Creative Education, 2023, 14, 1984-2008
https://www.scirp.org/journal/ce
ISSN Online: 2151-4771
ISSN Print: 2151-4755

Instrumental Support and Its Impact on Psychological Capital and Well-Being in Online Learning: A Study of Hospitality and Tourism Students

Shuyue Huang[1], Maria Matthews[1], Lena Jingen Liang[2], Hwansuk Chris Choi[3]

[1]Business and Tourism Department, Mount Saint Vincent University, Halifax, Canada
[2]Faculty of Business, University of Prince Edward Island, Charlottetown, Canada
[3]School of Hospitality, Food and Tourism Management, University of Guelph, Guelph, Canada
Email: shuyue.huang@msvu.ca

How to cite this paper: Huang, S. Y., Matthews, M., Liang, L. J., & Choi, H. C. (2023). Instrumental Support and Its Impact on Psychological Capital and Well-Being in Online Learning: A Study of Hospitality and Tourism Students. *Creative Education, 14,* 1984-2008.
https://doi.org/10.4236/ce.2023.1410127

Received: September 21, 2023
Accepted: October 23, 2023
Published: October 26, 2023

Abstract

The COVID-19 pandemic's influence on students' mental health is significant, with online learning offering unique challenges and prospects. This study investigates the antecedents of student psychological well-being within this context, focusing particularly on instrumental support from instructors, students' academic psychological capital (PsyCap), and school satisfaction. We surveyed Canadian tourism and hospitality students about their pandemic-era online learning experience, using Structural Equation Modeling (SEM) for data analysis. Our hypotheses were tested on a sample of 88 full-time students who had transitioned to online education, and our survey specifically asked about this online experience. Despite the small sample size, we utilized Partial Least Squares SEM (PLS-SEM), a technique well-suited for small sample sizes when using the SEM model, and confirmed the adequacy of our sample to ensure it met the minimum required sample size for PLS-SEM. Our findings reveal that instrumental support directly boosts students' academic PsyCap—encompassing confidence, hope, optimism, and resilience. While instrumental support does not directly enhance school satisfaction, its total effect, mediated through academic PsyCap, is significant. Additionally, while instrumental support does not directly heighten psychological well-being, the mediation role of academic PsyCap is crucial. Our study thus underscores the importance of nurturing academic PsyCap to foster student satisfaction and well-being in digital learning environments. Furthermore, we validate that academic PsyCap influences both school satisfaction and psychological well-being. As such, universities should consider investing in programs that

strengthen students' psychological resources, ultimately enhancing their satisfaction and overall well-being, especially during online learning post-pandemic.

Keywords

Instrumental Support, Academic Psychological Capital, School Satisfaction, Psychological Well-Being, Online Learning Experience, Covid-19 Pandemic

1. Introduction

The existing research highlights the growing concern about mental health and the importance of promoting well-being among higher education students, as Priestley et al. (2022) reported. Several studies have identified university students' common mental health problems, such as anxiety, depression, eating disorders, and harmful drinking (Said et al., 2013). Factors contributing to these mental health issues can range from individual and interpersonal to institutional factors (Byrd & McKinney, 2012). The COVID-19 pandemic has exacerbated this problem and created a long-lasting negative impact on the mental well-being of post-secondary students (Chen & Lucock, 2022; Denden & Alkhalifah, 2023). For example, in a study of UK university students' mental health during the pandemic, Chen and Lucock (2022) found that over half reported high depression and anxiety that exceeded clinical thresholds. Furthermore, the 2021 Canadian Student Well-being Survey Research reported that 74% of respondents stated that the ongoing COVID-19 pandemic had negatively impacted their college/university learning experience (Reid, 2021).

Furthermore, online learning during the pandemic has presented several challenges, such as inadequate internet access, technological constraints, affordability and ease of access, lack of teacher-student interaction, and peer support, leading to increased stress levels (Islam, 2023; Nutsugbodo et al., 2023). Since March 2020, lockdowns have been implemented in Canada, leading to a shift to online teaching at all universities. However, not all students were equipped to smoothly transition to online learning due to limited internet capacity, access to laptops, and study spaces at home (Nutsugbodo et al., 2023). This study explores the psychological well-being of university students in the tourism and hospitality (T&H) program during their transition to online learning amid the pandemic. Notably, while we focus on this specific group, we use these students as a representative sample. The investigation into psychological well-being serves as a strategy to address mental health issues during this challenging period. The study is based on positive education and seeks to understand how instrumental support from instructors and academic psychological capital (PsyCap) of students impact their school satisfaction and psychological well-being.

Despite the end of the COVID-19 pandemic, the importance of understanding students' online learning experiences remains relevant for several reasons.

Firstly, while the pandemic necessitated a sudden shift to online learning in educational institutions worldwide, online learning neither started nor ended with the pandemic (Singh et al., 2022). Many universities had already offered distance or online learning options to accommodate students with diverse needs before the pandemic (Wotto, 2020). This trend continues, enhancing these universities' competitiveness by providing excellent support for the online learning experience. Simultaneously, universities primarily focused on traditional learning methods need to rethink their approach to shaping students' online learning experiences (Alzahrani, 2022). Some have continued to develop and offer online or hybrid learning options. Moreover, the significance of instrumental support in online learning environments and strategies to enhance students' PsyCap remains vital as online learning continues to be an effective mode of education.

Secondly, our study's implications extend beyond academia and address broader mental health issues. Even post-pandemic, mental health remains a significant concern for higher education students (Denden & Alkhalifah, 2023; Radwan, 2022). Our research emphasizes the role instrumental support in online learning can play in enhancing student PsyCap, school satisfaction, and psychosocial well-being. These constructs are significantly related to improved mental health outcomes (Belle et al., 2022; Katja et al., 2002; Prasath et al., 2021; Satici, 2020). Lastly, given the unpredictability of global events, such as health crises and wars, it is essential to be proactive in managing potential disruptions to traditional educational processes. As we navigate this post-pandemic world, the continued growth and adoption of online learning platforms only amplify the relevance of our study. Therefore, developing effective strategies to bolster student PsyCap and well-being in online environments is an ongoing need. This ensures that our educational institutions are better equipped to face future challenges, whether during a public health crisis (Huang & Zhang, 2022) or the evolving demands of higher education (Salama & Hinton, 2023).

After setting the context of online learning experiences and emphasizing our goal to explore the mechanisms behind university student psychological well-being in the Introduction, the paper is structured as follows. The subsequent Literature Review and Hypothesis Development section delves into key concepts such as instrumental support, academic PsyCap, student satisfaction, and psychological well-being, culminating in six hypotheses that outline their interrelationships. Our Methodology outlines our approach, from an online survey design to data collection on a sample of T&H students at a Canadian university, using Structural Equation Modeling (SEM) for analysis. In the Results section, we assessed the proposed hypotheses and examined the total effects of instrumental support and academic PsyCap on both satisfaction and psychological well-being. In the Discussion, we compared our findings with existing literature. The Conclusion emphasizes strategies to boost student well-being through enhanced psychological resources, instrumental support, and mediated satisfaction, particularly as online learning persists post-pandemic.

2. Literature Review and Hypothesis Development

2.1. Instrumental Support

The social support received by students from different sources, including parents, teachers, classmates, and close friends, significantly impacts their academic outcomes (Malecki & Demaray, 2003). Among these sources, teacher support is essential in determining students' learning experiences (Federici & Skaalvik, 2014a, 2014b) and academic achievements (Wong et al., 2018). Previous studies have primarily focused on two dimensions of teacher support, i.e., emotional and instrumental support (Granziera et al., 2022; Zeng et al., 2022).

Emotional support encompasses empathy, care, respect, and love and is characterized by teachers being perceived as approachable, understanding, caring, and encouraging (Langford et al., 1997; Malecki & Demaray, 2003). On the other hand, instrumental support refers to tangible support provided by teachers, such as practical tools and resources to enhance students' problem-solving skills and comprehension (Malecki & Demaray, 2003). While these constructs are similar, research has shown that they can affect student outcomes differently (Granziera et al., 2022; Malecki & Demaray, 2003). Wilcox et al. (2005) found that while emotional support gives students "feelings of self-confidence", it is instrumental support that provides students "confidence in terms of their academic work" (p. 720).

Federici and Skaalvik (2014a) found that instrumental support was highly correlated with intrinsic motivation and moderately associated with the tendency to seek help. However, when examining emotional and instrumental support in a structural equation modeling (SEM) model, only instrumental support significantly impacted intrinsic motivation and the tendency to seek help. Nevertheless, the effect of teacher support during the COVID-19 pandemic remains unclear, particularly concerning how instrumental support affects other constructs (Korlat et al., 2021).

This study aims to examine the effect of instrumental support provided by instructors on students' PsyCap, satisfaction, and well-being in online learning during the pandemic. We define instrumental support as any tangible practices, assistance, or guidance provided by the instructor, in line with Federici and Skaalvik's (2014a) definition of instrumental support as "students' perceptions of being provided with instrumental resources and practical help" (p. 22). The actions considered instrumental support include "questioning, clarifying, correcting, elaborating, and modeling" (Federici & Skaalvik, 2014a: p. 22).

2.2. Academic Psychological Capital

Psychological Capital, or PsyCap, has become a central construct in positive organizational behavior (Luthans, 2002). According to Luthans, Youssef, and Avolio (2007b), PsyCap is a positive psychological state of development encompassing four key elements: confidence (self-efficacy), hope, optimism, and resilience. This construct is widely recognized for its profound influence on individual

performance and job satisfaction, primarily within organizational behavior (Badran & Youssef-Morgan, 2015; Luthans, Avolio, & Avey, 2007a). Its applications span a variety of contexts. It has been linked to improved employee engagement, job satisfaction, and performance in the workplace (Ngwenya & Pelser, 2020). In social work, it has been explored as a resource for the well-being of refugee employees (Newman et al., 2018). In academia, it has been studied in relation to academic performance (Luthans et al., 2012) and optimal academic and well-being outcomes (Datu & Valdez, 2016).

Academic PsyCap represents a specific application of the psychological capital concept, focusing on students (Kim et al., 2020; Poots & Cassidy, 2020). It encompasses the same four dimensions as mentioned previously, but in practical terms, measurement scales for these dimensions are adjusted to align with the academic context. For instance, students might be asked about their confidence in handling their schoolwork, their optimism about succeeding both currently and in the future in relation to their academic tasks, their hope in finding ways to attain their scholastic goals, and their resilience in navigating challenging periods with their coursework (Kim et al., 2020).

Academic PsyCap is typically associated with outcome variables that often emphasize improving academic achievement (Luthans et al., 2012), enhancing student well-being (Burns et al., 2020), increasing satisfaction with school life (Kim et al., 2020; Poots & Cassidy, 2020), and mitigating mental health issues (Belle et al., 2022). Research supports the idea that PsyCap can be an effective resource for students to navigate stress and other challenges (Belle et al., 2022; Prasath et al., 2021). For instance, a study by Huang and Zhang (2022) found that PsyCap positively impacted life satisfaction and positive affect while having a negative relationship with negative affect among Chinese university students during the COVID-19 pandemic. Additionally, the study revealed that PsyCap significantly mediated the relationship between perceived social support and subjective well-being.

2.3. Student School Satisfaction

School satisfaction, defined as the cognitive-affective evaluation of overall attitudes and contentment with one's educational experience, is a crucial factor in the success of educational institutes (Butler, 2007; Huebner et al., 2001). It not only plays a role in retaining and motivating students to pursue further education (Kwong et al., 1997) but also has implications for their future careers. In particular, students in the tourism and hospitality (T & H) industry face a high demand for qualified professionals and may need to re-enter higher education for professional training (Atay & Yildirim, 2010). Therefore, it is crucial to facilitate a seamless transition for students pursuing T & H degrees from the academic environment to the workforce in light of the increasing demand for highly skilled professionals in the T & H industry. More T & H programs offer certificates, diplomas, and degrees and welcome mature students with industry expe-

rience, ensuring that these students have a positive and satisfying school experience that can motivate them to return to education and achieve their career goals (Shah, 2009).

2.4. Psychological Well-Being

Psychological well-being is the comprehensive assessment of an individual's social, emotional, and intellectual health (Kim et al., 2020). It is a critical aspect of students' overall development and has been linked to other crucial psychological factors such as PsyCap (Huang & Zhang, 2022) and teacher support (Guo et al., 2020). The COVID-19 pandemic has imposed new challenges and anxieties threatening students' psychological well-being, such as limited educational resources (Cox & Brewster, 2020). Though previous research has examined the relationship between PsyCap, school satisfaction, and psychological well-being (Datu & Valdez, 2016; Kim et al., 2020), further investigation into antecedents, such as instrumental support in an online environment necessitated by the pandemic, is essential. A deeper understanding of these relationships could be instrumental in promoting students' psychological well-being.

2.5. Hypothesis Development

The existing literature suggests that instrumental support, such as that provided by educational institutions, can positively impact students' academic outcomes. Federici and Skaalvik (2014a) found that instrumental support leads to higher levels of student motivation and lower anxiety levels, which, as posited by Kim et al. (2020), contributes to the formation of a "positive psychological state". Moreover, the literature has established that social support, including teacher support, plays a crucial role in shaping students' psychological resources, such as positive PsyCap (Hobfoll, 2002). This claim has been supported by empirical studies, including those conducted by Newman et al. (2018) and Siu et al. (2023), demonstrating the positive relationship between social support and PsyCap. Based on these findings, the following hypothesis is proposed:

H1: Instrumental support has a positive effect on academic PsyCap.

A multitude of antecedents can influence students' school satisfaction, such as the relationship with instructors (DeSantis King et al., 2006), classmates (Danielsen et al., 2011), and parents (Ferguson et al., 2011). DeSantis King et al. (2006) established a correlation between social support from teachers, parents, and classmates and school satisfaction, with a significant impact of teacher support on students' satisfaction with school. Additionally, Olson et al. (2021) investigated the career optimism of STEM graduate students and found that school satisfaction is closely related to the instrumental support received from mentors. Based on these findings, the following hypothesis is proposed:

H2: Instrumental support has a positive effect on school satisfaction.

Numerous empirical studies have indicated the positive impact of teacher support on students' psychological well-being (Guess & McCane-Bowling, 2016;

Pap et al., 2021). Suldo et al. (2009) conducted a mixed-methods study that found a positive relationship between all four types of teacher support (emotional, informational, appraisal, and instrumental) and student well-being, with emotional and instrumental support having a unique effect on predicting students' subjective well-being (SWB). Although there is limited research in the educational context exploring the relationship between instrumental support and psychological well-being, this positive relationship has also been established between family members and seniors (Chao, 2012) and between caregivers and recipients (Morelli et al., 2015). For example, Morelli et al. (2015) found that when providers are emotionally involved in providing support, greater instrumental support leads to increased well-being for both providers and recipients. Hence, the following hypothesis is proposed:

H3: Instrumental support has a positive effect on students' psychological well-being.

The literature on positive organizational behavior has demonstrated the positive impact of PsyCap on key outcome variables, such as performance, engagement, and satisfaction (Badran & Youssef-Morgan, 2015; Ngwenya & Pelser, 2020). Likewise, research has established a positive relationship between student academic PsyCap and academic achievement (Liu & Huang, 2022), student engagement and psychological well-being (Siu et al., 2023), and school satisfaction (e.g., Kim et al., 2020). For example, Kim et al.'s (2020) study found that student athletes' academic PsyCap directly impacted school satisfaction and influenced psychological well-being by mediating student engagement. Furthermore, school satisfaction is believed to be related to students' positive attitudes toward life and is a mitigating factor for depressive emotions (Katja et al., 2002). The statistical findings of Luthans et al. (2012) also support the notion that PsyCap can be improved and developed over time, emphasizing the importance of exploring the antecedents and outcome variables of PsyCap. Therefore, the following hypotheses are proposed:

H4: Academic PsyCap has a positive effect on school satisfaction.

H5: Academic PsyCap has a positive effect on psychological well-being.

The relationship between school satisfaction and psychological well-being has been the subject of various studies in education. Hampden-Thompson and Galindo (2016) and Sun (2015) have demonstrated the importance of school satisfaction as a predictor of student behavior outcomes. Similarly, Tian et al. (2015) and Satici (2020) have indicated that school satisfaction can positively impact psychological well-being. Thus, the following hypothesis is proposed:

H6: School satisfaction has a positive effect on psychological well-being.

3. Methodology

3.1. Survey Design

Measurement scales for instrumental support (5 items) (Federici & Skaalvik, 2014a), PsyCap (12 items) (Luthans, Avolio, & Avey, 2007a), school satisfaction

(4 items) (Kim et al., 2020), and psychological well-being (6 items) (Kim et al., 2020) were adapted from existing literature. Permission was obtained from Mind Garden, Inc., the publisher of the Psychological Capital Questionnaire (PCQ) (Luthans, Avolio, & Avey, 2007a), to adapt PsyCap items from a work to an academic context. The PsyCap was modified and assessed as a second-order construct, encompassing four dimensions: confidence (3 items), hope (4 items), resilience (3 items), and optimism (2 items). Due to restrictions from the publisher, the original six-point Likert scale was maintained for the PsyCap, which ranges from 1 (strongly disagree) to 6 (strongly agree), with no neutral point. The scale includes the following responses: 1—Strongly Disagree, 2—Disagree, 3—Somewhat Disagree, 4—Somewhat Agree, 5—Agree, 6—Strongly Agree. The remaining constructs were assessed using a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree), reflecting their validated reliability from previous studies. The survey also gathered demographic information, such as participants' age, gender, and years of university experience.

3.2. Data Collection and Analysis

Data for this study were collected in the Fall of 2021 through a self-administered online survey. The participants were full-time students enrolled in the Tourism and Hospitality (T & H) Management program at a Canadian university, each of whom had taken at least three courses in the Winter term of 2021. It is important to note that Canadian universities transitioned to online learning in March 2020 and only resumed on-campus instruction in Fall 2021. Therefore, all survey respondents had experienced online learning during the Winter term of 2021, the period on which the survey questions focused. After applying specific screening criteria, the pool of potential participants was narrowed down to 178 students. The research team dispatched a recruitment email to these students via their university email addresses, outlining the study's purpose and including a survey link. The team offered a $5 e-gift card as an incentive for completing the survey. Of the 178 students initially contacted, 121 responded positively and were recruited, yielding a response rate of approximately 68%. The data cleaning process, involving the deletion of incomplete surveys and invalid responses, resulted in a final tally of 88 valid surveys for data analysis. These remaining surveys accounted for approximately 50% of the initial group of eligible participants, providing a satisfactory representation of student experiences within the T & H program.

The study leveraged SPSS v.27.0 for descriptive statistical analysis, and hypotheses testing was conducted through structural equation modeling (SEM) using Partial Least Squares (PLS) via the SmartPLS v.3.3.7. software. PLS-SEM is particularly suitable for small sample estimation and validation of the SEM model (Henseler et al., 2009), which is why it is becoming increasingly popular in social sciences, including hospitality and tourism (Usakli & Kucukergin, 2018). This technique has multiple advantages, such as not requiring normally distributed

data, being capable of handling small sample sizes, and dealing effectively with both reflective and formative constructs (Usakli & Kucukergin, 2018).

Although our study had a small sample size, we verified its adequacy using the "ten times rule", a guideline for determining the minimum required sample size in PLS-SEM (Hair Jr. et al., 2021). This rule suggests that the sample size should be ten times the largest number of structural paths directed at any particular construct in the structural model. For example, if a construct has six paths leading to it (as is the case with "psychological well-being" in our model), a minimum sample size of 60 (10 * 6) is needed for reliable results. Our study obtained 88 responses, exceeding the minimum threshold of 60. Our approach aligns with several studies that have applied the "ten times rule" to address the minimum sample size requirements and demonstrated the efficacy of the SmartPLS tool for data analysis with samples smaller than 100. For instance, Lavandoski et al. (2016) successfully used a sample size of 40 to analyze an SEM model with seven latent constructs (85 indicators) in a wine tourism development study. Similarly, Yew et al. (2022) used a sample size of 70 in an SEM model with six latent constructs (34 indicators) to understand outdoor play in preschools. Both studies achieved satisfactory results, lending credence to our methodology.

4. Results

4.1. Descriptive Analysis

The participants' demographic information was analyzed, revealing that most were female (69%) and belonged to the age group of 18 - 23 years (89%). Additionally, 95% of the students reported having access to high-speed internet in their households. The results revealed that students held diverse opinions on the online learning experience compared to traditional classroom learning. While 33% of the participants believed the online learning experience was better, 38% felt the opposite, and 29% thought it was the same. The descriptive statistical analysis of the four key constructs, including instrumental support, academic PsyCap, school satisfaction, and psychological well-being, was conducted to provide a comprehensive overview of the results (see details in **Appendix 1**).

4.2. Measurement Model

The initial step in our analysis involved evaluating the reliability of the first-order measurement model. We assessed the reliability of our first-order measurement model consisting of 27 items. Three items with low factor loadings were removed to meet a satisfactory level of composite reliability (CR) or average variance extracted (AVE), resulting in a final model of 24 items. The standardized factor loadings of the items in the final model ranged from 0.77 to 0.95, as depicted in **Table 1**. Furthermore, the results of the t-tests conducted on the items indicated that all the factor loadings were significant at the $p < 0.001$ level. Additionally, the CR values of all constructs were in the range of 0.93 to 0.95, surpassing the threshold (0.7) for internal consistency, as Hair Jr. et al. (2021)

Table 1. Assessment of the first-order measurement model.

Items	Loading	t-value
Confidence (Cronbach's Alpha = 0.88; CR = 0.93; AVE = 0.81)		
I feel confident in representing my course understanding in class with my professor.	0.928	50.680
I feel confident contributing to discussions about the course content.	0.923	47.900
I feel confident presenting information to a group of classmates.	0.847	16.241
Hope (Cronbach's Alpha = 0.91; CR = 0.94; AVE = 0.85)		
Right now, I see myself as being pretty successful in my course.	0.907	27.911
I can think of many ways to reach my current course goals.	0.936	60.765
At this time, I am meeting the course goals that I have set for myself.	0.915	35.454
Optimism (Cronbach's Alpha = 0.89; CR = 0.95; AVE = 0.90)		
I always look on the bright side of things regarding my education.	0.948	77.052
I'm optimistic about what will happen to me in the future.	0.946	58.018
Resilience (Cronbach's Alpha = 0.71; CR = 0.84; AVE = 0.63)		
I can study on my own, if I have to.	0.772	9.669
I usually take stressful things at university in my stride.	0.768	10.357
I can get through difficult times at university because I've experienced difficulty before.	0.837	22.913
Instrumental support (Cronbach's Alpha = 0.93; CR = 0.95; AVE = 0.83)		
When I have problems with the subject, I receive help and guidance from my professor.	0.916	44.564
My professor helps me so that I understand the subject.	0.919	35.278
My professor is always available when I need assistance.	0.907	33.578
My professor is good at explaining challenging class material.	0.897	28.409
School satisfaction (Cronbach's Alpha = 0.92; CR = 0.95; AVE = 0.86)		
This program meets my expectations.	0.915	45.650
I feel comfortable in this program.	0.947	61.267
I am pleased with the support I have received in this program.	0.926	51.733
Psychological well-being (Cronbach's Alpha = 0.92; CR = 0.94; AVE = 0.71)		
I like most aspects of my personality.	0.864	25.227
I have warm and trusting relationships with others.	0.858	17.745
I have experiences that challenge me to grow and become a better person.	0.811	13.862
My life has a sense of direction or meaning to it.	0.850	27.113
I am confident in thinking or expressing my ideas and opinions.	0.867	25.453
I am good at managing the responsibilities of daily life.	0.787	12.431

suggested. These findings indicate that the final measurement model reliably represents the construct under investigation.

In our assessment of the validity of the first-order measurement model, Table

1 indicates that the AVE values ranged from 0.63 to 0.90, surpassing the threshold of 0.50 established by Fornell and Larcker (1981). This demonstrates that our reflective measurement model exhibits convergent validity. To assess the discriminant validity of each construct, we compared the square root of its AVE with its correlation with other factors, as suggested by Fornell and Larcker (1981). The heterotrait-monotrait ratio (HTMT) was also calculated for each correlation to ensure the discriminant validity was not compromised. The results, as presented in Table 2, indicate that no HTMT values were greater than 0.90, per the guidelines provided by Gold et al. (2001). This suggests that the discriminant validity of our first-order measurement model has been achieved.

To test the relationship between the first-order constructs of confidence, hope, optimism, and resilience, and the posited second-order construct of PsyCap, we used the standardized factor scores of the first-order constructs. Results showed all path coefficients are from 0.78 to 0.85 (i.e., Confidence = 0.84; Hope = 0.78; Optimism = 0.78; and Resilience = 0.85, significant at $p < 0.001$). PsyCap's CR was 0.89, and AVE was 0.66, exceeding threshold values for construct validity.

Table 3 validates the discriminant validity of the second-order measurement model, utilizing criteria from Fornell and Larcker (1981) and the HTMT approach, previously applied to the first-order model. The diagonal elements

Table 2. The discriminant validity for the first-order model.

Fornell-Larcker Criterion	CONF	HOPE	OPT	RESI	IS	SAT	PWB
Confidence	**0.90**						
Hope	0.76	**0.92**					
Optimism	0.60	0.65	**0.95**				
Resilience	0.64	0.60	0.71	**0.79**			
Instrumental support	0.55	0.54	0.45	0.59	**0.91**		
Satisfaction	0.56	0.53	0.61	0.60	0.53	**0.93**	
Psychological well-being	0.69	0.60	0.60	0.63	0.57	0.75	**0.84**
Heterotrait-monotrait (HTMT)							
Confidence							
Hope	0.84						
Optimism	0.67	0.72					
Resilience	0.81	0.74	0.90				
Instrumental support	0.60	0.58	0.49	0.73			
Satisfaction	0.62	0.57	0.67	0.74	0.57		
Psychological well-being	0.76	0.65	0.67	0.78	0.62	0.81	

Notes: The diagonal elements (bolded) in the first section are the square root of the AVEs of each factor and should be greater than its correlation with other factors.

(bolded) in Table 3 represent the square root of the AVEs, which are greater than their respective construct correlations. With no HTMT values exceeding 0.90, the discriminant validity of our second-order model is affirmed.

4.3. Structural Model

Standardized path coefficients were employed to test the causal relationships proposed in the research model. The results in Table 4 and Figure 1 indicate that two of the six hypotheses were not supported: H2. instrumental support's impact on school satisfaction (β = 0.13, t = 0.75, $p > 0.05$), and H3. instrumental support's impact on psychological well-being (β = 0.06, t = 0.48, $p > 0.05$). However, all standardized path coefficients were positive and significant ($p < 0.05$) for the remaining hypotheses. While instrumental support did not directly predict school satisfaction and psychological well-being, it significantly influenced both, as indicated by total effects on school satisfaction (β = 0.57, t = 4.68) and psychological well-being (β = 0.62, t = 4.69). The total effects results further revealed that academic PsyCap (β = 0.73, t = 5.93) and school satisfaction (β =

Table 3. Discriminant validity analysis for the second-order model.

Fornell-Larcker Criterion	PsyCap	IS	SAT	PWB
PsyCap	**0.81**			
Instrumental support	0.68	**0.88**		
Satisfaction	0.74	0.57	**0.89**	
Psychological well-being	0.81	0.62	0.81	**0.80**
Heterotrait-monotrait (HTMT)				
PsyCap				
Instrumental support	0.68			
Satisfaction	0.74	0.57		
Psychological well-being	0.81	0.62	0.81	

Table 4. Results of structural model analysis.

Hypotheses and Relationship	Path coefficient β	t-value	Results
H1. Instrumental support → Academic PsyCap	0.68	7.38***	Supported
H2. Instrumental support → School satisfaction	0.13	0.75	Not Supported
H3. Instrumental support → Psychological well-being	0.06	0.48	Not Supported
H4. Academic PsyCap → School satisfaction	0.65	4.29***	Supported
H5. Academic PsyCap → Psychological well-being	0.43	2.20*	Supported
H6. School satisfaction → Psychological well-being	0.47	2.52*	Supported

Note: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

0.47, t = 2.52) were the other two significant predictors of psychological well-being.

To examine the mediating effects, the SmartPLS method was employed (see Table 5). The results demonstrate that the relationship between PsyCap and student psychological well-being is mediated by school satisfaction and that PsyCap plays a crucial role in the impact of instrumental support on both satisfaction and well-being.

According to Hair Jr. et al. (2021), the strength of the coefficients in a model can be determined based on the Adjusted R^2 values, which can be classified as weak (0.25), moderate (0.5), or strong (0.7). In our study, the results indicated that the variance explained by the model for the constructs of PsyCap (R^2 = 0.46), school satisfaction (R^2 = 0.54), and psychological well-being (R^2 = 0.75)

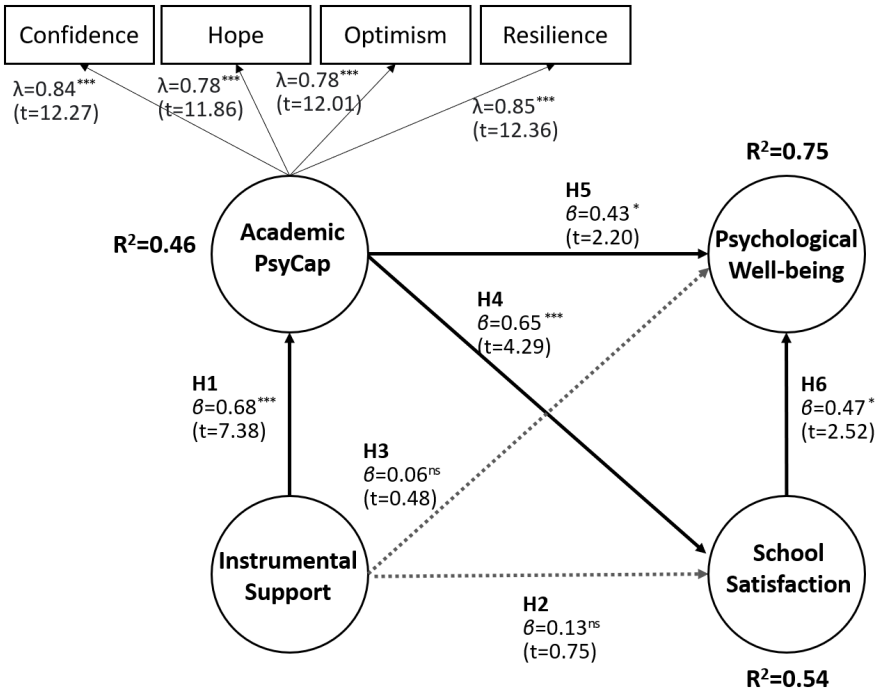

Figure 1. The Structure model with standardized estimated path coefficients.

Table 5. Results of mediating effect analysis.

Indirect Effect Path	Indirect Effect Value	Bootstrap 5000 times	
		SE	t
PsyCap → SAT → PWB	0.30*	0.15	1.97
IS → PsyCap → SAT → PWB	0.21	0.11	1.88
IS → SAT → PWB	0.06	0.09	0.68
IS → PsyCap → SAT	0.44***	0.12	3.58
IS → PsyCap → PWB	0.29*	0.14	2.15

Note: IS = Instrumental Support; PsyCap = Psychological Capital; SAT = Satisfaction; PWB = Psychological Well-being; *$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

was satisfactory (see **Figure 1**). Additionally, the Stone-Geisser's Q^2 values for the three dependent constructs were found to be above zero (0.27, 0.39, and 0.44, respectively), further supporting the predictive relevance of the partial least squares (PLS) path model for all the endogenous constructs (Hair Jr. et al., 2021).

5. Discussion

The COVID-19 pandemic has presented new and significant challenges that have threatened the well-being of students, such as the inability to engage in physical contact with loved ones and COVID-related fears of infection (Burns et al., 2020; Evans et al., 2021). However, despite the recent academic attention given to students' well-being (Burns et al., 2020; Cox & Brewster, 2020; Datu & Valdez, 2016), there has yet to be a comprehensive examination of how well-being can be improved through contributions to students' PsyCap or the provision of instrumental support from instructors in the digital learning environments.

This study focuses on unraveling the antecedents of student psychological well-being, an approach that has gained prominence in addressing emerging mental health issues within higher education (Kim et al., 2020; Priestley et al., 2022). We proposed a model where instrumental support received from instructors plays a crucial role in bolstering student academic psychological capital (PsyCap), school satisfaction, and psychological well-being. Furthermore, academic PsyCap independently contributes to satisfaction and psychological well-being. To empirically validate these proposed relationships, we designed a survey targeted at students in a Canadian university's tourism and hospitality program, specifically concentrating on their online learning experience during the COVID-19 pandemic. The objective was to highlight the importance of instrumental support and academic PsyCap, as well as the associated outcomes in online learning environments, a modality of education that continues to be prevalent in the post-pandemic era. In essence, this study underscores the significance of PsyCap and well-being in the context of online learning, especially during crisis periods like the COVID-19 pandemic.

Our findings corroborate the notion that instrumental support directly enhances students' academic PsyCap, which aligns with Wilcox et al. (2005), who asserted that instrumental support fosters students' academic confidence. This essentially signifies that delivering high-quality instrumental support, including practical assistance, technical guidance, and tutoring services, is integral for students to garner psychological resources. These resources, encompassing confidence (self-efficacy), hope, optimism, and resilience towards their coursework (Kim et al., 2020), serve as protective factors enabling students to handle stressors and sustain well-being amidst challenging circumstances (Huang & Zhang, 2022).

Our study discerns that amplifying instrumental support does not directly correlate to heightened school satisfaction (H2). This contrasts with Olsen et al.'s

(2021) findings, where instrumental support, in their case offered by mentors to STEM graduate students, was linked to career optimism through school satisfaction. One plausible explanation for this discrepancy is the potential difference in interaction frequency and quality: graduate students tend to have more direct, personal mentorship. At the same time, our study focused on general instructor support. This nuance may weaken the direct link between instrumental support and school satisfaction. Moreover, our results differ from those of DeSantis King et al. (2006), who found a significant correlation between total social support from teachers, parents, and classmates and school satisfaction. Notably, their study did not delineate the distinct effects of different types of teacher support, including instrumental support. Therefore, we propose that when examining the impact of instrumental support on school satisfaction, the educational level (undergraduate or graduate) and the specificity of support type should be considered due to their potential effects on the intensity of teacher-student interaction. Nonetheless, our research did reveal a significant total effect of instrumental support on school satisfaction, mediated through academic PsyCap. This highlights the pivotal role of PsyCap in interpreting the relationship between instrumental support and school satisfaction.

We did not confirm the proposed relationship between instrumental support and enhanced psychological well-being (H3). This diverges from Suldo et al.'s (2009) findings, where emotional and instrumental support were unique predictors of students' subjective well-being. The variation may stem from sample differences—our study focused on university students who face non-academic stressors such as job searching and navigating a more independent learning environment, particularly during the pandemic. This is distinct from the middle-school student cohort in Suldo et al.'s work. Despite the absence of a direct link, our study found academic PsyCap to be a crucial mediator between instrumental support and psychological well-being, emphasizing the importance of resource availability in shaping individuals' well-being.

Our study found that academic PsyCap influences both school satisfaction and psychological well-being, affirming previous studies such as those by Kim et al. (2020) and Siu et al. (2023). They argued that the more confidence, hope, optimism, and resilience a student possesses (components of PsyCap), the likelier they are to be satisfied with their school. It is well-established that school satisfaction impacts student retention and academic performance (Hampden-Thompson & Galindo, 2016). Engaged and content students tend to perform better academically and are more likely to complete their programs. Further, our study aligns with Tian et al. (2015) and Satici (2020) in establishing a direct impact of school satisfaction on psychological well-being. Universities may enhance student well-being in challenging learning environments by investing in programs that bolster psychological resources. In essence, students with more psychological resources are likely to be more satisfied and, consequently, experience better mental health outcomes. By addressing these factors and enhancing

the digital learning experience, universities can boost student retention and appeal, thereby ensuring their long-term sustainability.

6. Conclusion

6.1. Theoretical Contributions

Our study contributes to the literature on online learning, PsyCap, and student well-being. To begin, it advocates for enhancing instrumental support, fostering PsyCap, and promoting school satisfaction to improve students' psychological well-being in online learning contexts. Our study begins by examining the relationships between key factors and expands our understanding of strategies that can enhance the online learning experience. This realm, having gained significant relevance, will continue to be vital for universities aiming to heighten their competitiveness in the evolving landscape of higher education (Radwan, 2022).

The findings of this study highlight the significance of preserving teacher-student interaction (Granziera et al., 2022) and enhancing teacher support (Federici & Skaalvik, 2014a, 2014b; Guo et al., 2020) in facets such as learning strategies and course activities within the digital environment. These findings suggest that strengthened instrumental support from instructors could lead to a more confident and satisfying student experience. This enhanced support fosters a sense of belonging among students and nurtures an emotional connection with the university community amidst these uncertain times (Nutsugbodo et al., 2023). Consequently, universities can amplify domestic and international students' PsyCap and school satisfaction, irrespective of their geographical location.

In addition, our study accentuates the vital role of academic Psychological Capital (PsyCap)—a concept hinged on students accruing resources such as confidence, hope, optimism, and resilience in challenging environments like online learning during the pandemic. By identifying instrumental support (Federici & Skaalvik, 2014a) as a key antecedent, and school satisfaction (Kim et al., 2020) and psychological well-being (Burns et al., 2020) as significant outcomes of academic PsyCap, we enrich the understanding of its application in the academic context. In our model, academic PsyCap emerges as a crucial mediator between instrumental support and both school satisfaction and psychological well-being, implying that the effectiveness of support relies on students' ability to develop PsyCap. This finding is critical since, according to Luthans et al. (2012), PsyCap can be enhanced over time. Thus, our research highlights the importance of identifying the antecedents and outcome variables of PsyCap in education and recommends that higher education institutions prioritize developing and nurturing students' PsyCap.

The final area of contribution our study makes is in the domain of student mental health and well-being. Existing research underscores the importance of well-being for higher education students (Priestley et al., 2022; Satici, 2020), an issue that has been exacerbated during the pandemic (Chen & Lucock, 2022; Reid, 2021). Our study extends this understanding by identifying the antece-

dents of psychological well-being. We found that internal resources like PsyCap can directly influence well-being or indirectly through mediating school satisfaction. Simultaneously, external resources, such as instrumental support, indirectly contribute to well-being through the mediation of PsyCap. This integrated understanding presents a more comprehensive approach to improving students' mental health and well-being.

6.2. Managerial Implications

The findings of this study offer substantial managerial implications for universities, particularly concerning the delivery of instrumental support in online-only learning environments (Alzahrani, 2022). To begin with, universities must ensure that students receive consistent guidance from instructors, regardless of their physical location or course mode (e.g., synchronous, asynchronous). This support can be facilitated through online platforms such as Moodle Collaborate, Zoom, or Microsoft Teams to provide availability, accessibility, and flexibility for students (Levenberg, 2023). Implementing drop-by online meetings or office hours could also be a valuable tool in this regard.

Furthermore, it is essential for university instructors to effectively digitize existing learning resources and develop novel strategies to facilitate students' understanding of digital-only assessment processes. Sharing frequently asked questions from previous cohorts, conducting end-of-course surveys, and providing subject-specific guidance online can be highly effective in bolstering perceived instrumental support. Instructors should employ varied methods to explain challenging class material—through notes, in-class discussion, Q and A sessions, annotated PowerPoints, and interactive tools such as Nearpod, Whiteboard, or AI resources like ChatGPT.

Quick responses to students' queries, whether through emails, chat boxes, discussion forums, or video calls, are vital in fostering a positive student-instructor interaction. Collaborative initiatives between administration and faculty, such as workshops and panels on innovative online teaching tools and strategies, can enhance instrumental student support. These efforts would facilitate a positive online learning experience, help students amass personal resources to build PsyCap during their education and maintain their school satisfaction and psychological well-being. These recommendations align with Federici & Skaalvik's (2014a) focus on "questioning, clarifying, correcting, elaborating, and modelling," thus contributing to a rich online learning environment.

Cultivating and harnessing PsyCap can be a valuable asset for students aiming for academic success and enhanced overall well-being (Huang & Zhang, 2022; Kim et al., 2020). Students exhibiting higher PsyCap levels tend to demonstrate resilience in adversity, enhanced motivation toward success, and an optimistic outlook on their future. This is corroborated by a series of research studies, including those conducted by Wang et al. (2021), Kim et al. (2020), and Prasath et al. (2021). Recognizing the significance of PsyCap, universities should establish

programs oriented towards fortifying its four components—confidence, hope, optimism, and resilience—through in-class instruction and extracurricular activities. Potential strategies may encompass resilience training, confidence- boosting exercises, leadership development initiatives, positive psychology seminars, and student engagement and learning strategies.

Our study offers insights into enhancing student psychological well-being within online learning environments. Universities are encouraged to foster initiatives promoting instrumental support due to its significant impact on psychological well-being. Strengthening the teacher-student bond is crucial, and programs such as mentorship schemes, course-related tutoring services, academic writing centers, and library resources can ensure students experience instrumental support. Regular surveys soliciting student feedback or strategies encouraging clear university-student communication can enhance school satisfaction (Danielsen et al., 2011; Katja et al., 2002), which serves as a vital antecedent to student psychological well-being. Universities should also develop well-being programs ensuring students' access to mental health resources like counseling services. These initiatives should consider the backgrounds of the diverse student population (Luo et al., 2019), ensuring a comfortable environment for students to express their concerns.

Finally, while our study utilized students from tourism and hospitality programs as a representative case in hopes of generalizing the results to a broader student population, the importance of these particular students should not be underappreciated. They constitute a vital segment of the present and future workforce in the industry. Increasing students' commitment to academic discipline and career aspirations through enhanced support can yield significant dividends. By advocating the enhancement of psychological well-being among students, our study offers critical insights that could potentially aid in better equipping the tourism sector for recovery.

6.3. Limitations

The limitations of this study should be acknowledged for future research to build upon its findings. First, we strategically selected PLS-SEM for data analysis due to its capability to handle smaller sample sizes, and we enforced the 'ten times rule' (Hair Jr. et al., 2021) to ensure our sample was sufficient for reliable and valid results. As evidenced by prior research on student experiences (Levenberg, 2023), small sample sizes are not uncommon when engaging participants from specific programs within higher education due to the limited eligible population. Nevertheless, future work could amplify its scope by involving larger sample sizes or students from diverse programs, enabling comparative analysis. Additionally, focusing on a representative case of tourism and hospitality students from a Canadian university was a pragmatic decision made in this study due to their availability and familiarity. Although our findings are drawn from this specific cohort, they may hold broader relevance. The influence of instrumental support

on improving the online learning experience, especially its potential role in boosting PsyCap, school satisfaction, and psychological well-being, could extend to a broader student demographic. This avenue is worthy of exploration in future research, confirming the generalizability of our conclusions.

Furthermore, this study primarily explores the interrelations between key research constructs without including control variables such as gender or education years due to the limited sample size and the study's scope. However, future research could extend our work by introducing these control variables to investigate further their influence on the relationships observed in this study. Besides, while the current study provides a cross-sectional snapshot of students' online learning experience during the pandemic, future studies can collect longitudinal data to determine if students' PsyCap and psychological well-being improve in the post-pandemic era. Given that online learning was prevalent before COVID-19 and is likely to continue its growth in popularity post-pandemic (Radwan, 2022), such studies would be of significant interest to higher education. Last but not least, it is essential to note that online learning due to the COVID-19 pandemic may trigger anxiety in some students (Nutsugbodo et al., 2023). Some of the questions used in the study may evoke negative memories. Therefore, future research should consider incorporating anxiety as an outcome variable and exploring coping strategies for online learning.

Acknowledgements

This research is funded by the Mount Saint Vincent University SSHRC Explore Grant awarded to both the first and second authors.

Conflicts of Interest

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

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Appendix 1. Descriptive Analysis of the Key Constructs (N = 88)

Construct	Measurement items		Mean	SD
Academic psychological capital (confidence, hope, optimism, resilience)	CONF1	I feel confident in representing my course understanding in class with my professor.	4.55	1.13
	CONF2	I feel confident contributing to discussions about the course content.	4.56	1.16
	CONF3	I feel confident presenting information to a group of classmates.	4.49	1.18
	HOPE1	If I should find myself in a jam regarding a course, I can think of many ways to get out of it.	4.53	1.16
	HOPE2	Right now, I see myself as being pretty successful in my course.	4.33	1.21
	HOPE3	I can think of many ways to reach my current course goals.	4.58	1.13
	HOPE4	At this time, I am meeting the course goals that I have set for myself.	4.59	1.21
	OPT1	I always look on the bright side of things regarding my education.	4.72	1.24
	OPT2	I'm optimistic about what will happen to me in the future.	4.76	1.31
	RESI1	I can study on my own, if I have to.	4.78	1.13
	RESI2	I usually take stressful things at university in my stride.	4.17	1.06
	RESI3	I can get through difficult times at university because I've experienced difficulty before.	4.39	1.07
Instrumental support	TS1	When I have problems with the subject, I receive help and guidance from my professor.	5.77	1.37
	TS2	My professor helps me so that I understand the subject.	5.78	1.34
	TS3	My professor provides good guidance.	5.80	1.48
	TS4	My professor is always available when I need assistance.	5.53	1.37
	TS5	My professor is good at explaining challenging class material.	5.60	1.34
School satisfaction	SAT1	I enjoy being a student in this program.	5.38	1.48
	SAT2	This program meets my expectations.	5.30	1.28
	SAT3	I feel comfortable in this program.	5.42	1.29
	SAT4	I am pleased with the support I have received in this program.	5.42	1.37
Psychological well-being	PWB1	I like most aspects of my personality.	5.46	1.35
	PWB2	I have warm and trusting relationships with others.	5.69	1.23
	PWB3	I have experiences that challenge me to grow and become a better person.	5.85	1.28
	PWB4	My life has a sense of direction or meaning to it.	5.43	1.42
	PWB5	I am confident in thinking or expressing my own ideas and opinions.	5.61	1.27
	PWB6	I am good at managing the responsibilities of daily life.	5.59	1.12