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PSYCHOLOGICAL CAPITAL IN MAINTAINING THE STUDENTS' POSITIVE ATTITUDES IN CONDITIONS OF WAR

Annotation. *Based on research on the processes of accumulation of psychological capital (PsyCap) of students of Alfred Nobel University, the study explores the role of PsyCap in maintaining students' positive attitudes amid the ongoing war in Ukraine. The research focuses on how students' location, employment status, and year of study influence their PsyCap during wartime. A survey conducted among 70 students at Alfred Nobel University in the 2023/24 academic year gathered data on these factors. Using methods such as cross-tables, ANOVA, and discriminant analysis, the study assessed the effects of external factors on PsyCap. Key findings reveal that location plays a significant role, with students who have relocated abroad showing lower levels of self-efficacy, hope, and resilience than those remaining in*

Ukraine. Meanwhile, employment status positively impacts self-efficacy and hope but has little influence on resilience or optimism. Additionally, students in higher years of study tend to exhibit stronger resilience and hope. The research concludes that, among all PsyCap components, hope is the most influenced by external factors like location and employment. Nevertheless, internal resources remain crucial in shaping the overall psychological resilience of students during challenging times.

Key words: *psychological capital, cultural dimensions, contingency tables, discriminant analysis, ANOVA, neural networks, intrinsic and extrinsic motivational factors.*

Анотація. *На основі дослідження процесів накопичення психологічного капіталу (PsyCap) студентів Університету імені Альфреда Нобеля у статті розглядається роль PsyCap у підтримці позитивного настрою студентів в умовах війни, що триває в Україні. Дослідження фокусується на тому, як місце проживання, статус зайнятості та рік навчання студентів впливають на їхній PsyCap у воєнний час. Опитування, проведене серед 70 студентів Університету імені Альфреда Нобеля у 2023/24 навчальному році, зібрало дані про ці фактори. Використовуючи такі методи, як перехресні таблиці, ANOVA та дискримінантний аналіз, дослідження оцінило вплив зовнішніх факторів на PsyCap. Основні висновки показують, що місце проживання відіграє значну роль: студенти, які переїхали за кордон, демонструють нижчий рівень самоефективності, надії та життєстійкості порівняно з тими, хто залишився в Україні. Водночас, статус зайнятості позитивно впливає на самоефективність та надію, але має незначний вплив на життєстійкість та оптимізм. Крім того, студенти старших курсів, як правило, демонструють сильнішу життєстійкість і надію. Дослідження показало, що серед усіх компонентів PsyCap надія найбільше залежить від зовнішніх факторів, таких як місце проживання та працевлаштування. Тим не менш, внутрішні ресурси залишаються вирішальними у формуванні загальної психологічної стійкості студентів у складні часи.*

***Ключові слова**: психологічний капітал, культурні виміри, таблиці спопученості, дисримінантній аналіз, ANOVA, нейронні мережі, внутрішні та зовнішні мотиваційні фактори.*

Introduction and relevance of the study. Psychological Capital (PsyCap) is a set of personal resources that help people cope with life challenges and achieve success in their professional and personal lives (Luthans *et al.*, 2007) [4]. It includes four key components (Luthans et al., 2007) [2]:

1. **Confidence** (**self-efficacy**) is the belief in one's own strength and ability to complete tasks successfully. Self-confident people are more willing to take on complex tasks; they can better adapt to new challenges and believe they can overcome any difficulties.
2. **Hope** is the ability to set goals, find ways to achieve them, and stay motivated throughout the process. Hope includes both setting realistic goals and striving to achieve them through active endeavor and planning.
3. **Resilience** is the ability to recover from setbacks, adapt to stress, and overcome challenges. Resilient people bounce back from defeat faster, learn from their mistakes, and keep moving toward their goals.
4. **Optimism** is a positive attitude towards the future and expecting everything to turn out well. Optimists tend to focus on opportunities rather than obstacles, which helps them stay motivated and believe in success even in difficult situations.

These four components interact to create a powerful internal resource for overcoming challenges and achieving goals.

Fred Luthans, the creator of the PsyCap concept, emphasizes both internal and external factors in its development, but he mainly focuses on the internal elements as primary drivers. Each of the abovementioned PsyCap's four main components is inherently tied to an individual's internal resources, such as their ability to set meaningful goals, bounce back from adversity, and maintain a positive outlook.

While external factors, such as organizational culture or leadership, can influence PsyCap by providing support or resources, (Luthans & Youssef, 2004) argue that the development of PsyCap largely depends on internal factors. These include personal agency (the belief in one's ability to influence outcomes), the capacity to persevere through challenges, and the cognitive resources to maintain motivation and resilience during difficult times. For example, resilience, a core aspect of PsyCap, involves drawing from personal experiences of overcoming past difficulties, which is an internally driven process.

Overall, (Luthans *et al.*, 2004) highlight that while external conditions can facilitate the growth of PsyCap, the internal psychological processes ultimately form the foundation for developing the mental strength that PsyCap represents [3-4].

Problem statement in general form. Given the above, the objectives of this study include:

- Identifying the factors that are the most important influencers, making an impact on the students' PsyCap profile at war-time conditions,
- Identifying the factors that are the most distinctive groupers of the students' PsyCap profiles,
- Rating the power and defining direction of influences of selected factors on the students' PsyCap profile at war-time conditions,
- Defining the most influential grouping factor from the set selected for the study and the PsyCap component, which is mainly influenced by the whole set,
- Identifying the mechanism of PsyCap accumulation by the students at war-time conditions.

Research methodology. The following methods and approaches were used in the study: a survey to assess the Psychological Capital of the students; comparative study and cross-tables when exploring the qualitative nature of the PsyCap profile change related to the grouping variables introduced; ANOVA analysis to unveil the statistically significant differences induced by grouping factors selected, discrimination analysis to define the best grouping factor, neural network to define

the most influential grouping factor from the set of chosen for the study and the PsyCap component which is mainly influenced by the whole set.

Presentation of the main research material. A survey on Psychological Capital in conjunction with current location, employment status, and year of study was held at Alfred Nobel University during the spring semester of the 2023/24 teaching year. 70 students from different specialties took part in the survey. Both students from Ukrainian and English-speaking programs were involved; for the students who combined work and study, the classical form of the PsyCap survey by (Luthans *et al.*, 2007) [4]. was utilized. For those who are only studying, some alterations were made to represent HEI specifics as organizations to which the respondents belong. One of the principal conditions of the empirical research was to avoid any pressure put on the prospective respondents. With regard to that important attitude, the students' involvement with this research goal was also included in the set of factors being investigated. The involvement was introduced and defined based on when a specific respondent filled out the survey.

The initial hypothesis is that *students' location should be the most important factor* shaping the PsyCap profile *in war-time conditions*. *Employment status is* also essential as the leading provider of certainties yet *will play a more modest* role. *Study year* and *study language* are assumed to be the least influential factors.

The general shapes of the students' PsyCap profiles are represented in Fig. 1. Percentages denote the share of the maximal possible magnitude of the current PsyCap component. Before the statistical processing, this profile did not explicitly prove the hypotheses formulated but could provide a general understanding of the proportions between individual components. At the same time, some conclusions could be drawn based on comparing the direct profiles.

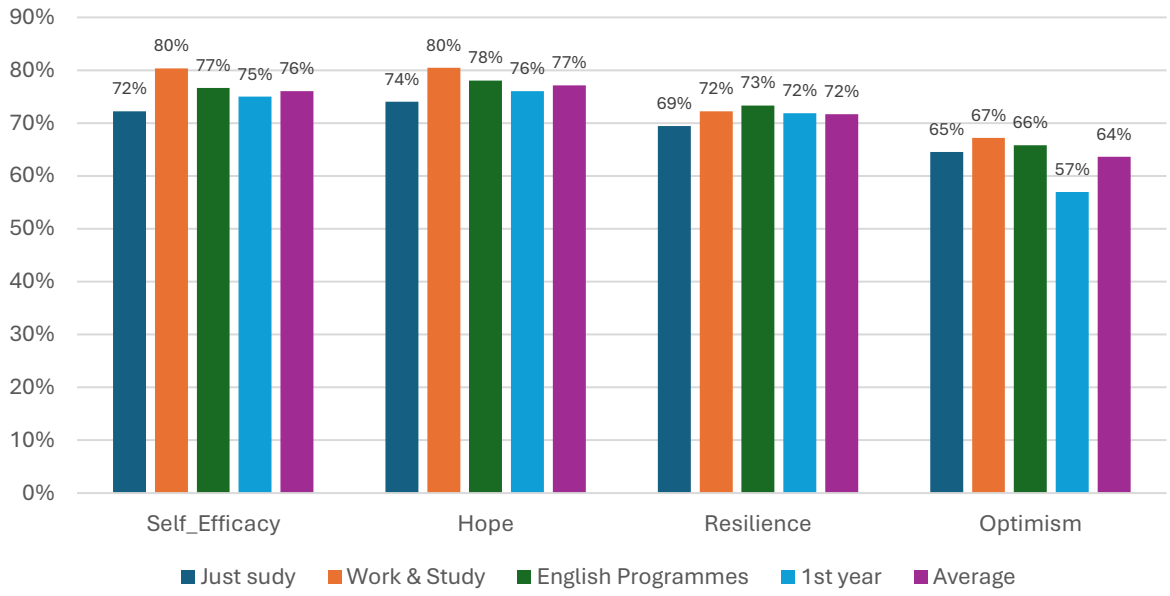

Fig. 1. Results of students' PsyCap assessment at ANU during spring semester 2024

Source: data collected by the authors

The «fullbloodiest» profile PsyCap has for *Self-Efficacy* and *Hope*. The weakest component is *Optimism*. Both peculiarities could be regarded as direct consequences of the war in Ukraine. People need *Hope* and *Self-Efficacy* to withstand all the hardships war brings, while *Optimism* is mostly affected since the basic needs of individuals, such as security, are questionable. It should also be noted that *Resilience,* being the ability to recover in the broad sense of this word as was described above, is also in the «oppressed» state, possibly because this internal feature was already squandered by individuals trying to cope with the consequences of war conditions.

Let us proceed to the results of statistical processing of the data.

The cross-tables built on PsyCap components power and *location* show that those students who stay abroad by 4,8% more frequently demonstrate lower *Self-Efficacy*, by 5,5% more frequently indicate a lower level of *Hope*, by 5,1% more frequently are less *Resilient*, while preserving almost the same *Optimism* level as those who remain in Ukraine (the difference is approx. 1%). The cross-tables built on PsyCap components power and *employment status* show that those students who have

employment by 9,3% more frequently show higher *Self-Efficacy*, by 7,4% more frequently demonstrate higher Hope, but just by 1,7% more frequently indicate higher *Optimism*, while their *Resilience* is almost unaffected by the employment status (approx. 1%). The cross-tables built on PsyCap components power and the study year show that 3rd-year students, by 2,1% more frequently demonstrate lower *Self-Efficacy*, and 1st-year students, by 5,5% more frequently show lower *Hope. In comparison,* 4th-year students by 4,98% more frequently indicate higher *Hope*, and 3rd-year students by 3,8% more frequently demonstrate low *Resilience. In comparison,* 4th-year students by 5,16% more frequently indicate higher *Resilience*, 1st-year students are 3,69% less optimistic, and 4th-year students are 1,66% less optimistic, while 3rd-year students are 5,1% more resilient. The rest of the cross-table cells are built on PsyCap components power, and the students' study years do not demonstrate any remarkable differences between expected and observed counts. Correspondingly, one could preliminarily conclude that employment status is the most influential factor affecting the psychological capital of the students, which comes in line with the hypothesis being formulated preliminary. However, the hypothesis of the substantial positive influence of the students' location abroad on the PsyCap profile should be rejected – on the contrary, students located abroad approx. by 5% more frequently demonstrate the low level on 3 of 4 PsyCap components. Low and high PsyCap component levels were introduced by splitting the observed data by median. Cross-tables are just referred to but skipped from the article body to avoid the cumbersome presentation of results.

As the cross-table tables indicate the existence and nature of a pattern that relates PsyCap with the selected influencers, we need to take a step further by analyzing these relations' power and direction using independent samples *t*-test and ANOVA. Neither independent samples *t*-test nor ANOVA for the groups based on the employment status did not reveal any statistically significant differences (corresponding tables are skipped). ANOVA for the groups based on the year of study also did not reveal any significant differences (corresponding tables are also skipped).

Statistically significant differences found by independent samples *t*-test exist for the year of study-based groups (Table 1) between 1st and 4th-year students for *Optimism* and between 3rd and 4th & 1st and 3rd-year students for *Hope*. *Self-Efficacy* and *Resilience* do not demonstrate statistically significant differences.

Table 1

Comparison of groups based on year of study

Groups	Efficacy			Hope			Optimism		
	t	Mean difference	Cohen's ***d***	***t***	Mean difference	Cohen's ***d***	***t***	Mean difference	Cohen's ***d***
1-4	*H_0 accepted*						-0,161	-0,0101	0,0927
3-4	*H_0 accepted*			-0,054	-0,0031	0,1259	*H_0 accepted*		
1-3	*H_0 accepted*			-0,030	-0,0201	0,1202	*H_0 accepted*		

Source: calculations by the authors

ANOVA reveals differences between groups based on students' location for *Self-Efficacy* and *Hope* (Table 2). The independent samples *t*-test also reveals significant differences between the groups based on the location of the students for *resilience* (see Table 3).

Table 2

ANOVA based on the location of the students

Indicators	**Sum of Squares**	**Mean Square**	**F**	**Sig.**
Efficacy	0,087	0,087	4,456	0,038
Hope	0,06	0,06	4,192	0,044
Resilience	0,008	0,008	0,663	0,418
Optimism	0,001	0,001	0,049	0,825

Source: calculations by the authors

Table 1 also testifies that 1st-year students demonstrate lower *Optimism* than older ones (see a comparison of groups 1-4 & 1-3). However, despite being statistically significant, that trend is quite weak – 1% and 2%, respectively. At the

same time, those students who are in Ukraine demonstrate 3,84% bigger *Resilience* (see Table 3), which is slightly more impressive.

Table 3

Comparison of groups based on location

Groups	Efficacy			Hope			Resilience		
	t	Mean difference	Cohen's ***d***	***t***	Mean difference	Cohen's ***d***	***t***	Mean difference	Cohen's ***d***
0-1	*H_0 accepted*						2,2527	0,0384	0,1107

Source: calculations by the authors

Thus, analyzing the power of different influencing factors, we got more reassuring proof of our hypotheses concerning *location* as the essential PsyCap influencer. This is natural because it directly addresses safety as one of the person's basic needs. At the same time, employment status does not play an expected role.

The discriminant analysis leads to a somewhat contradictive conclusion that data groupings for 1st and 4th years of study overlap (Fig. 2) while independent samples *t*-test revealed that youngest students are statistically significantly different at least across two PsyCap components – *Optimism* and *Hope*.

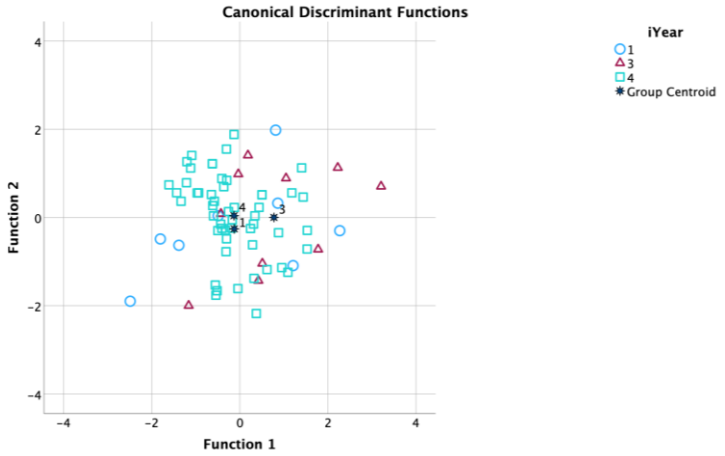

Fig. 2. Discriminant analysis by year of study

Source: calculations by the authors

So, to summarize these stages of statistical modeling, the following table describing the dependencies of PsyCap components from selected influencers was created.

Table 4

Generalized influence

PsyCap Component	Location	Employment status	Year of Study
Efficacy	By 4,8% more frequently is low for those who are abroad, but statistically significant differences absent	By 9,1% more frequently is high for employed but statistically significant differences absent	More frequently low for younger students but statistically significant differences absent
Hope	By 5,5% more frequently is low for those who are abroad, but statistically significant difference absent	By 7,4% more frequently is high for employed, but statistically significant differences absent	By 4,98% more frequently is high for 4th year students in average being 2,31% higher
Resilience	By 5,1% more frequently is low for those who are abroad, in average being 3,84% lower		By 5,16% more frequently is high for 4th year students, but statistically significant differences absent
Optimism		By 1,7% more frequently is high for employed, but statistically significant differences absent	By 3,69% more frequently is low for 1st year students, being 1,01% lower

Source: generalized by the authors

Based on this summary, the following conclusions could be made:

1) *Location* does not affect *Optimism*, while employment status does not affect *Resilience*, leaving the *Year of Study* the only factor influencing all the PsyCap components,

2) *Location* and *Year of Study* are the only factors that cause the statistically significant influence on PsyCap,

3) *Efficacy* and *Hope* are the PsyCap components affected by all the influencers selected.

Based on the definitions of PsyCap components (Luthans et al., 2007) [2], assuming that the primary sources of PsyCap are internal (as mentioned above), and considering the effects of war conditions, one could propose the following explanations for the mechanism of the effects of the selected influencers:

- Those who are relatively comfortable abroad do not need to develop additional resources to adapt to the new challenges and overcome the difficulties compared to those who remain in Ukraine being at war – specific "price of security," which turns out to be a loss of internal resistance to hardships (*Self-Efficacy & Resilience* vs. *Location*),
- It turns out that those living abroad feel comparatively less freedom to find ways to achieve goals and, therefore, are less motivated – possibly because they usually face a lot of unfamiliar regulations and strict formal rules to follow compared to Ukraine (*Hope* vs *Location*),
- On the contrary, those who are already employed tend to feel more confident about themselves and, therefore, have a greater belief in their ability to handle complex tasks and recover from difficulties (*Self-Efficacy* vs *Employment status*),
- Similarly, those who are already employed tend to feel less constrained, especially in setting individual goals, since they are not limited by those who should fund them; motivation is such a case and should be treated as the flip side of personal responsibility (*Hope* vs *Employment status*),
- A positive attitude is expected to be more solid for those already employed. At the same time, this pattern is not well expressed, being the weakest among the observed results, so obviously, this issue requires additional research, possibly by implementing specific psychological tools such as PANAS (Watson *et al*., 1988) [5] (*Optimism* vs *Employment status*),
- Confidence of younger students is more typically lower than average, but one could not conclude the statistical significance of such a trend, possibly because of minor age differences (*Self-Efficacy* vs *Year of Study*)

- Similarly, the perception of freedom in goalsetting is expected to be higher for those in their graduation year and probably already employed. That is why a statistically significant difference is observed (*Hope* vs *Year of Study*)
- However, even though bouncing back from defeat is higher and learning from mistakes is more natural for pre-graduates, who show high *Resilience* more often, the differences are not statistically significant, which could also be explained by the short independent life experience and not enough age difference between consecutive cohorts involved into the research (*Resilience* vs *Year of Study*)
- Surprisingly enough, 1st-year students are statistically significantly more pessimistic about the future, which could be explained by the sad experience of growing up in wartime (*Optimism* vs *Year of Study*)
- Employment status usually leads to more frequent indications of higher *Self-Efficacy*, *Hope,* and *Optimism.* At the same time*,* statistically significant differences are absent, which could be explained by the fact that the share of employed students was considerably smaller. Location abroad, although resulting in less frequent display of the peculiarities, leads to lower *Resilience.*
- Some influencers, most notably employment status, act independently of war conditions.

Again, all these explanations assume that the peculiarities of the PsyCap profile result from «deformations» of internal factors shaped by external factors.

Applying a neural network allows us to conclude which is the most potent influencer among the investigated factors (Fig. 3) and which component is most influenced by the whole set of selected influencers, as mentioned above. The neural network model utilized in this study was based on the radial-base function with the number of layers defined by the model. It reveals that location is the most potent individual influencer, which proves that safety considerations are the ultimate power influencers on students' psychological capital in war conditions. The table of predicted variables sensitivity (which was skipped, being very cumbersome) indicates that *Hope* is the most affected by the whole set of influencers. This may be related to

the fact that *Hope,* being the ability to maintain motivation throughout the goal-attainment process, is highly dependent on environmental stability, which is most affected by the factors selected (possibly excluding the study year).

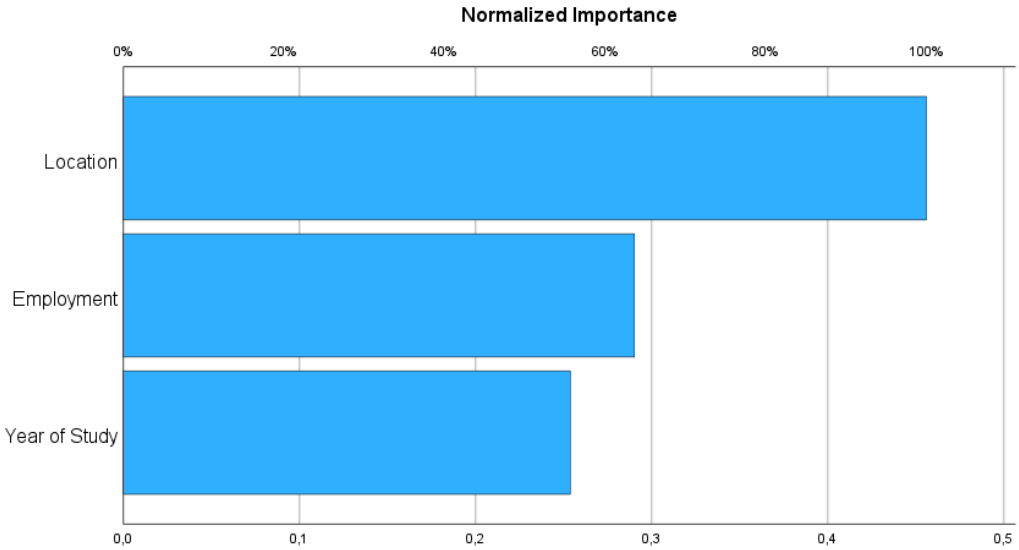

Fig. 3. Relative importance of factors influencing the PsyCap

Source: calculations by the authors

Conclusions. Thus, summarizing the research of psychological capital in maintaining the students' positive attitudes in conditions of war, the following conclusions could be made:

1) Statistical processing of the PsyCap survey data reveals the intrinsic mechanism of students' psychological capital accumulation in war conditions, internal and external displacement, and different employment statuses.

2) At war conditions, safety considerations play a crucial role in shaping the psychological capital profile, which is proved by using different methods of statistical analysis for cross-verification. In the set of the selected influencers, it is represented by location.

3) Hope is the component of students' psychological capital most affected by the selected influencers, as both location and employment status have a synergistic effect on it.

4) At the same time, some influencers, such as employment status, first act independently of war conditions because it directly affects positive attitudes and psychological stability and provides more stability.

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