

Correlates of School Performance

“Demographic and Psychosocial Correlates of School-Related Measures for Native Hawaiian and Non-Hawaiian High School Students”

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Objectives

- Determine the strongest & most consistent pattern of associations between demographic, social, cultural, & psychological variables with school outcome measures for a large high school sample from Hawai'i
- Provide implications of the results of the study

Introduction

- Hawaiians tend to perform lower on academic measures
 - ~ vocabulary at kindergarten (PPVT-R)^a
 - ~ reading & math on the Stanford Achievement Test (SAT)
- Hawaiians tend to have higher rates of absences starting from about the 7th grade through high school^a
- More research is needed on ethnically diverse Asian/Pacific Islander adolescents in Hawai'i, including correlates of school outcomes

^a From: Kamehameha Schools Bernice Pauahi Bishop Estate. (1993). *Native Hawaiian Educational Assessment, 1993*. Honolulu, HI: Office of Program Evaluation & Planning, Kamehameha Schools.

Method: Data

- Native Hawaiian Mental Health Research Development Program (NHMHRDP)
- School data collected by Judy Foster, former graduate student
- Examined data obtained in the spring of 1993 from 4 public high schools in Hawai'i
 - 2 suburban & 2 rural from O'ahu & neighbor islands
- Total $N = 2,833$

143 Caucasians	201 Filipinos
1,324 Hawaiians	315 Japanese
749 mixed/non-Hawaiians	55 "Other"

Method: 36 Independent Variables

- Demographic (9): gender, grade level, age, main wage earners' education, earners' employment, 4 primary languages at home
- Social (3): parent expectation, family support, friends' support
- Cultural (15): 6 different ethnicities, 8 Hawaiian culture/values, value Non-Hawaiian culture
- Psychological (9): 3 stressful life event composites, optimism, depressive symptoms, anxiety symptoms, conduct, **substance use**, suicide attempt

Method: Substance Use

- Substance Abuse Subtle Screening Inventory—Adolescent Version (SASSI-A)

used only 6 items; 1 point for every “True” response

1. I have sometimes drunk too much beer or other alcoholic drink.
2. I have used alcohol or “pot” too much or too often.
3. **I smoke cigarettes regularly.**
4. I have neglected my school work because of drinking or using drugs.
5. I have taken a drink in the morning to steady my nerves or to get rid of a hangover.
6. Sometimes I feel that my drug use or drinking is keeping me from getting what I want in life.

Method: School Outcomes

- **Academic grade-point average (GPA)**
 - data from 3 of the 4 schools (minus 1 senior class)
- **Absences from school** (transformed \log_{10})
 - 1 school's data prorated because only 3 quarters
 - 1 school's data prorated because across 4 periods/day
- **Suspensions** (transformed \log_{10})
 - data from only 1 of the 4 schools
- **School conduct infractions** (transformed \log_{10})
 - data from all 4 schools

Method: Rationale for Analyses

- Goal 1 = Not Miss Any Important Independent Variable(s)
 - ~ exploratory approach using stepwise regressions with all of the independent variables in the prediction model
- Goal 2 = Retain Independent Variable(s) that were Robust
 - ~ cross-validation approach where the associations between the independent variables & school outcomes had to be demonstrated in 2 random subsets

Results: Exploratory Stepwise

- (1) Split the entire sample into 2 random “cross-validation” subsets
- (2) GPA: Performed a “stepwise” regression analysis with all 36 independent variables predicting GPA using the 1st half:
 - ~ stepwise = retains variables sequentially that are the best predictors (at least 1% variance accounted for)
- (3) GPA: Performed the same analysis on the 2nd half
- (4) GPA: Retained only common independent variables that predicted GPA for both analyses
- (5) GPA: Performed one last stepwise analysis with only the common variables using the entire sample
- (6) 3 remaining school outcomes: Used the same technique

Results: GPA ($N = 1,320$)

Predictor	Partial R ²	Cumulative R ²	Relationship
Substance use	8.4%	8.4%	Negative
Japanese ethnicity	5.6%	14.0%	Japanese > remaining groups
Main wage earners' education	3.2%	17.2%	Positive
Gender	3.3%	20.5%	Females > males
Value non-Hawaiian culture	2.4%	22.9%	Positive

Results: Absences ($N = 2,431$)

Predictor	Partial R²	Cumulative R²	Relationship
Substance use	10.0%	10.0%	Positive
Japanese ethnicity	3.8%	13.8%	Japanese < remaining groups

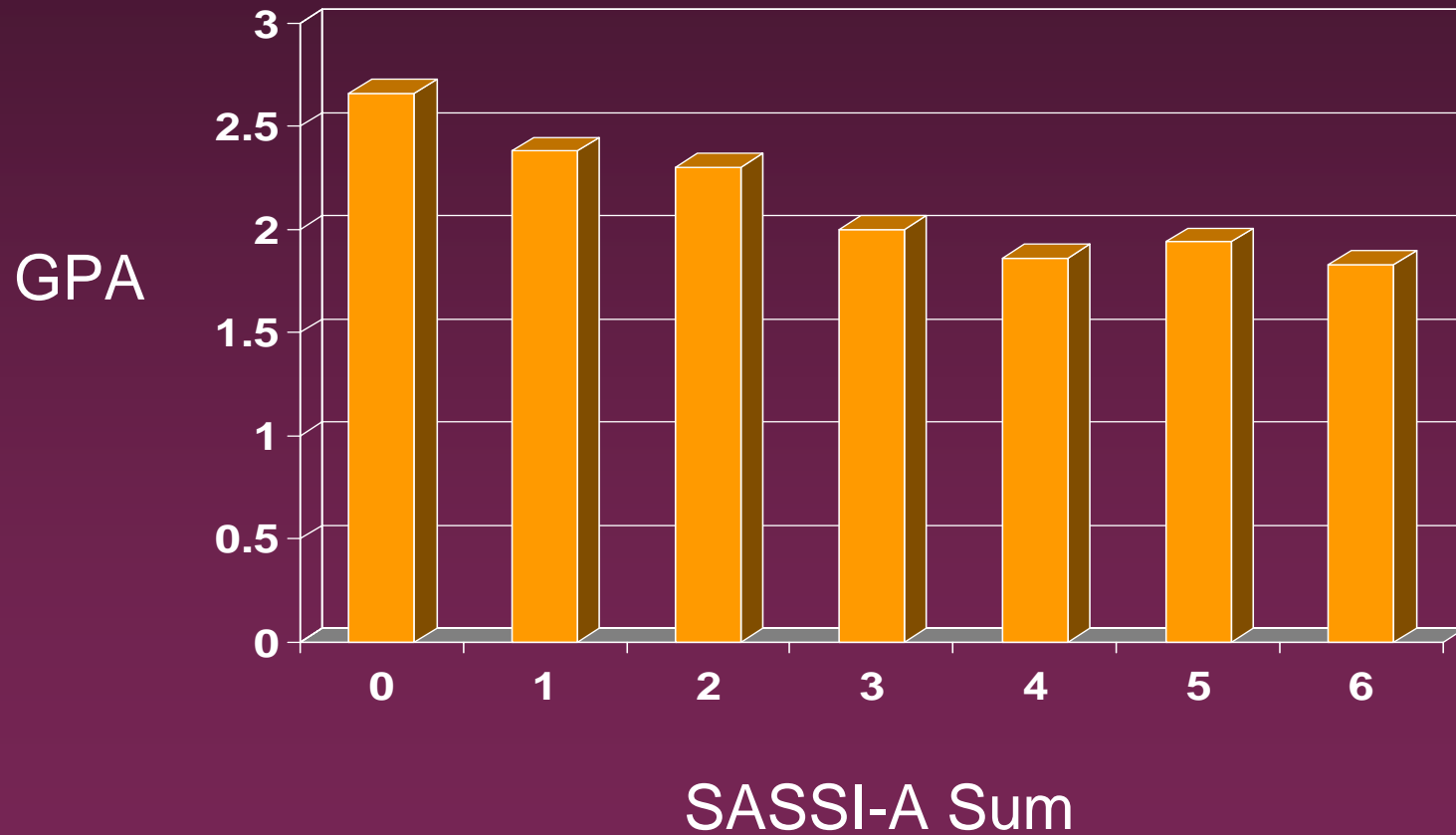
Results: Suspensions ($N = 852$)

Predictor	Partial R²	Cumulative R²	Relationship
Substance use	14.5%	14.5%	Positive
Grade level	3.8%	18.3%	Negative
Gender	1.7%	20.1%	Females < males
Stressful life events – adolescent	1.6%	21.6%	Positive

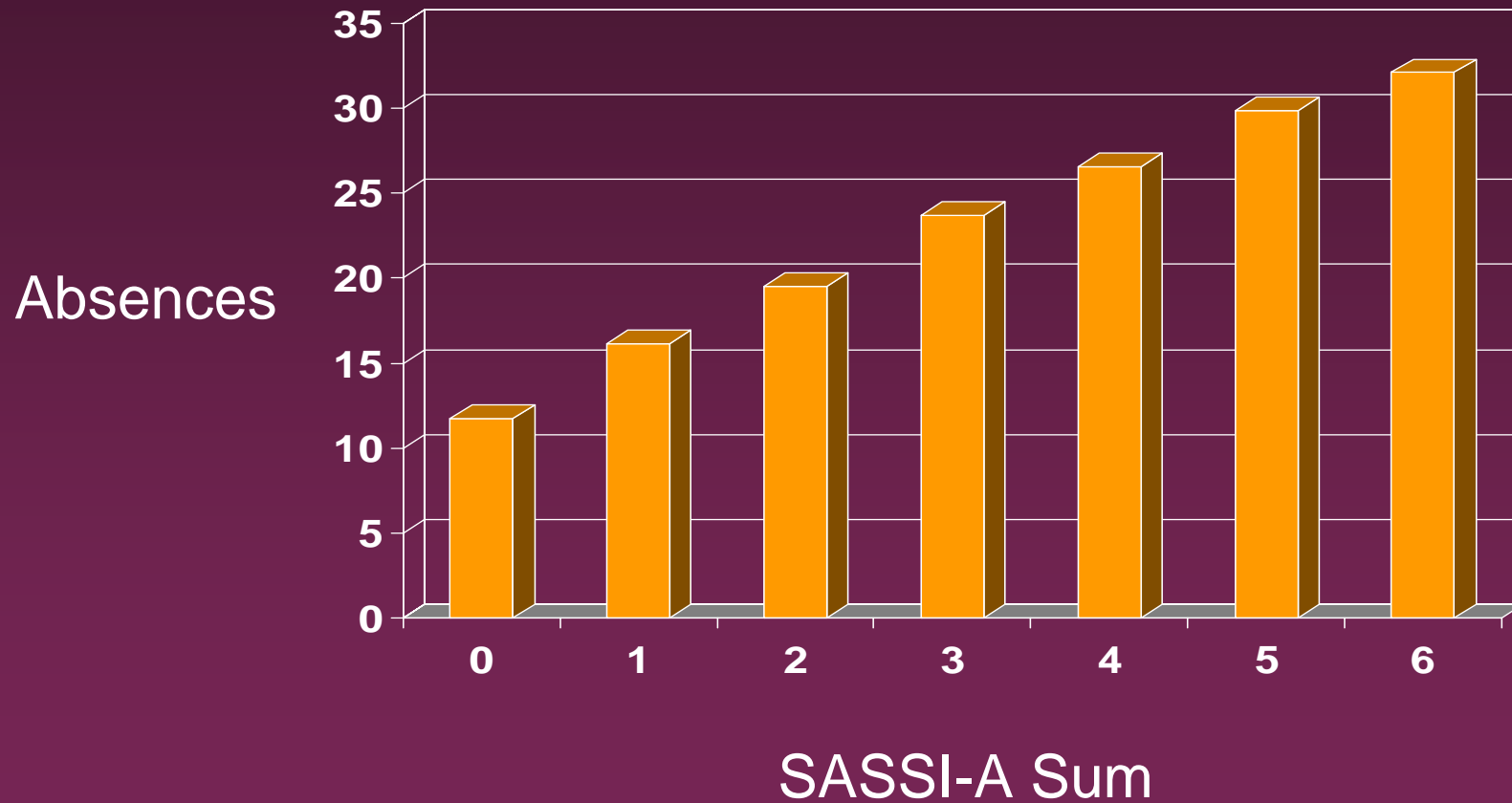
Results: Infractions ($N = 2,682$)

Predictor	Partial R²	Cumulative R²	Relationship
Substance use	16.1%	16.1%	Positive
Grade level	1.4%	17.5%	Negative

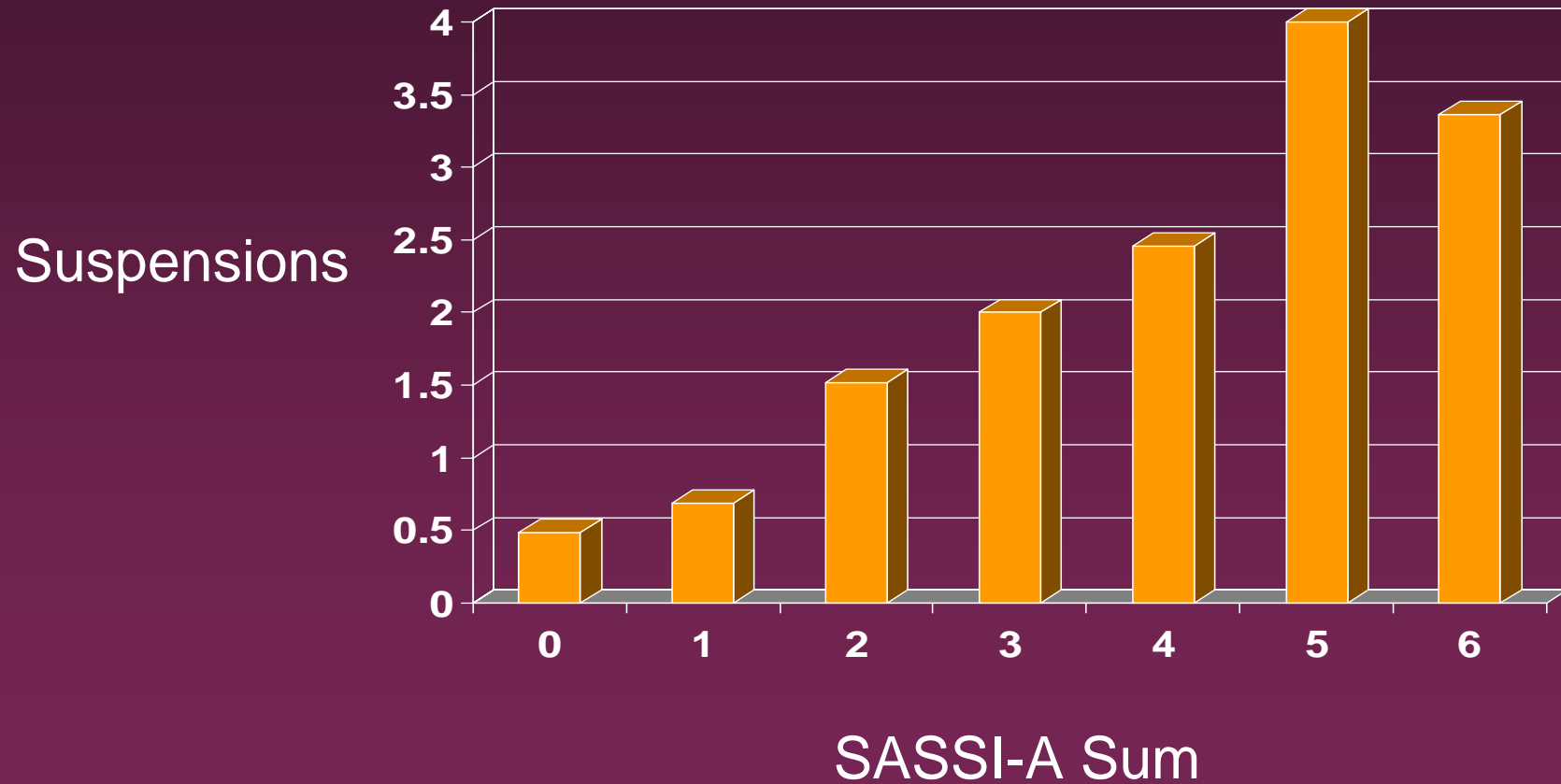
Results: SASSI Sum & GPA



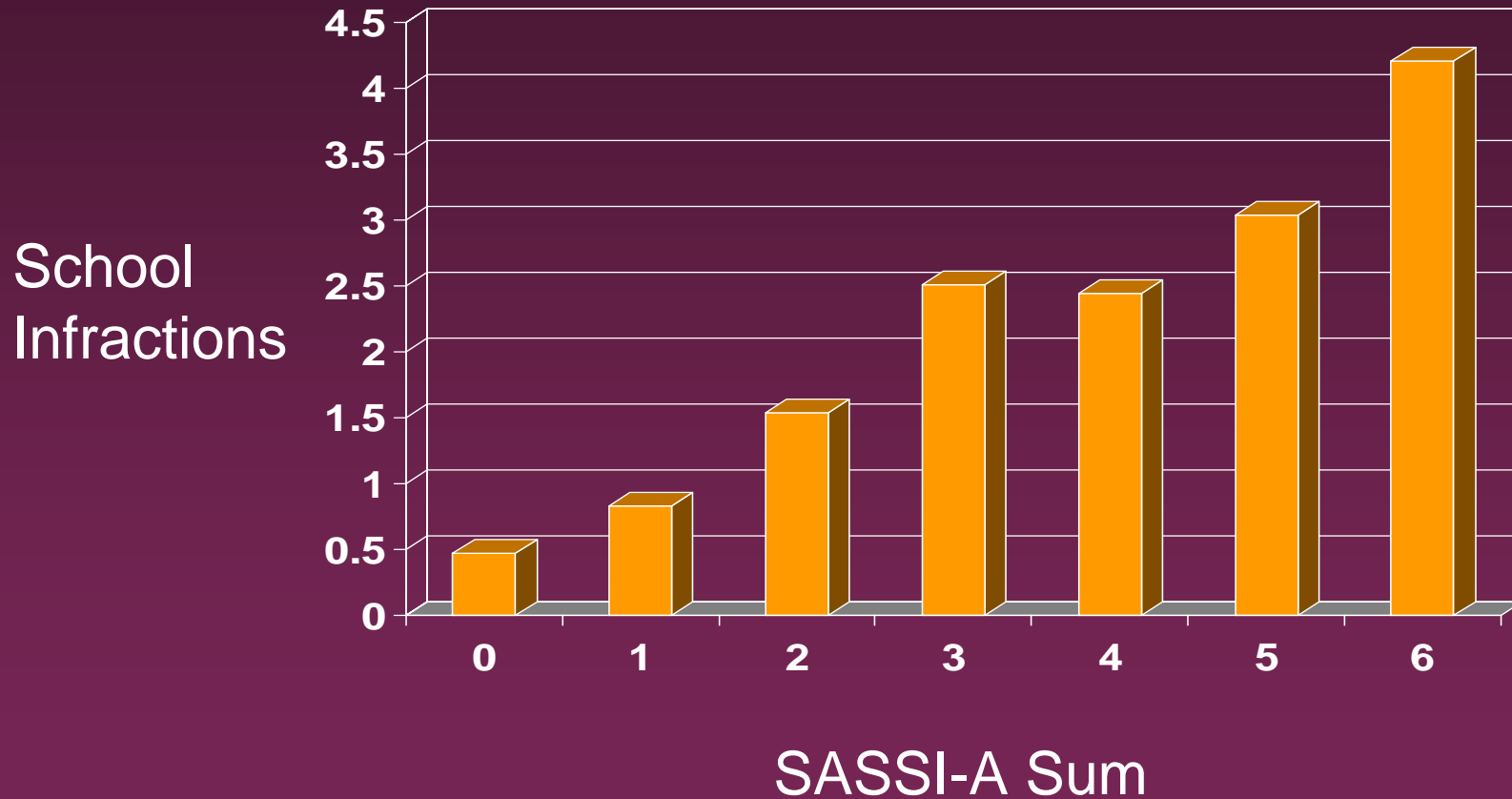
Results: SASSI Sum & Absences



Results: SASSI Sum & Suspensions



Results: SASSI Sum & School Infractions



Results: Substance Use & Ethnicity

- No significant interaction effect was found between ethnicity and substance use in the prediction of each of four school outcomes
- Therefore, the same general trend existed for each of the 6 ethnic groups in the SASSI-A sum predicting each of the four school outcomes

Results: Smoking Cigarettes Regularly

	No	Yes	Difference	R ²
GPA	2.59	2.02	0.57	6.8%
Absences	12.94	24.75	11.81	7.5%
Suspensions	0.52	2.30	1.78	13.7%
School Infractions	0.61	2.39	1.78	12.5%

SASSI-A item on “smoking cigarettes regularly” accounted for the largest variance in school outcomes.

Summary

- Substance use, especially that of smoking cigarettes regularly, was consistently related to poor school performance & adjustment, independent from ethnicity and culture
- Other variables that played relatively minor roles, after controlling for substance use:
 - Japanese ethnicity – somehow a protective factor
 - Main wage earners' education level
 - Gender
 - Value non-Hawaiian culture
 - Grade level
 - Stressful life events for the adolescent


Limitations

- Sample bias
 - ~ 60% of students enrolled in the 4 high schools
therefore, may be missing larger proportion of at-risk students (e.g., high school dropouts)
 - ~ only public school students; about 18% in private schools in Hawai'i
therefore, may be missing larger proportion of higher achieving students
- Incomplete school outcome data
 - ~ this was due to the incompleteness of school documents
 - ~ no anticipated bias

Limitations (continued)

- Independent variables were based on self-report
 - ~ however, school outcomes were obtained from the schools

Conclusions & Implications

- The causal direction of the association between substance use & school adjustment is unclear:
 - (1) substance use \longrightarrow poor school adjustment
 - (2) poor school adjustment \longrightarrow substance use
 - (3) third variable 

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graph LR; A[third variable] --> B[substance use]; A --> C[poor school adjustment]
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Conclusions & Implications

- Smoking cigarettes regularly was unexpectedly a better predictor of school outcomes than even Item 4 (“I have neglected my school work because of drinking or using drugs”). Possible explanations include:
 - ~ Poor school adjustment causes smoking cigarettes regularly
 - ~ A third variable (e.g., negative peer influence) causes both smoking cigarettes regularly & poor school adjustment
 - ~ Smoking cigarettes regularly may be a gateway to other substances
 - ~ Adolescents who are already using other substances indicated only smoking cigarettes regularly given the more negative stigma associated with “harder” substances

Conclusions & Implications

- Greater supports and programs are needed to increase academic performance (i.e., GPA) & decrease school adjustment difficulties, including
 - ~ education, mentorship, personal & career development
 - ~ possible family-based prevention & intervention as well
- Prevention & treatment programs should seriously consider the possible relationship between substance use & school performance
- Further research is needed examining the causal relationship between substance use & school outcomes

Conclusions & Implications

- Tobacco/smoking is the single-most preventable cause of adverse health effects
 - ~ most who are addicted to nicotine/smoking started in their teens or early 20s

Thank You!

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