

Teaching Presence and Academic Achievement: The Mediating Role of Psychological Capital in Online and Offline Hybrid College English Course

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Abstract

Online and offline hybrid courses have become an important element in the construction of first-class undergraduate courses in China, and educational administrators, educational researchers and front-line lecturers are thinking about and seeking ways to improve students' academic achievement. Based on positive psychology theory (PPT) and Communication of Inquiry (CoI) framework theory, this paper constructs the first research framework on the mediating role of psychological capital (PC) on teaching presence (TP) and academic achievement (AA) in online and offline hybrid English course contexts, revealing the pathways and mechanisms of influence of teaching presence (TP) and psychological capital (PC) on academic achievement (AA). A total of 321 valid questionnaires were collected through online platform. The partial least squares structural equation modelling (PLS-SEM) analysis using SmartPLS3 found that: 1) teaching presence (TP) had a significant positive effect on academic achievement (AA); 2) teaching presence (TP) had a very strong positive effect on psychological capital (PC); 3) psychological capital (PC) had a significant positive effect on academic achievement (AA), and 4) academic achievement (AA) was partially mediated by psychological capital (PC). Therefore, measures such as enhancing students' perceptions of teaching presence, optimizing the quality and design of online and offline courses, fostering positive psychological states in students, raising students' psychological capital levels and ensuring smooth communication between online and offline teaching and learning are conducive to significantly improving students' academic achievement (AA).

Keywords

Teaching Presence, Academic Achievement, Psychological Capital, Hybrid

1. Introduction

In recent years, the rapid development of computer technology and network communication has facilitated the integration of face-to-face teaching and online learning environments. Online and offline hybrid learning formats have become a research hotspot in the field of higher education, training and basic education because they combine the advantages of face-to-face course teaching and online learning, and their development and application in the field of higher education is particularly notable. The US New Media Consortium Horizon Report (Higher Education Edition) in 2015, 2016, and 2017 (Alghamdie et al., 2020; Alkiş & Temizel, 2018) listed online and offline hybrid learning as an increasingly popular trend in the near future for three successive years. More and more universities in China and abroad are realizing the importance of online and offline hybrid learning in higher education and are widely implementing this format. To this end, the Ministry of Education of the People's Republic of China has issued the "Implementation Opinions on the Construction of First-class Undergraduate Courses", which explicitly proposes to build about 10,000 national and 10,000 provincial first-class undergraduate courses in about three years (Zhang et al., 2021). As one of the five types of first-class undergraduate courses, the online and offline hybrid first-class courses mainly refer to the use of appropriate digital teaching tools based on MOOC, SPOC or other online courses, and the transformation of the on-campus courses by combining the actual courses and arranging 20% - 50% of the teaching time for students' online independent learning. The online courses are combined with offline face-to-face lectures to develop flipped classes and hybrid teaching, creating hybrid first-class courses that integrate online courses and classroom teaching (Wu, 2018). As a result, Chinese undergraduate education has changed from a single offline teaching method to a hybrid online + offline teaching method, and the way of knowledge acquisition has changed significantly as a result. Although this approach has many advantages (Lv, 2022; Shi et al., 2023), in practice, 50% - 60% of students believe that the effort they put into online and offline learning is not proportional to their performance, that the time spent before and after class is too long, and that the content taught by the teacher does not exactly match the textbook (Xie et al., 2021), which resulted in poor communication between teachers and students (Dai & Lin, 2020), increased psychological stress and reduced motivation (Yu & Li, 2022), which ultimately affected academic achievement (AA).

AA is one of the most important indicators for assessing students' academic outcomes as well as the quality and equity of education in different countries (OECD, 2016). A good AA both facilitates a virtuous cycle in the development of

individuals (Ye et al., 2014; Zhang et al., 2020) and is an important factor in interrupting the intergenerational transmission of poverty (Altschul, 2012). Its importance becomes more critical in the context of higher education, as it predicts higher levels of productivity and higher social living standards (Massah, Sobhy, & Fadly, 2017). At the institutional level, AA is a signal of human capital. Higher education institutions such as business schools help organizations by providing graduates with sufficient knowledge, skills, and attitudes, often measured through AA (Petriglieri, 2015). Thus, AA is the main indicator of an individual's ability to acquire competence and achieve upward mobility in their career (Brand & Xie, 2010). One of the most important issues in educational psychology is to discover how to improve students' AA (Quaye & Harper, 2014). Teachers are important players in the educational and teaching process and are one of the main factors that influence students' AA. It has been shown that teacher presence, or teaching presence (TP), has a significant impact on college students' AA in online learning (Yu, 2022b; Joo et al., 2016; Yazdi & Zandkari-mi, 2013), but this impact is not direct, but rather the teacher's influence on student learning through instruction and course design, dialogue among students, and the extent to which students are motivated by self-efficacy, hope, optimism, and resilience have an important and direct impact because in online learning, personal motivation plays a more critical role in the success of an online learning environment than stimulation by external factors from the instructor (Daspit, Mims, & Zavattaro, 2015). Therefore, in this study, we relied on Psychological Capital (PC) to elucidate the foundations of students' personal psychological dimensions in online and offline hybrid course environments. PC focuses on the positive aspects of personal success and is a personal-level state consisting of self-efficacy, hope, optimism, and resilience (Luthans, Luthans, & Luthans, 2004).

The existing literature reveals the effects of TP on PC or AA in business and mathematics discipline students in fully online and blended learning (Daspit, Mims, & Zavattaro, 2015; Setayesh, 2018) and PC as a mediator to affect students' AA, mental health, employability, and well-being (Sun, Wang, & Wang, 2020; Zou et al., 2023; Li et al., 2022; Wang, 2017), but no studies have focused on the relationship between TP, PC and AA in the context of college English courses, so this study uses students' PC as a mediator of TP-AA relationship and aims to answer the following questions.

Q1. Does TP significantly affect AA in online and offline hybrid English general education courses?

Q2. Does higher level of PC predict higher AA in online and offline hybrid English general education courses?

Q3. Does PC mediate the relationship between TP and AA in online and offline hybrid English general education courses?

By identifying and highlighting the mediating role of PC in the relationship between TP and AA, we aim to reveal the causes of students' distress, especially

psychological distress, in blended English general education courses and to incorporate interventions aimed at enhancing students' psychological strength. It also provides better solutions for teaching staff responsible for designing and implementing blended online and offline instruction in English general education courses, as well as data to support research in educational psychology and educational administration.

2. Research Framework and Hypothesis

2.1 Research Framework

Garrison et al.'s (Garrison, Anderson & Archer, 2000) theoretical framework for Community of Inquiry (CoI) is rooted in Dewey's (1933) view that education is a collaborative reconstruction of experience. The CoI framework theory produces a collection of pedagogical, social and cognitive elements that are labelled as presence and collectively referred to as CoI (Garrison, Anderson, & Archer, 2000). TP in this context refers to the design, facilitation and instruction of cognitive and social processes to achieve personally meaningful and educationally valuable learning outcomes. Delivery begins before the course begins, with the teacher acting as the instructional designer, planning and preparing the learning session, and continuing during the course, with the teacher facilitating dialogue and providing direct instruction when needed. Formal learning that facilitates personally relevant and educationally defined outcomes is achieved through adequate TP. We do not wish to denigrate individual learning through independent or autonomous study. However, powerful communication tools such as collaborative computer conferencing (Paulsen, 1995) or collaborative learning (Rossman, 1999) can only become useful teaching and learning resources through active teacher intervention (Anderson et al., 2001). From a constructivist perspective, TP and social presence (SP) have an impact on cognitive presence (CP)-related learning outcomes. Related research suggests that teachers influence collaboration, and peer collaboration influences student learning outcomes (Garrison, Cleveland-Innes, & Fung, 2010). Studies have examined the effects of teacher support, teacher expectations, and teacher teaching ability on AA for elementary, middle, and high school students and college students in mathematics and business subjects (Wang, 2022; Zhao, 2022; Chen & Guo, 2016; Su, 2022; Yi, 2020; Daspit, Mims, & Zavattaro, 2015; Setayesh, 2018), but few studies have focused on learning contexts in university English subjects.

PC research has its roots in positive psychology and social learning theory, usually in the context of a company where positive forms of individual motivation are recognized as possible in organizational behavior and human resource management (Luthans, Luthans, & Luthans, 2004; Luthans, Luthans, & Jensen, 2012; Stajkovic & Luthans, 1998). PC focuses on personal strengths rather than weaknesses and includes four elements of self-efficacy (self-confidence), hope, optimism, and resilience. All four traits are states rather than traits, as states are malleable with training, whereas traits such as personality are more static.

Self-efficacy refers to having the self-confidence to perform and put in the effort necessary to successfully complete challenging tasks; optimism is the positive attribution of current and future success; hope refers to persevering with goals and being able to re-route to them if necessary in order to achieve success; and resilience is the ability to persevere, recover quickly and take a roundabout route to success when faced with problems and dilemmas (Luthans, Youssef, & Avolio, 2006). Numerous studies have shown that PC mediates AA success in different student populations (Zeng, 2021; Xu, Xu, & Wang, 2021; Yuan, 2018; Xu & Yang, 2016; Feng et al., 2015), and few studies have focused on the relationship between the two in university English learning environments.

Figure 1 shows the research framework proposed in this study. Based on previous research, this study will explore the mediating role of PC between TP and AA in an online and offline hybrid English general education course environment and verify the influential relationship between the three in order to help teachers, students and educational administrators to advance the construction and practice of online and offline hybrid courses. At the same time, the study also attempts to extend PC's integration into the CoI framework theory (Daspit, Mims, & Zavattaro, 2015) to hybrid learning environments in the university English discipline with a view to informing and providing evidence for areas of extended application of positive psychology and the CoI theoretical framework. This study will then examine the relevant influences in accordance with the model presented in this paper.

2.2. Hypothesis

2.2.1. TP & AA

CoI is a theoretical framework that represents a process of creating deep and meaningful learning experiences through the development of three interrelated elements (SP, CP, and TP). Of these, TP is critical for balancing CP and SP, and is aligned with desired educational outcomes and includes three subcategories: design and organization, facilitation of dialogue and direct instruction (Garrison, Anderson, & Archer, 2001). CoI researchers report that the perceived level of TP has a considerable impact on their learning outcomes. Available evidence

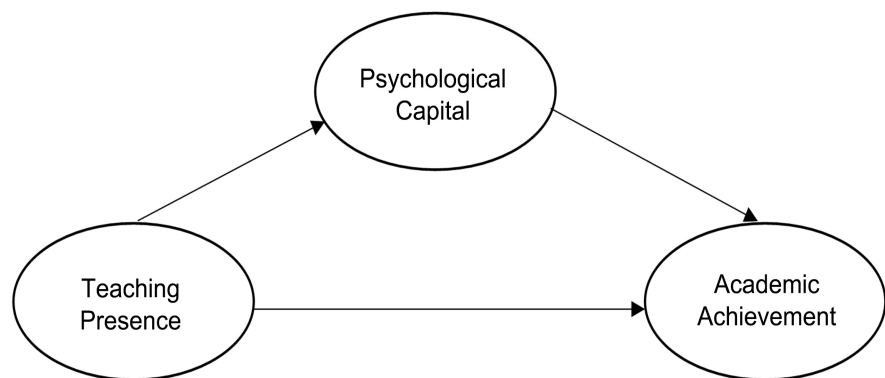


Figure 1. Research framework.

also suggests that students' perceptions of TP are related to satisfaction and learning outcomes. Arbaugh reported that students' perceptions of TP were significantly related to their perceived learning ($r = 0.51$) (Arbaugh, 2008); Joo et al. used structural equation modeling to show that TP has a positive effect on learner satisfaction and indirectly affects learner persistence (Joo, Lim, & Kim, 2011); Khalid and Quick reported that students' TP levels were positively related to course satisfaction (Khalid & Quick, 2016); Lim et al. examined differences in students' perceived SP, CP and TP in four disciplines and their effects on students' affective learning outcomes (perceived learning outcomes and satisfaction), with TP being a significant predictor of student learning outcomes across the four disciplines (Lim & Richardson, 2021). Based on this, the following hypotheses were formulated.

Hypothesis 1: TP has a significant positive effect on AA in online and offline hybrid English general education courses.

2.2.2. PC & TP

PC is theoretically based on the idea that positive perceptions allow individuals to be successful (Harms & Luthans, 2012). Positive psychological perspectives are associated with individual-level states because such perspectives are malleable and open to development (Brandt, Gomes, & Boyanova, 2011; Luthans, Luthans, & Luthans, 2004). In CoI, TP facilitates teaching and learning through curriculum design and is a central and organizing element of CoI (Arbaugh, 2013) as it has a significant impact on sense of community, perceived learning and teaching satisfaction (Garrison & Arbaugh, 2007). Previous research has shown that TP has a direct impact on the presence of SP and CP within the CoI (Garrison, Cleveland-Innes, & Fung, 2010; Shea & Bidjerano, 2009), which supports the core impact of TP.

The way in which teachers facilitate dialogue by providing personal feedback and engaging students in a learning environment may help to create a psychological contract between teacher and student. Similarly, teachers influence self-efficacy development through the use of well-designed syllabuses, teaching activities and other similar tools. In addition, teachers nurture students' beliefs through feedback at the individual and group levels, thereby increasing optimism and resilience. However, few studies have explored the relationship between PC and TP. Considering the instructional correlates of TP, teachers may influence students' PC in a blended online and offline learning environment.

Hypothesis 2: TP is positively related to PC in online and offline hybrid English general education courses.

2.2.3. PC & AA

Research has shown that PC is positively related to a variety of work attitudes, behaviors, and organizational outcomes (Luthans & Youssef-Morgan, 2017). Theory and research have identified positive outcomes of PC at the individual and organizational levels (Luthans et al., 2010). PC includes four elements of

self-efficacy, optimism, hope, and resilience that positively influence academic performance. Self-efficacy promotes cognitive engagement, and enhanced self-efficacy can facilitate students' use of cognitive strategies to improve academic performance. Zimmerman et al. (Zimmerman, Bandura & Martinez-Pons, 1992) found that self-efficacy directly or indirectly influenced AA; Lu, Dian et al. (Lu, Ye, & Zeng, 2022) found that students' chemistry self-efficacy was significantly and positively related to their academic achievement in chemistry through a survey of Chinese chemistry undergraduates; Wang & Huang (Wang & Huang, 2022) et al. explored that self-efficacy was moderately related to second language academic achievement through meta-analysis ($r = 0.458$). A preliminary empirical study by Snyder (Snyder et al., 1991) showed that students' hope levels not only correlated with regular grades but also predicted final grades well; Yu, Yue (Yu, 2022a) explored the key factors that enhance academic achievement of high school students and showed that both hope status and academic resilience were significantly and positively related to AA and significantly predicted AA. Some studies have shown that optimistic students have less stress, feel lonely, feel more social support and perform better academically than pessimists. From the above research findings, it can be seen that PC, as a deep state and psychological ability, can lead to positive learning behavior and thus have a positive impact on academic performance, however, few studies have focused on the relationship between PC and AA.

Hypothesis 3: PC has a significant positive effect on AA in online and offline hybrid English general education courses.

Hypothesis 4: PC mediates the effect of TP on AA in online and offline hybrid English general education courses.

3. Method

Based on a review and summary of existing research, this study considers the factors influencing AA in online and offline hybrid English general education courses, establishes a research framework, and develops hypotheses. This study will use quantitative methods to test the research hypotheses (Fan, Zhang, & Xu, 2020; Feng & Wang, 2018; Nambudiri, Shaik, & Ghulyani, 2020; Vîrgă, Pattusamy, & Kumar, 2022). The latent variables of relevant observations cannot be directly observed to obtain corresponding data, so the use of scale measurements can help this study to obtain data to test the hypotheses (Feng & Wang, 2018; Nambudiri, Shaik, & Ghulyani, 2020; Vîrgă, Pattusamy, & Kumar, 2022; Slåtten et al., 2021).

3.1. Questionnaire Design

The questionnaire for this study contains two sections, basic information about the participants and factors influencing online and offline hybrid course AA, with a total of 26 questions. To ensure content validity, all measurement questions were derived or contextually adapted from existing literature (Straub,

Boudreau, & Gefen, 2004). The four dimensions of the PC were adapted from the PC scale adapted for Chinese university students by Wang Yanfei et al. (Wang, Li, & Huang, 2011) and include self-confidence, resilience, optimism and responsibility. Each latent variable in this scale has 6 - 8 items, using a 6-point Likert scale (of which the objective achievement item is a 5-point scale), ranging from 1 - 6 on a scale of “strongly disagree” to “strongly agree”. The questionnaire and references are shown in **Table 1**.

3.2. Data Collection

Three universities in eastern, western and southern China were selected for this survey, and students in administrative classes were selected for the survey using a whole-group sampling method. The three universities have been jointly implementing the practice of teaching a hybrid online and offline first-class course (A Survey of English-speaking Countries) since 2020, as this course is an English

Table 1. Survey instrument.

Latent Variable	Measurement Items	References
Teaching Presence	<ol style="list-style-type: none"> 1) The course instructor clearly tells me what to learn in the course. 2) The course instructor clearly communicates the course objectives to me. 3) The course instructor tells me clearly how to complete each task in the course. 4) The course instructor finds ways to engage me in the course. 5) The course instructor encourages me to discover and understand new concepts in the course. 6) The course instructor gives me timely feedback on my learning status in class. 	Adopted from Arbaugh, Cleveland-Innes, Diaz, Garrison, Ice, Richardson, & Swan (2008)
Psychological Capital	<ol style="list-style-type: none"> 1) I can present my views with confidence during course activities. 2) I enjoy challenging course tasks. 3) I am always comfortable with the pressure of the course. 4) I always recover quickly from setbacks. 5) When things get tough, I always believe that “the sun always shines”. 6) I believe that “you reap what you sow”. 7) I will do my best to complete my course assignments. 8) Even if I have difficulty completing my course tasks, I will persevere to the end. 	Adopted from Lorenz, Beer, Pütz, & Heinitz, (2016); Wang, Li, & Huang (2011)
Academic Achievement	<ol style="list-style-type: none"> 1) The extent to which I complete course tasks in line with the teacher’s requirements. 2) The extent to which my learning outcomes meet expectations. 3) I am considerate and caring towards other students involved in the course. 4) I offer assistance to other students. 5) I have a good rapport with my classmates. 6) I take the initiative to solve problematic learning situations. 7) I persevere with customer service difficulties in order to complete my learning tasks. 8) In which of the following bands does my final grade fall? 	Adopted from Wang, Li, & Huang (2011)

elective and is available to students from sophomore to senior year at all three universities, including undergraduate and tertiary students. The formal survey was conducted using an online questionnaire and was administered to students enrolled in the hybrid online and offline course, A Survey of English-speaking Countries, during the spring semester of 2022, which was not affected in any way by the implementation of strict epidemic control measures by the Chinese government. After completing the initial design of the questionnaire in **Table 1**, 34 students participating in the course were randomly invited to conduct a pre-survey by a WeChat group and the questionnaire was carefully modified in response to feedback suggestions to ensure the formal survey was accurately completed by the respondents. The total number of course participants was 404, of which 325 volunteered to participate in this survey, which was distributed by the instructor to DingTalk or displayed on the course PowerPoint to invite students to participate in the survey and answer. The online questionnaire was administered between 16 May 2022 and 20 June 2022, and the data was collated to obtain a sample of 321 valid questionnaires as shown in **Table 2**.

4. Data Analysis and Results

Structural equation modelling (SEM) can be used to test relationships between multiple potential variables while minimizing estimation error (Ullman & Bentler, 2012; Liu, 2018; Zhang, 2015; Hoyle, 1995). Partial least squares structural equation modelling (PLS-SEM) is an analytical technique used to detect or construct predictive models. In particular, for causal model analysis between potential variables, it outperforms general linear structural relationship models and is well suited for exploratory studies (Cepeda-Carrion, Cegarra-Navarro, & Cillo, 2019; Chin, 2010). Meanwhile, PLS-SEM is mainly used to detect whether causal relationships have statistically significant linear relationships with each other.

Table 2. Demographics.

Information	Title Item	Quantity	Percentage
Gender	Male	152	47.4%
	Female	169	52.6%
Age	18 - 20	132	41.1%
	21 - 23	189	58.9%
Years of participation in online and offline learning	Less than 1 year	23	7.2%
	More than one year and less than two years	190	59.2%
	More than two years	108	33.6%

It is well suited for the construction of theoretical models. In particular, researchers are advised to use PLS-SEM when the number of variables is large, when there is a lack of normal distribution and when the sample size is exploratory (Hair Jr. et al., 2019; Chin, 2010). It mainly uses the PLS algorithm and bootstrap to perform 5000 replicate sampling to derive path coefficients and significance (Chin, 2010). It also allows for discussion of correlations and effects between dimensions. Previous research has not explored PC as a mediator influencing the TP-AA relationship, and this study is an exploratory study that seeks to develop and empirically test a model of PC's mediated prediction and explanation of the TP-AA relationship in a hybrid English course learning environment; the framework of this study is a multi-theoretical hybrid based on Communication of Inquiry theory, Positive Psychology Theory and a hybrid online and offline English course context model (Cepeda-Carrion, Cegarra-Navarro, & Cillo, 2019). For these reasons and analyses, PLS-SEM is the applicable statistical analysis method for this study. Therefore, the widely used SmartPLS 3 will be chosen to test the hypotheses presented in this study (Hair Jr. et al., 2019; Cepeda-Carrion, Cegarra-Navarro, & Cillo, 2019; Chin, 2010; Sarstedt & Cheah, 2019).

4.1. Non-Response Bias

If there was a non-response bias in the data from this study, it would have had a significant impact on the conclusions of this study (Armstrong & Overton, 1977). To test whether the data from this study had a no-response bias, this study examined whether there was a significant difference between the previous data and the subsequent data (Armstrong & Overton, 1977). First, all samples were sorted in order of response time. The top 25% of the data sample and the bottom 25% of the data were tested using SPSS 27. Analysis revealed no significant differences in gender, age and Years of participation in online and offline learning ($p > 0.05$). Therefore, it is reasonable to believe that non-response bias does not significantly affect the results of this study (Garrison & Arbaugh, 2007).

4.2. Common Method Variation

The sample data in this study were obtained from the distribution and collection of an online questionnaire, which is likely to be a common method variation (Podsakoff et al., 2003). Therefore, procedural controls and statistical methods were used in this study to reduce the impact of standard methodological variations on the findings (Zhou & Long, 2004). Statistical tests were analyzed using the Harman one-way test (Lindell & Whitney, 2001). The Harman one-way test using principal components analysis in SPSS 27 software yielded a maximum explained factor variance of 36.125%, not exceeding 40%, indicating that no single factor explained most of the variance (Podsakoff et al., 2003). It is believed that the standard method variance does not significantly affect the results of this study (Lindell & Whitney, 2001).

4.3. Measurement Model Assessment

The validity and reliability of the model was tested by examining content validity, discriminant validity, and convergent validity (Hair Jr. et al., 2019). The current questionnaire items were derived or adapted from the results of a previous study and were pre-tested for the study. Therefore, it is reasonable to assume that they have good content validity (Hair Jr. et al., 2019). The Average Variance Extracted (AVE) values for the measurement models are shown in **Table 3**, indicating good convergent validity when the AVE value is not less than 0.5 (Hair Jr. et al., 2019; Chin, 2010). From **Table 4**, the square root of the AVE of the measurement model is greater than the correlation coefficient between the latent variable and the other latent variables; it then indicates good discriminant validity (Hair Jr. et al., 2019; Chin, 2010). In **Table 5**, a combined reliability (CR) and Cronbach's Alpha value greater than 0.7, the reliability of the measurement model is good (Hair Jr. et al., 2019; Chin, 2010). Analysis of the above test results demonstrated that the questionnaire has adequate reliability and good validity (Arbaugh et al., 2008; Lorenz et al., 2016; Wang, Li, & Huang, 2011).

The discriminant validity of the model can also be tested by examining the values of the cross-loadings (Al-Fraihat, Joy, & Sinclair, 2020). **Table 5** shows that the factor loadings between each measured variable and its latent variable are more significant than the cross-factor loadings between other latent variables, indicating that the measurement model has good discriminant validity (Hair Jr. et al., 2019; Chin, 2010). In **Table 6**, the HTMTs for this measurement model were all less than 0.67, indicating that the measurement model has good discriminant validity (Hair Jr. et al., 2019; Cepeda-Carrion, Cegarra-Navarro, & Cillo, 2019).

Table 3. AVE, CR, and Cronbach's Alpha.

Latent Variable	ID	Items	Cronbach's Alpha	CR	AVE
Teaching Presence	TP	6	0.844	0.886	0.616
PsyCap	PC	8	0.881	0.905	0.594
Academic Achievement	AA	8	0.857	0.889	0.551

Table 4. Fornell-Larcker discriminant validity.

	AA	PC	TP
AA	0.708		
PC	0.403	0.738	
TP	0.376	0.498	0.752

Note: The values bolded on the diagonal are the square root of AVE.

Table 5. Cross-loading.

	AA	PC	TP
AA1	0.708	0.390	0.328
AA2	0.719	0.289	0.321
AA3	0.702	0.371	0.355
AA4	0.701	0.316	0.224
AA5	0.718	0.374	0.331
AA6	0.742	0.410	0.341
AA7	0.739	0.335	0.423
AA8	0.764	0.342	0.338
PC1	0.343	0.774	0.458
PC2	0.460	0.817	0.504
PC3	0.369	0.705	0.331
PC4	0.354	0.708	0.625
PC5	0.319	0.709	0.246
PC6	0.318	0.780	0.357
PC7	0.454	0.739	0.415
PC8	0.310	0.725	0.451
TP1	0.279	0.445	0.739
TP2	0.347	0.460	0.825
TP3	0.410	0.444	0.768
TP4	0.399	0.488	0.821
TP5	0.298	0.429	0.709
TP6	0.395	0.425	0.710

Table 6. HTMT.

	AA	PC
PC	0.566	
TP	0.550	0.666

If the variance inflation factor (VIF) value in the study model is less than 5, then the study model does not have a covariance problem (Hair Jr. et al., 2019). The VIF values of the models obtained after calculations using SmartPLS3 software were all less than the critical value of 5, which indicates that the study

model does not have a multicollinearity problem and that the results of the study model are relatively stable.

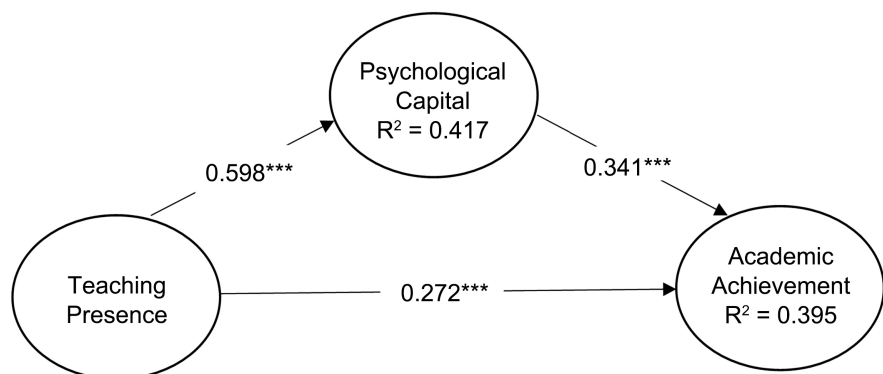
4.4. Structural Model Assessment

In this study, SmartPLS3 was used to build a PLS-SEM to analyze the influencing factors of AA in online and offline blended English courses, and the results of the analysis are shown in **Figure 2**. It is showed that the R^2 for PC and AA were 0.417 and 0.395, respectively, indicating good prediction of the analyzed model (Hair Jr. et al., 2019). **Figure 2** shows that the path coefficients between TP and PC, PC and AA, and TP and AA were 0.598, 0.341 and 0.272, respectively, and $p < 0.001$, indicating that TP had a significant positive effect on PC and AA, and PC also had a significant positive effect on AA, and hypotheses 1, 2 and 3 held, especially the path coefficient from TP to PC reached 0.598, showing a very strong positive influence.

The Q^2 values of 0.285 and 0.251 for PC and AA, respectively, were obtained using the Blindfolding algorithm, indicating that this model has moderate predictive accuracy (Hair Jr. et al., 2019).

The mediating effect of PC was verified using the boot-pull method (Hair Jr. et al., 2016), which showed that the t-values between TP and PC, PC and AA, and TP and AA were 13.116, 4.477, and 4.797, respectively, all greater than 3.29, (Huang, 2021), indicating that hypotheses 1, 2 and 3 have reached a significant level with $p < 0.001$ and a significant effect between the three. It is also evident from **Table 3** that the research model has good reliability and validity, therefore, the value of VAF from the path coefficient between the three latent variables in **Figure 2** is 0.429, which shows that the effect of instructional presence on academic achievement is partially mediated by psychological capital and Hypothesis 4 holds.

The mediating effect of PC was verified using the boot-pull method (Hair Jr. et al., 2016), which showed that the t-values between TP and PC, PC and AA, and TP and AA were 13.116, 4.477, and 4.797, respectively, all greater than 3.29, (Huang, 2021), indicating that hypotheses 1, 2 and 3 have reached a significant



Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; ns: not-significant.

Figure 2. Structural model PLS results.

level with $p < 0.001$ and a significant effect between the three. It can also be seen from **Table 3** that the research model has good reliability and validity, therefore, the value of VAF from the path coefficient between the three latent variables in **Figure 2** is 0.429 with a 95% confidence interval of [0.224, 0.302] for the direct effect, which is significant, and the indirect interval was [0.112, 0.288], which also turned out to be significant. This suggests that the effect of TP on AA is partially mediated by PC and hypothesis 4 holds.

4.5. Measurement Invariance

To measure model invariance, a three-step test was used to determine that latent variables in different groups had the same connotation, based on the measurement invariance of the composite model (MICOM) developed explicitly for PLS-SEM by Henseler et al. (Henseler, Ringle, & Sarstedt, 2016). Firstly, identical measurement items, data processing methods and analysis techniques were used across genders to have construct invariance; secondly, component invariance results passed the test ($p > 0.05$, two-tailed); and finally, there were no significant differences in equal mean values and variance confidence interval results. Therefore, it was considered that the model exhibited full invariance in the gender grouping.

5. Discussion

Online and offline blended courses are rapidly becoming an important part of undergraduate curriculum development in China, and researchers and instructional administrators are working to more fully understand how various phenomena of teaching and learning in such blended course contexts arise and affect students' AA. Much research has focused on the important influence and role of teachers on students' AA in blended learning (Wang, 2022; Zhao, 2022; Chen & Guo, 2016; Su, 2022; Yi, 2020; Daspit, Mims, & Zavattaro, 2015; Setayesh, 2018), and the mediating role of PC on AA (Zeng, 2021; Xu, Xu & Wang, 2021; Yuan, 2022b; Xu & Yang, 2016; Feng et al., 2015), but few studies have explored the impact of TP on students' PC.

Therefore, this study is the first to examine the mediating role of PC on TP and AA in a hybrid course context, using students from three Chinese universities.

This study shows that the presence of teaching and learning has an important role in online and offline hybrid course contexts. First of all, it has a very strong positive impact on the psychological capital of university students. The importance of teachers in this regard is underlined by their extensive influence in the learning environment. Through online course design and organization, online and offline facilitated dialogue and direct instruction (Garrison, Anderson, & Archer, 2001; Rubio, Thomas, & Li, 2018). Teachers have a direct and critical impact on the extent to which students are motivated by confidence (self-efficacy), optimism, resilience, and responsibility (responsibilities related to academic achievement) (Wang, Li, & Huang, 2011). Secondly, it has a significant

positive effect on college students' AA, a finding that is consistent with previous research that teachers have a positive effect on students' academic-related performance (Wang, 2022, Chen & Guo, 2016; Su, 2022) and grades (Yi, 2020; Das-pit, Mims, & Zavattaro, 2015; Setayesh, 2018). The findings further confirm that teacher-led TP has a similar positive impact on students in online and offline hybrid course contexts. PC then significantly and positively influenced academic achievement. The findings indicated that the sub-dimensions of PC, confidence, optimism, resilience and responsibility, all had strong predictive power for AA. When students possess the self-confidence that they can complete challenging tasks if they put in the effort, their motivation and efficiency in learning are increased; if students possess a personality trait of consciously doing their part well, they will increase their sense of self-awareness in the learning process and enhance their learning outcomes; when students encounter problems and dilemmas in the learning process, they are able to persevere and recover quickly, and then choose other paths to make attempts, which helps when students tend to make positive attributions for current and future successes or failures, they will be able to make sustained efforts in learning. Lastly, PC has a partially mediating role in the relationship between TP and AA. In the findings, VAF = 0.429 and all 95% confidence interval values were greater than 0, indicating a significant mediating effect of TP on AA via PC and that PC was a significant predictor of AA, which is consistent with previous research findings (Sun, Wang, & Wang, 2020; Wang, 2020; Shu, 2021). In summary, these results report the first exploration of the triadic interactions and pathways of PC as a mediating variable between TP and AA in a hybrid context using the PLS-SEM research method, extending the application of PC theory and CoI theory to online and offline hybrid course contexts.

6. Implications

6.1. Implications for Instructors

The findings show that the influence of TP on students' PC in online and offline hybrid course contexts is significant. In light of this, we encourage instructors to remain conscious of how their influence affects students within the hybrid learning environment. For instructors interested in directly influencing students' PC, Luthans (Luthans, Avey, & Patera, 2008) and others offer developmental techniques that include: setting high expectations for students as they progress from simple to more responsible tasks to increase self-efficacy; increasing peer tutoring or study groups to increase alternative learning and provide peer role models for students; evaluating effort rather than intelligence; providing honest, developmental and positive feedback (ratio of three positive comments to one negative comment according to the work of Fredrickson (2009)). It is also important for teachers to make students perceive a sense of TP and provide timely support when learning online, and to give more attention to emotional support

alongside intellectual support, as personal motivation plays a key role in learning success in an online environment, and TP directly enhances students' confidence, optimism, resilience and responsibility, which in turn motivates students to continue to engage in the online learning space (Daspit, Mims, & Zavattaro, 2015; Wang, Li, & Huang, 2011).

6.2. Implications for Education Administrators

For educational administrators, on the one hand, it is important to ensure that teaching and learning hardware facilities can support students' learning in online and offline hybrid courses, allowing teachers and students to communicate fluently in both offline and online environments, thus providing adequate TP. On the other hand, according to research at the intersection of motivation and instructional theory, learning must be conditioned at a certain personal level, i.e., students must be confident to learn before they are willing to engage, and students who believe they are performing well are more cognitively engaged and show better learning outcomes (Hill, Song, & West, 2009). Thus, the higher the level of PC, the greater the motivational effect of TP and the higher the AA. Furthermore, according to Luthans (Luthans, Avey, & Patera, 2008) et al. who deployed individualised training to adult professionals targeting PC level improvement, the results showed that PC levels were higher for those who participated in the training after the training intervention, so that PC levels can be improved through specialized training. In light of this, educational administrators can incorporate courses on psychological competency training into their curriculum planning in order to positively influence learning outcomes by improving students' PC levels through psychological training.

6.3. Implications for Researchers

This study examines the relationship between TP, which has direct influence on learners in the CoI framework, and PC in positive psychology as an influencing factor on AA in an online and offline hybrid course, revealing the external and internal personal motivational factors that influence AA in contemporary university students, extending the application area of CoI and positive psychology theories, and the results of the study validate all the hypotheses. Although we have considered TP, which is the most weighted factor for learners in the CoI framework, the presence of the other two (SP and CP) on AA is something that future researchers can continue to examine. Also, as this study focused on psychological positives, researchers are encouraged to examine the relationship between other psychological states and TP and the impact on AA. In addition, the successful delivery of online and offline hybrid courses requires technological support, including good synchronization technology, a fluid online environment and modern smart classrooms, all of which may affect the effectiveness of course teaching and learning and therefore AA, and future research could take elements of technology into account.

7. Limitations

Although this study extends CoI theory and PC application contexts by examining the relationship between TP, PC and AA and exploring the impact of TP on PC for the first time, it is not without its limitations. Firstly, PC explains positive individual level states, but a more comprehensive conceptualization of learning presence should explain both positive and negative psychological states, and therefore could be examined in more detail by integrating assessments of negative (or neutral) psychological traits. Secondly, only the impact of TP on PC and AA in the CoI framework was considered in this study, not SP and CP, and future research could confirm the relationship between these two elements and TP and the impact on PC and AA in online and offline blended courses.

8. Conclusion

In conclusion, this study constructs a research model of the factors influencing AA in online and offline hybrid course contexts from the students' perspective in the context of building a first-class undergraduate curriculum in China. Based on the CoI framework theory and positive psychology theory, the research framework was proposed to include two factors, TP and PC, and to use PC as a mediating variable between TP and AA. The research sample was collected through scale design and online questionnaire research, and the sample was analyzed empirically using SPSS27 and SmartPLS3 analysis software, and the research hypothesis was tested with the help of PLS-SEM. The analysis yielded the interaction relationship between TP, PC and AA and the pathways of TP and PC influence on AA. Future research can integrate the CoI framework's SP and CP, assessment of negative (or neutral) psychological characteristics or technical support elements of online and offline hybrid courses as research variables for examination, enriching the theoretical findings of the PC and CoI frameworks, and also providing a basis and reference for teachers, educational researchers, universities and educational authorities to improve the effectiveness of teaching and learning in online and offline hybrid courses.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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