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Post-Compulsory Students Learning Styles and Resilience in London (U.K.)

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ABSTRACT: *Research on learning style models advocate that students are more likely to achieve learning goals by matching teaching styles with learning styles. This paper investigates students' learning styles by the Learning Styles Questionnaire (LSQ) as it conveys the opportunity to build resiliency among students. The nature of resiliency has also been explored using multiple measurements. The paper's investigation includes a short scale of measuring resiliency used by post-compulsory researchers. Students' learning styles were examined in terms of ethnicity and gender and their relationship with course types and resilience. A research study in London asked thirty students (15 males and 15 females) to complete the LSQ and measurement of resilience items. The results showed that students' learning style was not related to ethnicity, gender, qualification type, or resilience. These findings support some research. The research implies that triangulation of measurements is necessary with a larger number of participants across types of courses and locations. Furthermore, students' resilience needs to be defined in terms of wellbeing, gender, and ethnicity across the U.K.*

KEY WORDS: learning style questionnaire, resiliency, post-compulsory students.

INTRODUCTION

Learning Styles

Bringing together the definitions of learning styles by Dunn et al (1995), Keefe (1979), Sims and Sims (1995), Oxford et al (1991) and Dingliang (1995), learning styles may be defined as the combination of our motivations and cognitive processing which interact with metacognitive skills such as planning, analysis of situations, self-evaluations and knowledge skills. A succinct classification of learning styles was made by Curry (1991), who conceptualised three layers of a model of styles analogous to an onion.

A. The innermost layer of the onion is the cognitive personality style. This is defined as the individual's approach to adapting and assimilating information that does not interact with the environment but is an underlying and relatively permanent personality dimension that is apparent only when an individual's behaviour is observed across many learning instances.

B. The second layer is referred to as the "information processing style". Curry believed that measures of information processing styles are more stable than instructional preference, but modifiable by learning strategies.

C. The outermost layer is the most observable style and is labelled as "instructional preference". This refers to the individual's choice of the environment in which to learn.

Curry concluded that definitions of learning style, its concepts and theories are dissimilar between cultures and types. Sternberg and Grigorenko (2001,b.) also reported that there is an empirical problem with the measurement of learning styles and this is the generalisability of findings. Nevertheless, Coffield et al. 's (2004) arguments were seen as being influential. A review identified 71 models of learning styles; 13 are viewed as more significant than the other 58. While some are new constructs similar to others, some were used with small or homogenous populations. This offered little reliable and valid evidence for practice-based applications. Models also failed to recognise how styles vary in different content areas and disciplines and have not answered how context affects learning (Coffield et al., 2004). Hodgkinson, Herriot, and Anderson (2001) discussed the need for a pragmatic approach, which Cools (2008) asserted combines theoretical rigor and practical relevance.

However, the use of learning styles remains to be influential in pedagogy. Pritchard (2009) named three learning styles (VARK). *Visual learners (V)* usually like information to be presented as either diagrams, graphs or maps. Boatman, Courtney and Lee (2008) used the VARK methodology and found that students with a visual learning preference performed better in an Introductory Economics Course. They preferred to explain concepts by drawing pictures and diagrams. *Auditory learners (A)* tend to gain from discussions, lectures, interviewing, audio tapes and hearing stories. Students with a *Read-Write* preference can understand concepts easily through mediums such as lists, handouts, and textbooks. Finally, *Kinesthetic learners (K)* tend to learn mostly by doing things and they use feelings and/or physical experiences and much of this is memorised.

In the discussion of the application of students' learning styles, there may be variation in performance with the level of guidance they prefer. Riechmann and Grasha (1974) specified that learners may prefer the teacher to take control of schedules with clear assessed assignments, but independent learners will use the teacher as a facilitator. In this case, students shape their own learning. However, collaborative learners like to work in groups and do well in discussions, group projects, or assignments. Nevertheless, assignment completion varies according to individual differences in approach as well as types of assignments. Moreover, Riding and Sadler-Smith (1997) pointed out that individuals may have various levels of responses to any problem. For instance, while some basic routines for problem-solving may be automatic other routines will require reflective thinking and repetition before a level of automation is reached. Some routines may require elaborate planning procedures as well as high levels of self-awareness and some students will recognise this. It is suggested that students' resilience with learning tasks coupled with learning style and course types may impact their learning outcomes.

Students' Resilience

Being resilient denotes one's ability to cope with hardships. Perry (2002) discussed that facing stressors does not mean that all will succumb to negative consequences. For example, Bonanno (2004) pointed out that resilient individuals have psychological mechanisms which enable outcomes which are positive. That is, individuals respond differently to situations which pose threats to their existing coping strategies (Rutter, 1987).

Sandin and Sànchez-Marti (2014) examined the relationship between resilience and school completion among immigrant students in Spain. Ninety- four students in their fourth-year compulsory education participated in the study; they were from 19 different nationalities, between 15 and 18 years of age, and the ratio of boys/girls was 55/45. There were no significant differences by gender, age but significant differences were between cultural groups. It was reported that students who continued their studies beyond compulsory education had higher levels of resilience. However, those who did not continue beyond the required education tended not to be as resilient.

Resilience is linked with wellbeing among the student population. Wu et al. (2020) reported the relationship between resilience and mental health in a sample of 314 college students in China. The authors used the Depression Anxiety Stress, Positive Mental Health and Resilience scales and reported that first year students and senior year students experienced lower positive mental health levels and higher negative mental health levels compared with other students. The results indicate that mental health education for college students and interventions should be focused of students' college year. Other research such as that conducted by Chow et al. (2018) reported that resilience impacted nursing students' learning experiences, academic performance and course completion. However, the authors reported that the relationship between resilience and wellbeing among nursing students is relatively unknown.

Research conducted in Karachi (Pakistan) by Rao and Malik (2021) examined the relationship between wellbeing and resilience among undergraduate university students, with gender as a research construct. Ryff's (2014) psychological wellbeing scale and the Connor-Davidson Resilience Scale (Connor & Davidson, 2003) showed that autonomy and environmental mastery were significant positive correlates of resilience. Psychological wellbeing and resilience were found to be more apparent among female students compared with males.

It is therefore envisaged that post-compulsory students are more likely to be resilient and possess positive wellbeing. However, it is not known in what way resilience and wellbeing are linked among the London based student population in the UK., their learning styles, their gender, the courses they study and their ethnicity.

Research Questions

- Is there a relationship between learning styles and ethnicity?
- Are qualification types suitable for learning styles?
- To what extent are resiliency items related to learning styles and ethnicity?
- Are there gender differences in measures of resiliency items and learning styles?

METHODOLOGY

The methodology comprised a case study with measures: the learning styles questionnaire (LSQ), a measurement of resiliency used in post-compulsory education and participants' ethical consent.

Case Study

Harrison et al. (2017) discussed the care study as a way for researchers to pursue their research interests, as it enables real-life situations to be explored and evaluated. Thirty post-compulsory

students in London completed the LSQ and items measuring resiliency. There was a mix of ethnicity and subjects studied among participants for the investigation reported in this paper.

The Learning Styles Questionnaire

The LSQ has not been used globally as an alternative to VARK. From the researcher's teaching experience, students vary and can be activists, theorists, reflectors or pragmatists. Nevertheless, it was acknowledged that the LSQ cannot capture the multifaceted element of learning (Coffield et al., 2004).

The LSQ was designed to find preferences for learning and consists of 80 items. It takes approximately 10-15 minutes to complete. Students were instructed.
'There is no time limit to this questionnaire. It will probably take you 10-15 minutes. The accuracy of the results depends on how honest you can be. There are no right or wrong answers. If you agree more than you disagree with a statement put a tick. If you disagree more than you agree put a cross by it. Be sure to mark each item with either a tick or cross.
(Honey and Mumford, Learning Styles Questionnaire, 1992)

- Activists talk through problems by brainstorming, and flourish on challenges. They act first and consider consequences afterward. Reacting positively to small group discussions is easy for them. However, they may take unnecessary risks or rush into actions without preparing sufficiently. An example of an item is: - *I thrive on the challenge of tackling something new and different.'*
- Reflectors think about experiences they have and consider different perspectives before arriving at conclusions. They prefer:- e-learning, listening to lectures or presentations, self-study and self-directed learning. However, they can be too cautious and assertive. An example of an item is:- *I take care over the interpretation of data available to me and avoid jumping to conclusions.'*
- Theorists are restricted in lateral thinking and intolerant of subjectivity and ambiguity. They nevertheless are good at asking probing questions and have a rational and objective approach. An example of an item is:- *I like to relate my actions to a general principle'.*
- Pragmatists try out new ideas, theories and techniques, are practical and respond to problems as a challenge. They react positively to discussions in small groups, problem-solving workshops, and project work. As they tend to be more task-oriented they take advantage of the first solution to a problem. A n example of an item is:- *'I can often see better, more practical ways to get things done'.*

Items Measuring Resilience

The items listed below (a-f) are used by the researcher in English further education colleges and was adopted in this research as the items relate to resilience and wellbeing measured by Ryff (2014) and conceptualised six dimensions. Item a is related to positive relations, b to personal growth, c to purpose in life/self-acceptance, e to autonomy, and f to environmental mastery.
Students were asked to circle the relevant number, 1 =Never, 5 = Yes, always.
a. Do you usually know how others perceive you? 1 2 3 4 5
b. Are you determined to achieve your lifetime ambitions? 1 2 3 4 5
c. Can you see your future clearly? 1 2 3 4 5
d. Do you normally feel comfortable in new situations? 1 2 3 4 5

e. Can you plan your next day in advance? 1 2 3 4 5
f. Do you enjoy the challenge of unraveling puzzles
and solving problems? 1 2 3 4 5

Information Sheet with Ethical Consent Details

I am a chartered psychologist, and I am requesting your participation in this research. The purpose of this research is to investigate the relationship between learning styles and wellbeing among post-16 student populations in London. This is because it is envisaged that learning styles and resiliency are fundamental antecedents to performance. You have the right to withdraw from this study, and data received from you will be destroyed immediately. Complete data will be stored in a secure location and recorded on a data sheet for analysis. Only when the data are used in an article for publication will the findings be available to others. You are not asked to provide the name of the institution/organisation where you work or study and the name(s) you use in your everyday life.

The researcher provided all students with the opportunity to complete an informed consent form.

RESULTS

Relationship Between Learning Styles and Ethnicity

The results given below in Table 1 show that there is no significant relationship between learning styles and ethnicity.

Table 1 - Correlation Analysis

		Ethnicity
Learning Styles	Pearson Correlation	-0.298
	Sig. (2-tailed)	0.110
	N	30

Qualification Types and Learning Styles

The results given below in Table 1 show that there is no significant relationship present between qualification types and learning styles. As there is no relationship between qualification types and learning styles, therefore it can be inferred that the qualification types are not suitable for learning styles.

Table 2 - Correlation Analysis

		Learning Styles
Qualification Types	Pearson Correlation	0.298
	Sig. (2 tailed)	0.110
	N	30

Resiliency Items, Learning Styles, and Ethnicity

The results presented in Table 3 below show that there is no significant relationship between resiliency and learning styles. Moreover, the results also show that there is no significant relationship between resiliency and ethnicity.

Table 3 - Correlation Analysis

		Ethnicity	Learning Styles
Resiliency	Pearson Correlation	0.308	-0.069
	Sig. (2- tailed)	0.098	0.719
	N	30	30

Gender Differences, Resiliency Items, and Learning Styles

The results of an independent sample t-test, presented in Table 4, indicate that there is no significant difference in resiliency between males and females. However, a significant gender difference exists between the learning styles of males and females.

Table 4 - Independent Sample T-test

	Gender	N	Means	t-test for Equality of Means (Sig. Value)
Resiliency	Male	15	3.23810	
	Female	15	3.58095	0.140
Learning Styles	Male	15	12.4500	
	Female	15	10.1500	0.038

DISCUSSION

The research revealed that learning styles across genders and ethnicities are similar. Also, styles required to complete courses are similar for participants. In terms of gender and ethnicity, students did not show differences in measures of resiliency, and it is inferred that wellbeing

was similar for participants. There are however, methodological arguments for the findings. One is that as Hickcox (1995) and Curry (1987) explained, more than one instrument for measuring learning styles should be used for any assessment because use of a single instrument may not be suited to every individual. Moreover, Riding and Rayner (2000) concluded that most measures available for learning styles research are questionnaires, but the validity of these is unclear. These sorts of measures may be suitable for research projects but not for the diagnoses of individuals. However, it is feasible that the LSQ could be used with another measure such as VARK to deduce the learning styles of post-compulsory students globally.
It possible that the resiliency items used in this study were unable to capture how students deal with an academic existence. This may be due to its lack of reliability and validity. Other measures have however shown good internal reliability and construct validity such as The Academic Resilience Scale (Cassidy, 2016) and the Resiliency Index developed by McIntosh and Shaw (2017).

It is suggested that the meaning of resilience as well as its relationship with post-compulsory students' wellbeing requires definition. In this context, McIntosh and Shaw (2017) reported that BAME (Black Asian and Minority Ethnic) university students scored higher on emotional control but lower on social relationships and integration. The authors suggested that living at home was the reason for this. Furthermore, female students scored slightly lower on the Resilience Index and were less likely to use emotional control when there was an impact on their confidence following negative setbacks. It was reported by the authors that female students nevertheless made significant gains academically. It is suggested that this may be due to their learning styles, and this requires further exploration.

Nevertheless, some student groups may exhibit lower resilience than others. Chua et al (2022) reported students with low resilience are vulnerable to negative factors and this impacts unfavourably on their wellbeing. However, the detailed nature of this is not apparent. The authors, therefore, conducted a meta-analysis across 41 studies globally and discovered that there was evidence for widespread low resilience among dance or nursing student groups in Europe. The authors identified the requirement for intervention techniques.

In summary, research examining the learning styles with respect to ethnicity and gender is limited. It is suggested that learning styles may be relevant in predicting students' resilience and therefore, wellbeing. This means that student resiliency requires definition as well as factors surrounding gender and ethnicity that could contribute to a lack of wellbeing among London-based students. Types of courses students' study may be a contributing variable to their experiences of wellbeing.

Furthermore, ethnicity did not vary proportionally in this investigation as differences in numbers were too small to make firm and significant conclusions. Also, course types did not differ proportionally in types and quantities for results to convey significance and reliability.

The research reported in this paper presents a methodology that could be improved by the use of more robust, valid, and reliable measures (with triangulation procedures). This may provide a context for further examination of the relationship between learning styles and resiliency among students in the U.K.

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APPENDIX –RESULTS TABLES

Relationship Between Learning Styles and Ethnicity

Correlation

		Learning Styles	Ethnicity
Learning Styles	Pearson Correlation	1	-0.298
	Sig. (2-tailed)		0.110
	N	30	30
Ethnicity	Pearson Correlation	-0.298	1
	Sig. (2-tailed)	0.110	
	N	30	30

Suitable Qualification Types for Different Learning Styles

Correlation

		Qualification Type	Learning Styles
Qualification Types	Pearson Correlation	1	0.298
	Sig. (2-tailed)		0.110
	N	30	30
Learning Styles	Pearson Correlation	0.298	1
	Sig. (2-tailed)	0.110	
	N	30	30

Relation Between Resiliency Items, Learning Styles, and Ethnicity

Correlation

		Resiliency	Ethnicity	Learning Styles
Resiliency	Pearson Correlation	1	0.308	-0.069
	Sig. (2-tailed)		0.098	0.719
	N	30	30	30
Ethnicity	Pearson Correlation	0.308	1	-0.298
	Sig. (2-tailed)	0.098		0.110
	N	30	30	30
Learning Styles	Pearson Correlation	-0.069	-0.298	1
	Sig. (2-tailed)	0.719	0.110	
	N	30	30	30

Gender Differences in Measures of Resiliency Items and Learning Styles

T-Test Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Resiliency	Male	15	3.23810	0.774346	0.199935
	Female	15	3.58095	0.387361	0.100016
Learning Styles	Male	15	12.4500	1.91143	0.49353
	Female	15	10.1500	3.61520	0.93344

Gender Differences in Measures of Resiliency Items and Learning styles

		Independent Samples Test								
		Levene's Test for Equality of Variances		T-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Resiliency	Equal variances assumed	5.695	0.024	-1.534	28	0.136	-0.3429	0.2236	-0.8008	0.1151
	Equal variances not assumed			-1.534	20.594	0.140	-0.3429	0.2236	-0.8083	0.1226
Learning Styles	Equal variances assumed	1.321	0.260	2.178	28	0.038	2.3000	1.0559	0.1371	4.4629
	Equal variances not assumed			2.178	21.260	0.041	2.3000	1.0559	0.1058	4.4942