

## Underlying Causes of Student Academic Engagement in High Schools of South Punjab, Pakistan

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<b>Keywords:</b> Socio-Psychological, Educational, Students, Academic Engagement, High schools, South Punjab,	<p style="text-align: center;"><b>ABSTRACT</b></p> <p><i>Student Engagement (SE) refers to the extent to which students are attached, interested, involved, and committed to their academic activities at the high school level. This concept encompassed a four-dimensional spiral model i.e. behavioral, emotional, cognitive, and agentic. Keeping this spiral model in consideration, we designed a Cross-Sectional Survey Research Design (CSSRD) to find out the underlying causes of SE in registered high schools of South Punjab, Pakistan. A sample size of n1=2758 students was selected from n2=347 registered high schools through a multistage sampling technique. A questionnaire was used to investigate the viewpoints of the participants through the survey method. The responses of the students were analyzed through SPSS Version-21 by using simple linear and hierarchical linear regression analysis. Empirical findings showed that school belonging and valuing of school education altered SE by 90.4%. Moreover, the classroom's learning environment and cognitive engagement factors changed SE by 59.5% and 52.8%, respectively. In conclusion, the components of belongingness, valuing of school education, mental excellency, cognitive abilities for learning, and classroom environment were the major determinants of SE in the study context. Ensuring the positive role of parents, peer groups, and teachers accompanied by pertinent goal-setting behavior and classroom environment can enhance SE. Moreover, emotional integration, behavioral acquiescence, and cognitive restructuring can also upsurge SE in the present research milieu.</i></p> <p>This work is licensed under a <a href="https://creativecommons.org/licenses/by-nc/4.0/">Creative Commons Attribution-NonCommercial 4.0 International License</a>.</p>  <p>Copyright (c) 2022 Tehmina Sattar, Furrukh Bashir &amp; Farooq Arshad Rana, Published by Faculty of Social Sciences, the Islamia University of Bahawalpur, Pakistan.</p>
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## 1 Introduction

### 1.1 Student engagement as a unique and multidimensional meta-construct

SE refers to the attachment, persistence, motivation, and connectedness of a student toward the process of learning. This terminology was introduced in the 1980s to address the problems of student dropouts, failure rates, and lower attendance ratios in high schools (Marks, 2000). In the aforementioned studies, the major pondering question was that “How the students are engaged in learning, and what makes them disengaged from knowledge acquisition in high schools?” Answering this question, the researchers explained that high schools induce students' knowledge, cognitive skills, learning integration, and behavioral acquiescence (Fredricks, Blumenfeld, & Paris, 2004; Wilson, Tanner- Smith, Lipsey, Steinka- Fry, & Morrison, 2011; Winne & Nesbit, 2010). Moreover, adolescents also develop self-regulation in learning, commitment towards studies, self-evaluations, prioritizing academic goals, and absorbing effective learning strategies (Wang & Holcombe, 2010). These learning procedures determine SE through behavior, emotions, and cognition under the "unified meta-construct of engagement" (Jimerson, Campos, & Greif, 2003; Zimmerman & Schunk, 2001).

SE was considered as a multidimensional meta-construct used by Sociologists, Psychologists, Educationists, and Social Psychologists in the process of learning (Jimerson et al., 2003). Previous literature demonstrated that more than 40% of students worldwide showed disengagement from their academic activities in high schools. This disengagement was illustrated through their low grades attained in annual tests or exam scores (Appleton, Christenson, Kim, & Reschly, 2006; Sattar, Ullah, Rehman, & Ismail, 2020). This meta-construct is unique as it acted as the predictor, mediator, and response variable in unison. The basic dimension of this construct comprised a four-dimensional spiral model i.e. Behavioral Engagement (BE), Emotional Engagement (EE), Cognitive Engagement (CE), and Agentic Engagement (AE) (Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Marks, 2000).

### 1.2 The transition of students' engagement literature

The earlier theoretical framework of SE demonstrated that this meta-construct comprised a one-factor model, i.e. BE. This engagement dimension put forth students' behavior in the classroom, homework completion, and acquiescence toward school rules (Yonezawa, Jones, & Joselowsky, 2009). Afterward, the EE of students was used as a dyed model of SE (BE-EE), which includes students' belongingness, valuing, enthusiasm, persistence, and enjoyment in their studies. This dyed relationship demonstrated that despite the behavioral compliance, students' emotional integration with studies was also imperative for ensuring higher levels of academic engagement. Subsequently, the previous dyed model introduced the third dimension of CE. This concept refers to students' mental focus, personal goal orientation, and mental abilities for mastering complex ideas (Green et al., 2012; Reeve, Deci, & Ryan, 2004). This tripartite model (BE-EE-CE) forms an integrated linear path, a prerequisite for high school grade attainment (Skinner, Furrer, Marchand, & Kindermann, 2008; You, 2011). Recently, CE was followed by a fourth-dimension spiral formation, i.e. AE, which demonstrated students' learning contribution through their opinions, communication of knowledge, suggestions, recommendations, and generating new ideas during lectures (Reeve & Tseng, 2011).

### 1.3 Determinants of students' engagement in high school

There are multiple socio-psychological and educational determinants for SE in high schools. These factors are associated with family, teachers, peers, and students (Liu, Amin,

Rasool, & Zaman, 2020). Moreover, goal orientation and learning academic environment, along with various engagement dimensions at the behavioral, emotional, and cognitive level, also determines SE in the learning context (Chiu, Pong, Mori, & Chow, 2012; Lam et al., 2012; Li & Lerner, 2013). In convergence, the present empirical research used parental involvement, support provision, and discussion about academics as the major determining factors for SE (Houtenville & Conway, 2008; Lee & Bowen, 2006). Along with these factors, goal directness and classroom learning context were also used to determine SE (Schlenker, Schlenker, & Schlenker, 2013; Zimmer-Gembeck, Chipuer, Hanisch, Creed, & McGregor, 2006). These determinants were also accompanied by teachers, peer support, and students' roles in the process of learning (Martin, 2007; Van Ryzin, 2011).

#### **1.4 Research gaps in previous empirical studies**

The major focus of the aforementioned academic debates was on bivariate (BE-EE) and tripartite models (BE-EE-CE) of SE (Li & Lerner, 2013; Skinner et al., 2008). The AE dimension was new and needed to be investigated with dyed and triplet models (Reeve & Tseng, 2011). Moreover, previous hypothetical discussions lacked the combined effects of the role of parents, peer groups, course instructors, goal directness, school learning context, and variables related to the tripartite model formation on SE (Sattar, Ullah, Ahmad, & Warraich, 2019). Aligning this, SE was the most ignorant variable of students' academic outcomes in underprivileged regions of Pakistan and South Punjab in particular. Especially, the districts of South Punjab measured students' academic outcomes through their academic performance. Therefore, measuring the determinants of the four-dimensional spiral model of SE was the major research gap in the said study context (Sattar et al., 2020; Sattar, Zakar, Zakar, & Ullah, 2019).

To address the gaps mentioned above, the present study used the linear relationship between stakeholders' participation, goal directness, and the learning context of the classroom towards SE. Additionally, the present study addressed SE in the most underprivileged vicinity of Pakistano to highlight the research's originality and uniqueness.

#### **1.5 Adding novel perspectives in previous literature, suggesting new research directions, and designing research objectives**

The major novelty of this research was to challenge the existing literature and add a new perspective through our empirical findings. As evident, the present empirical research encounters the existing literature that measured academic outcomes through students' grade attainment. The present research added a new perspective on how academic outcome is measured through SE.

This present finding put forth the subsequent research directions in the future (i) Usage of the web model through the inclusion of predictors, mediators, and response variables (ii) SE must be used as a mediation variable to highlight the importance of SE in determining the student's academic performance, and (iii) SE must be used as a predictor variable in relation with personal and contextual determinants to find out its linear relationship with academic performance of students.

Based on the previous research gaps, our research objectives were aimed to find out the role of teachers, peers, parents, students, goal directness, learning climate, and students' engagement dimensions in determining their overall engagement in high schools of the study context.

## **2 Methods and Materials**

### **2.1 Research setting**

In Pakistan, the education sector is mainly segregated into three levels, i.e., primary, secondary, and tertiary. There are 260,903 education institutions comprising 180,846 public and

80,057 private sector institutions (Economic Survey of Pakistan [ESP], 2012-2013; GOP, 2007, 2011). High schools comprise 9<sup>th</sup> and 10<sup>th</sup> grades for completion of a Matriculation degree from the Board of Intermediate and Secondary Education (BISE). The statistics showed that there are 28,664 high schools which are divided into 11,276 public and 17388 private sector institutions. The pathetic education conditions of South Punjab (Pakistan) can be reflected in its low literacy rate, which never exceeded more than 50% (Economic Survey of Pakistan [ESP], 2012-2013; PSLM, 2010-2011).

## **2.2 Universe and Sample selection**

The geographical vicinity of South Punjab comprised 3 divisions i.e. Multan, DG Khan, and Bahawalpur. All the enrolled high school students were the universe of the present study. In extension, the students enrolled in registered high schools of BISE and spent at least one month in 9<sup>th</sup> or 10<sup>th</sup> grade after passing their previous annual examination were targeted for data collection. For sample selection, the researchers used a multistage sampling technique which comprised of three stages i.e. i) selection of registered high schools ( $n_1=347$ ), ii) selection of class sections from the 9<sup>th</sup> and 10<sup>th</sup> grades (3 sections), and iii) selection of students from each section ( $n_1=2758$ ).

## **2.3 Research approach**

As the nature of the data was numerical, we used a quantitative research approach to collect, analyze, and interpret the data. This approach helped to describe, explain, and generalize the participants' responses. Moreover, we used an explanatory study approach to analyze the cause-effect relationship between the study variables. This approach focused on empirical data for the formation and testing of hypotheses.

## **2.4 Instrumentation and measures**

Data was collected from high school students of South Punjab through a self-administered questionnaire. The instrumentation comprised multiple modules. Module-1 demonstrated parental contribution towards SE i.e., Parental Involvement (PI) and Parental Discussion (PD) (Chowa, Masa, & Tucker, 2013). In extension, subsequent stakeholders' participation comprised Teachers and Peer Support (TPS) in SE (Module-4) (Osterman, 2000). These derived variables from "Classroom Life Scales" were evaluated on the scale range of "Never" to "Always" (Wentzel, Barry, & Caldwell, 2004). The subsequent Module-5 comprised Students' Perceptions, Beliefs, and Strategies (SPBS) about their academic activities.

In addition to the modules related to stakeholders' participation, Module-2 comprised the Antecedents of Students Academic Engagement (ASAE) scale, which represented the goal directness of students in high schools in the study context. Afterward, Module-3 represented the influence of classroom context on SE (Black & Deci, 2000). Module-6 (i) represented Behavioral Engagement Factors (BEF), with a scale range of "almost never" to "almost always" (Wang et al., 2011). Module 6 (ii) was related to Emotional Engagement Factors (EEF) (Eccles, 1993; Fredricks et al., 2004), while Module 6 (iii) encompassed Cognitive Engagement Factors (CEF) (Zimmer-Gembeck et al., 2006).

The response variable was SE with a uniquely constructed four-dimensional spiral formation, i.e., behavioral, emotional, cognitive, and agentic. Behavioral Engagement Sub Scale (BESS) represented the students' task involvement and behavioral conduct in their schools (Jang, Reeve, Ryan, & Kim, 2009; Skinner et al., 2008). The Emotional Engagement Sub Scale (EESS) represented the dynamic integration and perceived control beliefs with the internal consistency of  $\alpha=0.78$ . The cognitive Engagement Sub Scale (CESS) illustrated students' mental efforts towards

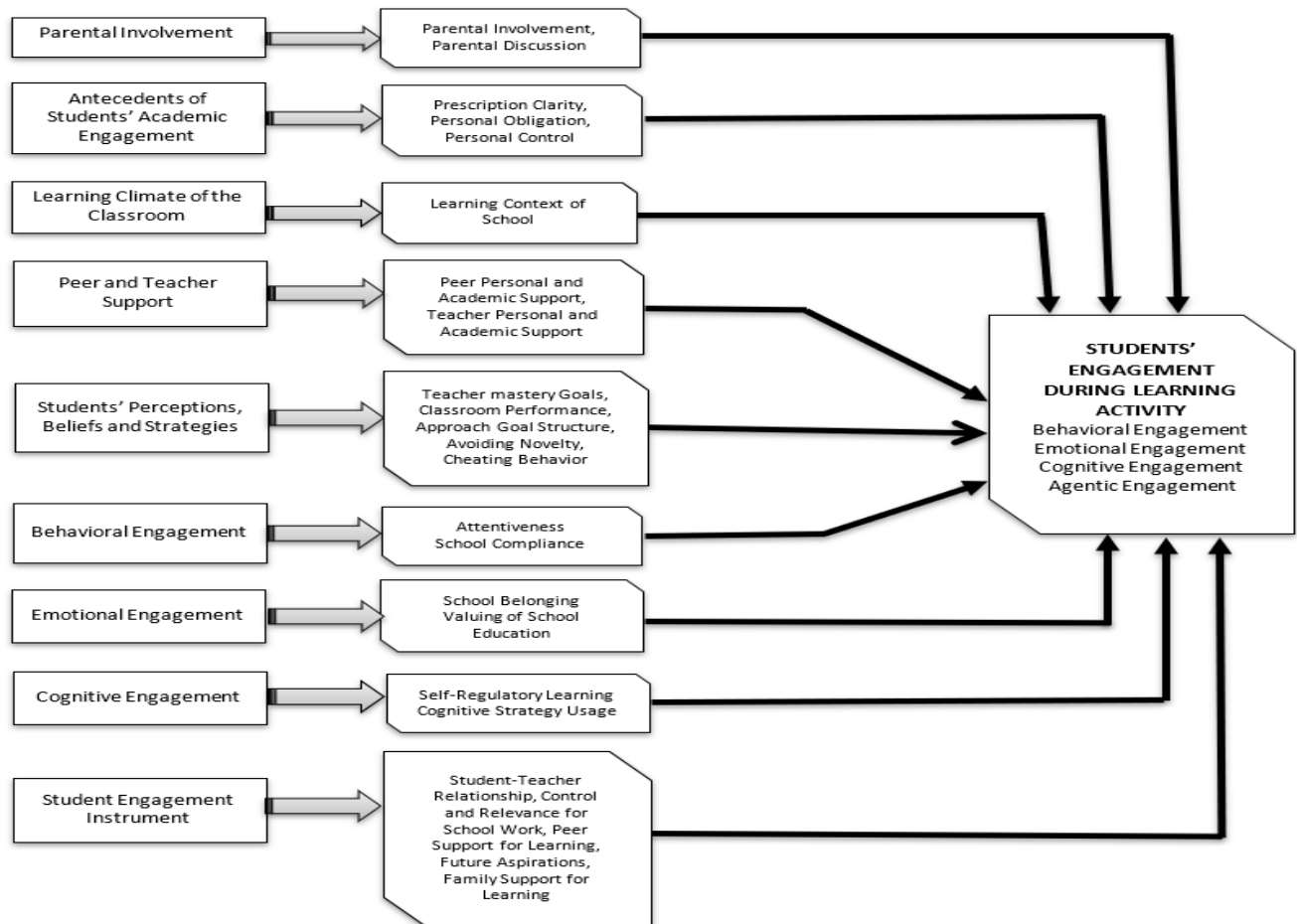
academic activities. (Pintrich, Smith, Garcia, & McKeachie, 1993; Reeve & Tseng, 2011; Wolters, 2004) developed a newly added Agentic Engagement Sub Scale (AESS), which showed students' contribution to the learning process with Cronbach's  $\alpha=0.82$ .

Based on the above-said variables in the instrumentation, gaps identified from the previous literature, and the objectives of the study, we constructed the following hypothetical model in the present research.

### 2.5 Pre-testing

Pre-testing was conducted before the data collection to check the study instrument's validity, empiricism, and workability. Based on the instructions of the Ethical Review Committee (ERC), the first author pre-tested 40 questionnaires on the randomly selected non-sampled high school students. The responses of the participants helped us to redesign the overlapping modules. These changes helped the researchers to minimize the content error from the designed instrument. For example, teachers' supportive variables overlapped with teachers' participation in students' studies; therefore, the overlapping modules were excluded. 28/40 of respondents recommended these changes as they left the questions blank and suggested eliminating these overlapping scales. In pre-testing, 33/40 respondents reported that they could not mail back their filled responses. Accordingly, the researcher arranged a sealed box in their schools in which they could put their filled questionnaires with confidentiality and anonymity.

### 2.6 Hypothetical model



**Figure 1** Hypothetical model showing the relationship of underlying causes and SE in high schools of South Punjab (Pakistan)

The hypothetical model depicted the relationship between the independent and response variables. The model depicted the role of parents, peers, teachers, and students themselves along with the goals setting, and learning context of the academic environment for determining the four-dimensional model of SE in the registered high schools of Southern Punjab, Pakistan.

## 2.7 Data collection process

For data collection, the researcher collected the students' attendance sheets, and result cards (last final term exams) from the administration of the registered high schools. There were two ending sessions of final term examinations i.e., December and March. As the geographical area comprised three divisions, therefore multiple boards were selected. These boards were operational under BISE which was the governmental approved authenticated academic institution for the awarding of the matriculation degree to high school students. The researchers gathered informed consent from the students to participate in the research. Conversely, the randomly selected students who did not want to participate in the present study filled out an alternative opt-out letter. Keeping in view the ethical concerns, the confidentiality and anonymity of the respondents were kept hidden. The details of the questionnaires sent, received, and included are given below in Table-1;

**Table 1**

*Division and district-wise response rate in the data collection process*

District-wise categorization of divisions	Total number of questionnaires send	Total number of questionnaires received	Total number of questionnaires after exclusion	Response rate in percentage
<b>Multan division</b>	<b>1201</b>	<b>1149</b>	<b>1086</b>	<b>90.85%</b>
Multan district	379	371	344	90.76%
Lodhran district	179	155	142	86.39%
Khanewal district	352	341	328	94.03%
Vehari district	291	282	272	89.76%
<b>DG Khan division</b>	<b>912</b>	<b>845</b>	<b>809</b>	<b>88.69%</b>
DG Khan district	268	259	247	91.48%
Muzaffargarh district	276	252	244	90.97%
Rajanpur district	139	121	112	77.45%
Layyah district	229	213	206	89.71%
<b>Bahawalpur division</b>	<b>1010</b>	<b>897</b>	<b>863</b>	<b>85.33%</b>
Bahawalpur district	683	615	609	87.12%
Bahawalnagar district	139	113	101	85.71%
Rahim Yar Khan district	188	169	153	77.17%

## 3 Data analysis

The researchers analyzed the data through statistical software i.e. SPSS Version-21. In the initial phase, frequencies and percentages were calculated through univariate analysis. Afterward, simple linear regression and multivariate hierarchal regression analyses were used for the hypothetical testing. In simple linear regression analysis, all the modules comprising socio-psychological and educational determinants were statistically tested with SE. This test set forth the magnitude of predictor variables towards the response variable. On the other hand, hierarchical linear regression analysis was used to test each independent variable's change in magnitude and direction by adding the last predictor variable. A new variable is added in the forward stepwise manner in each module.

## 4 Results

### 4.1 Demographic correlates of the respondents

Table-2 demonstrated that the gender of n=1753 (63.6%) high school students was male. In extension, n=1009 (39.9%) participants divulged that they lived with their parents, unmarried siblings, and grandparents. The residence illustrated that n=944 (34.2%) respondents belonged to the nuclear family system while n=1095 resided in Multan division. The study area illustrated the pathetic education conditions of parents i.e. the fathers of n=423 (15.3%) students were illiterate while mothers of n=433 (15.7%) students were illiterate.

**Table 2**

*Univariate analysis of demographic correlates of the respondents*

Demographic correlates of the respondent	Categorization	Frequency	Students Overall Engagement (BE-EE-CE-AE) Means (SD)
<b>Gender</b>	Male students	1753 (63.6)	41.60 ± 6.244
	Female students	1005 (36.4)	57.78 ± 9.390
<b>Family size</b>	<5 members	952 (34.5)	70.95 ± 7.858
	5-10 members	1077 (39.1)	74.06 ± 8.771
	>10 members	729 (26.4)	68.64 ± 6.813
<b>Family type</b>	Nuclear	944 (34.2)	76.25 ± 8.448
	Extended	1099 (39.9)	71.23 ± 7.572
	Joint	715 (25.9)	73.81 ± 7.782
<b>Father education</b>	Illiterate/Equivalent	423 (15.3)	70.06 ± 36.610
	Primary/ Equivalent	502 (18.2)	71.14 ± 36.837
	Secondary/Equivalent	735 (26.6)	72.50 ± 38.697
	Tertiary/ Equivalent	629 (22.9)	71.35 ± 37.286
<b>Mother education</b>	Any Other	469 (17.0)	71.12 ± 36.685
	Illiterate/Equivalent	433 (15.7)	72.28 ± 35.199
	Primary/ Equivalent	517 (18.7)	73.96 ± 36.982
	Secondary/Equivalent	674 (24.5)	77.68 ± 37.969
	Tertiary/ Equivalent	791 (28.7)	79.07 ± 39.942
<b>Household head</b>	Any Other	343 (12.4)	71.77 ± 34.813
	Father	1578 (57.2)	76.22 ± 43.522
	Mother	185 (6.7)	75.21 ± 42.332
	Any other male	940 (34.1)	68.89 ± 40.382
	Any other female	55 (2.0)	64.62 ± 38.237
<b>Geographical division</b>	Multan	1095 (39.7)	98.94 ± 18.510
	DG Khan	803 (29.1)	87.34 ± 14.602
	Bahawalpur	860 (31.2)	82.42 ± 12.747

### 4.2 Bivariate relationship between socio-psychological and educational determinants and students' engagement

Table-3 indicated that students' EE changed the magnitude of SE by 90.4%,  $p=0.000<.001$ . Moreover, LCC and CEF also became the highest determining causes for SE in the study locale (Module-3: LCC→SE:  $R^2=59.5\%$  and Module-6iii: CEF→SE:  $R^2=52.8\%$ ). Afterward, the role of BEF and students' goal directness significantly changed SE level in their academic context (Module-6i: BEF→SE:  $R^2=50.1\%$ ), (Module-2: ASAE→SE:  $R^2=47.3\%$ ). As evident from the results, parents' influence and TPS became significant but low influential predictors for determining SE levels in registered high schools in the study vicinity (Module-4→SE:  $R^2=16.8\%$ ). Conversely, students' SPBS negatively but significantly affected SE in the said academic context (Module-5: SPBS→SE:  $R^2=-11.5\%$ ).

**Table 3**

**Bivariate simple linear regression relationship between socio-psychological and educational determinants and students' engagement (N=2758)**

Predictor modules	Variables usage	R2	p	Significance level
Module-1	PI+PD	.210	.060	<.01
Module-2	PC+PO+PCNT	.473	.000	<.001
Module-3	LCC	.595	.000	<.001
Module-4	TPS+TAS+PPS+PAS	.168	.003	<.05
Module-5	TMG+CPAGS+AN+CB	-.115	.000	<.05
Module-6i	ATN+SC	.501	.000	<.01
Module-6ii	SB+VSE	.904	.000	<.001
Module-6iii	SRL+CSU	.528	.000	<.001

Response variable= SE (AE-BE-EE-CE)

**Table 4**

**Multivariate hierarchical linear regression modeling between socio-psychological and educational determinants and students' overall engagement (N=2758)**

M	Mod	Std. $\beta$	p	Sig.	ANOVA-F value	P value of the model	Sig. of the model	Collinearity Statistics Tolerance	VIF
1	PI+PD	.035	.062	<0.01	60.471	p=0.062	<0.01	1.000	1.000
2	PI+PD	.155	.002	<0.01	45.935	p=0.000	<0.01	.997	1.003
	ASAE	.374	.000	<0.001				.997	1.003
3	PI+PD	.138	.015	<0.05	84.461	p=0.000	<0.01	.996	1.004
	ASAE	.239	.000	<0.001				.906	1.103
	LCC	.449	.000	<0.001				.908	1.101
4	PI+PD	.120	.207	Ns	64.549	p=0.039	<0.01	.978	1.022
	ASAE	.229	.000	<0.001				.902	1.108
	LCC	.365	.000	<0.001				.679	1.472
	PTS	.166	.000	0.05				.703	1.423
5	PI+PD	.020	.206	Ns	51.838	p=0.000	<0.001	.978	1.022
	ASAE	.210	.000	<0.001				.883	1.132
	LCC	.380	.000	<0.01				.672	1.488
	PTS	.162	.000	<0.001				.702	1.424
	SPBS	-	.000	<0.05				.974	1.027
		.126							
6i	PI+PD	.146	.003	<0.01	52.005	p=0.000	<0.001	.952	1.050
	ASAE	.237	.000	<0.001				.860	1.163
	LCC	.328	.000	<0.001				.625	1.599
	PTS	.133	.000	<0.01				.685	1.459
	SPBS	-	.000	<0.001				.965	1.036
		.110							
	BEF	.373	.000	<0.001				.827	1.210
6ii	PI+PD	.113	.028	<0.001	43.832	p=0.000	<0.001	.946	1.057
	ASAE	.211	.001	<0.001				.793	1.261
	LCC	.391	.073	<0.001				.550	1.819
	PTS	.215	.036	<0.01				.673	1.485
	SPBS	-	.010	<0.01				.951	1.051
		.123							
	BEF	.450	.002	<0.01				.780	1.282
	EEF	.851	.000	<0.001				.575	1.738
6iii	PI+PD	.195	.000	<0.001	36.623	p=0.000	<0.001	.941	1.063
	ASAE	.305	.000	<0.001				.753	1.329
	LCC	.297	.000	<0.001				.538	1.861
	PTS	.119	.069	<0.01				.681	1.499
	SPBS	-	.026	<0.05				.957	1.154
		.140							



	BEF	.581	.000	<0.001				.482	2.321
	EEF	.736	.000	<0.001				.575	1.667
	CEF	.627	.000	<0.001				.485	2.184
7	PI+PD	.119	.001	<0.001	38.565	p=0.000	<0.001	.941	1.063
	ASAE	.316	.027	<0.001				.753	1.328
	LCC	.435	.000	<0.001				.538	1.858
	PTS	.118	.006	<0.001				.672	1.488
	SPBS	-	.000	<0.001				.950	1.052
		.126							
	BEF	.551	.000	<0.001				.482	2.076
	EEF	.952	.000	<0.001				.575	1.738
	CEF	.715	.000	<0.001				.487	2.053
	SEIF	.718	.000	<0.001				.939	1.044

**Note:** Response variable: Students' Overall Engagement (SOE)

M=Module, Mod=Model, Std.  $\beta$  stands for standardized coefficient, Sig.=Significance

F change=Explanatory power, Sig. F change=p value/significance value, Ns=not significant

### 4.3 Multivariate hierarchical linear regression relationship between socio-psychological and educational determinants and students' overall engagement

Results of Table-4 indicated that PI has a feeble but significant relationship in determining SE in studies (M-1: Mod-1: PI+PD $\rightarrow$ SOE: Std. $\beta$ =.035, p=0.062<.01). Relating this, by adding ASAE in the subsequent model (M-2: Mod-2: ASAE $\rightarrow$ SOE: Std. $\beta$ =.374, p=0.000<.001), the statistical strength of PI increases in comparison with the previous model (M-2: Mod-1: PI+PD $\rightarrow$ SOE: Std. $\beta$ =.374, p=0.000<.001). In extension, the magnitude of goal directness and PI decreases as compared to the previous model (M-3: Mod-2: ASAE $\rightarrow$ SOE: Std. $\beta$ =.239, p=0.000<.001) with the addition of LCC i.e. M-3: Mod-3: LCC $\rightarrow$ SOE: Std. $\beta$ =.449, p=0.000<.001 in M-3.

The subsequent model added PTS to previous modules, i.e., Mod-1, Mod-2, and Mod-3. The results show that with the addition of support provided by peers and teachers (M-4: PTS $\rightarrow$ SOE: Std. $\beta$ =.166, p=0.000<.05), parental contribution in engaging their children in studies (M-4: PI+PD $\rightarrow$ SOE: Ns) became insignificant. Moreover, the contribution of ASAE (M-4: ASAE $\rightarrow$ SOE: Std. $\beta$ =.229, p=0.000<.001 in comparison with M-3: ASAE $\rightarrow$ SOE: Std. $\beta$ =.239, p=0.000<.001) and LCC (M-4: LCC $\rightarrow$ SOE: Std. $\beta$ =.365, p=0.000<.001 in comparison with the previous model) also lowers with the addition of PTS in M-4. This model's results show that the role of PI in SE is insignificant as in the previous model, i.e., M-4: Mod-1: PI+PD(SOE: Ns and M-5: Mod-1: PI+PD) SOE: Ns. Moreover, with the addition of SPBS, the strength of goal directness (M-5: Mod-2: ASAE $\rightarrow$ SOE: Std. $\beta$ =.229, p=0.000<.001 in comparison with M-4: Mod-2: ASAE $\rightarrow$ SOE: Std. $\beta$ =.210, p=0.000<.001) and the role of teachers and peers (M-4: Mod-4: PTS $\rightarrow$ SOE: Std. $\beta$ =.166, p=0.000<.05 compared to M-5: Mod-4: PTS $\rightarrow$ SOE: Std. $\beta$ =.162, p=0.000<.001) become slightly lower than the previous model. In M-5, it is also evident that the sign of SPBS is negative, which indicates that a higher level of CB and AN lowers SOE in studies.

The analysis also indicated that with the addition of BEF in M-6i, PI becomes significant (M-6i: Mod-1: PI+PD $\rightarrow$ SOE: Std. $\beta$ =.146, p=0.003<.01) in comparison with the previous model, i.e., M-5: Mod-1: PI+PD $\rightarrow$ SOE: Ns. Moreover, adding BEF lowers the magnitude of LCC (M-6i: Mod-3: LCC $\rightarrow$ SOE: Std. $\beta$ =.328, p=0.000<.001) as compared with M-5. In subsequent models, EEF and CEF were added in M-6ii and M-6iii, respectively. M6ii revealed that EEF comprising of SB and VSE are the unique predictors that determine SOE in the high school context, i.e., M-6ii: EEF $\rightarrow$ SOE: Std. $\beta$ =.633, p=0.000<.001. In addition, the statistical strengthening power of BEF decreases in M-6ii (M-6i: Mod-6i: BEF=ATN+SC $\rightarrow$ SOE: Std. $\beta$ =.440, p=0.049<.01) as compared to M-6i and again rises in M-6iii. M-6iii shows that adding CEF becomes the most influential determining factor for engaging the students in studies (M-6iii: Mod-6iii: CEF=SRL+CSU $\rightarrow$ SOE: Std. $\beta$ =.817, p=0.000<.001). The results show that

the magnitude of LCC constantly decreases with the addition of BEF, EEF, and CEF in M-6i, 6ii, and 6iii. In similarity, PTS becomes insignificant (M-6i: Mod-4: PTS→SOE: Ns) in determining SE with the addition of BEF in M-6i but becomes lesser in magnitude with the addition of CEF in M-6iii (M-6iii: Mod-4: PTS→SOE: Std.β=.239, p=0.069<.05) in comparison with M-6ii.

The statistical analysis shows that tolerance and VIF values are significant, indicating the absence of multicollinearity between the independent variables. Overall M-6iii and M-7 is significant i.e. M-6iii: F=36.623, p=0.000<.001 and M-7: F=38.565, p=0.000<.001 respectively. Furthermore, the analysis revealed that SEIF has a unique contribution in determining SE in high schools of study vicinity, i.e., M-7: Mod-7: SEIF= TSR→SOE: Std.β=.718, p=0.000<.001. Moreover, with the addition of SEIF, the magnitude of EEF (M-6iii: Mod-6ii: EEF→SOE: Std.β=.736in comparison with M-7: Mod-6ii: EEF→SOE: Std.β=.952) and CEF (M-6iii: Mod-6iii: CEF→SOE: Std.β=.627in comparison with M-7: Mod-6iii: CEF→SOE: Std.β=.715) also increases as compared to the previous module, i.e., M-6iii. It can also be seen through statistical analysis that the magnitude of classroom context also increases with the addition of SEIF compared to M-7.

## 5 Discussion and Conclusion

Our present research findings depicted that SE comprised a four-dimensional spiral, i.e. BE-EE-CE-AE. In compliance with this finding, previous studies also validated that SE incorporated four significant dimensions in spiral formation (Bandura, 2006; Dynarski et al., 2008; Wang & Holcombe, 2010). Results validated that PI in their children's studies was significantly and positively related to SE. Moreover, peer and teacher support and the academic environment are significant factors in SE in high schools (Hill & Tyson, 2009; Houtenville & Conway, 2008; Jeynes, 2007; Lam et al., 2012; Reeve & Jang, 2006). Findings were also validated by the empirical research of (Van Ryzin, Gravely, & Roseth, 2009; Wentzel et al., 2004), who demonstrated that teachers' and peers' supportive behavior became the primary predictor for SE in high schools. As evident from the hypothetical model, if the students get less behavioral and emotional support from their peers, teachers, and academic environment, they become disengaged from their studies. Relating this, the students' perceptions, beliefs, and strategies became the major determinant of SE in the study context. In this regard, academic novelty and cheating behavior were negatively but significantly related to SE. Previous empirical research conducted by (Eccles, 2007; Martin, 2007; van Uden, Ritzen, & Pieters, 2013; You, 2011).

Despite the stakeholders' participation, the goal directness of students also became the imperative predictor for SE in high schools of the study locale. Endorsing this, Meece, Anderman, and Anderman (2006) depicted that goal directness comprised task engagement, work persistence, and cognitive resonance of students towards their learning process. In extension, Schlenker et al. (2013) authenticated the significant relationship between goal directness and SE. Moreover, focusing on academic goals was also topped with the academic learning context. Countersigning this finding, (Meece et al., 2006; Weinstein, Mignano, & Romano, 2007) also endorsed that classroom context determines high school-level SE.

There is a dearth of literature addressing students' academic outcomes in the Pakistani context. In this regard, students' academic performance was evaluated directly without considering the role of SE. The literature mentioned above addressed the contribution of parents, teachers, and school context in determining students' academic outcomes. This literature also highlights the student's attitude towards studies, teachers' instructional styles, and classroom academic essentials (Farooq, Chaudhry, Shafiq, & Berhanu, 2011; Mushtaq & Khan, 2012). The

other empirical evidence from Pakistan demonstrated that family background, student-teacher association, academic environment, and quality of instruction patterns also affected students' engagement and academic success through their grades attainment (Ayaz, Shah, & Khan, 2013; Rafiq, Fatima, Sohail, Saleem, & Khan, 2013; Zahid, 2014).

### 5.1 Strengths, Limitations, and Future research directions

The major strength of the present empirical research was using the enriched tool for data collection. In this regard, socio-psychological and educational determinants were used to pin down the multidimensional nature of SE meta-construct. Moreover, the study used a large sample size, which lowered the sampling error of the statistical results. To ensure the geographical diversity and generalization of the study phenomenon, we collected the data from three divisions of the study locale. These strengths of the present study were also shadowed by some limitations, such as self-reported grades of the students, which could create biases in data collection. In this regard, future research studies should compare teachers' and students' grade reporting. The methodology section has limitations such as using one method of investigation i.e. explanatory. Relating this, the novelty of the present phenomenon could be better investigated by the triangulation method, such as simultaneously using explanatory and interpretivism approaches to investigation. An additional limitation of the present study was the ignorance of the contextual cultural, economic, and political factors such as gender biases, lack of budget allocation, and inappropriate policy-making for the high schools' structure. Moreover, students' engagement in the academic domain is directly related to their academic grades attained in exams. Future studies must address the mixture of socio-cultural, economic, and political factors affecting students' engagement and its effects on their academic performance.

### 5.2 Recommendations

To ensure higher SE levels, teachers and school administrators must focus on students' analytical approaches (such as acknowledging, modifying, applying, comparing, and summarizing the lesson contents). The analytical approach among students can be constructed and upgraded by providing an open learning environment for the learning context. Teachers should also use differential modernized instructional methodologies to ensure higher SE levels in their studies. Regular parent-teacher meetings can also ensure the student's academic progress and their level of engagement in academics. Above and beyond these recommendations, students must ensure their behavioral compliance, emotional integration, and cognitive restructuring to increase their academic outcomes. Likewise, students should espouse the social constructionism approach, which helps them get knowledge, academic skills, and better grades through their interaction with the classroom's learning environment. The government should also ensure highly qualified teachers and learning materials in an academic context at the macro level.

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