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Mediating Role of Flow and Study Engagement Between Academic Psychological Capital and Perceived Academic Stress among University Students

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The present study investigated the role of flow and study engagement in the relationship of academic psychological capital and perceived academic stress in a sample of 300 students of University of Sargodha. A cross-sectional survey research design was employed and the summated score on perceived self-efficacy subscale from Student Approaches to Learning Scale (Marsh, Hau, Artelt, Baumert, & Peschar, 2006), Life Orientation Test-Academics Scale (Chang, Bodem, Sanna, & Fabian, 2011), Academic Hope Scale (Shorey & Snyder, 2004), and Academic Resilience Scale (Martin & Marsh, 2006) provided a measure of academic psychological capital. Flow Short Scale (Engeser & Rheinberg, 2008), Utrecht Study Engagement Scale (Siu, Bakker, & Jiang, 2014), and Undergraduate Stressor Questionnaire (Spiridon & Evangelia, 2015) were used to measure flow, study engagement, and perceived academic stress, respectively. Path analysis through Amos revealed that academic psychological capital had positive direct effects on flow and study engagement. Flow had a positive direct effect on study engagement, and study engagement had a positive direct effect on perceived academic stress. Flow mediated between academic psychological capital and study engagement. Academic psychological capital showed two indirect paths to the perceived academic stress: the path mediated by the study engagement, and the path serially mediated by flow and study engagement. Implications of the study and recommendations for future investigation have been discussed.

Keywords: academic psychological capital, study engagement, flow, academic stress

Psychological capital (PsyCap) is marked by the strengths and positive traits of individuals. PsyCap helps in the increased level of performance (Luthans, Luthans & Luthans, 2004). It is said that PsyCap leads towards intrinsic motivation and it results in the achievement of goals. Students with a higher level of psychological capital are well aware of their goals. As they are intrinsically motivated, therefore they put the increased effort in their work and try to perform the task in a flow (Deci & Ryan, 1985). Psychological capital is an important phenomenon which helps the students in their academic life, and unfortunately psychological capital is an ignored area in the academic settings. Keeping in view this neglect, it is an essential and fruitful line of investigation to carry out the investigation regarding psychological capital in the educational settings. Moreover, past studies have shown that psychological capital may reduce perceived academic stress (Avey, Luthans & Jensen, 2009; Lazarus, 2003).

People high on stress-resilience disposition may have positive attributes and capabilities (e.g., hope, emotional stability, optimism, resilience, and hardiness), which reduces the likelihood of issues of physical and psychological health (Tugade & Fredrickson, 2004). As a super-ordinate latent construct, PsyCap is comprised of various attributes that have been identified as positively contributing to psychological resilience. PsyCap is measured by adding efficacy, optimism, hope, and ego resilience (Peterson, Walumbwa, Byron, & Myrowitz, 2009). Individually, these constructs differentiate people on different standards of well-being (Block & Kremen, 1996; Snyder et al., 1991), whereas Peterson et al. (2009) proposed that the combination of these attributes into a single latent construct might result in a consistent and strong predictor of health and preliminary research in the fields of organizational psychology has yielded consistent support for the positive association between well-being and PsyCap (Culbertson, Mills, & Fullagar, 2010).

Study engagement is a notion rested upon work engagement. Work engagement can be defined as "an individual's state of mind aimed at positivity and fulfilling the work that is characterized by dedication, absorption, and vigor" (Schaufeli & Bakker, 2004, p. 295). Salanova, Schaufeli, Mart´ınez, and Breso (2010) has illustrated that there are core activities of students, which can be regarded as work. For instance, a core activity for a student can be to attend the lectures or to work on and complete the assignments. Moreover, the students may have specific academic goals they strive for. These goals may vary like completing the course, academic performance, or getting the degree. Therefore, study engagement in this research is conceived as a fulfilling and positive state that comprises of dedication, vigor, and absorption in an educational context. An amalgamation of engagement, interest, and concentration in the learning process may constitute student engagement. Students may experience the engagement state during their classes or at any time when they are engaged in reading or writing a term paper. The pivotal control of student engagement in determining their intrinsic motivation (Shernoff & Hoogstra, 2001) and academic achievement(Salanova et al., 2010) has been substantiated by empirical research.

Despite the growing awareness of the importance of the linkage between study engagement and various learning outcomes, research linking various reflectors of study engagement with learning motivation has been very scarce. In this regard, positive psychology offers a relevant construct in the form of flow (Seligman & Csikszentmihalyi, 2000). The term 'flow' was introduced by Csikszentmihalyi (1990) and it is marked with an optimal experiential state that even without any incentive, it is very

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fascinating and satisfying. It reflects that intrinsic motivation with the mastery goals is required for the experience of flow.

Literature Review

Psychological capital is a salient source of coping with stress (Avey et al., 2009) and it involves both problem-focused coping strategies (e.g., hope and self-efficacy) to cope with demanding events, and emotion-focused coping mechanisms (e.g., resilience and optimism) to adapt one's emotions to specific taxing events. In organizational studies, PsyCap has been found as a significant personal resource for fighting against stress (Avey et al., 2009). Other researchers such as Lazarus (2003) asserted that as a coping resource against stress, PsyCap's salient role must be explored. Since studies on PsyCap in academic settings are very scarce, the present study was an important step in extending PsyCap's buffering role against stress from organizational settings to an academic and educational milieu.

Bakker and Demerouti (2008) suggested that personal resources change study demands into challenges. It is previously revealed that psychological capital is the positive determinant of the study engagement, because psychological capital acts as a facilitator in recovering an individual from past difficulties. As a personal resource, the psychological capacities of PsyCap re-motivate an individual and enable him/her to focus attention on the work. According to Bakker (2011), psychological capital is a novel and superordinate personal resource; it is directly linked with study engagement specifically, when the students of the university are facing great challenges and demands. Luthans, Luthans and Palmer (2016) used item response theory and hierarchical regression and analysis revealed that psychological capital was a significant predictor of student engagement.

In his qualitative investigation of high achieving students, Pope (2001) identified the notion of disengagement and "doing school" corollary to the academic stress. He observed that academic stress might result in students being unhappy, it might make them indulge in cheating behaviors, disengagement from school leading to compromised development and learning. Smith-Osborne (2012) noted that the association between student engagement and academic stressors may take two different roots: specific and uniform. Among the stressors faced in academic life, only academic stressors demonstrated a stable and consistent negative association with behavioral and affective student engagement. Among other stressors, family stressors and school life events were negatively associated with behavioral engagement whereas peer-related stressors uniquely predicted effective student engagement.

A person may experience flow as an experiential state of deep and strong immersion in tasks that are physically or intellectually challenging yet at par with the individual's competence and skills (Johnson, 2008). Flow appears to fulfill the criteria given by Luthan's (2002) about positive psychological capacity. Therefore, according to Luthans, Youssef, and Avolio (2007), construct of PsyCap may include flow as a component of positive psychological resources. During the past couple of decades, the importance of the associations among learning, motivation, and study engagement has been documented in several studies (Mills & Fullagar, 2008).

Mesurado and Richaud (2015) revealed that self-efficacy was a significant predictor of engagement and flow. Another study demonstrated that high school students experienced the lowest level of engagement in apathy conditions and the highest level of engagement inflow condition. A moderate disparity between an academic task and a leaner's skills may ensue the engagement experience (Shernoff et al., 2003).

The spiral model of engagement (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010) suggests that job resources and personal resources have a positive impact on work engagement, which, in its turn, seems to reinforce both types of resources. This dynamic, reciprocal relationship between resources and engagement as described by conservation of resources theory (Hobfoll, 1989) is compatible with and supports the notion of gain spirals. Job resources that allow the employee to work better makes work more rewarding for them, which in turn increases their engagement and effectiveness. Personal resources often get admiration from other workers, boosting their positive attitudes, productivity, and engagement, which acts as a personal reward for the employee who brings the personal resources (Bakker, 2016). Thus, resources may not only develop the mental state of flow, they may also lead to better work outcomes, improved psychological well-being, and redcued chances of being burnout. Previously researchers reported that the relationship between academic efficacy beliefs and future efficacy beliefs of students is mediated by study engagement (Salanova, Breso, & Schaufeli, 2005). Similarly, research by Rodr´ıguez-Sanchez, Salanova, Cifre, and Schaufeli (2011) empirically supported self-efficacy as a positive predictor of flow state in academic settings. These empirical findings are reflective of the potential mediating role of flow and study engagement between academic PsyCap and academic stress.

In consonance with the aforementioned literature review, the present study hypothesized:

H 1:Academic PsyCap negatively correlates with perceived academic stress

H 2: Academic PsyCap positively correlates with study engagement.

H 3: Flow positively correlates with academic PsyCap

H 4: Study engagement negatively correlates with academic stress.

H 5: Flow negatively correlates with academic stress

H 6: Study engagement and flow correlates positively

H 7:Flow and study engagement serially mediate between academic PsyCap and academic stress

Method

Sample

A convenient sample of 300 students of the University of Sargodha was recruited, which comprised of students of 5^{th}-8^{th} semesters of BS Honor (4-year program) and MSc (2-year program). Equal numbers of male and female students were given representation in the sample. Moreover, students from regular(n=150) and self-support programs (n=150) were given equal representation in the sample. An equal number of participants (i.e., 100) were included from the faculty of sciences, faculty of social sciences, and faculty of arts. As per the exclusion criteria of the present sample, the students who were repeating any course(s) or who were on probation status were not included in the sample.

Instruments

All instruments used in the present study were psychometrically sound self-report Likert type scales in English language. The details are as follows:

Academic PsyCap Measure. In order to measure academic

PsyCap, Perceived self-efficacy subscale of Student Approaches to Learning Scale, Academic Hope Scale , Life Orientation Test-Academics Scale, and Academic Resilience Scale were used in the current studty. Negative items were reversly scored and then scores obtained on all the scales were summated as an index of academic PsyCap (Adil, Ameer, & Ghayas, 2019). There were 25 items in the complete measure . Response format was 5-point Likert type scale ranging from 0 = *Strongly Disagree* to 4 = *Strongly Agree*. The alpha reliability coefficient of the scale in the present study was .80. The detailed description of the constituent scales are provided below:

Perceived Self-efficacy Subscale from Student Approaches to Learning Scale. In the current study perceived self-efficacy subscale of the Student Approaches to Learning Scale developed by Marsh et al. (2006) was used to measure academic self-efficacy component of academic PsyCap. All the items were positively phrased. Marsh et al. (2006) reported a satisfactory level of internal consistency for this scale (Cronbach's α = .87). A sample item of the scale is "I am confident I can understand the most complex material presented by the teacher".

Life Orientation Test-Academics Scale. Life Orientation Test-Academics Scale by Chang et al. (2011)was applied on the study participants. There are six items in the scale. Three items were reversly scored (2, 4, and 5). Change et al. (2011), reported that alpha reliability of the scale is satisfactory (α = .77). A sample item of the scale is "I'm always optimistic about my academic future".

*Academic Hope Scale.*For the purpose of current study the Academic Hope Scale (Shorey & Snyder, 2004), was used. This scale comprised of nine items and all the items were positively phrased. Shorey and Snyder (2004) reported that the reliability coefficient of the scale is satisfactory (α = .79). A sample item of the scale is "I know of many strategies I can use to succeed in my classes."

Academic Resilience Scale. Academic Resilience Scale(Martin & Marsh, 2006) comprised of six items was used to measure academic resilience in the current study. Martin and Marsh (2006) reported that reliability coefficient of the scale is excellent (α = .89). All the items in the scale are positively phrased. A sample item of the scale is "I think I am good at dealing with academic work pressure".

Flow Short Scale. For the purpose of current study, Flow Short Scale by Engeser et al. (2008) was adapted to validate it for academic settings. There are 10 items in the scale and response format of the scale is 7-point Likert scale ranging from 1 = *Not at all* to 7 = *Very much*. Engeser et al. (2008) provided the evidence of excellent reliability index for the scale (α = .92). Scores on all the items were summed up to take composite flow score. A sample item of the scale is "While studying, my thoughts/activities run fluidly and smoothly".

Utrecht Study Engagement Scale. The present study used Utrecht Study Engagement Scale (Siu et al., 2014) to assess study engagement among university students. The scale comprises of 9 items on a 7-point Likert scale (0 = *Never* and 6 = *Always*). None of the items was reverse coded. Sui et al. (2014) reported that the alpha coefficient of reliability of the scale was α =.90. A sample item of the scale is "When I study, I feel strong and vigorous".

Undergraduate Stressor Questionnaire. The present study used Undergraduate Stressor Questionnaire (Spiridon et al., 2015) for measuring academic stress in university students. The scale comprised of 29 items and was scored on a 4-point Likert type scale with 1 = *Not stressful* and 4 = *Very stressful*. Spiridon et al. (2015) reported an alpha coefficient of reliability for the scale impressive (α = .90). A sample item of the scale is "I think that I cannot cope with my academic demands in order to graduate".

Procedure

After taking the permission from department of Psychology, University of Sargodha, data collection was started. The participants were contacted in their classrooms. Initially rapport was built with the study participants. Confidentiality of data was ensured to the participants. Informed consent and demographic information was gathered. An average time taken by the participants to complete all the scales was 45 minutes.

Results

The descriptive statistics, alpha coefficients of reliability, and Pearson's correlation coefficients were computed through IBM SPSS whereas, path analysis for examining the mediating role of flow and study engagement between academic PsyCap and perceived academic stress was undertaken in Amos 20.0. The average age of the participants of the present study was 22.13 years with a standard deviation of 2.99 years.

Table 1
Descriptives of the Study Variables (N = 300)

Scales	*M*	*SD*	Range		*Sk*[a]	α
			Actual	Potential		
Academic Stress	62.70	18.93	17-105	0-116	-.16	.90
Study Engagement	43.18	11.03	11-68	0-70	-.30	.87
Academic PsyCap	64.25	9.81	21-82	0-100	-.62	.80
Flow	35.48	4.76	16-55	0-60	-.13	.82
Self-efficacy	10.34	2.74	0-16	0-16	-.61	.73
Resilience	15.09	3.22	3-23	0-24	-.28	.79
Hope	13.47	2.86	6-36	0-36	.27	.88
Optimism	25.35	4.70	6-20	0-24	-.54	.81

[a]Standard error of skewness =.14

As evident in Table 1, all measures demonstrated an excellent degree of internal consistency.

Table 2
Intercorrelations among the Study Variables (N = 300)

Variables	1	2	3	4	5	6	7	8
1.Academic stress		.15**	-.13*	.11	-.24**	-.27**	-.33**	-.21**
2.Study Engagement			.50***	.62***	.40***	.32***	.11	.53***
3.Academic PsyCap				.48***	.78***	.70***	.49***	.85***
4. Flow					.46***	.39***	.05	.44***
5.Self-efficacy						.50***	.14*	.62***
6. Resilience							.14*	.40***
7. Optimism								.24**
8. Hope								

*p < .05, **p < .01, ***p < .001

As depicted in Table 2, the correlations among all the constructs were in the expected directions except for the association between study engagement and academic stress, which turned out to be positive.

Table 3
Standardized Path Coefficients of Direct and Indirect Effects (N = 300)

Paths	β	95% CI for β	
		LL	UL
PsyCap → Flow	.48*	.36	.56
PsyCap → Study Engagement	.26*	.13	.36
Flow → Study Engagement	.50**	.41	.62
Study Engagement → Stress	.15*	.012	.30
PsyCap → Flow → Study Engagement	.24**	.16	.31
Flow → Study Engagement → Stress	.09*	.01	.20
PsyCap → Study Engagement → Stress	.04*	.01	.11
PsyCap → Flow → Study Engagement → Stress	.08*	.01	.18

χ^2 (2) = 3.87, p = .14
CFI = .99, GFI = .99, RMSEA = .05, Standardized RMR = .028

*p < .05; **p < .01

Table 3 shows that academic PsyCap was a positive predictor of flow and study engagement and it negatively predicts academic stress. Flow positively predicts study engagement and study engagement positively predicts academic stress. The indirect effect of academic PsyCap on study engagement via flow is positive. Flow and academic psychological capital appear to have indirect positive effects on academic stress via study engagement. Finally, the serial mediation of flow and study engagement between academic PsyCap and academic stress is also significant.

A 2 x 2 factorial ANOVA was employed in order to assess the main effect of particpants' gender, particpants' program of study (regular vs self-support) and their interaction effects on the focal constrcuts of the present study. Gender had non-signifcnat main effects on academic PsyCap {F (1, 295) = 1.89, p = .21}, flow {F (1, 295) = .07, p = .71}, study engagement {F (1, 295) = 3.80, p = .0550}, and academic stress {F (1, 295) = 2.32, p = .13}. Similarly, participants' program of study had non-signifcnat main effects on academic PsyCap {F (1, 295) = .39, p = .32}, flow {F (1, 295) = 1.92, p = .31}, and academic stress {F (1, 295) = 1.38, p = .24}. However, students of regular programs were found to be significantly more engaged in their studies as compared to their counterparts {F (1, 295) = 6.95, p = .009}. All the interaction effects were found to be non-signifcant {F_{Flow} (1, 295) = 1.29, p = .13; F_{Stress} (1, 295) = .50, p = .82; $F_{study\ engagement}$ (1, 295) = 1.46, p = .11; $F_{academic\ PsyCap}$ (1, 295) = 2.74, p = .09}.

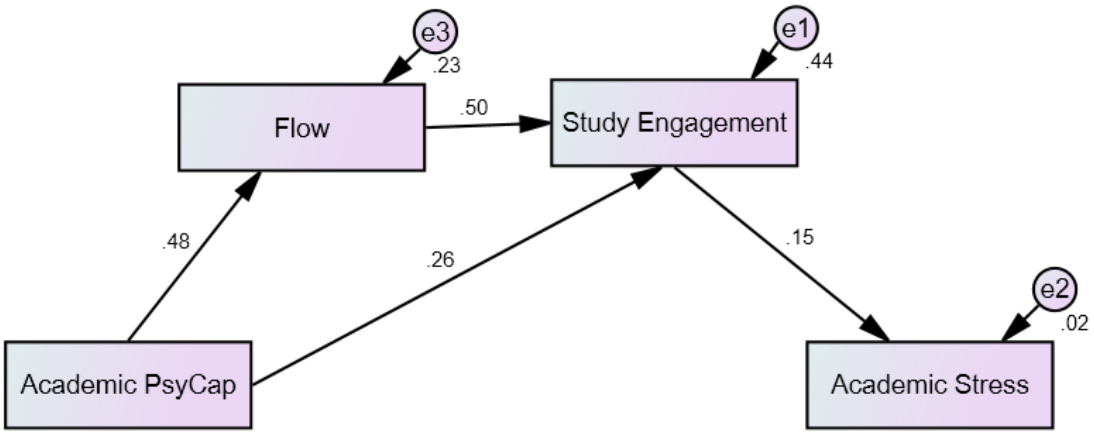

Figure 1. Standardized path coefficients of the structural model of the present study. All paths were significant at p < .01.

Discussion

The primary objective of the present study was to examine the mediating roles of flow and study engagement between academic PsyCap and perceived academic stress. Results showed that academic PsyCap was significant positive predictor of flow and study engagement and it had two different routes of indirect effect on academic stress. More specifically, academic PsyCap not only showed an indirect effect on academic stress through study engagement, but it also had an indirect effect via both flow and study engagement in a serial fashion.

In terms of the hypotheses of the present study, our first two hypotheses proposed academic PsyCap as a significant positive correlate of study engagement and a significant negative correlate of academic stress. Results supported the hypotheses of current study as analysis revealed that PsyCap was a significant positive correlate of study engagement and a negative correlate of academic stress. Results of current study can be justified on the basis of the job demands-resources model (JD-R model, Bakker & Demerouti, 2008). This model of academic instituitions and personal capabilities indicates the personal charecteristics that may convert towards study demands into the form of various challenges, and ultimately it reduce the negative effect of study demands (Siu et al., 2014).

According to Siu et al. (2014) PsyCap is a component of personal resource, which might have great potentials for harnessing individuals' work engagement (Bakker, 2011). The concept of study engagement is parallel to that of work engagement, as both involve the same components (i.e., dedications, vigor, and absorption) albeit the difference of their contexts. The former refers to the academic milieu of the students whereas the latter refers to the occupational and work setting of the employees. Thus, in accordance with the JD-R model, as a personal resource, academic PsyCap is expected to be strongly associated with study engagement particularly when there are a lot of challenges to face in front of university students. According to Sweetman and Luthans (2010), students having higher

levels of PsyCap may conceive their educational environment as less stressful and may have more inclination to focus on the positive aspects, which in turn may enhance their overall well-being. For instance, despite a very stressful environment, there is a greater likelihood that an optimistic, efficacious, hopeful, and resilient individual may have a stronger belief in her/his sufficient resources for combating with demands of stressful situations. Lepine, Podsakoff, and Lepine (2005) found that individuals could be more adaptive to those demands they found more challenging because optimistic people were more likely to focus on the positive aspects of new demands. Similarly, hope is related to the goal significance (hope-path) and with the belief that goal achievement improves one's life (hope-agency). In sum, these factors indicate that individuals with higher levels of PsyCap are more likely to preserve their psychological and physical well-being even in the face of academic stress because they have a greater capacity to endure the challenging demands of stressful situations.

Our third hypothesis was also supported as academic PsyCap appeared as a significant direct predictor of flow. The positive association between academic PsyCap and flow is quite plausible since both can be grouped together as positive personal capacities or personal resources. Students rich in academic psychological capital have stronger beleifs in their abilities, they remain more optimistic about their academic future; and if temporarily beset from their academic goals, they are resilient enough to bounce back and strive for their scholastic goals through new pathways owing to their higher degree of agentic hope. These results are in line with the findings of Adil et al. (2019) as they found a strong positive association between flow and academic PsyCap among university students.

Our fourth hypothesis was not supported, we found a positive relationship between study engagement and academic stress. It is quite plausible that students with higher degree of study engagement may exclusively focus on their academic issues and demands and owing to their greater sensitivity to their academics, they may perceive the academic demands as more challenging and stressful. That's why they may perceive higher degree of stress in terms of their academic lives.

The fifth and sixth hypotheses of the present study suggested that flow positively corelated to study engagement and negatively related to academic stress. The result of the present study provided support for these hypotheses as flow predicted study engagement positively, and it turned out to be negatively reated to perceived academic stress (although it did not demonstrate a direct negative effect on academic stress owing to the full mediation of study engagement between flow and academic stress). In the same line, some researchers have identified positive associations between engagement and flow. On theoretical grounds, engagement is also a somewhat similar concept as an engaged student will be immersed in his/her studies (absorption component of study engagement) to such a high level that time speedily flies. They feel motivated and rewarded because their high level of dedication for their studies (dedication component of study engagement).

The findings of the present study revealed that flow did not predict perceived academic stress. Although apparently surprising, this finding could have been justified if we dwell a bit deeper into the concept of flow and apply it to the situation of undergraduate university students. Engeser and Rheinberg (2008) conceptualized the flow state only ensues when skills and job demands are compatiable, which may result in reducing the task-related stress. However, in the context of Pakistani undergraduate university students, the university demands usually exceed their skills owing to their first time exposure to the semester system, higher difficulty level of course contents and reading materials, and English as the medium of instructions. This condition is not conducive to experiencing flow state and it could be occasional throughout students' undergraduate degree programs that they experience flow state in their studies. Therefore, there appeared to be a very low variability in flow as compared to the fluctuating rate of perceived academic stress as the students progressed through various semesters of their degree programs. This is also evident in the standard deviation scores of flow and academic stress. Thus, the flow could have better accounted for variance in academic stress had there been more frequent experiences of flow in students' studies. This explains why flow might have not been able to add any unique variance in academic stress.

Finally, our last hypothesis was also supported as we found that flow and study enagagement serially mediated between academic PsyCap and perceived academic stress. As discussed earlier, students with higher degree of academic PsyCap are more likely to experience a flow state in their studies. This rewarding and pleasing state of flow in studies may enable students to be more enthusiastically engaged in their studies, and their increased sensitivity towards their acadmeics may make them more vulnerable to academic stress.

Conclusion

Findings of study also revealed that students deeply engaged in their studies may become more vulnerable to academic stress owing to their increased sensitivity towards their academic ambitions. Therefore, it is imperative to train the highly engaged students in the effective and efficient use of positive coping strategies, so that they may actively combat their stress while keeping intact their states of flow and engagement—the states that have been found as the proximal predictors of student's academic performance in terms of their cumulative grade point averages (Adil et al., 2019).

Implications

Our results yield some important implications for the field of educational psychology. Our findings indicate academic PsyCap as a vital resource of enhancing study engagement and flow. Since PsyCap is quite flexible in nature, therefore, it can be fostered and cultivated in our students. Intervention programs for inspiring study engagement in students must integrate modules of PsyCap training for developing this treasured personal capacity of the students. In organizational settings, various programs to improve psychological capital has been devised. This type of programs should be adapted to the educational milieu.

Limitations and Recommendations

The cross-sectional design of the present study precludes from deriving a causal interpretation of our findings. Therefore, future research should employ some experimental or longitudinal designs in order to affirm the causal interpretation with more confidence. In the current study, self report instruments were used and it might have led to a common method bias. Therefore, in future, a mixed method approach must be used with multiple instruments. Furthermore, future researchers can use social desireability tool to exclude the participants with high level of social desirability.The partcipants of the present study were undergraduate students of university of

Sargodha, which may not be a true representative of population of university student across Pakistan. Therefore, future studies should incorporate measures for maximizing the the external validity of the research. This could be achieved by recruiting a nation wide representative sample of Pakistani university students.

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