition is to them and its significance towards not just their PA, but also feeling supported in school and by teachers. The current study had an adequate sample size for its purposes, but with participants only coming from two schools on one island. Having a larger sample size and collecting data on school sites from neighboring Hawaiian Islands would allow for more in-depth data collection on ethnic identity, specifically Hawaiian populations. Future research could also explore Hawaiian Studies curriculum and classes that teach students forms of physical activity that are culturally grounded and significant such as traditional forms of hula and other Polynesian dance which is taught at most schools in Hawai'i. A longitudinal study of mixed methods might be a good approach to understand the effects of Hawaiian Studies on students trying to facilitate the exploration and commitment to their cultural identity.

In the current study more than half of the participants self-identified as Asian. Opening the study to other parts of Hawai'i could, perhaps, increase the number of participants who identify as Hawaiian. Even then, Hawai'i as a whole is not homogenous, and different parts of Hawai'i could lead to Hawaiians experiencing different forms and degrees of acculturation (Kaholokula et al., 2008). However, participants who self-identified as one ethnicity are actually mixed race. Many of the participants were Part-Hawaiian but identified primarily with their other ethnicity as dominant. Since adolescents have yet formed an achieved ethnic identity because of lacking an understanding of the meaning of commitment towards their ethnic identity (Phinney & Ong, 2007) and are still developing that identity, future research could consider looking at individuals how they self-identify and motivation towards PA over time to observe possible changes in both ethnic identity and motivation towards PA into high school. Since this study was also a cross-sectional study, having the study conducted over a longer period of time would allow the study to be conducted over multiple days and produce consistent data.

### **Conclusions**

In conclusion, findings show that students as a whole have positive SDI scores meaning they demonstrate more intrinsic motivation and identified regulation towards PA. Students also explore their ethnic identity and are committed to it more than not. Students participate between two and three sports or activities but one or less Hawaiian sports or activities. Hawaiian students, in general, are positively motivated towards PA (IM, IDR, and SDI), and explored their ethnic identity and were committed towards their ethnic identity more often than not.

This study has shown that Hawaiian students who explore their culture and are committed towards their ethnic identity are more likely to be positively motivated towards PA, indicating that there is a relationship between student ethnic identity and their motivation



towards PA. The importance of this study goes beyond trying to have students motivated about PA, but recognizing that the culture of these students plays an important part in their motivation. Classes like Hawaiian Studies are needed to help strengthen Hawaiian student ethnic identity. This reveals a need for curriculum that enriches both healthy lifestyles and Hawaiian identity to strengthen Hawaiian student commitment to their culture instead of assimilating to aspects of the dominant culture that are detrimental to their motivation towards PA and overall health. Much of the purpose of engaging in PA is for the purpose of sport and becoming an athlete rather than the purpose to provide and help others, family, and community.

In a time where monitoring the health and PA of young students is marginalized, it is important to ensure that one's culture is preserved throughout the coming generations, and much of that preservation is dependent on a healthy generation that has a firm grasp of their ethnic identity in all of its many expressions, including PA. The Hawaiian culture goes beyond the glimmering tourism of luaus, flower leis, and aloha, but it is also more than a culture of being physically active warriors. Rather, it is a culture that is solely based on the protection and care of the community and all those in it.

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### Tables

Table 1

*Means, Standard Deviations, and Eta<sup>2</sup> for all Dependent Variable Measures by Gender*

	Male		Female		<i>Eta</i> <sup>2</sup>
	<i>N</i> = 165		<i>N</i> = 136		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
IM	5.94*	1.17	5.47	1.12	.04
Total	<i>M</i> = 5.73, <i>SD</i> = 1.17				
IDR	6.01	1.07	5.82	1.01	.01
Total	<i>M</i> = 5.92, <i>SD</i> = 1.05				
ER	4.55**	1.31	4.20	1.22	.02
Total	<i>M</i> = 4.39, <i>SD</i> = 1.28				
AM	2.77*	1.61	2.42	1.16	.02
Total	<i>M</i> = 2.61, <i>SD</i> = 1.43				
SDI	7.80	5.35	7.72	4.74	.00
Total	<i>M</i> = 7.76, <i>SD</i> = 5.07				
Explore	3.49**	1.04	3.78	.70	.03
Total	<i>M</i> = 3.62, <i>SD</i> = .91				
Commit	3.74*	.98	4.00	.74	.02
Total	<i>M</i> = 3.86, <i>SD</i> = .89				
Steps	2072**	610	1877	667	.02
Total	<i>M</i> = 1984, <i>SD</i> = 642				
Sports in general	2.88***	2.04	2.07	1.70	.04
Total	<i>M</i> = 2.52, <i>SD</i> = 1.94				
Hawaiian sports	.72	1.04	.53	.79	.01
Total	<i>M</i> = .64, <i>SD</i> = .94				

*Note.* \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$

Table 2

*Means, Standard Deviations, and Sample Size for all Dependent Variables by Ethnic Group*

	Hawaiian		Pac. Islander		White		Hispanic		Asian		African American	
	n = 73		n = 19		n = 41		n = 41		n = 122		n = 4	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
IM	5.84	1.23	5.80	.96	5.88	1.19	5.62	1.11	5.61	1.18	6.50	.84
IDR	5.98	.94	5.95	.87	6.18	.90	5.81	1.01	5.79	1.17	6.94	.13
ER	4.28	1.39	4.89	1.39	4.32	1.35	4.21	1.25	4.47	1.18	4.38	1.09
AM	2.18	1.27	3.07	.41	1.87	1.23	2.96	1.60	2.97	1.34	2.00	.79
SDI	9.02	5.03	6.53	5.12	9.87	4.68	6.93	4.49	6.59	5.04	11.56	3.86
Explore	3.72	.87	3.72	1.37	2.98	1.11	3.63	.84	3.75	.71	3.83	.84
Commit	3.94	.94	4.07	1.18	3.36	1.05	3.80	.87	3.94	.70	4.33	.27
Steps	2041	683	2013	596	2182	716	1968	626	1882	590	2049	859
Sports	2.84	2.11	3.16	1.86	3.02	1.98	2.80	1.87	1.98	1.76	2.00	.82
HI Sports	.90	1.11	.79	1.13	.93	1.06	.46	.87	.43	.70	.25	.50



Table 3

*Correlations of Measures of Motivational Indices, Ethnic Identity Measures, and Steps*

						Mean	Mean	
	IM	IDR	ER	AM	SDI	Explore	Commit	Steps
IM		.77**	.09	-.16**	.69**	.17**	.18**	.22**
IDR			.07	-.25**	.68**	.18**	.22**	.20**
ER				.36**	-.40**	.01	-.002	.07
AM					-.78**	.01	-.03	-.10
SDI						.11	.14*	.18**
Explore							.75**	.03
Commit								.040

Note. \* =  $p < .05$ , \*\* =  $p < .01$

## APPENDIX A

### Review of Literature

#### People of the Pacific: Native Hawaiian and Other Pacific Islanders

Hawaiians have a history of living an active lifestyle being skilled in navigation, farming, and being warriors. They were the first to settle in the Hawaiian Islands by way of voyage and navigation across the Pacific Ocean. Voyaging is a skill that was not only part of the spreading of Polynesians throughout the Pacific but also important in forming the social identity of Polynesians (Richards, 2008). By canoe, the Native Hawaiians were able to discover and settle in new lands. Voyage and navigation across the Pacific were not only crucial to finding a new home but also a central component to the Hawaiian identity. Native Hawaiians lived very productive and industrious lives upon their arrival to the islands. The term *aina*, which refers to the land, represents a concept “belonging to an agricultural people, deriving as it did from the verb *'ai*, to feed, with the substantive suffix *na* added, so that it signified ‘that which feeds’...” (Handy & Pukui, 1950, p. 175) meaning that the Native Hawaiians labored tremendously in agriculture, particularly with taro. Cultivation of the land was the main industry, working with tools made of hardwood and stone, they raised taro, sweet potato, yams, and other crops (Kamakau, 1961). Having an understanding that the land provided nourishment for their bodies, Hawaiians knew that taking care of the land through the cultivation of crops such as taro meant taking proper care of their bodies as well. The combination of laborious activities and taking responsibility for cultivating the land created an active lifestyle for themselves. However, the culture of physical activity and fitness has not transitioned well into the lifestyle of Hawaiians today.

Native Hawaiians lived a family-centered culture that valued the needs of each other and requiring everyone to do their part to support each other. The term *ohana*, meaning family, when broken down into parts carry significant meaning.

‘*Oha* means “to sprout” or being the “off-shoots of the taro plant which furnish the staple of life for the Hawaiian... with the substantive suffix *na* added, '*ohana* literally means "off-shoots," or "that which is composed of off-shoots." This term, then, as employed to signify the family, has, precisely, the meaning "the off-shoots of a family stock.”

(Handy & Pukui, 1950, p. 175)

The connection between family and the cultivation of taro suggests a deeper meaning to Native Hawaiians, that by taking responsibility for farming their main food source they were also fulfilling the responsibility to take care of their family and others. On many of the islands, the men would take responsibility for tilling the grounds, deep-sea fishing, and cooking in the imu (Kamakau, 1961). This unique connection behaves as a cycle of Hawaiians taking care of the taro plant and in return taking care of the Hawaiians by providing nutrition. The term *ohana* explains the importance of helping family, that family and community working together was vital in sustaining the community and showed how Native Hawaiians valued each other and their connection with their staple food taro. *Ohana* goes beyond the value that is placed on the family but explains how the importance of family is fulfilled through acts of caring and serving others.

### **Collectivist Culture**

A culture that is of interest within the study would be the Native Hawaiian culture, which follows similarly to collectivism. Collectivist and individualistic cultures display different behaviors and norms of interacting with self and others in a community or environment. An individualistic culture promotes the idea that it is the interests and wellbeing of the individual

that is important. Within Hawaiian culture, being close to family and building relationships within the community is very important to Hawaiians. Collectivists are concerned about the needs of the group before their own needs. A study by Hui and Triandis (1986) found that collectivists have more concern towards others within their group while individualists have low concern for others and their time to bond with others is infrequent. However, the researchers are uncertain that one who is a collectivist has concern for all individuals or only for others within a group, but the social scientists who were surveyed think that collectivism is “construed as concern for a certain subset of people” (Hui & Triandis, 1986, p. 240). The reason for this could be that individuals who are considered to be collectivist do not share similar values as other individuals outside of their group, thus having a high-level concern for others not from the same group can be difficult (i.e., Pacific Islanders may not have a high concern for others without their group). Although the influence of collectivism is deeply rooted within the Hawaiian culture, some individuals that are Hawaiian may not feel a need to have concern for others. By culture, Native Hawaiians are collectivists, but the lines that differentiate between culture and today’s society become more blurred as the importance that was placed on cultural values becomes more diminished as society shifts the views of young adult Hawaiians. Where being Native Hawaiian once meant being in line with components of collectivism within the *ohana* culture, becomes conflicted when individualist matters become of greater importance. The discord between collectivist and individualist occurred with the involuntary acculturation was gradually imposed upon Hawaiians due to the arrival of Westerners.

### **Acculturation**

Much of the Hawaiian culture that is more commonly known through today’s media is diluted from what it once really was and now commercialized to a specific audience instead of

holding value for some Native Hawaiians. Examples of acculturation can be identified within Hawaiian dance and song which has come about when Western influences arrived in Hawai'i. Traditional hula was used to illustrate the chants of people such as chiefs, specific events, and even sharing genealogy. However, when Christian missionaries arrived in Hawai'i hula was deemed being pagan and sinful, marking the beginning of changes to "... music and dance as well as in culture values" (Kaeppler, 1972, p. 41). What was once accompanied by chants and percussion instruments was now accompanied by string instruments such as ukulele and steel guitar.

Changes in dance movement itself became more profound in the twentieth century and these can be related to three fundamental processes of change (a) large-scale immigration, (b) the disuse of the Hawaiian language, and (c) tourism... English became the medium of communication and the Hawaiian language was used with less frequency, even by those of Hawaiian ancestry. Hawaiian dance, rooted in poetry, became less understood.

(Kaeppler, 1972, pp. 41-42)

This amalgamation of other cultures and the influence of change on Hawaiians would be the beginning of a shift in traditional Hawaiian culture. Also, the effects of acculturation that happened were not immediately detrimental to Native Hawaiian wellbeing, but it can be argued that it created a chain of events that would reshape the life of future generations of Native Hawaiians. For example, the English language is more common within the islands as the Hawaiian language is used sparingly for reasons of tourism than daily communication. People go out to eat at restaurants instead of cooking their food and the mode of work has evolved within Hawai'i that usually is popularized around tourism among Native Hawaiians. There are

four types of acculturation: Integration (high identification with both traditional culture and dominant culture), separation (high identification with traditional culture and low with dominant culture), assimilation (low identification with traditional culture and high with dominant culture), and marginalization (low identification with both traditional culture and dominant culture). Of these various forms of acculturation, it began as the integration of Hawaiian culture with Western ideas to preserve traditional practices such as hula. Much of today's Hawaiian cultural practices are assimilated with the culture of tourism and hospitality, where traditional hula was practiced to tell stories is now a means of income for Hawaiians and entertainment for visiting tourists.

### **Ethnic Identity**

Ethnicity is understood as a sense of belonging an individual has with others in an identified group of common cultural traditions. Ethnic identity is a part of one's social identity which is "part of an individual's self-concept that derives from his or her knowledge of membership in a social group together with the value and emotional significance attached to that membership" (Phinney, 1992, p. 156). Several components significantly impact one's ethnic identity to a group which is (a) self-identification, (b) ethnic behaviors and practices, (c) affirmation and belonging, (d) ethnic identity achievement (Phinney, 1992). Self-identification is how one labels themselves based on their ethnic background but views and attitudes that individuals have with others who identify with the same ethnic label may differ with others in that group. For example, an individual labeling him or herself Hawaiian with mixed Hawaiian ethnic background may not feel the same sense of belonging within a group of others who also use the label of Hawaiian. Ethnic behaviors and practices are how one interacts with other members in a group during social activities and cultural traditions. This includes involvement in

social activities with members of one's group and participation in cultural traditions. Examples of involvement with Hawaiian cultural traditions are participation in practices for activities such as hula or canoe paddling or conversing with relatives in the Hawaiian language. Affirmation and belonging are other components of ethnic identity where individuals have "ethnic pride" when possessing positive feelings of their background and the group that they represent as well as having a sense of belonging within that group (Phinney, 1992). Ethnic identity achievement is where an individual goes through the process of identity formation that involves "... an exploration of the meaning of one's ethnicity... that leads to a secure sense of oneself as a member of a minority group" (Phinney, 1992, p. 160) meaning that the individual is able to internalize their ethnic identity. Of these components, participating in ethnic behavior and practices and affirmation are the most important to ethnic identity as they promote one's exploration and commitment to their ethnic identity.

Commitment to ethnic identity does not lead to an achieved ethnic identity immediately, especially with adolescents who have yet to fully internalize their identity because they "lack a clear understanding of the meaning and implications of their commitment" (Phinney & Ong, 2007, p. 272). As one seeks out knowledge of their ethnicity and culture through means of exploration is commitment strengthened. Exploration of ethnic identity is seeking knowledge and experience which takes the form of learning cultural practices and attending and participating in cultural events (Phinney & Ong, 2007). Hawaiians today strengthen their commitment to their ethnic identity by participating in hula, growing traditional crops such as taro, and speaking the native Hawaiian language. Exploration of cultural practice and knowledge is vital to strengthening commitment to ethnic identity as experiences outside of one's ethnic group could weaken their commitment.

## Cultural Association with Chronic Diseases

Acculturation in Hawai'i introduced many new things to Hawai'i such as chronic diseases, which have unfortunately become common among Hawaiian and Pacific Islander populations. According to the State of Hawai'i Behavior Risk Factor Surveillance Survey, 49.3% of Native Hawaiians in Hawai'i are considered obese and have higher rates of chronic diseases associated with obesity in comparison with European Americans (Mau, Sinclair, Saito, Baumhofer, & Kaholokula, 2009). As of 2018, obesity rates of Hawaiians and Pacific Islanders in Hawai'i is at 44.4 % compared to 32.5% of Hawaiians living in the mainland US (America's Health Rankings, 2019). Between 2013 and 2018, the prevalence of diabetes among Hawaiians and Pacific Islanders is 15.5% in Hawai'i, compared to 10.3% of Hawaiians in mainland US. A study on modes of acculturation and diabetes found that Hawaiians in a traditional (or separation) mode were 27% more likely to have diabetes compared to Hawaiians with integrated modes (15.4%), assimilated modes (12.5%), and marginalized modes (10.5%) (Kaholokula, Nacapoy, Grandinetti, & Chang, 2008). In Hawai'i during 2018, physical inactivity rates of Hawaiians were at 24.7%, much smaller compared to Hawaiians living in mainland US at 32.1% (America's Health Rankings, 2019). Some lifestyle choices among Hawaiians have remained the same such as leisure activities like surfing. However, the purpose of maintaining physical fitness has evolved from training to become warriors to become professional sport athletes. While the inclusion of Western athletics is not detrimental to Hawaiian lifestyle, other Western lifestyle behaviors can be devastating such as alcohol consumption (28.5% among Hawaiian adults) and smoking (20.8% among Hawaiian adults) only inhibiting the health of Hawaiians with other diseases (America's Health Rankings, 2019).



Hawaiians suffering from chronic disease are prevalent in Hawai'i due to foreign influence on culture and lifestyle. Some, however, don't experience the problem of morbidity that has negatively affected other Hawaiians. Even though there are changes made to a culture of a group (e.g. diet and lifestyle), an individual decides whether or not to adopt those changes and new practices of lifestyle. A Hawaiian can choose to assimilate or separate from the Western culture, but the strategy to manage one's culture is independent of how others choose to do so, even if belonging from the same ethnic group. How one acculturates is an individual matter and not a group matter.

### **Self-Determination Theory**

Motivation is having a reason to perform or to initiate a behavior for a specific purpose. To be self-determined is having the desire to fulfill a purpose. SDT was developed by Deci and Ryan (Deci, Vallerand, Pelletier, & Ryan, 1991) which posits that individuals are motivated to meet those purposes influenced by various motivation types. Within SDT individual behaviors can be identified within a spectrum of motivation through the locus of causality "When a behavior is self-determined, the person perceives that the locus of causality is internal to his or her self, whereas when it is controlled, the perceived locus of causality is external to the self" (Deci et al., 1991, p. 327), meaning that the behavior can either be influenced from within the self or outside of self. Whether the behavior is being influenced from within the individual or from external factors the behavior is intentional but differentiates in how it is developed (Deci et al., 1991), which means how the behavior is influenced depends on the context preceding the behavior. The theory further states three psychological needs (competence, autonomy, relatedness) that when satisfied can influence the type of motivation that is sought. Competence is one's belief that their actions can lead to specific desirable outcomes (a sense of "I can do

this.”). Autonomy is the need to act under one’s own beliefs and volition (a sense of “I choose this behavior.”). Relatedness is described as successful interaction within the social milieu (a sense of “I belong.”). Autonomy and competence play an integral part for one to become intrinsically motivated when these needs are met within a situation (Ryan & Deci, 2016), but when interrupted it can cause an individual to be less intrinsically motivated. The degree to which these social needs are met affects how motivations are formed and shape behaviors for various experiences.

SDT explains what motivates individuals to do tasks or interact with experiences. The three types of motivation that an individual may experience is amotivation, intrinsic motivation, and extrinsic motivation. These motivation types can be better understood when placed on a spectrum ordered by regulation and relative autonomy, with amotivation on the low end of relative autonomy and intrinsic motivation on the high end of relative autonomy (Ryan & Deci, 2016). Amotivation lacks autonomy, meaning there is no desire to make any effort of motivation while intrinsic motivation is strongly autonomous. Between them is external motivation with varying regulations. On the lower end of external motivation is external regulation is a controlled motivation to initiate behavior to get a reward. Introjected regulation is another form of controlled motivation that regulates behaviors through one’s ego on success or failure (Ryan & Deci, 2016). Identified regulation is an autonomous motivation where individuals can see value within an experience and “... feel volition and self-endorsement when they act in accord with identified values” (Ryan & Deci, 2016, p. 102). Integrated regulation is the most autonomous form of external regulation where individuals not only identify with the value of an experience but integrate it with other values and interests (Ryan & Deci, 2016). Both identified and integrated regulation are considered autonomous even though the original motives originated

outside of self (i.e. extrinsic). Studies have shown that students who were intrinsically motivated and displayed regulatory styles that were autonomous experienced enjoyment of school in comparison to students with regulatory styles that were controlled motivation who experienced anxiety and lacked effective coping with failure (Deci et al., 1991).

When an individual's behavior or action is intrinsically motivated it is because the activity is of interest to the individual and participate with a full sense of control and not being influenced by material or external rewards or constraints. Instead, intrinsically motivated behaviors "emanate from the self and are fully endorsed" (Deci et al., 1991, p. 328). In other words, the behavior is controlled from within the individual instead of being controlled from factors outside of the individual. It is this type of motivation that educators strive to achieve among students within academic settings, especially in physical education classrooms. In a study on SDT within the PE context (Standage, Duda, & Ntoumanis, 2005) results have found that when the teacher creates an environment that is supportive of student psychological needs the more likely students will be intrinsically motivated within the class. However, the motivation that students gain from the class is developed from the learning environment that the teacher creates to provide autonomy-support, competence-support, and relatedness-support. Further work needs to be done to see the impact of social factors on students such as parents and school culture. Another study looked at autonomy-supportive PE classrooms and giving choice to female students in walking activities (Prusak, Treasure, Darst, & Pangrazi, 2004). Findings from the study found that students who were given choice and autonomy were more likely to be intrinsically motivated. While the needs of autonomy, competence, and relatedness help attain intrinsic motivation within a school setting, these needs can also be fundamental for an individual within a specific group such as Native Hawaiians.

## Measures of Physical Activity

Measuring of physical activity has evolved from observing only external measurements through the use of measuring sticks and stopwatches to including internal measurements of the body requiring equipment such as heart rate telemetry (HRT) and accelerometers. One of the most well-known forms of physical activity measurement is pedometers, used to track and monitor an individual's steps during physical activity. Some pedometers vary in function, either being spring-levered (spring-suspended lever arm that moves vertically during movement) or piezoelectric (beam that presses on a crystal during acceleration). A study by Smith, Egercic, Bramble, and Secich (2017) and colleagues tested the reliability and validity of a piezoelectric pedometer by placing them on 4 different location points as individuals walked the length of a mile around a track. Although the pedometer lacked validity in energy expenditure, it did show validity in steps and distance in any of the four placements (hip, pocket, middle of the chest, middle of the back). A study using spring-levered pedometers to determine its accuracy in step count as well as energy expenditure at different stride frequencies found that the pedometers had accurate measures at strides of 100 to 120 steps per minute, but not at stride frequencies below 100 (Nielson, Vehrs, Fellingham, Hager, & Prusak, 2011). Graser, Pangrazi, and Vincent (2009) designed a study to see if moderate-to-vigorous physical activity (MVPA) could be discovered within a range of steps per minute (SPM). Boys and girls between the ages of 10 and 12 wore pedometers and walked on a treadmill for a minute between speeds of 3 and 4 miles per hour as these speeds represented the levels of MVPA. Graser and colleagues (2009) determined that 120 to 140 SPM as reasonable MVPA for youth between 10 and 12 years old. However, it should be noted that this was done in a lab setting, not a classroom setting where multiple variations of PA can be demonstrated.

Another measure of PA is heart rate telemetry. Heart rate telemetry (HR monitors) measures the heart rate of an individual during physical activity. This can be used to gauge the intensity of activity for that individual. Leger and Thivierge (1988) compared and tested multiple types of HR monitors by placing them on individuals who exercised on a bicycle ergometer and the treadmill at different HR max, concluding that monitors that used conventional chest electrodes posed greater validity and stability of HR activity compared to HR monitors that used photocell or nonconventional electrodes. HR monitors provide valid measurements of physical activity and energy expenditure among healthy individuals (Sirard & Pate, 2001). In one study an HR monitor was used to determine the relationship between physical activity levels and motivation of children, monitoring duration of physical activity within a threshold HR of 139 and 159 bpm (Biddle & Armstrong, 1992). Lastly, accelerometers are another useful way to measure physical activity. Accelerometers detect movement and can be used to measure the intensity of physical activity. Accelerometers operate similarly to pedometers except it relies on the use of piezoelectric transducers, converting accelerations into 'counts' (Sirard & Pate, 2001). Single plane accelerometers are limited in detecting a wide variety of movements observed outside of a laboratory setting, but newer accelerometers with a 3-dimensional plane can provide a more accurate assessment of physical activity (Sirard & Pate, 2001).

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## APPENDIX B

### Parental Permission for a Minor

#### **Introduction**

My name is Nathan Kahaiali'i. I am a graduate student from Brigham Young University. Dr. Keven Prusak is working with me and I am conducting a research study about the relationship of ethnic identity and motivation to be physically active of Hawaiian students in physical education classes. I am inviting your child to take part in the research because (he/she) is currently enrolled in in one of the aforementioned classes.

#### **Procedures**

If you agree to let your child participate in this research study, the following will occur:

- Your child will be asked to wear a pedometer during PE class.
- This study will take place in their regular PE class for two days. At the end of the class your child will record their step count. They will also fill out a survey about their ethnic identity and motivation in physical activity.

#### **Risks**

There are minimal to no risks in participating in this study.

#### **Confidentiality**

The data that is gathered will be kept confidential and all data will be protected under lock and key where only the researchers will have access.

#### **Benefits**

There are no direct benefits for your child's participation in this project.

#### **Compensation**

There is no compensation for participation in this project.

#### **Questions about the Research**

Please direct any further questions about the study to Nathan Kahaiali'i at (808) 250-3006 or email: nathan.kahaialii@byu.edu. You may also contact the IRB Administrator, Brigham Young University, A-285 ASB, Provo, UT 84602. Call (801) 422-1461 or send emails to irb@byu.edu. You have been given a copy of this consent form to keep.

#### **Participation**

Participation in this research study is voluntary. You are free to decline to have your child participate in this research study. You may withdraw your child's participation at any point without affecting your child's grade/standing in school.

Child's Name: \_\_\_\_\_

Parent Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## APPENDIX C

**Child Assent Form**What is this research about?

My name is Nathan Kahaiali'i and I am a student at BYU. I want to tell you about a research study I am doing. A research study is a special way to find the answers to questions. We are trying to learn more about the relationship of ethnic identity and your motivation to be more physically active of adolescents in Hawai'i. You are being asked to join the study because you live in Hawai'i.

If you decide you want to be in this study, this is what will happen. You will be asked to wear a pedometer during your PE class. At the end of the class you will record your step counts. Then you will fill out a survey about your ethnic identity and motivation in physical activity.

Can anything bad happen to me?

There are no risks in participating in the study.

Do I have other choices?

You can choose not to be in this study.

Will anyone know I am in the study?

We won't tell anyone you took part in this study. When we are done with the study, we will write a report about what we learned. We won't use your name in the report.

What if I do not want to do this?

You don't have to be in this study. It's up to you. If you say yes now, but change your mind later, that's okay too. All you have to do is tell us.

Before you say yes to be in this study; be sure to ask Nathan Kahaiali'i to tell you more about anything that you don't understand.

If you want to be in this study, please sign and print your name.

Name (Printed): \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## APPENDIX D

**Capture the Flag Lesson Plan**

**Before Lesson:** Make sure that students have attached their assigned pedometer (reset to zero) before beginning lesson.

**Warmup Stations (3-5 min):** Four separate stations (represented with cones) will be placed at the same distance from each other. Students will be at one of the four stations (planks, sit-ups, body squats, high knees) for one minute. At teacher's signal the students will rotate to the next station and do the next warmup. Students will rotate through all four warmup stations.

**Equipment:**

Flags (bean bags or something easy to grab and run with)

Cones (for safe zone and setting boundaries)

**4-Way Capture the Flag (25-35 min):**

- Playing area will be setup into two quadrants with two different teams.
- Each quadrant has a safe zone with opposing teams flag in the safe zone. A player cannot be tagged out in the safe zone.
- Players must grab their flag from the safe zone of the opposing teams in the other quadrants and bring it back to their safe zone without being tagged.
- If player is tagged, they must sit down and wait to be saved from a teammate. Saved teammates have a "free walk" back to their quadrant.

**Objective:** Collect your team flag from other quadrant without being tagged.

**Closure:** Students will record their step counts on their pedometers and return their pedometers.

## APPENDIX E

## Student Survey

Why are you currently engaged in being physically active? Total Steps:	Name:		Grade:		Gender:		
	Hawaiian	Pac. Is. (not Hawaiian)	White	Hispanic	Asian	African American	American
In terms of ethnicity, I consider myself to be:	Not at all	Very little	A little	Mode- rately	Enough	A lot	Exactly
1 Because I think that being physically active is interesting.	1	2	3	4	5	6	7
2 Because I am doing it for my own benefit.	1	2	3	4	5	6	7
3 Because I am supposed to do it.	1	2	3	4	5	6	7
4 There may be good reasons to be physically active, but personally I don't see any value in it.	1	2	3	4	5	6	7
5 Because I think being physically active is pleasant.	1	2	3	4	5	6	7
6 because I think that being physically active is good for myself.	1	2	3	4	5	6	7
7 Because being physically active is something that I have to do.	1	2	3	4	5	6	7
8 I am physically active, but I am not sure it is worth it.	1	2	3	4	5	6	7
9 Because being physically active is fun.	1	2	3	4	5	6	7
10 By personal decision.	1	2	3	4	5	6	7
11 Because I don't have the choice.	1	2	3	4	5	6	7
12 I don't know; I don't see what being physically active brings me.	1	2	3	4	5	6	7
13 Because I feel good, when in P. E., doing challenging activities.	1	2	3	4	5	6	7

14 Because I believe being physically active is important for me.	1	2	3	4	5	6	7
15 Because I feel that I have to be physically active.	1	2	3	4	5	6	7
16 I am physically active but I am not sure it is a good thing to pursue it.	1	2	3	4	5	6	7

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs.	1	2	3	4	5
2 I have a strong sense of belonging to my own ethnic group.	1	2	3	4	5
3 I understand pretty well what my ethnic group membership means to me.	1	2	3	4	5
4 I have often done things that will help me understand my ethnic background better.	1	2	3	4	5
5 I have often talked to other people in order to learn more about my ethnic group.	1	2	3	4	5
6 I feel a strong attachment towards my own ethnic group.	1	2	3	4	5

Do you participate in extracurricular activities? Circle all that apply.

- Basketball
- Soccer
- Volleyball
- Baseball/Softball
- Football

- Wrestling
- Mixed martial arts
- Skateboarding
- Running
- Weight Lifting
- Surfing
- Fishing
- Paddling
- Hula or other Hawaiian dance forms
- Other activities: \_\_\_\_\_