

Association between actual and self-reported grades for ethnically diverse Asian/Pacific Islander adolescents

Earl S. Hishinuma, Ronald C. Johnson, Judy E. Foster, Stephanie T. Nishimura, Robin H. Miyamoto, Noelle Y. C. Yuen, Linda B. Nahulu, George K. Makini, Jr, Naleen N. Andrade and Cathy K. Bell University of Hawai'i at Mānoa

Data obtained via self-report are susceptible to many different forms of response bias (e.g. non-response, recall difficulties, confusion, acquiescence, social desirability, demand characteristics, faking, deviation [giving unusual responses]; Anastasi, 1988; Fowler, 1988; Lonner and Ibrahim, 1989; Nunnally and Bernstein, 1994). A critical issue from a methodological and psychometric perspective is the validity of self-reports, including how demographic variables (e.g. ethnicity, gender, socio-economic status [SES]) are associated with and influence the validity of these self-report data.

As one example of response bias, social desirability involves responding in a manner that is socially acceptable, the way that most people are thought to respond, or the way that is perceived to reflect best on the respondent (Cozby, 1997). Although the literature on social desirability and different ethnic groups consists of mixed results (e.g. no discrepancy found between Canadian *v.* Japanese samples, Heine and Lehman, 1995), demographic and cross-cultural differences have been reported. For instance, Ross and Mirowsky (1984) found greater occurrence of socially desirable responding by individuals of Hispanic ancestry (those residing in Texas and Mexico) as compared with European-Americans. In addition, these investigators found that those of lower SES and those who were older provided more socially desirable responses. These researchers theorised that social groups that are relatively powerless (e.g. those low in SES, with minority status, who have not culturally integrated well into the dominant culture) or that emphasise the importance of proper image, conformity, and avoidance of shame will more likely provide socially desirable responses. Further, socially desirable responding should not necessarily be viewed as a negative trait, but may entail an adaptive strategy in light of the individual's circumstances.

In the fields of education and psychology one of the most utilised measures of academic achievement is the grade earned on a school course, which has been quantified across multiple courses into the grade-point average (GPA; 0 to 4.0 scale). Despite the apparent usefulness of self-reported grades (SRGs; e.g. Kleiber and Malik, 1989; Lall and Schandler, 1991; Reynolds and Miller, 1989; Rienzi *et al.*, 1992; Roig and DeTommaso, 1995), this measure has been employed considerably less, perhaps simply owing to easier access to and

the completeness of actual school records in some circumstances, or perhaps on the assumption that SRGs are less accurate substitutes for actual GPA (AGPA). However, on a practical level, researchers may not always have access to AGPA, and, on a theoretical level, SRGs may perform differentially than AGPA, given the added potential response bias associated with SRGs. For example, on the one hand, SRGs may have less predictive validity of external behaviour than AGPA because SRGs have the added component of response bias, which may appear to add unsystematic 'error' to the construct of academic achievement. On the other hand, SRGs may have more predictive validity than AGPA in certain circumstances, owing to systematic response biases (see Ross and Mirowsky, 1984, as related to social desirability and psychological adjustment). For example, it is conceivable that those with lower self-concepts or those who are depressed may understate their academic achievements.

Knowing more about the association between AGPA and SRGs should influence how vigorously researchers pursue one or both measures. Therefore a scientific knowledge base is necessary to discern the similarities and differences between these seemingly comparable indicators of academic achievement, including how demographic variables are associated with or influence the measures. These academic measures can then be related to other external outcome variables to determine the differential predictive validity. The present study focuses on the associations between AGPA and SRGs, and how these two measures are related to basic demographic variables, including ethnicity.

A first step is to examine the differences between students who provide versus those who do not provide their SRGs, in relation to AGPA and as a function of basic demographic variables such as ethnicity, gender, grade level, and SES. A perennial problem in survey research is non-response to items. When there are no other indicators of that construct being measured, the typical 'solution' is to omit these participants from the analysis. The effects on sample bias of excluding these students are usually unknown. If the excluded participants have a lower GPA compared with the students who are included, the results of the remaining data will overestimate the GPA of the entire sample. Conversely, if the excluded participants have a higher GPA than the students who are included, the results of the remaining data will overestimate the GPA of the entire sample. A plausible hypothesis is that participants who do not provide their SRGs will score significantly lower on their AGPA as compared with those who provide their SRGs. Although results consistent with this notion have been found with the Scholastic Assessment Test (i.e. those who did not self-report their SAT scores performed significantly lower on the actual SAT in comparison with those who provided their actual SAT scores; Flake and Goldman, 1991; Trice, 1990), this phenomenon has not been demonstrated for SRGs and AGPA (Flake and Goldman, 1991). If this can be found for SRGs and AGPA, and if the phenomenon can be systematically linked with basic demographic variables, then the findings may provide important methodological and practical information for researchers beyond simply knowing the effects of missing SRGs. For example, if it is found that

students who do not provide their SRGs tend to have lower AGPAs, and if students of lower SES are less likely to provide their SRGs than those of higher SES, then this type of information may be vital to researchers in the *a priori* planning or *ad hoc* explanations of results.

A second step is to determine the relation between AGPA and SRGs when they are both available and how their association varies as a function of basic demographic variables. In directly comparing SRGs and AGPA, two important indicators of correspondence should be considered. As expected, the correlation between SRGs and AGPA has been found to be substantial. For example, Gonzales *et al.* (1996) obtained a correlation of 0.79 ($r^2=62.4$ per cent) between SRGs (of four recent core courses) and AGPA for an African-American adolescent sample. Similarly, a correlation of 0.76 was found for a sample of high school students (Dornbusch *et al.* (1987). Goldman *et al.* (1990) obtained correlations ranging from 0.70 to 0.88 for college students.

However, even if a perfect correlation of 1.0 was obtained, the means of the SRGs and AGPA may differ. Based on the literature, there is a tendency for students to overestimate their AGPA. For instance, Goldman *et al.* (1990) found that low- and high-achieving college students overestimated their GPA (and SAT scores), with greater overestimation occurring for males (as compared with females), for college sophomores (more than freshmen) of their college GPA, and for college freshmen (more than sophomores) of their high school GPA. In examining personality variables Johnson (1975) found that participants high in achievement motivation overestimated their GPAs more than did those low in achievement motivation.

Further research is needed on discerning the factors related to response bias, AGPA versus SRGs, and demographic variables such as ethnicity, gender, grade level, and SES. The field has particularly neglected students of Asian/Pacific Islander ancestry, adolescents included. Asian/Pacific Islanders pose a particularly interesting minority population, given their more collectivist and interdependent cultures, where, traditionally, values of social conforming and avoidance of shame may influence the type of response bias observed. In addition, much theorising and research has been noted on Asians in terms of academic motivation and achievement. For Native Hawaiians ('Hawaiians' hereafter), despite the generally lower academic achievement found across studies (e.g. Kamehameha Schools/Bernice Pauahi Bishop Estate, 1993) and the apparent belief that education is not as valued, the relatively scant research on Hawaiians suggests that education is valued comparably to European-Americans (Ferreira and Ka'anoi, 1981).

The purposes of this study are to address two main empirical questions and to discuss the practical research-based implications for each. (1) Are the cumulative AGPA scores of high school students from a diverse Asian/Pacific Islander population higher for those who indicate their SRGs as compared with other students who do not report their SRGs (or state that they do not know their SRGs), and are there any associations with basic demographic variables, including ethnicity, gender, grade level, and SES? It is hypothesised that adolescents of higher SES will provide their SRGs more than those of

lower SES. This prediction is made because students with higher SES tend to have higher academic achievement, and people tend to self-report positive information more than negative information. Given their generally lower levels of educational achievement, Hawaiians will less likely provide their SRGs than non-Hawaiians. Students who provide their SRGs will have significantly higher AGPAs than adolescents who do not indicate their SRGs.

(2) What is the association between 'last report card' SRGs and cumulative AGPA in terms of correlation (and regression slope) and mean difference, and what are the associations between the mean differences and basic demographic variables? The hypothesis is that the correlation between AGPA and SRGs will be comparable to other studies (i.e. approximately 0.70 to 0.85). No difference in the regression slopes between AGPA and SRGs is anticipated between ethnic groups. Those in positions of apparently less power and less cultural integration will have SRGs higher than AGPA. They will include Hawaiians, the indigenous people of the Hawaiian Islands, and those of lower SES. European-Americans will have the least difference between the SRGs and AGPA, given their generally higher SES and more individualist and independent traditions. Males as compared with females will have higher SRGs relative to AGPA.

Method

Participants

The data examined from this study were part of a larger cross-sequential investigation by the Native Hawaiian Mental Health Research Development Program (NHMRDP; e.g. Andrade *et al.*, 1994). In collaboration with the National Center for American Indian and Alaska Native Mental Health Research Program (Ackerson *et al.*, 1990) and based on the Sequoia High School Health Survey, the NHMRDP constructed the Hawaiian High Schools Health Survey. From the 1991–92 to 1995–96 school years, over 7,000 students in Hawai'i were surveyed across a total of five schools located on three different islands. The present study utilised the 1992–93 data set because it was the only wave of data collection that included actual school information (including cumulative GPA from three public high schools).

By research design, the high schools involved in the NHMRDP had a higher ratio of Hawaiian students. Hawaiians are descendants of the indigenous people who inhabited the Hawaiian Islands prior to 1778, the date of Captain Cook's first encounter with the Islands. Because Hawaiians of no mixed ancestry constitute less than 1 per cent of the population of Hawai'i (Department of Business, Economic Development and Tourism, 1995), Hawaiian was defined as an individual who self-reported that at least one biological parent had some Hawaiian ancestry. Japanese was defined as a student whose parents were of only Japanese ancestry. Given that persons of Filipino ancestry are frequently of Chinese or Spanish as well as aboriginal Malay ancestry, they are defined as being Filipino, even though they reported these

other ancestries. European-American was defined as an individual whose parents were of only European-American ancestry. The mixed/non-Hawaiian category included students of mixed heritage but with no Hawaiian ancestry. There were fifty-five adolescents who were of only African American, American Indian/Alaska Native, Chinese, Hispanic, Korean, Puerto Rican, Samoan, or Tongan ancestry.

The initial total sample for the 1992–93 data set consisted of 4,164 adolescents. AGPA from two of the five schools were not part of the larger data set. Of the resulting 3,229 high school students, data were omitted for participants who did not provide their ethnicity, gender, and AGPA, and for the fifty-five participants who had ‘other’ relatively infrequent ancestries in Hawai‘i (given the small n size). In the case of the AGPA, one senior class from one of the high schools did not have this information available. The remaining sample of 1,544 participants reflected the omission of proportionally more Hawaiians ($\chi^2[1]=454.5$, $p<0.001$), twelfth-graders (as expected; $\chi^2[3]=384.5$, $p<0.001$), those of higher SES (main wage earners’ education level ($\chi^2[3]=54.3$, $p<0.001$)) and main wage earners’ employment status ($\chi^2[3]=44.0$, $p<0.001$), but no difference was found for gender ($\chi^2[1]=1.8$, $p<0.186$).

Table 1 presents the description of the sample that was utilised. As expected, there were disproportionally more Hawaiians and ninth to eleventh-graders. The main wage earners’ educational level differentiated between ethnic groups more than did the main wage earners’ employment status.

Measures

All data except the AGPA were self-reported and from the Hawaiian Schools Health Survey. AGPA represented the cumulative GPA from the participating schools. Gender and grade level were obtained from the questionnaire. SRG was operationally defined by the question ‘On the average, what were your grades on your last report card?’ The following grade choices were available (values in parentheses are the quantification of the grade variable; these values did not appear on the questionnaire): A (4.0), A– (3.7), B+ (3.3), B (3.0), B– (2.7), C+ (2.3), C (2.0), C– (1.7), ‘D or less’ (1.0), or ‘Don’t know’ (converted to a missing score).

SES was represented by two measures. The main wage earners’ educational attainment entailed seven categories that were collapsed to four levels: 1=less than high school (i.e. ‘less than eighth grade’, ‘some high school’), 2=high school or general educational development (GED), 3=some college (or community college), and 4=college degree (i.e. ‘college graduate’, ‘master’s degree’, ‘doctoral degree (Ph.D., medical, law)’. The main wage earners’ employment status consisted of seven categories that were condensed to four levels: 1=‘unemployed’, ‘welfare’, or ‘disability’; 2=‘employed/part-time’ or ‘retired’; 3=‘self/employed/own business or farm’; and 4=‘employed/full-time’.

Table 1 Description of sample by ethnic group, gender, grade level, and socio-economic status

Demographic variable	Level	Ethnic group												
		European-American				Filipino		Hawaiian		Japanese		Mixed/Non-Hawaiian		Total
		N		% ^a		N		% ^a		N		% ^a		
		N	% ^a	N	% ^a	N	% ^a	N	% ^a	N	% ^a	N	% ^a	
Total ^b		77	5.0	102	6.6	802	51.9	191	12.4	372	24.1	1,544	100.0	
Gender ^c	Male	34	44.2	46	45.1	400	49.9	93	48.7	168	45.2	741	48.0	
	Female	43	55.8	56	54.9	402	50.1	98	51.3	204	54.8	803	52.0	
Grade level ^d	Ninth	28	36.4	22	21.6	299	37.3	61	31.9	142	38.2	552	35.8	
	Tenth	21	27.3	34	33.3	255	31.8	61	31.9	124	33.3	495	32.1	
	Eleventh	25	32.5	34	33.3	194	24.2	69	36.1	98	26.3	420	27.2	
	Twelfth	3	3.9	12	11.8	54	6.7	0	0.0	8	2.2	77	5.0	
Main wage earner's education level ^e	Less than high school	1	1.3	27	30.3	99	13.9	3	1.7	32	9.4	162	11.6	
	High school or GED	12	15.8	21	23.6	274	38.5	15	8.5	70	20.6	392	28.1	
Main wage earner's employment status ^f	Some college	15	19.7	16	18.0	168	23.6	44	25.0	87	25.6	330	23.7	
	College graduate	48	63.2	25	28.1	171	24.0	114	64.8	151	44.4	509	36.5	
	Unemployed, welfare, disability	0	0.0	0	0.0	50	6.9	1	0.5	21	6.1	72	5.0	
	Employed/part-time, retired	7	9.9	10	10.3	87	11.9	3	1.6	35	10.1	142	9.9	
	Self-employed/own business or farm	15	21.1	14	14.4	99	13.6	30	16.2	41	11.9	199	13.9	
	Employed/full time	49	69.0	73	75.3	494	67.7	151	81.6	249	72.0	1,016	71.1	

Notes

^a Percentages are based on rows for the total, but based on columns for all other demographic variables.
^b Test of proportional differences for main effect ($\chi^2[4]=1,158.1, p<0.001$).
^c Test of proportional differences for main effect ($\chi^2[1]=2.5, p=0.115$); for interaction with ethnicity ($\chi^2[4]=3.2, p=0.530$).
^d Test of proportional differences for main effect ($\chi^2[3]=3.52.5, p<0.001$); for interaction with ethnicity ($\chi^2[12]=49.0; p<0.001$).
^e Test of proportional differences for main effect ($\chi^2[3]=180.3, p<0.001$); for interaction with ethnicity ($\chi^2[12]=209.6; p<0.001$).
^f Test of proportional differences for main effect ($\chi^2[3]=1,642.3, p<0.001$); for interaction with ethnicity ($\chi^2[12]=46.1; p<0.001$).

Procedures

Parents/guardians and students were given written notification of the nature and purpose of the research study prior to the administration of the Hawaiian High Schools Health Survey. Parents/guardians who did not wish their child to participate returned a stamped addressed postcard. The students whose parents did not decline participation were presented with a form of consent on the day of the administration. Students who gave their assent were administered the Hawaiian High Schools Health Survey in their homerooms by teachers who had been previously instructed. The procedures were approved by the Committee on Human Studies (Institutional Review Board) of the University of Hawai'i at Mānoa. Based on the enrolments during those school years, approximately 60 per cent of the students were surveyed. Separate analyses indicated that a higher proportion of males were not surveyed. In addition, those who were not surveyed had more absences, suspensions, and conduct infractions, and had lower GPAs (Native Hawaiian Mental Health Research Development Program, 1999).

Results

Self-reported grades provided versus not provided

Participants were grouped on the basis of whether they provided their SRGs ($n=1,426$) versus those who did not ($n=118$, which included those who selected 'Don't know'). Given the relatively small sample size for those who did not report their SRGs (one European-American, eight Filipinos, seventy-seven Hawaiians, six Japanese, twenty-six mixed/non-Hawaiians), these participants were not further subdivided into non-Hawaiian ethnic groups; only the larger categories of Hawaiian versus non-Hawaiian were retained.

Univariate logistic regression analyses were first performed to determine whether there were significant differences in the proportion of participants who provided versus those who did not provide their SRGs as a function of each of the demographic variables. As expected, there were significant differences in the rates of missing SRGs on the basis of ethnicity and education SES. The following rates of missing SRGs were obtained: 9.6 per cent Hawaiians, 5.5 per cent non-Hawaiians ($\chi^2[1]=9.2$, $p=0.0024$, odds ratio=1.81, $R^2=0.011$, $n=1,544$). The obtained odds ratio indicated that Hawaiians had a 1.81-fold higher rate of not providing their SRGs. The main wage earners' education was also significantly related to rates of missing SRGs ($\chi^2[1]=15.4$, $p=0.0001$, odds ratio=0.67, $R^2=0.022$, $n=1,393$). For every one-step decrease in the main wage earners' education (e.g. going from high school education to less than high-school education), there was an approximately 50 per cent increase in the rate of missing SRGs.

In addition, grade level was a significant predictor ($\chi^2[1]=11.6$, $p=0.0007$, odds ratio=0.69, $R^2=0.014$, $n=1,544$), where, for every decrease in grade level (e.g. going from the twelfth to the eleventh grade), there was an approximately 50 per cent increase in the rate of missing SRGs. No significant

differences in proportions were found for gender, with 7.4 per cent for males and 7.9 per cent for females ($\chi^2[1]=0.1$, $p=0.75$, odds ratio=1.06, with males coded 1, females coded 2, $n=1,544$). No significant trend in main wage earners' employment status was found ($\chi^2[1]=2.7$, $p=0.10$, odds ratio=0.84, $n=1,429$). Given the focus on ethnicity for the present study, all two-way interactions effects involving ethnicity were also examined. Two-way interactions test whether a given variable such as grade level differentially predicts rates of missing SRGs as a function of another variable such as ethnicity. For example, perhaps grade level predicts rates of missing SRGs for Hawaiians but not for non-Hawaiians. Examination of all of the two-way interactions involving ethnicity indicated that none was statistically significant.

The hypothesis that students who reported their SRGs would have significantly higher AGPAs was supported by over half a grade difference in favour of those who provided their SRGs: AGPA=2.53 (s.d.=0.79, $n=1,426$) for those with SRGs, and AGPA=1.98 (s.d.=0.80, $n=118$) for those who did not indicate their SRGs ($F[1, 1542]=52.6$, $p<0.0001$, $\beta=-0.55$, $R^2=0.033$). However, these discrepancies may have been due to existing demographic (i.e. confounding) differences between the groups. To rule out this alternative explanation, the five demographic variables were simultaneously examined along with the availability of SRGs in the prediction of AGPA. This is a conservative test because it assesses how much each variable uniquely or independently predicts the outcome (with the other five variables held constant). The results indicated that the variable of availability of SRGs remained a significant predictor of AGPA ($F[1, 1334]=32.9$, $\beta=-0.46$, $p<0.0001$) despite the significant prediction of unique variance in AGPA by the other five demographic variables ($F[1, 1334]$, p value): ethnicity=76.8, <0.0001 ; gender=51.7, <0.0001 ; grade level=5.1, 0.0248; education SES=39.9, <0.0001 ; and employment SES=7.0, 0.0082. The interaction between availability of SRGs and ethnicity in the prediction of AGPA was not statistically significant ($F[1, 1540]=0.2$, $p=0.64$).

Actual GPA and self-reported grades

Data were then examined for the participants ($n=1,250$) whose SRGs and AGPA were available, as well as ethnicity, gender, grade level, education SES, and employment SES. Before examining AGPA and SRGs concurrently, each GPA variable was considered separately.

AGPA. For AGPA the overall model (five demographic variables) was statistically significant ($F[8, 1241]=35.9$, $p<0.0001$, $R^2=0.188$) indicating that when all five demographic variables were considered, a significant amount of variation in AGPA was predicted. In examining each demographic variable separately, ethnicity ($F[4, 1245]=43.6$, $p<0.0001$, $R^2=0.123$) and gender ($F[1, 1248]=48.9$, $p<0.0001$, $R^2=0.038$) were statistically significant. Table 2 presents the AGPA means, standard deviations, and n sizes by ethnic group and by gender. The AGPA differences between specific ethnic groups were then examined. However, because there were several ethnic groups, comparing each

ethnic group with every remaining ethnic group would increase the probability of obtaining a statistically significant difference just by chance (with alpha set at 0.05). Therefore a Newman–Keuls subsequent test was employed. This technique takes into account the number of comparisons being made as well as the AGPA rank order of the ethnic groups. The results were as follows: Japanese > all four ethnic groups; European-American > mixed/non-Hawaiian and Hawaiian; Filipino > Hawaiian; and mixed/non-Hawaiian > Hawaiian. In addition, females scored higher than males ($F[1, 1248]=7.0, p>0.0001, R^2=0.038$).

The correlation between AGPA and grade level was not significant ($r=0.04, p=0.17$), but the associations between AGPA and education SES ($r=0.24, p<0.0001$) and employment SES ($r=0.13, p<0.001$) were statistically significant. When examining the unique or independent variance predicted by the five demographic variables, ethnicity, gender, education SES, and employment SES remained statistically significant effects.

SRGs. Similar results were found for SRGs (Table 2), although the variances accounted for (R^2) tended to be lower – meaning that the effects were not as strong. The overall five-variable model was statistically significant ($F[8, 1241]=16.8, p<0.0001, R^2=0.097$), indicating that, when all five demographic variables were considered, SRGs were predicted to a statistically significant degree. Based on separate analyses, ethnicity was a significant predictor ($F[4, 1245]=19.9, p<0.0001, R^2=0.060$). Based on a Newman–Keuls test, the following was found: Japanese > Filipino, European-American, mixed/non-Hawaiian > Hawaiian. Females also self-reported higher grades than males ($F[1, 1248]=25.3, p<0.0001, R^2=0.020$). The variable of SRGs was not significantly correlated with grade level ($r=0.03, p=0.31$), but was significantly associated with education SES ($r=0.18, p<0.0001$) and employment SES ($r=0.09, p=0.0014$). Unlike with AGPA, however, employment SES was not a unique or independent predictor of SRGs.

Difference between AGPA and SRGs. To test for differences between AGPA and SRGs, t tests were performed for each ethnic group and for each gender. As displayed in Table 2, when considering the entire sample the SRGs were significantly higher than the AGPAs. However, this was partially due to the disproportionally larger n sizes of Hawaiians and mixed/non-Hawaiians. In examining each ethnic group separately, Filipinos, Hawaiians, and mixed/non-Hawaiians had significantly higher SRGs than AGPAs. Both genders exhibited the same significant trend.

To examine closer the AGPA–SRG difference, including interaction effects with the demographic variables, AGPA–SRG differences were calculated for each participant and an ANOVA design was employed with the five predictor variables. The overall model that considered all five demographic variables accounted for a statistically significant amount of variance in the AGPA–SRG scores ($F[8, 1241]=5.2, p<0.0001, R^2=0.033$). Analysed separately, ethnicity was significant ($F[4, 1245]=8.2, p<0.0001, R^2=0.026$) with a Newman–Keuls subsequent test indicating the following for the AGPA–SRG measure (in order from AGPA being higher to SRG being higher): European-American > Filipino, mixed/non-Hawaiian, Hawaiian; and Japanese <

Table 2 Actual GPA, self-reported grades, differences between actual GPA and self-reported grades, by ethnicity and gender

Demographic variables	Level	N	Actual GPA		Self-reported grades		Mean difference		t	p	R ² (%)
			Mean	(s.d)	Mean	(s.d.)	Mean	difference			
Ethnicity	European-American	70	2.83	(0.64)	2.74	(0.72)	0.09	0.09	1.78	n.s.	4.6
	Filipino	82	2.76	(0.69)	2.87	(0.74)	-0.11	-0.11	-2.03	0.0452	5.1
	Hawaiian	621	2.31	(0.75)	2.51	(0.80)	-0.20	-0.20	-8.24	<0.0001	10.9
	Japanese	171	3.09	(0.62)	3.08	(0.70)	0.01	0.01	0.51	n.s.	0.2
	Mixed/non-Hawaiian	306	2.58	(0.80)	2.70	(0.81)	-0.12	-0.12	-3.65	0.0003	4.4
Gender	Male	607	2.39	(0.76)	2.55	(0.78)	-0.16	-0.16	-7.11	<0.0001	8.3
	Female	643	2.69	(0.79)	2.78	(0.82)	-0.09	-0.09	-4.25	<0.0001	2.8
All		1250	2.54	(0.79)	2.67	(0.81)	-0.13	-0.13	-8.07	<0.0001	5.2

Note *n.s.* Not significant.

Hawaiian. Gender was also significant ($F[1, 1248]=6.3, p=0.0121, R^2=0.005$), indicating that the SRGs were higher than the AGPAs for males than for females. The correlations between the AGPA–SRG measure and grade level ($r=0.01, p=0.63$) and employment SES ($r=0.05, p=0.09$) were not statistically significant. However, the association between the AGPA–SRG difference and education SES was significant ($r=0.08, p=0.0040$), indicating that as the main wage earners' education increased AGPA tended to be higher than the SRGs. When each variable's unique prediction was considered (i.e. the other four variables statistically held constant), only ethnicity ($F[4, 1241]=6.1, p<0.0001$) and gender ($F[1, 1241]=6.5, p=0.0108$) remained significant predictors of the AGPA–SRG differences. The four variables other than ethnicity did not differentially predict the AGPA–SRG differences as a function of ethnicity (i.e. no two-way interaction involving ethnicity was statistically significant).

Association between AGPA and SRGs. The overall correlation between AGPA and SRGs was 0.76 ($p<0.0001$). With SRGs on the x axis and AGPA on the y axis, the best-fitting straight line between SRGs and AGPA was graphed (see obtained slope in Figure 1). The regression equation for this best-fitting line was: predicted $Y=0.56+0.74X$ (where predicted Y =predicted AGPA, X =SRG). In addition, superimposed in Figure 1 was the 'ideal' linear regression line if students self-reported their SRGs exactly as their AGPAs (i.e. predicted $Y=0+1.0X$). As indicated by Figure 1, students with lower SRGs tended to have higher SRGs relative to their AGPA and individuals with higher SRGs were more inclined to have lower SRGs relative to AGPAs.

Given the focus on ethnicity, the slopes (i.e. steepness) of the best-fitting straight lines were compared for the different ethnic groups. A significant finding would have indicated that a different regression equation would be

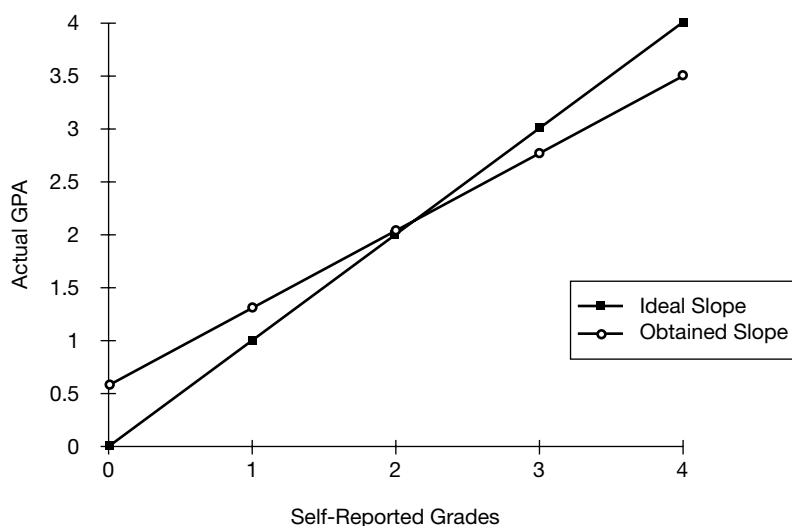


Figure 1 Comparison of ideal and obtained slopes of self-reported grades predicting actual GPA

needed as a function of the ethnic group in question. However, no significant difference between the slopes was found ($F[4, 1232]=0.6, p=0.63$) when all main effects and all two-way interactions with SRGs were also part of the model. Therefore the same regression equation of SRGs predicting AGPA applied for the five different ethnic groups.

Possible limitations

In light of all these findings, three issues were addressed.

1. Given that the AGPA–SRG differences were larger at the lower and higher GPA levels, and given the different levels of GPA between ethnic groups, the differential results of the AGPA–SRG scores between ethnic groups could have been partially due to a variation of ceiling and/or floor effects. For example, a student with an AGPA of 4.0 cannot self-report a GPA higher than 4.0, which would bias the results at the top end of the scale. The same argument could be made for the lower GPA end. To rule out this alternative explanation, AGPA was used as a covariate in the prediction of the AGPA–SRG difference scores. When a variable is employed as a covariate, all participants are statistically equated on this variable. With AGPA as a covariate, the rank order of the ethnic groups changed only slightly from European-American (0.09), Japanese (0.01), Filipino (–0.11), mixed/non-Hawaiian (–0.12, and Hawaiian (–0.20) prior to covariate adjustment, to European-American (0.03), Japanese (–0.09), mixed/non-Hawaiian (–0.12), Filipino (–0.11), mixed/non-Hawaiian (–0.12), and Hawaiian (–0.12), Filipino (–0.15), and Hawaiian (–0.15) after adjustment.

2. Two different (i.e. self-reported versus actual, and based on last report card versus cumulative) factors covaried to cloud the explanation of the findings. This issue was indirectly addressed by examining grade level as a variable. The hypothesis was made that if the differences found between AGPA and SRG were primarily due to the discrepancy in the method of assessment (i.e. ‘last report card’ for SRG versus cumulative GPA for AGPA), then correspondence between the two measures should be highest in either the ninth grade (because the self-report of the last report card’s grades should match closely the actual cumulative GPA, given the relatively short cumulative performance period) or the twelfth grade (because academic performance should be more stable by that grade level). A one-way ANOVA design was conducted, with each grade level treated as a qualitatively distinct group (as opposed to a continuum from the ninth to twelfth grade). The mean AGPA–SRG differences for the respective grade levels were as follows: –0.16 for ninth, –0.09 for tenth, –0.10 for eleventh, and –0.25 for twelfth-graders, with AGPA–SRG differences being smaller for tenth and eleventh-graders as compared with twelfth-graders ($F[3, 1246]=2.6, p=0.0499$; Newman–Keuls subsequent test). The pattern of means did not support the hypothesis noted above.

To further investigate the possible bias due to the two different measures (i.e. cumulative AGPA versus last-report-card SRGs) as reflected in the grade level, the interaction between SRGs and grade level in predicting AGPA was

investigated. The relation of SRGs predicting AGPA should be different across grade levels if the factor of cumulative versus last report card was influencing the results substantially. However, the interaction was not statistically significant ($F[3, 1242]=2.0, p=0.11$) indicating that the steepness of the best-fitting straight lines in SRGs predicting AGPA did not differ across grade levels.

3. The SRG question allowed choices from an 'A' grade to a 'C-' grade; the only choices below a 'C-' grade were 'D or less' (which was quantified as 1.0) and 'Don't know' (which was converted to a missing score). The possibility existed that the restricted range of scores below a 'C-' unduly impacted participants who tended to have lower GPAs. In order to address this potential problem, participants with AGPA or SRG scores lower than 1.7 ('C-' grade) were omitted and the effects of restricting the range of these two variables were examined through further analyses. A total of 202 participants were omitted for this partial analysis (percentages reflect rates within each ethnic group): three (4.3 per cent) European-Americans, six (7.3 per cent) Filipinos, 142 (22.9 per cent) Hawaiians, four (2.3 per cent) Japanese, and forty-seven (15.4 per cent) mixed/non-Hawaiians. Despite these significant proportional differences ($\chi^2[4]=56.9, p<0.001$) in the exclusion of data, the results using the restricted subset were comparable with those found with the larger data set. The correlation between AGPA and SRGs was 0.74 ($p<0.0001$) with the following regression formula: predict AGPA = $0.90 + 0.65(\text{SRG})$. Using ANOVA, ethnicity as a main effect was significantly associated with AGPA-SRG difference scores ($F[4, 1043]=6.7, p<0.0001, R^2=0.025$). As compared with the order of the mean AGPA-SRG differences for the original data set, only the Filipino and mixed/non-Hawaiian groups were inverted (0.09 European-American, 0.01 Japanese, -0.07 mixed/non-Hawaiian, -0.12 Filipino, and -0.15 Hawaiian). A Newman-Keuls subsequent test revealed identical results to those obtained by the original data. Therefore the findings were generally comparable.

Discussion

The present study investigated the possible effects of response bias on self-reported grades in relation to actual cumulative grade-point average. This was deemed important, given that (a) GPA is used as a standard measure of academic achievement, (b) only one type of measure (i.e. actual versus self-reported) may be available to researchers, and (c) there may be qualitative differences between the two measures despite their seeming correspondence, which may have theoretical and research-related implications. Of particular interest were the association and influence of demographic variables, with emphasis on the different ethnic groups.

Self-reported grades provided versus not provided

As hypothesised, higher rates of not providing SRGs were found for Hawaiians, and for those whose main wage earner was of lower educational attain-

ment. Additionally, higher rates of missing SRGs were found for the lower high school grade levels. As expected, those who provided their SRGs had higher AGPAs (approximately half a course grade) than students who did not provide their SRGs. These findings taken together suggest that studies involving adolescent minorities and using SRGs should be cautious, given that some ethnic minority groups and those of lower SES may not provide their SRGs at a higher rate, and in doing so may indirectly inflate the remaining sample's measure of academic achievement. It should be noted that the effects of ethnic minority status and low SES, while perhaps having overlapping influences, remained significant predictors when the other was held constant. In terms of implications, if the SRGs are being used to generalise descriptions of populations, weighting procedures may be necessary in an attempt to statistically adjust the available GPA scores to make them more representative of the population at large. In addition, given that lower SRGs tend not to be provided, restriction of the range of scores may occur at the low end of the SRG scale. These effects may need to be taken into account dependent upon the purpose of the study.

Actual versus self-reported grades

The analyses of the AGPA and SRGs supported the generally higher academic achievement of the Japanese and European-American adolescent, and the generally lower educational attainment of Hawaiians, consistent with past findings. Females had higher AGPAs and SRGs compared with males, and, as expected, students had lower AGPAs and SRGs when the main wage earner had lower educational attainment. The relatively high correlation of 0.76 between AGPA and SRGs was comparable to previous studies using different types of participants (e.g. college students). These findings generally support the validity of the SRGs as a measure of academic achievement.

However, a few cautions are noteworthy. First, SRGs tended to be higher than AGPAs when the entire sample was examined (5.2 per cent variance accounted for), although this was partially due to the disproportionately high number of Hawaiians and mixed/non-Hawaiians in the present sample.

Second, differential results should be expected as a function of the ethnic group in question. Hawaiians, mixed/non-Hawaiians, and Filipinos tended to have the largest AGPA–SRG differences in favour of SRGs. The Japanese adolescents also exhibited a relatively large AGPA–SRG difference (in favour of SRGs) when the level of AGPA was statistically controlled for. These trends remained even after controlling for the other demographic variables, suggesting that the collectivist and interdependent traditions of the minority groups in Hawai'i may play a role in the self-reporting of academic measures.

Third, based on the results of the present study, males more than females should be expected to provide SRGs higher than their respective AGPAs. If gender differences are being explored, researchers should be aware that males may provide higher SRGs than females, which may influence the results when small effect sizes are being addressed.

Fourth, as the main wage earners' educational level increased the AGPA

tended to be higher than the SRGs. Relative to education SES, the main wage earners' employment status appeared to have less of an association with the academic measures. These findings suggest that SES measures related to educational level may have higher association with academic achievement and with discrepancies in reported educational attainment than other measures of SES (e.g. employment, income, type of occupation). In addition, the results may have ramifications for studies investigating primarily only one end of the SES spectrum.

Fifth, the graphic representation (Figure 1) of the 'ideal' versus obtained $SRG \times AGPA$ regression lines demonstrated that students who had low AGPAs tended to respond with higher SRGs than their AGPA would have indicated. Conversely, those who had high AGPAs tended to provide lower SRGs than their AGPA would have indicated. Dependent upon which end of the GPA spectrum one is researching, investigators should take into account the possibility of SRGs being lower than AGPAs or higher than AGPAs, with average differences of up to half a course grade.

Limitations and further research

Three potential limitations were addressed via statistical techniques: (1) differential starting points of AGPA and possible ceiling and floor effects, (2) confounding of 'actual' versus 'self-reported' and 'cumulative' versus 'last report card', and (3) limited lower-end scale of the SRG variable. The results of the statistical analyses suggested that these were not major unresolved issues.

However, these potential issues could be addressed more effectively from a methodological standpoint than from a statistical one in future investigations. A similar line of research is needed on younger children and adults, and on other minority and majority groups. Additionally, the relation between AGPA and SRGs should be extended to other measures such as psychological adjustment. Such an endeavour may reveal differences between AGPA and SRGs, given that SRGs may also be tapping into forms of systematic response bias that may predict external behaviours above and beyond that of AGPA. SRGs may also indicate not merely response bias but subjective enhancement/diminution of achievement in comparison with actual academic performance, the former being grounded in certain psychological or cultural factors. For example, students with low self-concept (perhaps reflecting a particular SES or ethnic status) might subjectively enhance achievement grades, as a form of psychological compensation. Replications in other cultures would be valuable, especially investigations that included self-concept in relation to objective and subjective measures of achievement with gender and ethnicity as covariates.

Conclusion

The use of actual or self-reported GPA in research depends on many factors. The present study derived cautions in light of the findings, including the fact

that adolescents who do not provide their GPA tend to have lower actual GPAs, and the direction and amount of discrepancy between actual and self-reported GPA can vary as a function of demographic variables (e.g. ethnicity, gender, main wage earners' education). With these precautions in mind, however, self-reported GPA appears to provide researchers with a viable option in place of actual GPA. Influences such as demographic variables tend to affect the absolute measure of self-reported GPA, and less so the relative rank order of participants, as evidenced by the relatively high correlation ($r=0.76$) between actual and self-reported GPA.

References

- Ackerson, L. M., Wiegman-Dick, R., Manson, S., and Baron, A. (1990), 'Properties of the inventory to diagnose depression in American Indian adolescents', *Journal of the American Academy of Child and Adolescent Psychiatry* 29, 601-7.
- Anastasi, A. (1988), *Psychological Testing*, sixth edition, New York: Macmillan.
- Andrade, N. N., Johnson, R. C., Edman, J., Danko, G. P., Nahulu, L. B., Makini, G. K., Yuen, N., Waldron, J. A., Yates, A., and McDermott, J. F. (1994), 'Non-traditional and traditional treatment of Hawaiian and non-Hawaiian adolescents', *Hawai'i Medical Journal* 53, 344-7.
- Cohen, J., and Cohen, P. (1983), *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, second edition, Hillsdale NJ: Erlbaum.
- Cozby, P. C. (1997), *Methods in Behavioral Research*, sixth edition, Mountain View CA: Mayfield.
- Department of Business, Economic Development and Tourism, State of Hawai'i (1995), *The State of Hawai'i Data Book, 1995: a statistical abstract*, Honolulu HI: author.
- Dornbusch, S. M., Ritter, P. L., Leiderman, P. H., Roberts, D. F., and Fraleigh, M. J. (1987), 'The relation of parenting style to adolescent school performance', *Child Development* 58, 1244-57.
- Ferreira, C-A. L., and Ka'ano'i, G. K. (1981), *A Cross-cultural Comparison of Selected Family Values: Hawaiian-Western*, unpublished master's thesis, University of Hawai'i at Mānoa, Honolulu HI.
- Flake, W. L., and Goldman, B. A. (1991), 'Comparison of grade point averages and SAT scores between reporting and nonreporting men and women and freshmen and sophomores', *Perceptual and Motor Skills* 72 (1), 177-8.
- Fowler, F. J. Jr (1988), *Survey Research Methods*, revised edition, Newbury Park CA: Sage.
- Goldman, B. A., Flake, W. L., and Matheson, M. B. (1990), 'Accuracy of college students' perceptions of their SAT scores, high school and college grade point averages relative to their ability', *Perceptual and Motor Skills* 70, 514.
- Gonzales, N. A., Cauce, A. M., Friedman, R. J., and Mason, C. A. (1996), 'Family, peer, and neighborhood influences on academic achievement among African-American adolescents: one-year prospective effects', *American Journal of Community Psychology* 24 (3), 365-87.
- Heine, S. J., and Lehman, D. R. (1995), 'Social desirability among Canadian and Japanese students', *Journal of Social Psychology* 135 (6), 777-9.
- Howard, A. (1975), 'Aspects of self-esteem among Hawaiian-Americans of the parental generation', *Youth, Socialization, and Mental Health* 3, 87-95.
- Johnson, P. B. (1975), 'Achievement motivation and self-reported grade point average', *Psychology in the Schools* 12 (4), 402-4.
- Kamehameha Schools/Bernice Pauahi Bishop Estate (1993), *Native Hawaiian Educational Assessment, 1993*, Honolulu HI: Kamehameha Schools/Bernice Pauahi Bishop Estate.

- Kleiber, D. A., and Malik, P. B. (1989), 'Educational involvement of college athletes and subsequent well-being in early adulthood', *Journal of Sport Behavior* 12 (4), 203–11.
- Lall, R., and Schandler, S. L. (1991), 'Michigan Alcohol Screening Test (MAST) scores and academic performance in college students', *College Student Journal* 25 (2), 245–51.
- Lonner, W. J., and Ibrahim, F. A. (1989), 'Assessment in cross-cultural counseling', in P. B. Pedersen, J. G. Dragons, W. J. Lonner and J. E. Trimble (eds), *Counseling across Cultures*, third edition, Honolulu HI: University of Hawai'i Press.
- Native Hawaiian Mental Health Research Development Program (1999), *Native Hawaiian Mental Health Research Development Program (NHMRDP): Program Summary and Data Variable Codes*, Honolulu HI: Department of Psychiatry, University of Hawai'i at Mānoa.
- Nunnally, J. C., and Bernstein, I. H. (1994), *Psychometric Theory*, third edition, New York: McGraw-Hill.
- Reynolds, W. M., and Miller, K. L. (1989), 'Assessment of adolescents' learned helplessness in achievement situations', *Journal of Personality Assessment* 53 (2), 211–28.
- Rienzi, B. M., Scrams, D. J., and Uhles, P. (1992), 'GPA and height are related to self-acceptance scores of female college students', *Perceptual and Motor Skills* 74 (2), 354.
- Roig, M., and DeTommaso, L. (1995), 'Are college cheating and plagiarism related to academic procrastination?', *Psychological Reports* 77 (2), 691–8.
- Ross, C. E., and Mirowsky, J. (1984), 'Socially desirable response and acquiescence in a cross-cultural survey of mental health', *Journal of Health and Social Behavior* 25, 189–97.
- Trice, A. D. (1990), 'Reliability of students' self-reports of scholastic aptitude scores: data from juniors and seniors', *Perceptual and Motor Skills* 71 (1), 290.

Acknowledgements

This article was supported by the Research Centers in Minority Institutes Supplement, National Institutes of Health, Grant No. RR0361–06S1; National Institute of Mental Health, Grant No. 1 R24 MH5015–01; the Queen Emma Foundation; and the Native Hawaiian Center of Excellence. The authors would like to thank all of the researchers and administrators of the Native Hawaiian Mental Health Research Development Program.

Address for correspondence

Dr Earl S. Hishinuma, Native Hawaiian Mental Health Research Development Program, 1356 Lusitana Street, Fourth floor, John A. Burns School of Medicine, University of Hawai'i at Mānoa, Honolulu, Hawai'i 96813, USA. E-mail earlhish@aol.com