

# Self-assessed IQ and beliefs on intelligence to predict the academic achievement in university students

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## Introduction

Intelligence is a mental activity directed with the purpose of adaptation, which is formed by three aspects such as analysis, creativity and application[1].

The effect of Intelligence Quotient (IQ) and other traits such as learning styles on academic success have been the subject of many studies. In this study we aimed to investigate whether beliefs about IQ and IQ can predict academic success among students in mechanical engineering at FEUP.

Correlation analysis revealed a weak correlation between IQ and beliefs about IQ in one side and academic success in the other side. Nonetheless, IQ was detected to be a significant prerequisite in achieving high GPA.

## Methodology

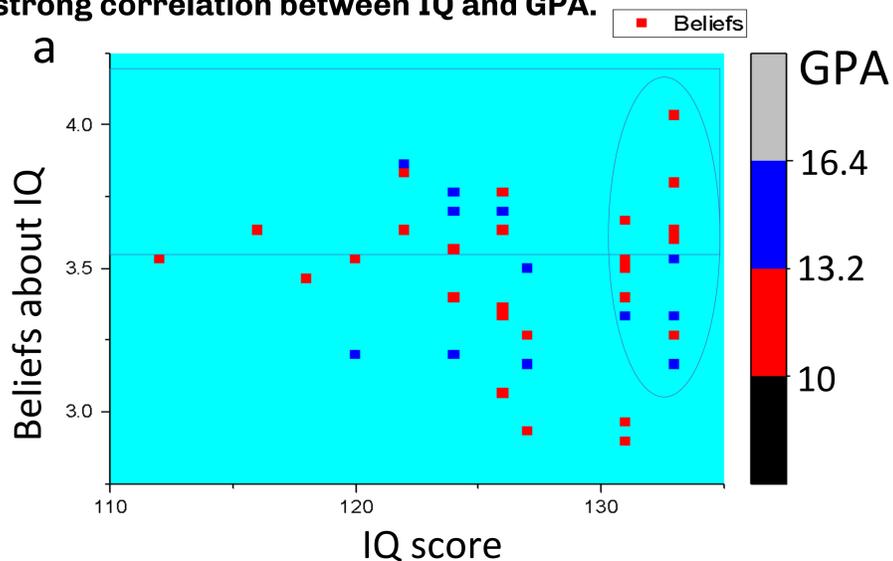
- 42 participants from Engineering students
- Age 18-29, and the mean age was 21.2 (SD = 2.6)
- Beliefs about Intelligence Questionnaire (Gottfretson, 1997)
- Raven's Progressive Matrices
- IQ grades were scaled up to 136.

A linear regression analysis was performed to correlate the GPA to both IQ and beliefs about IQ.

## Results and Discussion

- Figure (1a) shows beliefs on intelligence versus IQ grades.
- No significant correlation between IQ grades and their beliefs on IQ, though the students with higher IQ grades are more likely to believe less on IQ.
- Only 26% of those who have IQ grades higher than 130 got high grades (inside the ellipse). This means that just having a high IQ does not guarantee academic success.
- Figure (1b) shows the GPA of the students versus IQ grades.
- The interesting point is that the students with higher GPA are those ones which have got higher IQ score (the yellow square). This implies that a high IQ is therefore a prerequisite for academic success, but not everything.

The correlation matrix between IQ grades, beliefs on IQ and GPA is provided in Table 1. The p-values imply that there is no strong correlation between IQ and GPA.



## Results and Discussion

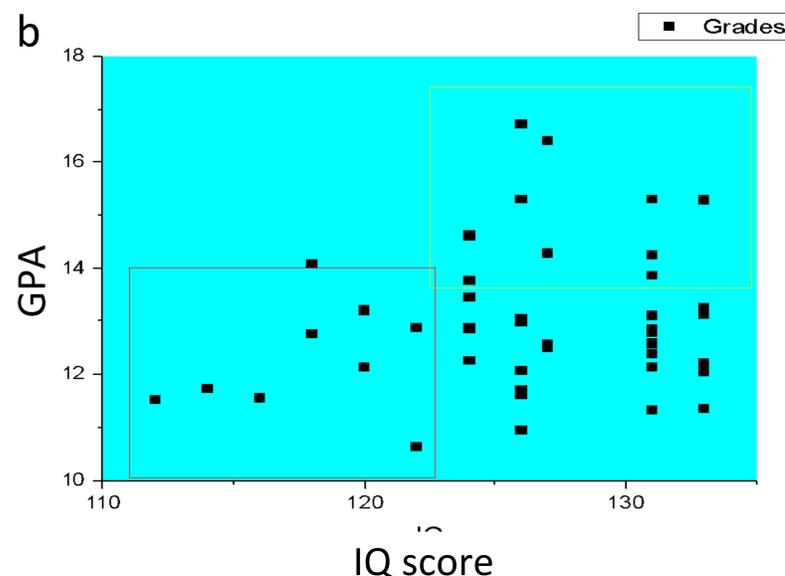


Figure 1. a) Beliefs on intelligence versus IQ grades.

The data are classified into two groups, students with low GPA (red squares, lower than 13.2) and the students with higher GPA (blue squares, higher than 13.2).

b) The GPA of the students versus IQ grades.

Table 1. The correlation matrix between IQ grades, beliefs on IQ and GPA.

Correlation Matrix				
		IQ belief	IQ	Final grades
IQ belief	Pearson's r	—		
	p-value	—		
	95% CI Upper	—		
	95% CI Lower	—		
	N	—		
IQ	Pearson's r	-0.098	—	
	p-value	0.538	—	
	95% CI Upper	0.213	—	
	95% CI Lower	-0.390	—	
	N	42	—	
Final grades	Pearson's r	-0.257	0.152	—
	p-value	0.100	0.336	—
	95% CI Upper	0.051	0.436	—
	95% CI Lower	-0.521	-0.159	—
	N	42	42	—

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

## Discussion & Conclusions

- No direct and significant correlation exists between IQ scores and academic success.
- The students with lower IQ grades tend to get lower GPA.
- The students with higher IQ scores do not necessarily get higher GPA.
- The students with high GPA have got higher IQ gradates, implying that intelligence is essential for academic success but not enough.
- IQ is important in academic success but is not everything.

## References

- [1] Puspitacandri, A. (2020). "The Effects of Intelligence, Emotional, Spiritual and Adversity Quotient on the Graduates Quality in Surabaya Shipping Polytechnic." *European Journal of Educational Research* 9(3): 1075-1087.