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Verification of Academic Buoyancy Scale for Adolescents in Indian Context

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***ABSTRACT**--Academic buoyancy is a psycho-educational concept. Martin (2009), proposed academic buoyancy as a way of exploring the constructive responses of different setbacks and difficulties, which is experienced by the students in their everyday school or academic life such as pressure of examination, obtaining poor grades or marks, complex schoolwork, minor negative interactions with teachers and competing deadlines. The main purpose of the present paper was to adapt the academic buoyancy scale and to investigate its psychometric properties in terms of reliability and factor structure in the Indian context. Sample was taken from 400 senior secondary school students from different districts of Punjab, India. For investigating the validity of test, EFA was used and CFA was used to verify how well the numbers of factors associated with construct as well as internal consistency was assessed by Cronbach's alpha. The result shows that the hypothesized uni-dimensional model was found to provide an excellent fit to the collected data from the present sample.*

***Keywords**--Academic Buoyancy (AB), Adolescents, exploratory factor analysis (EFA), confirmatory factor analysis (CFA)*

I. INTRODUCTION

Academic environment is where conformity and compatibility are the necessary part. There are many factors such as society, family and our education system is involved. Academic life is paramount important for successful and effective learning of students. However, students faced different obstructions, challenges in everyday academic life including levels of stress, poor grades, low self- confidence, less interaction and reduction in motivation. They do not only experience chronic life problems in their academic lives (Marsh & Martin, 2007), but also confront different academic challenges that affect their daily lives in the school (Marsh & Martin, 2007). This concept has been termed as academic buoyancy.

The term buoyancy emanates from Latin word (buoy) and used to refer to show reefs or other hazards. Webster's dictionary defines buoyancy is the ability to recover quickly from stress and discouragement. According to Martin reports (2012) there are lack of researches those focused on students who suffers from academic pressures and setbacks. To explore this kind of student's demeanor, buoyancy construct is offered as a new area of research. When buoyancy is used in educational context, it is referred to as 'Academic buoyancy'. It is a psycho-educational construct. Martin & Marsh (2009), proposed this construct as a way of exploring the constructive responses of different difficulties that is experienced by the students in their everyday academic life such as pressure of examination, obtaining poor grades or marks, complex schoolwork, negative interactions with their teachers and

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competing deadlines. Martin & Marsh (2008, 2009) described "academic buoyancy as a capacity to overcome setbacks, stress, challenges, and difficulties or problems that are part of the student's everyday academic life". In addition to it, "academic buoyancy refers to a positive, constructive and adaptable response to the type of challenges and barriers experienced in the current and constant academic area" (Putwain&Symes, (2012)).

Academic buoyancy originated from the academic resilience, but according to researchers academic buoyancy is different from academic resilience (Martin, 2009). The main differences are given below.

- Academic buoyancy is related with poor performance experience and grades, but academic resilience is related with serious problems, feeling of anxiety and depression.
- Academic buoyancy is related with daily pressures, low level of confidence and typical stress level; in another way, academic resilience is related to total disaffection of students from their school.
- AB(Academic buoyancy) is related with low level of engagement, motivation & negative feedback on school homework (Martin, 2009), whereas Academic resilience is related with anxiety & depression.
- Academic buoyancy comes, when a student deals with dips in motivation & engagement, whereas, truancy is related with academic resilience.
- Academic buoyancy related with negative feedback on schoolwork, whereas academic resilience deals with consistent alienation.

Marsh and Martin (2008) identified predictor factors of academic buoyancy and encompasses into three categories, first one is 'psychological factors' which include self-efficacy, sense of purpose and motivation ((Rock,(1997); Masten & Coastsworth, (1998); Wayman, (2002)) and second factor is related to school & engagement which include educational aspiration, participation in classroom, curriculum activities and communication with teachers and feedback from them and challenging the curriculum ((Alva (1991), Alexander (1993), Finn (1997),Coatsworth(1998) and Waxman (1997)), third factor is related with Peer and family, which include powerful and caring parents, communication with society, and peers' commitment to education (McMillan & Reed(1994), Padyla& Gonzalez(1997), Masten(1998) and Donnelly 1999). According to the research literature, Academic buoyancy is related with various motivational results such as, positive emotional outcomes (Putwain and Dally, (2013)), greater perseverance (Martin, 2010), academic achievement (Colli, 2015), academic performance and wellbeing (Miller, 2013). As per new researches, academic buoyancy has two influencing factors, first is distal and second is proximal (Marsh, 2008). Distal factors include life history of an individual and proximal factors include educational, psychological, peer resources and present life experiences (Martin, 2008).

For understanding the academic buoyancy, Martin et al (2010) and researchers of the Oxford and Sydney university investigated that how we can help the students to develop their Academic buoyancy and for this purpose researchers refer model as the 5C such as, (a) confidence (i.e. high self-efficacy), (b) composure (low anxiety), (c) commitment (high persistence), (d) control and (e) coordination (high planning)). It will help students to manage everyday challenges at school or we can say that these are the different strategies for boosting the student's academic buoyancy. Martin (2014) identified the contextual factors those can help to boost students' academic buoyancy such as (a) Teacher can provide some responsibility to the students (b) Teacher can adopt the different teaching methods (c) Teacher can change the classroom environment with some interesting schoolwork (d) Good interpersonal relationship with students (getting to know about the students). (e) Explain the work effectively and clearly (f) Maintain the balance between schoolwork and fun (g) Maintain the balance between classroom

environment and authority (h) Broad assessment practices and many other activities can be performed by the teacher to enhance their abilities.

II. ACADEMIC BUOYANCY SCALE (ABS)

Academic Buoyancy (AB) is a simple uni-dimensional Scale (Martin & Marsh, 2008a), comprising 4 items are (i) I am good at dealing with setbacks at school (ii) I don't let study stress get on top of me (iii) I think I am good at dealing with schoolwork pressures (iv) I don't let a bad mark affect my confidence. Sample was taken from 598 Australian students (8 to10 years). Half data was taken during the school year and rest of the data was taken in the end of the year. Cronbach alpha for the total scale was 0.82. Previous studies using this scale have shown a good factor structure of model, normally distributed and significantly predict the various academic results among the high school students (Mash & Martin, 2006).

III. METHOD

Sample and Procedure

Sample was taken from 400 senior secondary school students from different of Punjab, India. Formal permission was taken from the school principal and with the support of school teachers scale was administered on the students during the class. Scale was first explained to them after they rated themselves on seven point likert-scale of (1, Strongly Disagree) to (7, Strongly Agree).

Statistical Technique

For investigating the validity of test, EFA was used and to verify how well the numbers of factors associated with construct and CFA was used. Cronbach's alpha for the internal consistency.

IV. RESULTS

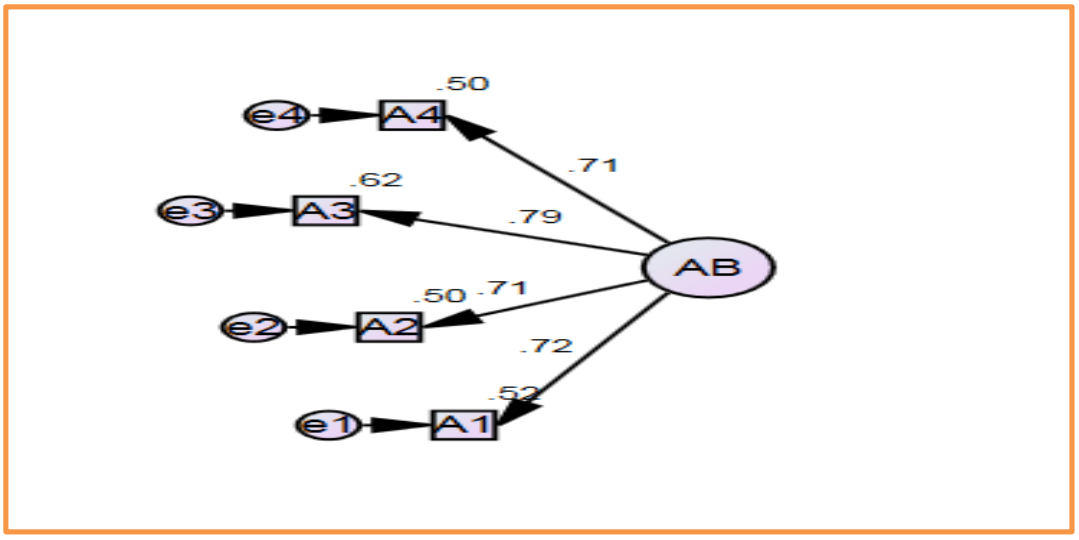

Figure 1: uni-dimensional model

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Table 1: Goodness of Fit Measures								
CFA default model	RMR	GFI	IFI	TLI	CFI	RMSEA	p-value	$\chi 2$/ df
Results	0.032	0.994	0.995	0.984	0.995	0.060	0.000	2. 43

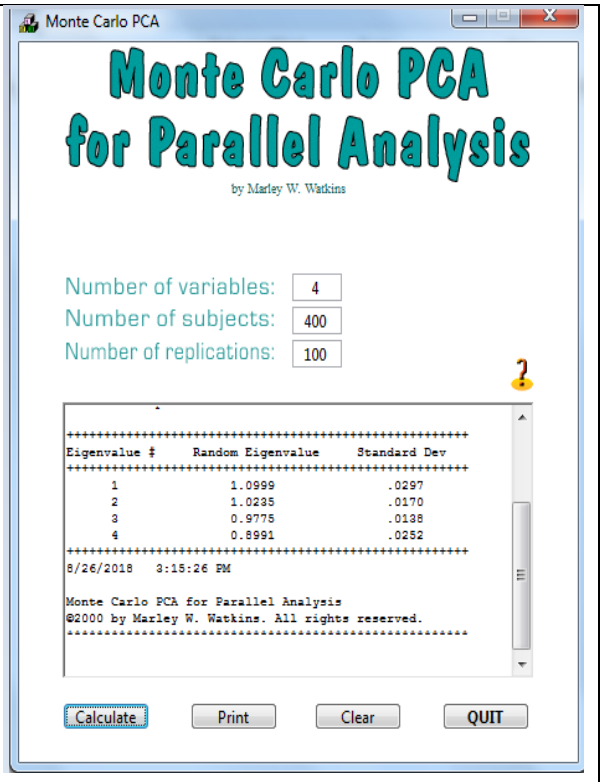
InterpretationThe above table shows the hypothesized uni-dimensional model fits well with the present sample. The values of GFI, CFI, RMR, RMSEA were good fit. Hence, model indicated a good-fit index. Cronbach's alpha for the total scale was 0.82.

Table 2: (Monte Carlo, Principal Component Analysis)

Total variance explained

		(iInitial eigenvalues)[a]			(extraction sums of squared loadings)		
	Factor	(total)	% of (variance)	(cumulative) Percentage	(total)	Percentage of variance	(cumulative) Percentage
raw	I	4.948	65.035	65.035	4.062	53.385	53.385
	Ii	1.013	13.573	78.607			
	Iii	.891	11.714	90.321			
	iv	.736	9.679	100.000			
Rescaled	1	4.948	65.035	65.035	2.139	53.463	53.463
	2	1.013	13.573	78.607			
	3	.891	11.714	90.321			
	4	.736	9.679	100.000			

Principal Axis Factoring.



V. INTERPRETATION

From above table it shows that after (EFA) factor analysis, it produced two-factor with eigen values such as 4.948 and 1.013. Monte Carlo principal component analysis (PCA) generated eigen values and these eigen values treated as critical eigen values. Moreover, the number one factor value from EFA is 4.948 which are more than critical eigen value are retained only, on the other hand, the number two factor value was 1.013, which is below critical eigen value which was 1.023, so it confirms the uni-dimensionality of the construct.

VI. CONCLUSION

The present paper was trying to verify the academic buoyancy construct in the Indian context. After applying EFA and CFA and compared these values with the Monte Carlo analysis. The uni-dimensional model fits well

with the present sample. Cronbach alpha for the total scale was 0.82. According to these result, academic buoyancy scale is a uni-dimensional. For the future studies, data size can be larged or it can be applied to another region of the India.

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