Effect of Early Language Education on students' academic performance in Port Moresby National High School (POMNATH)

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As the theoretical basis of this research has already been discussed in the previous paper, we will get straight to the point:

Our hypotheses:

1. Does the AO of English acquisition affect POMNATH students' grades?

$1H_0$: AO has no effect on POMNATH students' performance

2. Does the Age at Literacy affect POMNATH students' grades?

$2H_0$: AGELIT has no effect on POMNATH students' performance

3. Does Early Learning Lg (ELL) affect POMNATH students' grades?

$3H_0$: ELL has no effect on MBBS students' performance
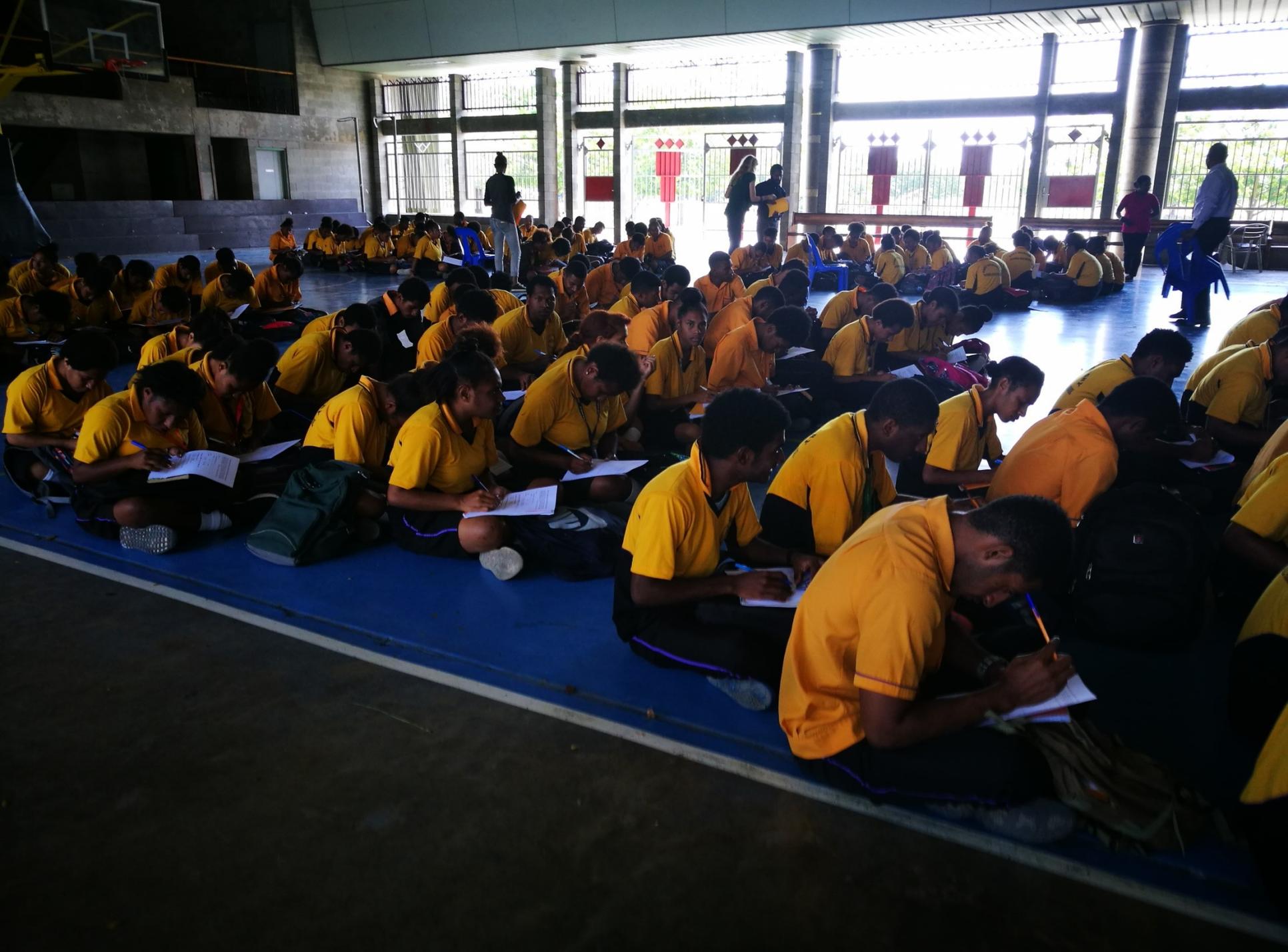
Materials

1. A short pre-tested questionnaire to elicit information on

   – *When*, *where*, & *in which language* POMNATH students learned to read & write
   – At what *age* they started learning English

2. **Term 2 2019 academic grades** for current POMNATH students

Methods

   – Purposive sampling
   – SPSS 20 software was used for statistical analysis

Research Procedures

With approval of POMNATH school administration, we

- carried out a Self-Administered Questionnaire (SAQ) Survey of students' language education backgrounds, and

- obtained the students' Term 2 2019 grades

Information contained in **422** filled questionnaires was entered into Excel spread sheets, coded, and matched with the respective students' English and Overall performance grades, forming our final dataset.

Comparisons of Means, ANOVAs, nonparametric correlations, regression, and nonparametric tests were run, as appropriate.

Sample description: Response Rate
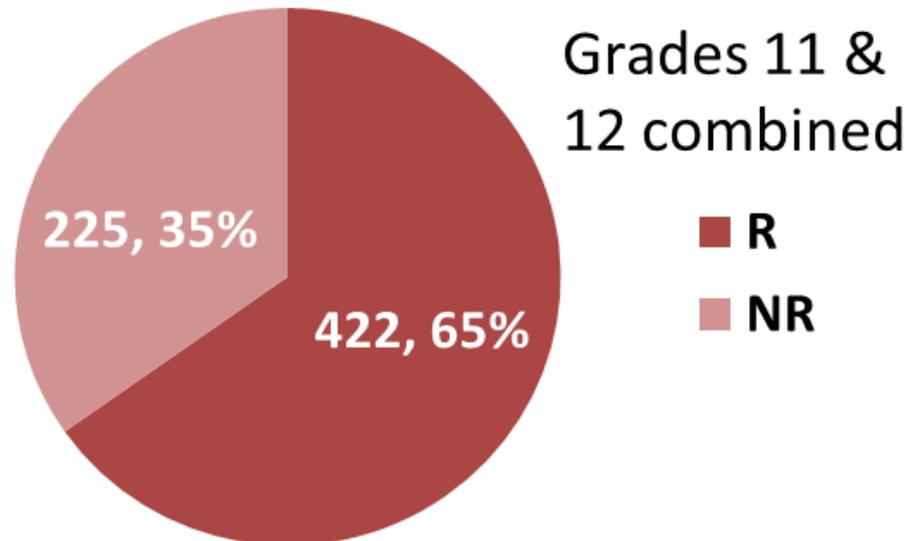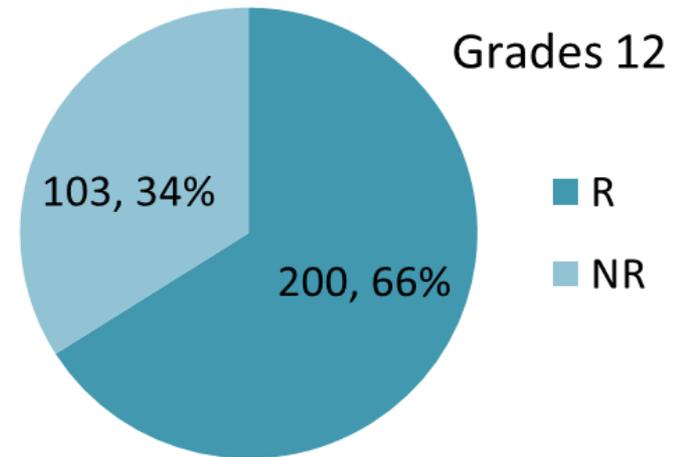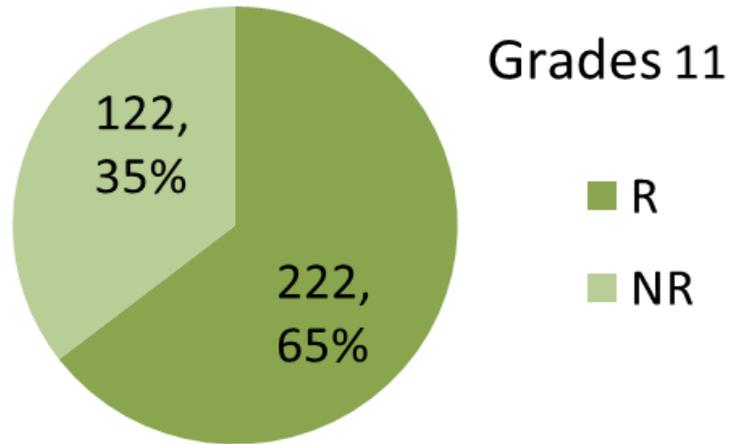
GPI 0.945; official **PARITY is** defined as **GPI between 0.97-1.03**

205, 49%   ■ F

217, 51%   ■ M
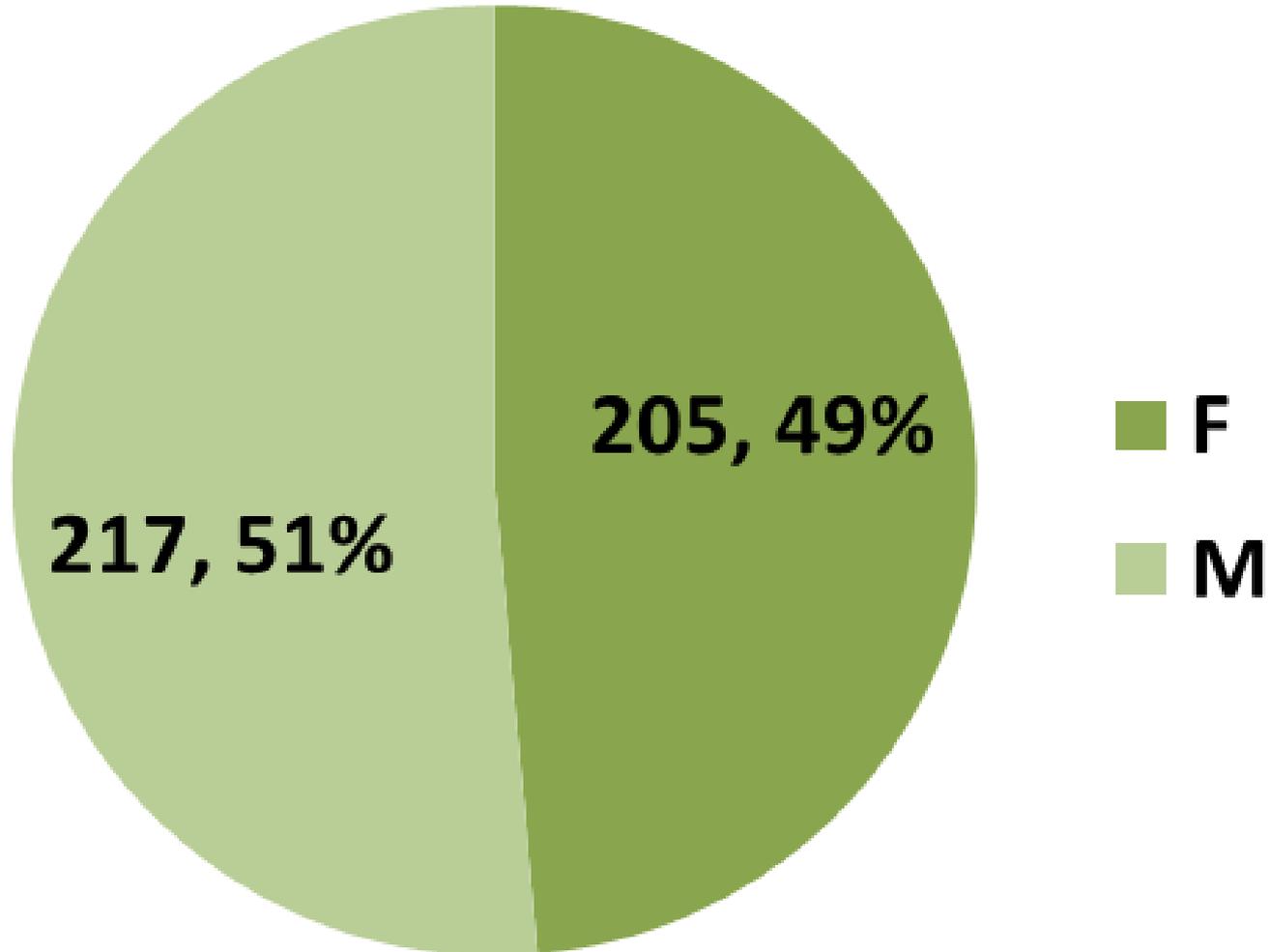
The vast majority of POMNATH students in our sample came from POM:

ELL DISTRIBUTION

32, 8%   **1, 0%**

78, 18%

59, 14%

243, 58%

9, 2%

Legend:
- ENG
- TP
- V
- TPENG
- VENG
- TPVENG
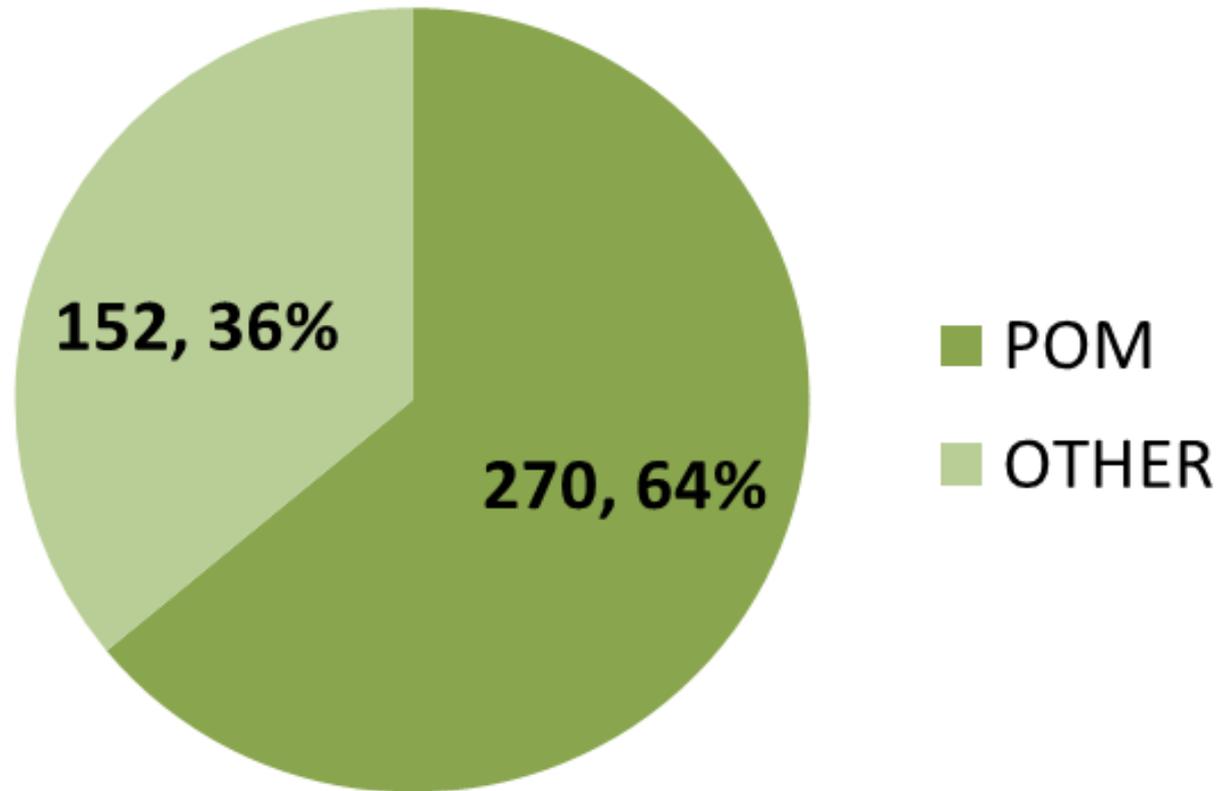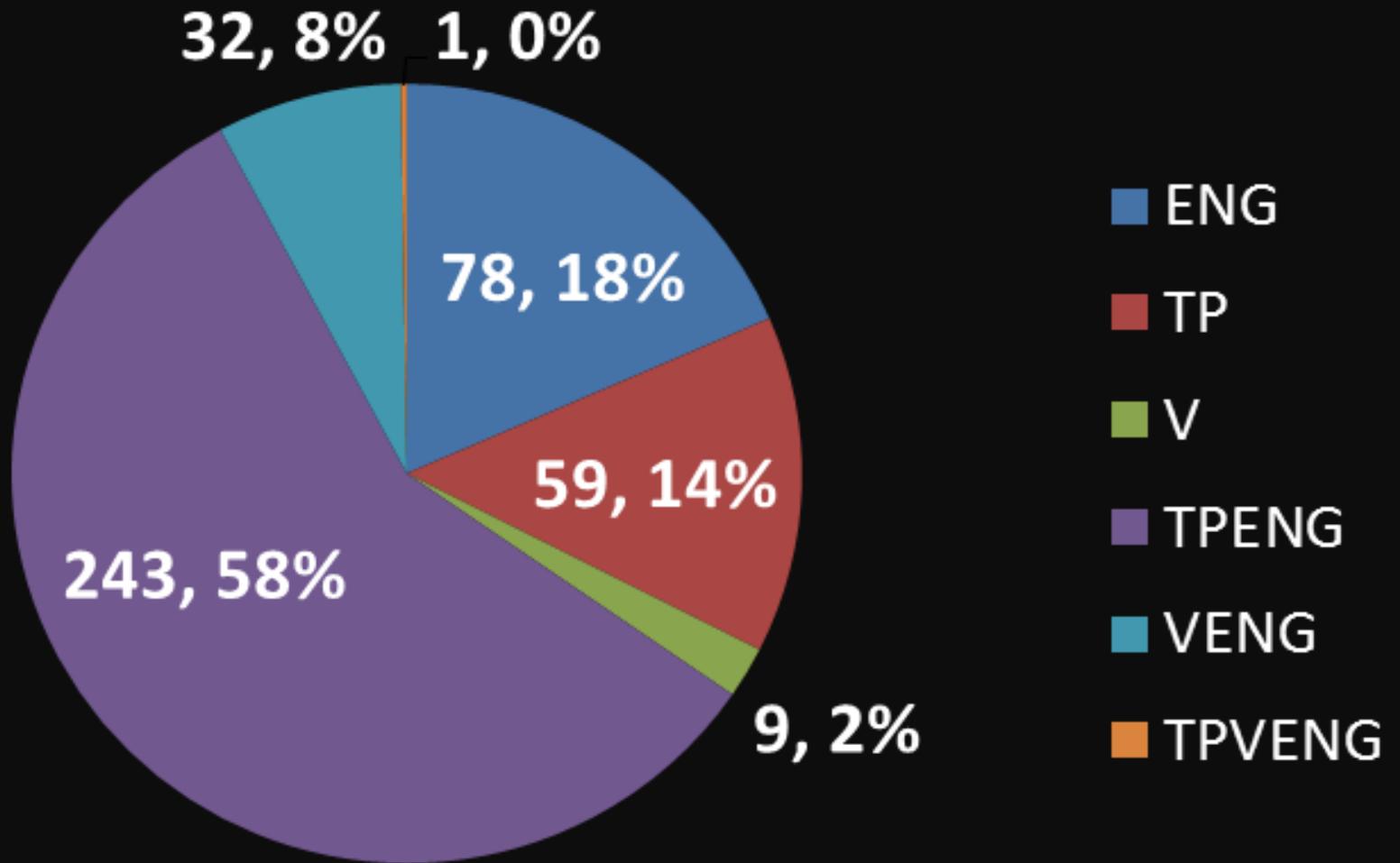
N.B. **76%** of our sample had ELL ENG / TPENG

COMPARISONS OF MEANS in ELL categories

	ENG	TP	V	TPENG	VENG	TPVENG
English	81.61	59.59	67.06	69.24	66.69	79.50
Overall	79.03	63.25	71.65	70.34	69.24	79.50
Count	78	59	9	243	32	1

Legend: ■ English ■ Overall
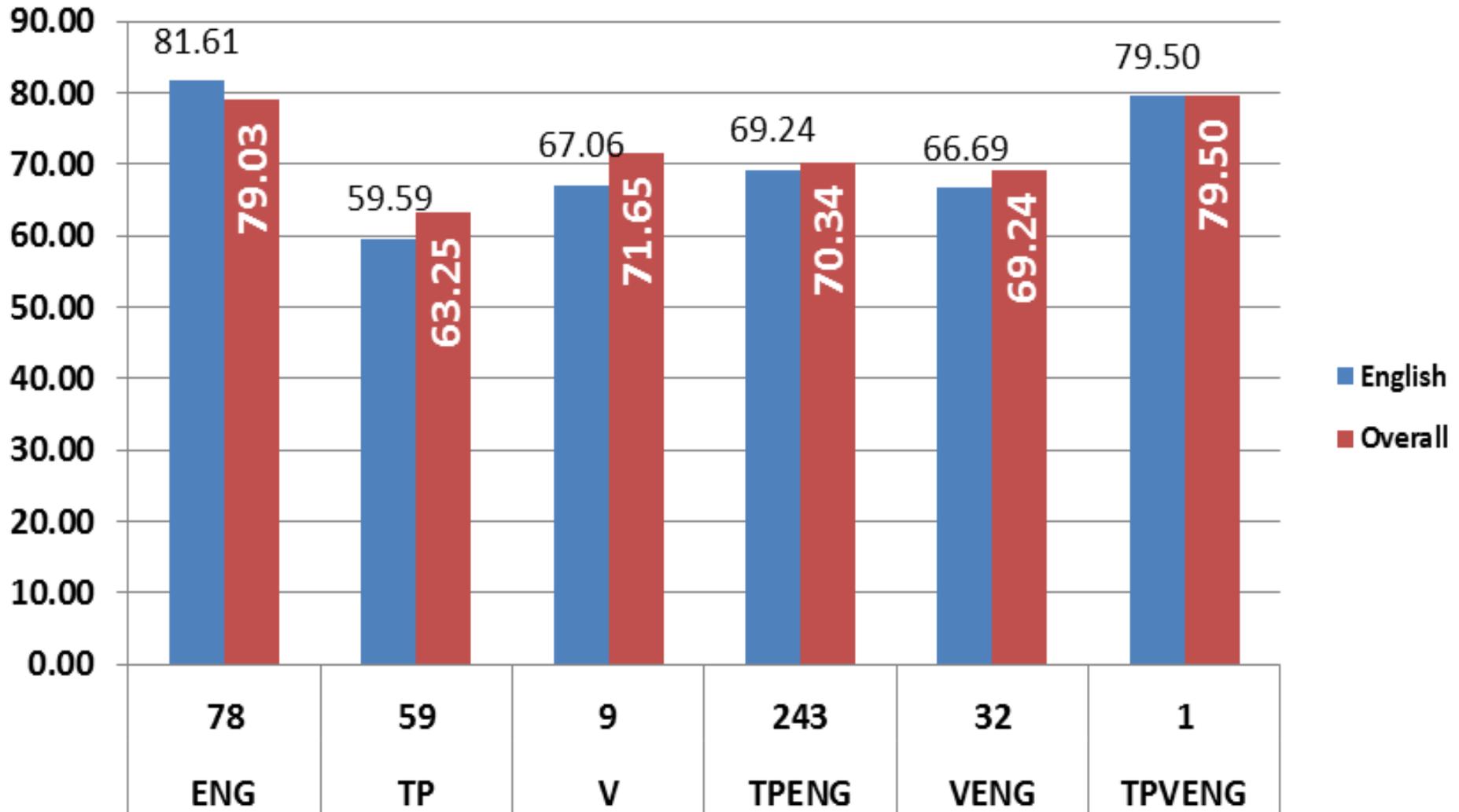
COMPARISON OF MEANS BY AOG
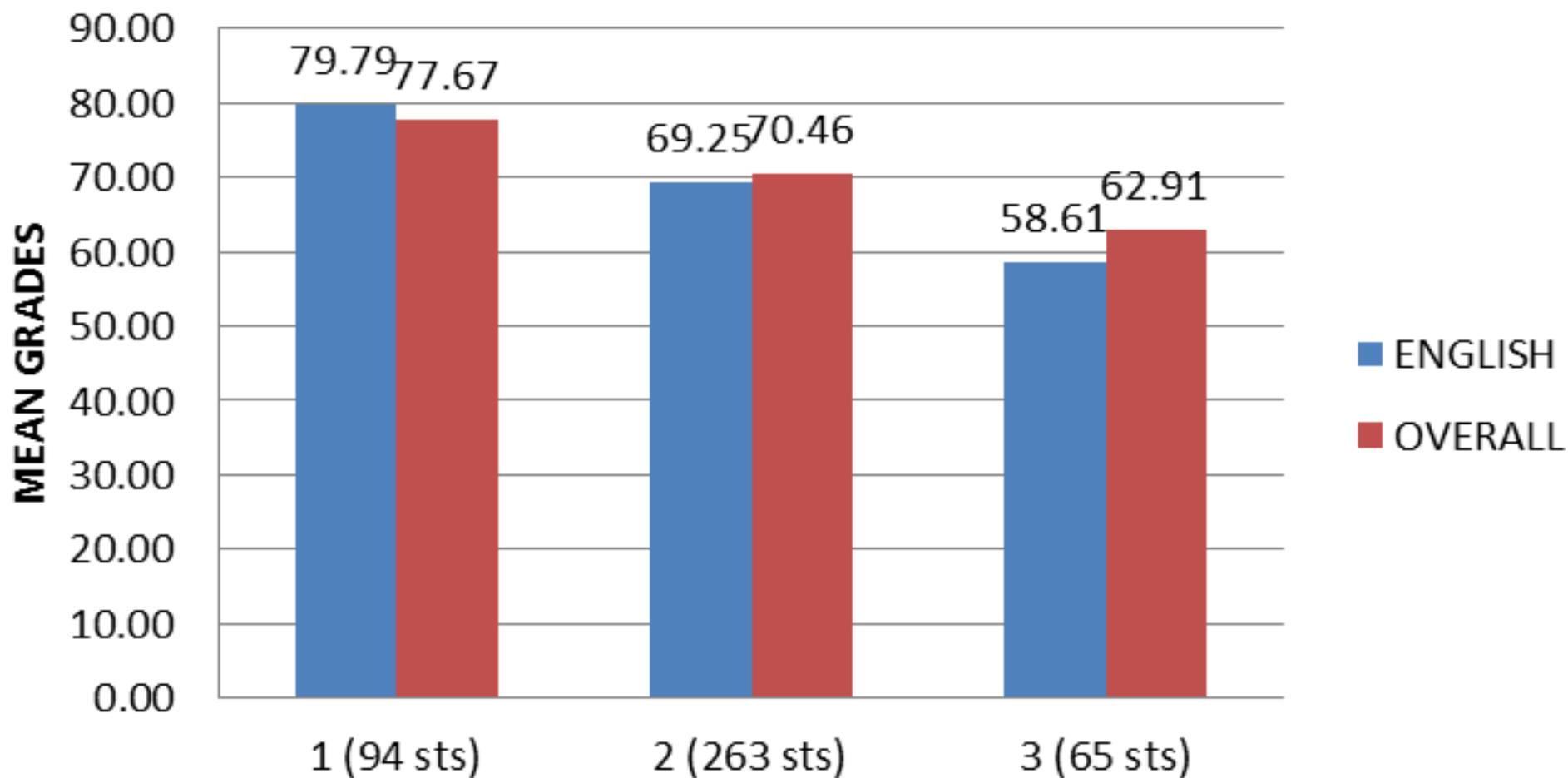
COMPARISON OF MEANS BY AGELIT Groups

	English	Overall
1 (30 sts)	81.53	79.47
2 (246 sts)	72.74	72.71
3 (146 sts)	62.89	66.10
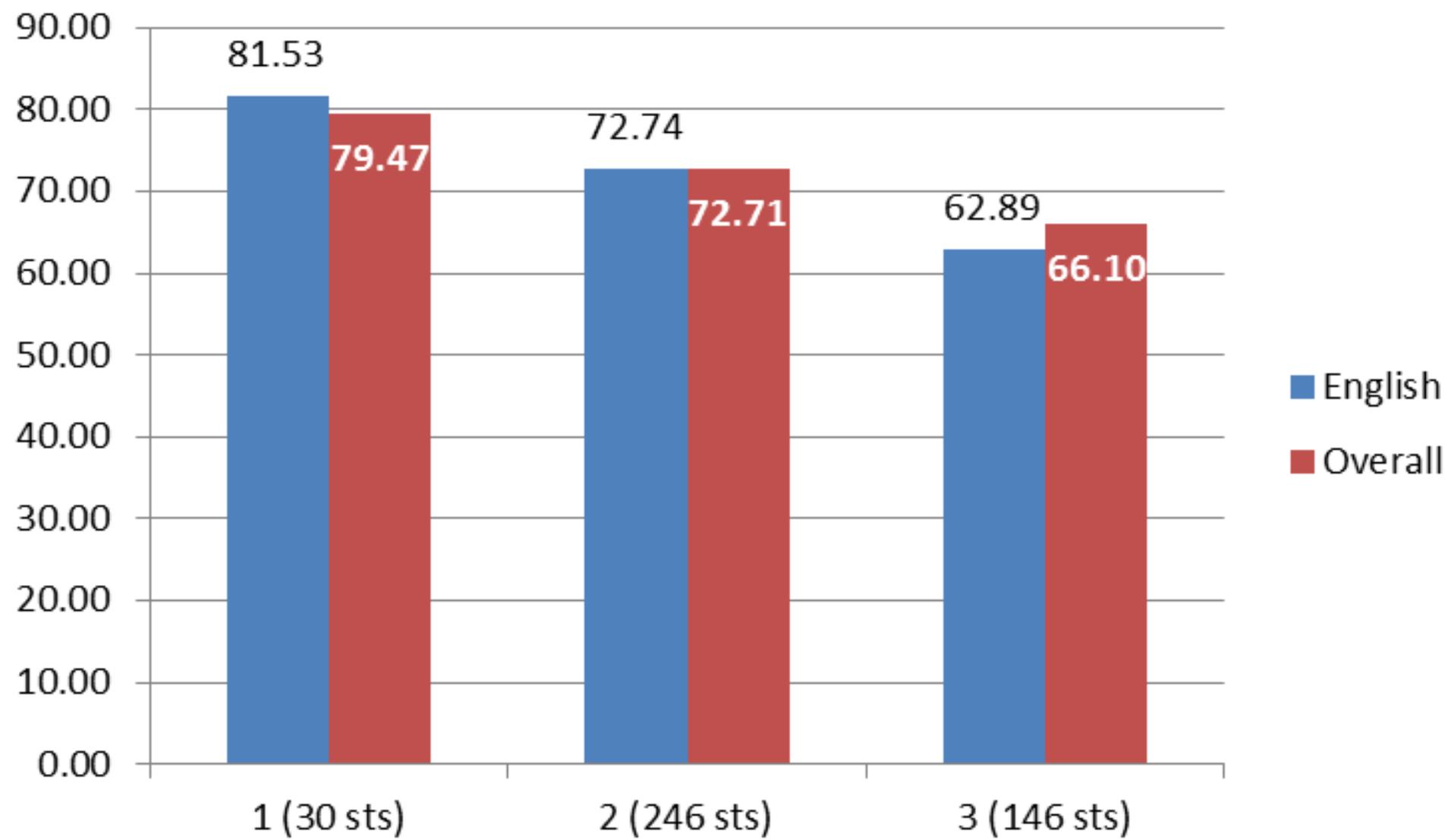
ANALYSES RUN	COEFFICIENTS (Effect Size statistic)	Significance level = 0.000		
		AO*Eng	AGELIT*Eng	ELL*Eng
ANOVA (COMP. MEANS)	Eta Squared	0.591	0.456	0.498
Nonparametric Correlations	Spearman's rho r	-0.775	-0.678	-0.307
OLS Regression	R-squared	0.559	0.402	0.093
	Beta (standardized)	-0.747	-0.634	-0.304

All coefficients showed a significant inverse relationship between AO, AGELIT, ELL and the students' grades.

Multiple Regression - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.739[a]	.546	.543	6.1867

a. Predictors: (Constant), AGELIT Groups, Early Learning Language, AO Groups

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19258.229	3	6419.410	167.719	.000[b]
	Residual	15998.875	418	38.275		
	Total	35257.105	421			

a. Dependent Variable: LANG & LIT

b. Predictors: (Constant), AGELIT Groups, Early Learning Language, AO Groups

R-squared explains **over 54 %** of Grades variation in our sample

F-Statistic: high, showing **significant variation between sample means**

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	95.846	1.299		73.758	.000
ELL	-.618	.240	**-.089**	-2.578	.010
AOG	-7.768	.658	**-.518**	-11.809	.000
AGELITG	-3.908	.684	**-.250**	-5.713	.000

a. Dependent Variable: English grades

All Beta coefficients are negative; it means that for every 1-unit increase in each of the predictor variables, the Grade will decrease by the Beta coefficient value.

Nonparametric tests of our three hypotheses

showed a statistically significant difference in Grades distribution across AOGs, AGELITGs, and ELLs:

1st Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of LANG & LIT is the same across categories of AO Groups.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
2	The distribution of Overall Performance is the same across categories of AO Groups.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Nonparametric Tests – 2ⁿᵈ Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of LANG & LIT is the same across categories of AGELIT Groups.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
2	The distribution of Overall Performance is the same across categories of AGELIT Groups.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Nonparametric Tests – 3ʳᵈ Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of LANG & LIT is the same across categories of Early Learning Language.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
2	The distribution of Overall Performance is the same across categories of Early Learning Language.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

In summary, we conclude:

There is **a strong and statistically significant negative link** between POMNATH students' AO, AGELIT, ELL and their Grades:

- The earlier they learned English, the higher were their Grades;

- The earlier they learned to read and write, the higher were their Grades;

- Students with ELL English had the highest grades, while those with ELL TP performed poorly. Therefore, PNG children must be equipped with basic English skills before they embark on their formal education.

AND A SPECIAL

THANK YOU

TO

MR. MATHEW MAITO & MRS. GEVENA GWAIBO,

THE SENIOR POMNATH ADMINISTRATORS,

FOR THEIR INVALUABLE ASSISTANCE IN CONDUCTING

OUR SURVEY!!!

THANK YOU FOR YOUR ATTENTION!

References

1. **Temple**, O., **Kamene**, S., **Guldan**, G., & **Maito** M. Effect of Early Language Education on Students' Academic Performance: the POMNATH case study. Proceedings of the LSPNG 2016 International Conference in Ukarumpa, Eastern Highlands Province, Papua New Guinea, pp. 52-79.
www.langlxmelanesia.com/Temple_LSPNG%20Proceedings%202016%20FV.pdf

2. **Temple**, O., **Dalsgaard**, S. & **Kamene**, S. Effect of Early Language Education on UPNG Students' Academic Performance. LLM Vol. 33(2), 2015, pp. 77-92.
www.langlxmelanesia.com

3. **Temple** O., **Ezebilo** E., **Hane-Nou** G., & **Kamene** S. Effect of early language education on the academic performance of National High School (NHS) students in Papua New Guinea. LLM Vol. 35, 2017

4. **Temple, O.** Does the effect of cortical myelination at the Age of Onset of Second Language Acquisition (SLA) affect the students' academic performance? A University of Papua New Guinea case study. PJMS Vol. 18 No. 2, 2018, pp. 15-34
www.pacjmedsci.com

5. **NRI Blog** https://pngnri.org/index.php/blog/121-the-earlier-png-kids-learn-english-the-better-they-do-in-school

6. **Temple, O. & Syeda, S.** Exploring the relationship between age of onset of learning English and student academic performance: evidence from Papa New Guinea . Pacific Journal of Medical Sciences, Vol. 19, No. 1, December 2018. Pp. 59 - 69.
www.pacjmedsci.com

Our survey questions

1. Personal information:
   - Your name /surname /Student ID
   - Gender

2. MBBS Year of study

4. What language(s) did you speak at home?

5. How old were you when you learned to read and write?

6. Where did you do the first two years of formal schooling?

7. In what language(s) did you first learn to read and write?

8. How old were you when you first started learning English?