Can cognitive style predict language proficiency? Self-rated questionnaire versus performance-based measure

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Introduction

In existing literature , close attention has been given especially to the role of cognitive style (i.e., verbalizer-visualizer spectrum) in influencing learners' learning outcomes (e.g., Thomas & McKay, 2010; Kolloffel, 2012), but not language proficiency which is examined in this study. Various self-reported questionnaires or tests can be adopted. However, research on this topic requires reliable and valid measurements.

The present study is to investigate the effect between a self-rated questionnaire and a performance-based measure and their roles in predicting English competence. The main research questions and hypotheses are:

Research question 1: Does the type of cognitive style estimated by a self-reported questionnaire same as or different from the type estimated by a performance-based measure?
Research question 2: Does cognitive style predict English competence?

Hypothesis 1: There is a coherence of the type of cognitive style estimated by the self-reported questionnaire and the performance-based measure of cognitive style.
Hypothesis 2: The verbalizer dimension significantly predicts English competence.

Method

Participants: 192 undergraduate students (57 males, 135 females; 91% of them were year one students)
English language proficiency: the grades obtained from the public examination (e.g., in HKALE or HKDSE)
Verbalizer-Visualizer Questionnaire (VVQ) *(the self-rated questionnaire, adopted version from Mendelson & Thorson, 2004):*

- **Verbalizer Dimension (10 items)**

- I enjoy doing work that requires the use of words.

- **Visualizer Dimension (10 items)**

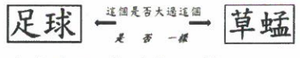
- I find illustrations or diagrams help me when I am reading.

Verbal-Imagery Cognitive Style (VICS) *(the perfomance-based measure, Chinese version translated from Peterson, Deary & Austin, 2005):*

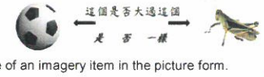
- 116 verbal items (58-item in word form and 58-item in picture form) & 116 imagery items (58-item in word form and 58-item in picture form) (Note: the below is a makeup item for illustration purpose.)

Example of a verbal item in the word form.

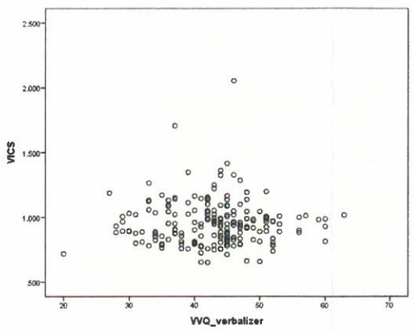

Example of a verbal item in the picture form.

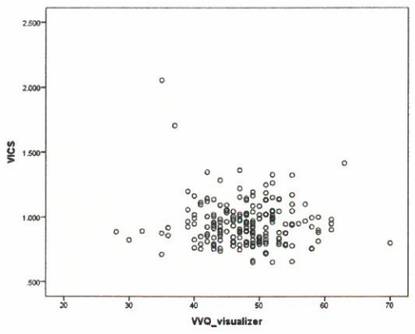


Example of an imagery item in the word form.


Example of an imagery item in the picture form.

Scatter plots





Note: For both the verbalizer and visualizer dimensions in VVQ that varied from 10 to 70, with 10 being either most verbal or most visual respectively. For the VICS, the scores arranged from 0 to 2 (or above), with indicating the spectrum from a verbal preference to an imagery preference.

There are no correlations between the sets of data.

Verbalizing and visualizing are not the opposite ends of a continuum. Although people differ in their predisposition to learn from verbal and visual information, some are still equally good at learning from both of them.

Regressions

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.422	.439		3.238	.001
	VVQ_verbalizer	.022	.006	.275	3.864	.000
	VVQ_visualizer	-.007	.006	-.075	-1.057	.292
	VICS	.140	.225	.044	.620	.536

a. Dependent Variable: Eng_oral

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.745	.423		1.763	.080
	VVQ_verbalizer	.020	.005	.264	3.709	.000
	VVQ_visualizer	.003	.006	.035	.487	.627
	VICS	.144	.217	.047	.663	.508

a. Dependent Variable: Eng_listening

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.317	.503		2.619	.010
	VVQ_verbalizer	.017	.006	.195	2.698	.008
	VVQ_visualizer	-.001	.007	-.005	-.068	.946
	VICS	-.025	.258	-.007	-.096	.924

a. Dependent Variable: Eng_comprehension

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.324	.413		3.206	.002
	VVQ_verbalizer	.020	.005	.274	3.865	.000
	VVQ_visualizer	-.005	.006	-.060	-.848	.398
	VICS	.137	.212	.046	.646	.519

a. Dependent Variable: Eng_writing

VVQ, VICS, and English competence

Correlations

		Eng_oral	Eng_listening	Eng_comprehension	Eng_writing
VVQ_verbalizer	Pearson Correlation	.265**	.268**	.195**	.267**
	Sig. (2-tailed)	.000	.000	.007	.000
	N	189	189	190	190
VVQ_visualizer	Pearson Correlation	-.045	.064	.019	-.030
	Sig. (2-tailed)	.539	.384	.792	.681
	N	189	189	190	190
VICS	Pearson Correlation	.048	.044	-.007	.048
	Sig. (2-tailed)	.515	.551	.920	.507
	N	189	189	190	190

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Results and Conclusion

The score of the self-reported questionnaire on cognitive style was not correlated with that of the performance-based measure. Only the verbalizer dimension of the VVQ could predict English competence significantly.

Language learning might be particularly influenced by verbalization.

References and Acknowledgements

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