Association Between Stress and Social Support Among Young Adult Pacific Islander Smokers

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Abstract

Recent studies have found high levels of stress among Americans, particularly amongst young adults and ethnic minority groups. The purpose of this secondary data analysis was to explore the association between stress and social support among a sample of 276 young adult smokers of Pacific Islander ancestry, specifically Samoans and Tongans with an average age of 25.3 years. Previous research had documented the protective role of social support on stress, and thus it is hypothesized that young adult Pacific Islander smokers who perceived higher levels of social support will have less perceived stress. Social support was assessed using a 12-item scale which measured participant's perceived social support from family, friends, and significant others. Perceived stress was measured using a 10-item scale with 2 subscales – self efficacy and helplessness. Standardized parameter estimates from structural equation modeling indicated a statistically significant inverse relationship between perceived social support from family and perceived stress related to helplessness. More specifically, young adult Samoans and Tongans who report higher levels of social support from family do not feel as much stress stemming from being helpless. The results highlight the importance of family social support on stress management among this population. Most importantly, these findings add to the limited research around mental health within Pacific Islander (Samoan and Tongan) communities in the US.

Keywords

stress, social support, family, young adults, Pacific Islanders (PIs)

List of Abbreviations

CFI = Comparative Fit Index
CRCHD = Center to Reduce Cancer Health Disparities
MPACT = Motivating Pasifikas Against Cigarettes and Tobacco
MSPSS = Multidimensional Scale of Perceived Social Support
NCI = National Cancer Institute
PIs = Pacific Islanders
PSS = Perceived Stress Scale
RMSEA = Root Mean Square Error of Approximation
TLI = Ticker-Lewis Index

Introduction

According to the American Psychological Association's annual Stress in America™ Survey, stress levels among Generation Z adults, those born between the mid-1990s to 2010s, have slightly increased over the past years, many reporting the highest level of stress compared to other adult generations.[1] Stress levels among this age group can be extremely high and it sometimes interferes with their ability to make basic decisions, such as what to eat.[2] Eighty-seven percent of Generation Z adults who attended college indicated that education was a significant cause of stress.[1] The American College Health Association's Spring 2020 National College Health Assessment found that almost half of students reported more than average levels of stress within the past year and 24.9% reported tremendous levels of stress.[3] Between 2015 and 2020, there was an increase in stress levels from 43.1% to 49.6% among college students.[4,5] Use and overuse of mobile devices[6,7] and lack of good coping skills[8] have all been linked to higher stress levels among young adults.

Previous research has shown that some ethnic minorities in the US typically experience more stress than their White counterparts.[9-11] Reasons for higher stress levels found among ethnic minorities include social isolation and marginality,[12] issues with ethnic identity,[13,14] acculturation,[15] sociocultural factors such as immigration status,[16] racism, discrimination,[17,18] and lower socioeconomic status.[12,19,20] Left untreated, chronic stress can lead to poor health outcomes,[21] as it has been linked to heart disease,[22-24] diabetes,[25,26] and mental health disorders such as depression.[27,28]

Stress is also associated with many unhealthy behaviors such as smoking. Studies focused on theories of addiction have linked stress to smoking initiation, maintenance, and relapse.[29] Individuals with greater perceived stress are more likely to smoke compared to those with less perceived stress.[30-33] Smoking is used as a coping mechanism for stress[29] related to working environments,[34,35] racial/ethnic discrimination,[36] and financial and personal problems.[33]

Stress and Social Support

Generally defined as a state of being cared for and assisted by others,[37] social support has been a buffer against life's many stressors.[38-40] Social support acts at 2 different time points: first, during the stress appraisal process, which happens immediately after a potentially stressful event; and second, after the event has been appraised as stressful and now requires some form of behavioral and/or physiological response.[39] Social support reduces or minimizes distress during and after disasters[41] while

being protective against poor mental health resulting from life stressors, such as financial stress and negative life events.[38,42] Positive influences of social support on other aspects of mental health have also been documented, such as the buffering of anxiety, depression, and irritation,[43,44] the improvement of psychological and existential quality of life, and the lessening of severe grief among young adults with cancer.[45] Among smokers, the relationship between stress and social support is inversely related. A study conducted among low-income minorities found that increasing amounts of social support aid in stress reduction during quit attempts led to improved rates of smoking cessation.[46] In times when coping skills and social support were high, stress did not have a significant effect on smoking behavior among a sample of university students.[47]

Pacific Islanders (PIs)

Broadly speaking, PI culture is collectivist in nature with higher value placed on the family and community rather than the individual.[48] Like other collectivist groups, PIs depend on their family and friends for social support.[49] Mutual support is critical in PI communities and extends to both close and extended family members, friends, and others within the community. In the US, PI communities have a shared sense of culture and history with close-knit relationships. PI groups represent less than 1% of the total US population, [50] estimated to be 1.6 million people from the 2019 US Census.[51] Among the Polynesian groups, Samoans are the second largest in the US with a population of 204 000 followed by Tongans with approximately 67 000.[52]

Despite their small population size, PIs have one of the highest gaps in health and mental health disparities with higher rates of smoking, alcohol consumption, and obesity when compared to other ethnic groups, and yet have lower access to health-related prevention and treatment programs.[53] Data gathered from a random sample of 239 Samoan and Tongan households in California found that smoking rates among these groups were 3-4 times higher compared to the general population of Californians.[54] Results from the Pacific Islander Health Study found that a higher proportion of Samoan and Tongan adult males smoked compared to the general US adult male population.[55] A more recent study of PIs in California found that both Samoans and Tongans who are heavy smokers reported higher levels of stress and hostility than moderate and light smokers.[56] The same study also found that Samoan men who are heavy smokers reported higher depression compared to moderate smokers. National data have shown that PI adolescents have higher occurrences of depressive moods than the general adolescent population, while rates of attempted suicide among PI adolescents were twice the rate of their White counterparts.[57] Stigma around mental health illness is also high among PIs and it often hinders efforts to seek help,[58,59] thus exacerbating the problem.

This paper describes the association between perceived stress and perceived social support among young Samoan and Tongan adult smokers living in Southern California. Using secondary data, the researchers examined whether the relationship between stress and social support among young adults is consistent with what is already known among other well-studied groups. Based on existing studies and literature, the authors hypothesized that perceived stress and social support among young adult Samoan and Tongan smokers are inversely related; high levels of perceived social support will be associated with less perceived stress.

Methods

Sample

This study utilized data from the baseline assessment of 278 PIs enrolled in a randomized controlled trial that tested the effectiveness of a culturally tailored smoking cessation intervention titled Motivating Pasifikas Against Cigarettes and Tobacco or MPACT,[60] that took place between 2013-2015. Designed specifically for young adult PIs who are ready to quit smoking, MPACT was developed by the Weaving an Islander Network for Cancer Awareness, Research, and Training (WINCART Center), a Community Network Program funded by the National Cancer Institute's Center to Reduce Cancer Health Disparities (CRCHD). A product of partnerships between community leaders representing Chamorros, Marshallese, Native Hawaiians, Samoans, Tongans, other PIs, and academic researchers in Southern California, MPACT is comprised of an online smoking cessation curriculum, text messaging, web-based social support, and telephone coaching sessions. Recruited mainly from Los Angeles, Orange, and San Diego counties through flyers, word-of-mouth, social media, and face-to-face recruitment at PI festivals and gatherings, individuals were eligible for this trial if they: (1) self-identified as Native Hawaiian or Pacific Islander, (2) were between the ages of 18 and 30 years, (3) lived in Southern California at the time of the study and would be living there for the next year, (4) owned a cell phone with a text messaging plan, (5) had access to a computer with internet for at least 2 hours per week, (6) smoked daily or most days of the week (>3 days), and (7) smoked at least 100 cigarettes in their lifetime. Since the trial focused on young adult current smokers and required routine check-ins by local PI community-based research staff, anyone over the age of 30 who lived outside Southern California was excluded. Assessments of trial participants took place at baseline pre-test, immediate post-test, and follow-up at 3, 6, and 12 months. Trained community-based research staff were on stand-by in case help was needed. Data used for the current study are drawn solely from the baseline pre-test assessments (both control and intervention arms) where participants completed a one-hour web-based survey and were compensated for their time. The research conducted was approved by the Institutional Review Board at the academic partners' institutions (ClinicalTrials.gov Identifier: NCT03238456; CGU IRB Protocol #: 2030). The trial was voluntary and all participants provided written consent.

Measures

Multidimensional Scale of Perceived Social Support (MSPSS). A 12-item social support scale[61,62] shown to be psychometrically valid in research involving youths[63-68] and South Asian populations[69,70] was employed to assess participants' perceptions of the social support they receive from friends, family, and significant others. Support was measured by presenting a statement about friends ("*My friends really try to help me.*"), family ("*My family is willing to help me make decisions.*"), or a significant other ("*There is a special person who is around when I am in need.*") and asking the participant to select a response option ranging from 1 (Strongly Disagree) to 6 (Strongly Agree).

Perceived Stress Scale (PSS). The Perceived Stress Scale is a 10-item scale[71,72] that measures how often someone feels their life is stressful, uncontrollable, or overwhelming. The PSS has been found to be correlated with higher cortisol levels[73-75] and has been used to assess a variety of populations including youths[76] and youth smokers,[77] Additionally, a translated Thai version demonstrated validity and reliability in estimating stress levels on a Thai population.[78] Comprised of 2 subscales,[71,76] the first PSS subscale consists of 6 questions that inquire about perceived self-efficacy (eg, "*In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?*"). The second subscale asks 4 questions about perceived helplessness (eg, "*In the last month, how often have you felt confident about your ability to handle your personal problems?*"). The response options for each question range from 0 (Never) to 4 (Very Often).

Analysis

Descriptive analysis was conducted in SAS version 9.4[79] (SAS Institute Inc, Cary, North Carolina). An examination of skew and kurtosis revealed that each item in the MSPSS and the PSS was within recommended guidelines (skew < 3, kurtosis < 10).[80] However, since several items from the MSPSS exhibited some degree of skew (> 2) and kurtosis (> 6), a Huber-White sandwich estimator was employed when calculating standard errors.[81] Based on *a priori* models described in prior research, a confirmatory factor analysis was performed in Mplus version 8.5[82] to test the psychometric properties of a three-factor measurement model of the MSPSS and a two-factor measurement model of the PSS. Factors within each measurement model were permitted to co-vary. Analysis of the MSPSS subscales of friends (α = .86), family (α = .86), and significant others (α = .83) exhibited good internal consistency. The subscales of perceived self-efficacy (α = .87) and perceived helplessness (α = .81) also demonstrated good internal consistency. Full-information maximum likelihood was employed to account for missing responses,[83] although no item had more than 11.3% of the responses missing. The absolute fit of each measurement model was evaluated using the chi-square goodness of fit statistic and the root mean square error of approximation (RMSEA)[84] with a cut-off for acceptable fit at .06.[85] The relative fit of each model was evaluated using the Tucker-Lewis index (TLI)[86] and the comparative fit index (CFI).[87] After evaluating the measurement models, a structural model was estimated in which the 2 factors from the PSS were regressed on the 3 factors from the MSPSS. Standardized parameter estimates were calculated to examine the relationship between perceived social support and perceived stress among young adult PIs. The initial structural model calculated unadjusted parameter estimates while a subsequent structural model adjusted for ethnicity (0 = Tongan vs 1 = Samoan), sex (0 = male vs 1 = female), and age in years.

Results

A total of 278 participants enrolled in the trial but 2 did not identify as either Samoan or Tongan and were excluded from analysis. The final study sample included 276 participants with approximately two-thirds (65.6%) of whom were Samoan and one-third (34.4%) were Tongan **(Table 1).** Half of the participants were female. The mean age of the sample was 25.3 (*SD* = 3.6) years old. The distributions of perceived social support for friends (*M* = 5.0, *SD* = 1.0), family (*M* = 5.1, *SD* = 1.0), and significant others (*M* = 5.4, *SD* = 0.8) had a negative skew. The mean and distribution of perceived stress self-efficacy (*M* = 1.7, *SD* = 0.8) and helplessness (*M* = 1.9, *SD* = 0.8) are also reported in **Table 1**.

The fit of the 3-factor MSPSS (ie, perceived social support from friends, family, and significant other) was adequate, $\chi 2$ (df = 51) = 95.813, *P* < .001, TLI = .911, CFI = .931, RMSEA = .058, 90% CI [.040- .076]. The standardized factor loadings ranged from .68 to .86 (all *P* < .001) (**Figure 1**). The covariance between the 3 factors ranged from.49 to .51 (all *P* < .001). The fit of the 2-factor PSS (ie, perceived stress related to self-efficacy and helplessness) was also acceptable, $\chi 2$ (df = 34) = 67.042, *P* < .001, TLI = .935, CFI = .951, RMSEA = .061, 90% CI [.039- .083]. Standardized factor loadings varied from.61 to.79 (all *P* < .001) (**Figure 2**). The covariance between perceived self-efficacy and perceived helplessness was not statistically significant.

The fit of the structural model was acceptable, $\chi 2$ (df = 199) = 314.168, *P* < .001, TLI = .923, CFI = .933, RMSEA = .047, 90% CI [.037-.057]. Standardized parameter estimates **(Table 2)** indicated a statistically significant inverse relationship between perceived social support from family and perceived stress related to helplessness in unadjusted (β = -.38, SE = .08, *P* < .001) and adjusted (β = -.37, SE = .08, *P* < .001) models. All other regression paths in the structural models were not statistically significant, including the covariates of ethnicity, gender, and age.

Table 1. Demographic Characteristics of Young Tongan and Samoan Adult Smokers (n=276) Enrolled in Motivating Pasifikas Against Cigarettes and Tobacco (MPACT)	
Ethnicity, n (%)	
Samoan	181 (65.6%)
Tongan	95 (34.4%)
Gender, n (%)	
Female	138 (50.0%)
Male	138 (50.0%)
Age, years mean (SD)	25.3 (3.6)
Perceived Social Support Scale[a], mean (SD)	
Friends	5.0 (1.0)
Family	5.1 (1.0)
Significant Other	5.4 (0.8)
Perceived Stress Scale[b], mean (SD)	
Self-Efficacy	1.7 (0.8)
Helplessness	1.9 (0.8)

[a] The Multidimensional Scale of Perceived Social Support[61]

[b] The Perceived Stress Scale (From Cohen, S., Kamarck, T., Mermelstein, R. (1983). A global measure of perceived stress. Journal of Health and Social Behavior, 24, 385-396. + Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapam & S. Oskamp (Eds.), The social psychology of health: Claremont Symposium on applied social psychology. Newbury Park, CA: Sage.

Table 2. Unadjusted and Adjusted[a] Estimates for Perceived Social Support by Perceived Stress Among Young Tongan and Samoan Adult Smokers (n=276) Enrolled in Motivating Pasifikas Against Cigarettes and Tobacco (MPACT)

	Unadjusted			**Adjusted[a]**		
	β	SE	*P*	β	SE	*P*
Perceived Stress: Helplessness						
Perceived Social Support from Friends	-0.15	0.10	.12	-0.12	0.09	.19
Perceived Social Support from Family	-0.38	0.08	<.001	-0.37	0.08	<.001
Perceived Social Support from a Significant Other	0.10	0.07	.21	0.07	0.07	.37
Perceived Stress: Self-Efficacy						
Perceived Social Support from Friends	0.01	0.11	.91	0.02	0.11	.89
Perceived Social Support from Family	-0.06	0.09	.54	-0.03	0.09	.77
Perceived Social Support from a Significant Other	-0.14	0.10	.16	-0.16	0.11	.14

[a] Adjusted for ethnicity, gender, and age. *P*-values calculated from univariate z-tests.

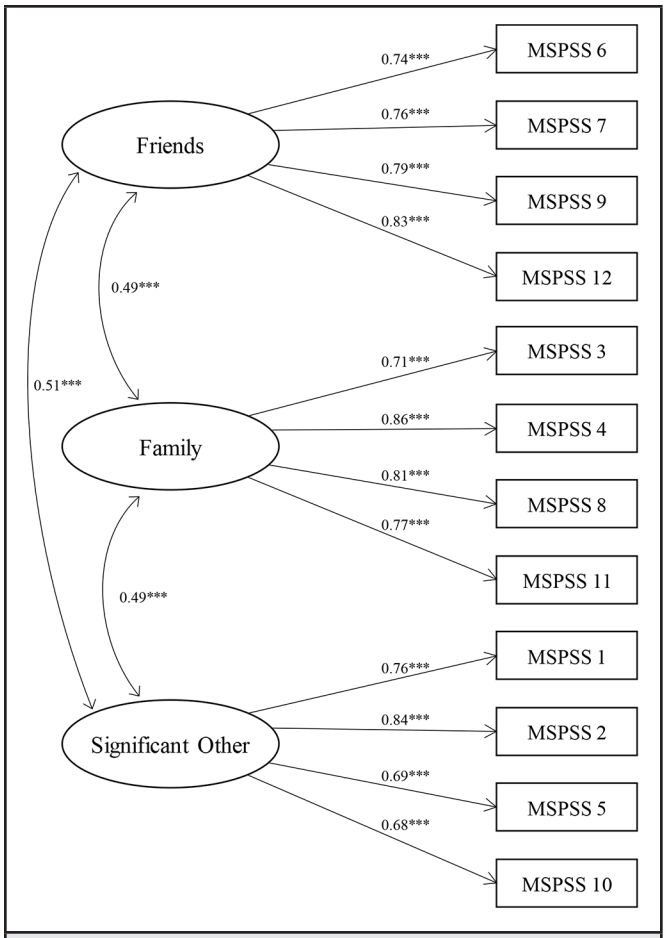

Figure 1. Three Factor Analysis Measurement Model for Perceived Social Support (MSPSS) Among Young Tongan and Samoan Adult Smokers (n=276) Enrolled in Motivating Pasifikas Against Cigarettes and Tobacco (MPACT)

Single-headed arrows denote standardized factor loadings. Double-headed arrows depict covariances. Statistical significance determined from univariate z-tests.
*$P < .05$ ** $P < .01$ *** $P < .001$

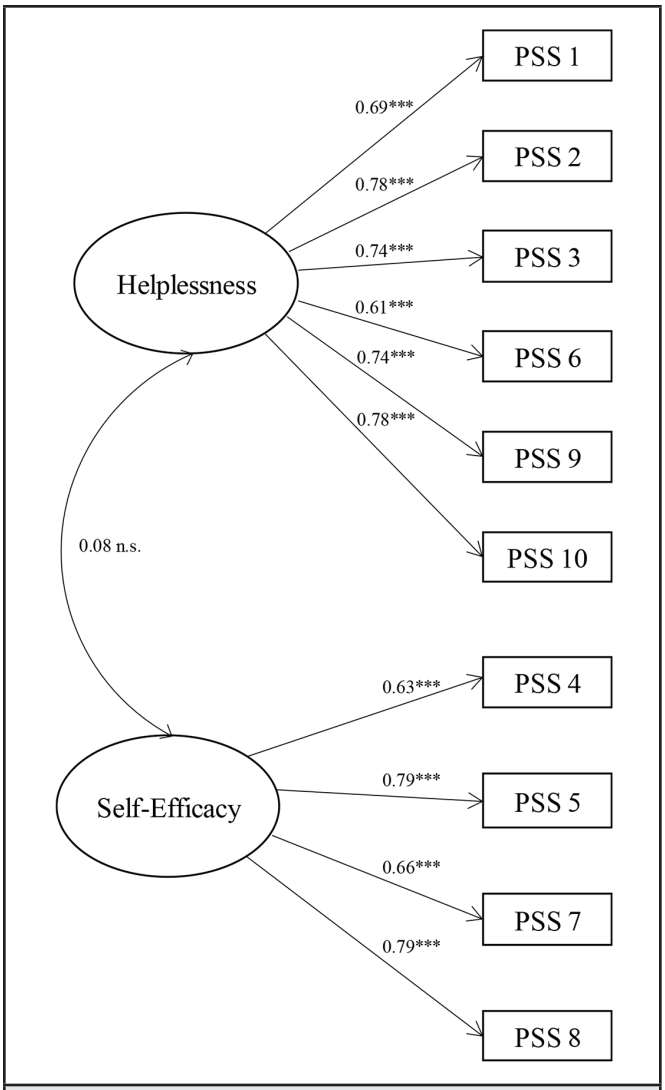

Figure 2. Two Factor Analysis Measurement Model for Perceived Stress (PSS) Among Young Tongan and Samoan Adult Smokers (n=276) Enrolled in Motivating Pasifikas Against Cigarettes and Tobacco (MPACT)

Single-headed arrows denote standardized factor loadings. Double-headed arrows depict covariances. Statistical significance determined from univariate z-tests.
*$P < .05$ ** $P < .01$ *** $P < .001$

Discussion

This study found that feeling supported by family members was associated with lower stress levels among young adult Samoan or Tongan smokers, particularly for stress related to feeling helpless. The results suggest that young adult Samoan or Tongan smokers who perceive greater levels of social support from their family do not feel as stressed or as helpless when tackling unexpected challenges or managing the stress they experience in everyday life. The finding is consistent with existing literature, which has identified social support as a defense against stress.[38,39] Many studies have documented the critical role of family social support in diverse areas such as aging,[88,89] job satisfaction,[90] cancer care and treatment,[91,92] and emotional and behavioral problems among adolescents.[93] Adolescents who reported low family social support had an increased likelihood of psychological distress compared to those who reported higher family social support.[94] Depressive symptoms were also seen among adolescents reporting lower levels of social support from family and friends.[94] Most relevant to the current study is the role of family social support among smokers. As previously described, the relationship between stress and social support among smokers is inversely related.[46,47,95] Social support not only reduces stress among smokers, but it has been documented to aid quit attempts and successful smoking cessation,[96,97] a key point particularly among young adult smokers.

These findings highlight the importance of family support in mental health management, particularly among Samoan or Tongans. Their cultural collectivism emphasizes connections to others, and places high value on social context and the preservation of relationships.[98] Hence, stress and coping in cultural collectivists' view are strongly tied to family and family-based social support.[99,100] Family is a critical component of stress management among young adults as it functions to support the individual and buffers the various forms of stress. PIs are likely to utilize support from family and religion/spirituality to cope with distressing events in their lives.[98] Most importantly, this study's findings add to the limited research on mental health and PI population. Although large mental health disparity gaps have been identified among this ethnic group, PIs are still understudied and their mental health needs often go undocumented due to reasons such as underutilization, lack of access to mental health services, and general mental health stigma within the community hindering documentation of needs.[59] Although recent research has established mental health as an important priority area among PIs,[58,59] more work needs to be done in this area.

Limitations

There are several limitations to the findings presented. First, this study's sample of current smokers may have higher levels of stress than their non-smoking counterparts and thus results are only generalizable to young adult Samoan or Tongan smokers from California. Second, the measurement models of social support and perceived stress and the structural model examining the relationship between these constructs had adequate but not exceptional model fit, suggesting that there may be aspects of each construct that were not captured by the current models. Still, prior validation papers that examined these constructs reported similar levels of model fit[76,78] and, while the fit indices are less than ideal, they are comparable to the unmodified models reported in previous studies. Third, because the assessments were conducted through web-based surveys, selection bias could be a limitation because only participants who had access to a computer or were computer literate could join the study. The research team provided participants with access to laptop computers at the community partners' offices so they can complete the survey if needed but not all potential participants wanted to complete the surveys at the community partners' sites due to lack of transportation, time, and overall inconvenience. Lastly, the sample in this study were inclusive to Samoans and Tongans living in Southern California whom may not be representative of Samoans and Tongans living elsewhere nor are they representative of the multiple ethnic groups that comprised the larger PI community. Although PI groups have similar cultures and experiences, they do differ greatly and one group may not be representative of another.

Implications

Findings from this study help to inform mental health professionals, researchers, and others working with PIs about the relationship between stress and social support. The significance of family social support on stress among PIs is important to highlight as it may be a key factor in stress prevention and management among this population. Existing evidence suggests that mindfulness-based stress reduction[101-103] and meditation[104] strategies have been effective at managing stress among healthy individuals, thus integration of a strong family component to these strategies may further enhance their effects.

Conflict of Interest

None of the authors identify a conflict of interest.

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