

# Effects of Interactions between Demographic Variables and Learning Traits on International Students' Performance

Dr.V.K.Varughese  
RMIT University  
Melbourne

## Aim

- Magnitude of difference in performance by demographic variables.
- Magnitude of difference in performance by learning traits.
- Magnitude of interactions between demographic variables and learning traits
- The effects of interactions on performance.

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## Participants

- International students
- Foundation studies at RMIT
- Academic years: 2003-2006
- 116 students
- Biology

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## Demographic Variables

- Gender
- Age
- Academic qualification
- Language of instruction used in prior qualification

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## Learning Traits

- Introversion/Extroversion
- Intuiting/Sensing
- Thinking/Feeling
- Perceiving/Judging

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## Methods of Teaching and Learning

- Traditional method of Teaching and Learning (TTL)
- Problem Based method of learning (PBL)

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## Methodology

- Collected demographic data
- Determined LS using PLSI
- Taught one topic using TTL and administered Test 1
- Taught second topic under PBL and administered Test 2, SPGD and SSE

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## Research design for investigating students' performance

Yr 2003- 2006	Group 1	Topic 1 by TTL	Test 1
		Topic 2 by PBL	Test 2
	Group 2	Topic 1 by PBL	Test 1
		Topic 2 by TTL	Test 2

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## Preliminary analyses Demographic Data

- Male: 49 42%
- Female: 67 58%
- Normal Age: 98 84%
- Mature Age: 18 16%
- English 53 46%
- Other 63 54%
- School Qualified 108 93%
- Tertiary Qualified 8 7%

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## Preliminary Analysis Learning Traits by using PLSI

- |              | M  | F        |
|--------------|----|----------|
| • Introvert  | 71 | (26 +45) |
| • Extrovert  | 45 | (23 +22) |
| • Intuitive  | 50 | (26+24)  |
| • Sensing    | 66 | (23+43)  |
| • Thinking   | 58 | (25+33)  |
| • Feeling    | 58 | (24+34)  |
| • Perceiving | 30 | (12+18)  |
| • Judging    | 86 | (37+49)  |

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## Further Analysis:

- Effect size calculation
- Independent of sample size
- Comparing groups that are not equal or controlled.
- Existing samples
- Measures the magnitude of a treatment effect
- Cohen's *d*

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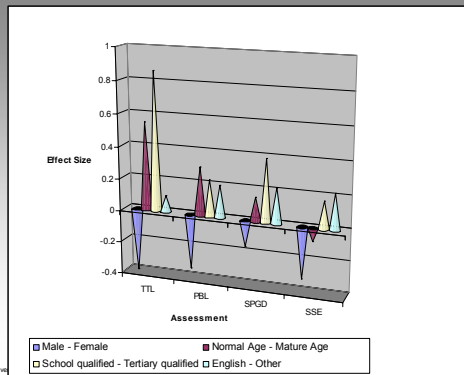
## Descriptors for magnitudes of effect sizes

- Large  $\geq 0.8$   
range (0.75 and above)
- Medium  $\geq 0.5$  and  $< 0.8$   
range (0.45-0.74)
- Small  $\geq 0.2$  and  $< 0.5$   
range (0.15-0.44)
- Very Small  $< 0.2$   
range (0.14 and below)

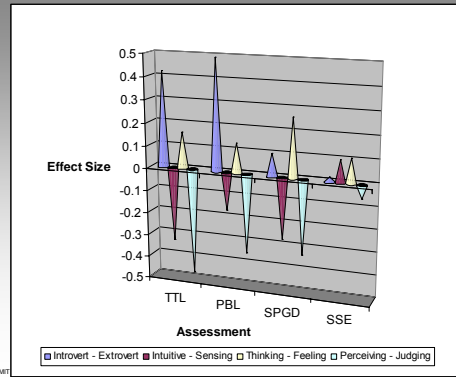
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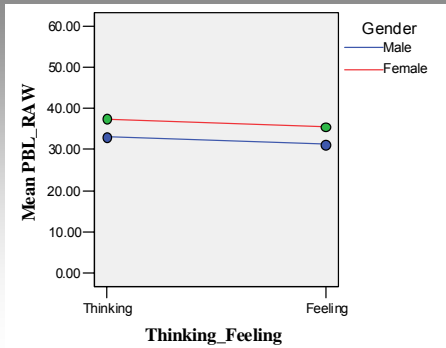
Magnitude of difference in performance by demographic variables



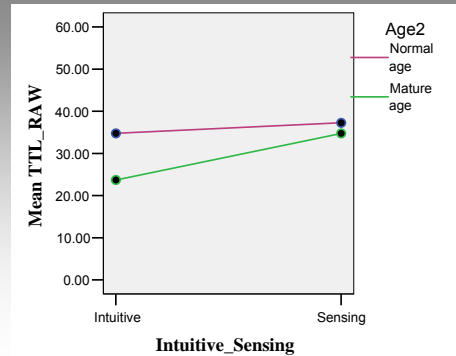
Magnitude of difference in performance by learning traits



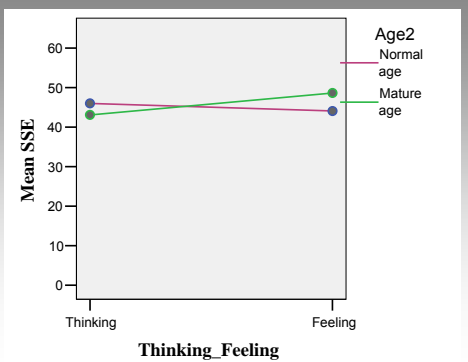
Interaction between gender and T/F traits on PBL



Interaction between Age and N/S traits on TTL



Interaction between Age and T/F traits on SSE



Magnitude of Interaction between Age & N/S traits

Assess	Group 1	Group 2	*Effect Size	*Difference in Effect Sizes	*Magnitude of Interaction
TTL	NA Intuit	MA Intuit	0.28	0.59 in favour of Intuit	Large
	NA Sens	MA Sens	0.21		
PBL	NA Intuit	MA Intuit	0.35	0.11 in favour of Intuit	Very small
	NA Sens	MA Sens	0.24		
SPGD	NA Intuit	MA Intuit	0.39	0.43 by reversed trends	Small
	MA Sens	NA Sens	0.04		
SSE	MA Intuit	NA Intuit	0.42	0.71 by reversed trends	Medium
	NA Sens	MA Sens	0.29		

\* Large Medium Small Very small

### Magnitude of Interactions between gender and learning traits

Subject Variables	Dependent variables	Learning style traits			
		I/E	N/S	T/F	P/J
<i>*Magnitude of interaction</i>					
Gender	TTL	small	v.small	v.small	small
	PBL	medium	small	none	v.small
	SPGD	medium	v.small	small	small
	SSE	small	small	small	medium

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### Magnitude of Interactions between age group and learning traits

Subject variable	Dependent variables	Learning style traits			
		I/E	N/S	T/F	P/J
<i>Magnitude of interactions</i>					
Age group	TTL	medium	large	small	large
	PBL	very small	very small	very small	small
	SPGD	small	small	very small	none
	SSE	small	medium	large	small

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### Magnitude of Interactions between prior qualification and learning traits

Subject variable	Dependent variables	Learning style traits			
		I/E	N/S	T/F	P/J
<i>Magnitude of interactions</i>					
Prior qualification	TTL	none	medium	large	large
	PBL	small	small	small	small
	SPGD	small	large	large	small
	SSE	very small	large	medium	small

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### Magnitude of Interactions between language of instruction of prior education and learning traits

Subject variable	Dependent variables	Learning style traits			
		I/E	N/S	T/F	P/J
<i>Magnitude of interactions</i>					
Language of instruction of prior education	TTL	small	small	very small	large
	PBL	medium	small	very small	large
	SPGD	small	small	small	medium
	SSE	medium	medium	small	small

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### Findings

- Magnitude of difference by demographic variables Eg: Gender-small, Age-TTL medium, P.Q- TTL large, L.I- TTL v.small
- Magnitude of difference by learning traits eg: female and male extroverts-Medium on TTL, PBL and SPGD and small on SSE
- Clear interactions
- Magnitude of interactions- Large, Medium, Small or Very Small.
- No interaction- Gender & T/F on PBL
  - Age & P/J on SPGD
  - PQ & I/E on TTL

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### Conclusion.

- Different educational, social and cultural backgrounds.
- Different teaching and learning environments.
- They might have been highly successful under those systems.
- Unfamiliar teaching and learning situations and very different educational expectations lead to frustrations

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### Conclusion.

- The classroom situation should accommodate the needs of students from various educational backgrounds.
- Traditional and Problem-Based methods.
- Teachers should be aware of interactions between the demographic variables and learning style traits and their effect on performance.

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### Conclusion.

- Mature age students had personal problems in attending classes regularly as they had to support themselves.
- Mature age students often had difficulties keeping pace with the regular activities.
- Self paced activities and Problem-Based method of learning into the curriculum could benefit mature age students.

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### Conclusion.

- Further, in higher education students are required to use more student-centred and analytical approaches to learning.
- International students often have languages other than English as language of instruction in their prior education.

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### Conclusion.

- It is recommended that a combination of traditional and Problem-Based methods of teaching and learning should be encouraged in FS.
- Determine the student learning styles at the beginning of any program.
- Teachers to be aware of their own learning traits

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### Conclusion.

- The use of instruments like SPGD and SSE for assessment purposes to measure students' participation in PBL activities.
- This will provide a systematic feed back to the facilitator to identify the individual learning differences of students and provide appropriate support.

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### The end

- Thank you for listening

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