Sociability and psychoticism as predictors
of interaction types in students' youth

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Abstract. The relevance of this research lies in its contribution to understanding how different interaction types, constructed by the balance of sociability and psychoticism, influence students' adaptation to the educational environment. As higher education institutions increasingly emphasise student well-being and academic success, identifying favourable and unfavourable interaction patterns is crucial for fostering a supportive learning atmosphere. The purpose of this study was to construct a typology of students according to the ratio of sociability and psychoticism, which ensures the interaction of the student with the educational environment, and the identification of favourable and unfavourable forms of such interaction for the student's personality on its basis. The empirical data collection employed V. M. Melnikov & L.T. Yampolsky's "Psychodiagnostic test" and F.E. Williams' Creativity Assessment Packet. Dispersion analysis and the Mann-Whitney U-test were used to identify differences in psychological traits among the four types of student interaction. Based on the ratio of sociability and psychoticism, four types of student interaction were identified: competing: a high level of curiosity, creative curiosity, creativity, depression, neuroticism, imagination, general activity, sociability, low level of shyness, introversion; manipulative: a high level of curiosity, creative curiosity, creativity, mental imbalance, tendency to dominance, depression, asociality, neuroticism, shyness, imagination, introversion; hermits (hikikomori): a low level of curiosity, creative curiosity, creativity, disinhibition, asociality, imagination, general activity, a high level of shyness and introversion; cooperative: a low level of mental imbalance, a tendency to dominance, depression, neuroticism, shyness, introversion, general activity, and a high level of sociability. The practical significance of this research lies in its potential applications for improving educational environments and student support strategies, emphasising the need for promoting cooperation rather than competition, thereby enhancing students' psychological well-being and overall academic engagement

Keywords: personality; typological properties; cooperation; competition; manipulation; social withdrawal; educational environment

Introduction

The educational environment can both constructively and destructively affect the student's personality. An increase in the pressure of the academic environment on the student's personality forces him/her to switch from energy-saving learning methods to energy-consuming ones. Prolonged forced social isolation caused by quarantine restrictions, distance learning, forced change of place of study, etc., does not facilitate the improvement of the situation. Loneliness, prolonged stress, and permanent uncertainty affect the mental health of students during difficult conditions.

The researchers F.J. Araújo *et al.* (2020) analysed how the global educational environment has been disrupted by the COVID-19 pandemic, focusing on challenges such as the transition to online learning, social isolation, and the psychological effects of these changes on students, faculty, and staff. They revealed the rise in anxiety and depression levels during quarantine, exacerbated by uncertainty and an overload of information, and the adverse effects of solitude on students' educational and psychological well-being.

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M.M. Husky *et al.* (2020) examined the mental health impact of the COVID-19 pandemic, explicitly focusing on stress and anxiety levels among university students in France during the mandatory confinement period. The researchers explored how social isolation, changes in academic routines, and uncertainty caused by the pandemic contributed to increased stress and anxiety in this population. They discussed the significant psychological challenges faced by students, including disruptions to their education, concerns about their health and the health of loved ones, and the general feeling of uncertainty. The results revealed a noted increase in anxiety and stress, particularly among students who stayed away from their parental homes during isolation.

Researcher C. Karing (2021) investigated the mental health impact of the first COVID-19 lockdown on university students in Germany. According to the research results, mindfulness and optimism stand out as key protective factors against anxiety, depression, and stress, whereas current situational stressors (like concerns over academics and finances, stress from the pandemic and media coverage, and quarantine measures) along with personal traits (such as neuroticism, being older, and female gender) were identified as risk factors for mental health issues and stress.

G. Letiago *et al.* (2024) examined the development of risky behaviours among student youth during the prolonged social isolation caused by quarantine measures. The paper explored the relationships between these risky behaviours and the overall health of students during the quarantine period. An uptick in risky behaviours (unhealthy eating, smoking, alcohol use, neglect of studies and personal appearance) during extended social isolation has been observed.

W.D. Killgore *et al.* (2020) discussed the significant mental health issue of loneliness during the COVID-19 pandemic. The researchers highlighted how social isolation and physical distancing measures have led to increased feelings of loneliness. They explored the psychological and emotional impact of loneliness during this period and discussed its potential long-term consequences for mental health. A significant correlation between loneliness during the pandemic and depression and suicidal ideation has been identified.

C. Stevens *et al.* (2020) investigated the prevalence of problematic internet use and computer gaming among university students in the United States. The researchers examined how excessive use of the internet and video games may correlate with negative psychological outcomes and the potential for developing mental health issues. It was found that excessive Internet use, a common aspect of social isolation, has been linked to problematic behaviours like Internet and gaming addiction that interfere with academic performance and heightened symptoms of mental health disorders. T. Kato *et al.* (2020) examined the relationship between Internet addiction, excessive use of online platforms, and social withdrawal behaviours. The Internet and the development of internet societies have contributed to the rise of internet addiction, which can lead to pathological social withdrawal, a condition often referred to as "hikikomori". The association between Internet addiction and severe social withdrawal (the "hikikomori" phenomenon) has been noted.

Thus, O. Kovalenko (2024) in his study determined that prolonged enforced social isolation due to quarantine measures, remote learning, and excessive Internet use can negatively affect students' emotional well-being and their social interaction capabilities. This could lead to a shift from enforced to voluntary isolation, supported by the lack of necessity for active social engagement (for instance, the option to continue education and work remotely). However, insufficient attention is paid to investigating various personality properties as psychological predictors of students' interaction with the educational environment in difficult conditions, which led to the choice of the research topic.

This purpose of this study was to develop a classification of student interaction based on the balance between sociability and psychoticism, which facilitates the student's engagement with the educational environment, and to determine which forms of this interaction are beneficial or detrimental to the student's personality development.

Materials and Methods

Participants. The empirical psychological research sample consisted of 280 university students (Kyiv and Zhytomyr) of the 1st-4th years of study and different educational programmes ("Preschool education", "Primary education", "Choreography", "Fine arts", "Social work", "Psychology"), with a mean age of 20.

Procedure. The empirical psychological research, including V.M. Melnikov & L.T. Yampolsky (1985) PDT and F.E. Williams' Creativity Assessment Packet (Bielska *et al.*, 2021) was proposed for students of Borys Grinchenko Kyiv University, Ivan Franko Zhytomyr State University, V.I. Vernadsky Taurida National University over the period 2020-2023 using Google Forms online. The responses were transferred from Google Forms into Excel and SPSS Statistics 27 for analysis. The testing was voluntary and anonymous. Data collection was performed online via Google Forms. Reporting on human studies, the testing was conducted according to the American Psychological Association's Ethical Principles of Psychologists and Code of Conduct (2017). Upon completion of the study, all participants were provided with individualised reports of the results, including a comprehensive interpretation.

In defining interaction types, the "Sociability" and "Psychoticism" scales were employed. Through the correlation of sociability and psychoticism, four distinct interaction types were defined: Type 1 "+ +" encom-

passed individuals showing high levels of sociability alongside high levels of psychoticism; Type 2 "– +" was characterised by individuals with low sociability levels and high levels of psychoticism; Type 3 "– –" included individuals with low levels of both sociability and psychoticism; Type 4 "+ –" was comprised of individuals demonstrating high levels of sociability coupled with low levels of psychoticism.

The study explored how psychological traits manifest differently, focusing on the following aspects: mental stability versus mental imbalance – evaluated the overall mental resilience of an individual (comprising three sub-scales: "neuroticism", "psychoticism", "depression"), social adaptability versus asociality – assessed a person's ability to adapt socially (including two sub-scales: "conscientiousness" and "disinhibition"), sociability versus introversion – evaluated how sociable an individual is (encompassing three sub-scales: "general activity", "shyness", "friendliness"), and emotional insensitivity versus sensitivity – evaluated the depth of emotional responses (with two sub-scales: "aesthetic sensitivity", "femininity"); personality's creative traits such as risk-taking, curiosity, complexity, and imagination.

In categorising students' interaction types based on their levels of sociability and psychoticism, a method to analyse the nonlinear relationships among psychological parameters was employed. This typology construction method presupposed that the connections between the variables under study were nonlinear and orthogonal to each other. This was empirically observed when the correlation among psychologically related variables was negligible ($r < \pm 0.25$).

Thus, the orthogonal, or quadripolar nature of the ratio of two indicators (when two indicators were located in an orthogonal coordinate system, for example, psychoticism was deposited on the x-axis, and social contact is deposited on the y-axis) acts as a criterion for building a personality typology. Subsequently, the analysis delineated four distinct personality types, defined by both indicators' intensity levels (high/high,

high/low, low/high, and low/low). Further, to the study determined the statistical significance of the identified differences between types in the level of manifestation of other psychological characteristics of the personality. This stage was carried out using dispersion analysis and/or the Mann-Whitney U-test. To confirm the assumption of the presence of a nonlinear relationship, it was necessary to have statistically significant differences in the predominant number of psychological characteristics (De Castella, 2013; Podshyvailov *et al.*, 2020a).

Statistical Analyses. The analysis employed descriptive statistics, dispersion analysis, and the Mann-Whitney U-test (Jamil, 2024) to identify differences across four interaction types in the expression of students' psychological characteristics.

Results and Discussion

Based on the balance between sociability and psychoticism, 4 interaction types were delineated: Type 1 ("+ +") comprises students with high levels of both sociability and psychoticism (10.0% of the sample); Type 2 ("– +") consists of students with low sociability yet high psychoticism (34.4% of the sample); Type 3 ("– –") includes students with low levels of both sociability and psychoticism (27.5% of the participants); Type 4 ("+ –") encompasses students with high sociability and low psychoticism (28.6% of the sample).

The next step was to define differences among the delineated 4 interaction types in the manifestation of psychological traits using dispersion analysis and Mann-Whitney U-test calculations. Differences in the following parameters were examined: curiosity, creative curiosity, aesthetic sensitivity, creativity, sensitivity, consciousness, mental imbalance, disinhibition, dominance tendency, depression, risk, emotional insensitivity, asociality, neuroticism, shyness, femininity, imagination, introversion, general activity, friendliness, complexity. Table 1 displays the differences between interaction types according to the assessed psychological measures, as determined through a dispersion analysis of the empirical data.

Table 1. Differences between interaction types according to the assessed psychological measures (dispersion analysis results)

Indicator	Type 1 "+ +"	Type 2 "– +"	Type 3 "– –"	Type 4 "+ –"	F
	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$	
Curiosity	6.3	6.3	4.8	5.2	5.09**
Creative curiosity	6.4	6.3	4.9	5.4	4.69**
Aesthetic sensitivity	5.8	6.6	6.5	6.6	2.22
Creativity	6.4	6.3	4.9	5.7	3.73**
Sensitivity	5.6	6.2	6.5	6.4	1.89
Consciousness	6.2	6.2	5.9	5.3	1.98
Mental imbalance	6.3	8.3	5.6	4.0	26.51**
Disinhibition	5.3	5.5	4.2	4.8	3.51**
Dominance tendency	5.9	6.5	5.0	4.3	19.23**
Depression	6.8	8.1	5.8	4.2	30.90**

Indicator	Type 1 "+ +"	Type 2 "– +"	Type 3 "– –"	Type 4 "+ –"	F
	$\overline{x}$	$\overline{x}$	$\overline{x}$	$\overline{x}$	
Risk	6.2	5.7	5.4	6.0	0.74
Emotional insensitivity	4.4	3.8	3.5	3.6	1.89
Asociality	4.2	4.8	3.1	4.0	3.51**
Neuroticism	7.0	8.1	5.5	5.3	14.13**
Shyness	3.3	6.8	6.8	3.1	50.16**
Femininity	7.3	7.5	7.6	7.4	0.30
Imagination	6.3	6.3	4.4	5.3	6.74**
Introversion	3.3	7.4	7.5	3.4	86.71**
General activity	5.7	5.3	4.5	4.6	4.88**
Friendliness	7.1	4.9	4.8	7.4	4.12**
Complexity	6.2	6.1	5.5	6.2	1.12

Note: $\overline{x}$– Average value of the indicator; F – Dispersion coefficient; ** – $p \le 0.01$; * – $p \le 0.05$
Source: developed by the author

Consequently, observed statistically significant distinctions between the types on the following dimensions were observed: curiosity, creative curiosity, creativity, mental instability, disinhibition, dominance tendency, depression, asociality, neuroticism, shyness, imagination, introversion, general activity, and friendliness ($p \le 0.01$).

Type 1 is characterised by: high levels of curiosity, creative curiosity, creativity, depression, neuroticism, imagination, general activity, friendliness, and low levels of shyness and introversion; Type 2: high levels of curiosity, creative curiosity, creativity, mental instability, dominance tendency, depression, asocial behaviour, neuroticism, shyness, imagination and introversion; Type 3: low levels of curiosity, creative curiosity, creativity, disinhibition, asocial behaviour, imagination, overall activity, and high levels of shyness and introversion;

Type 4: low levels of mental instability, dominance tendency, depression, neuroticism, shyness, introversion, general activity, and high levels of friendliness.

Students with high psychoticism (Types 1 and 2) are more prone to emotional instability, impulsivity, and depressive symptoms, especially when combined with low sociability (Type 2). Type 3 students are stable yet passive individuals, with limited emotional expressiveness and reduced social initiative. Type 4 students are socially active and emotionally stable, display the healthiest psychological profile. They are psychologically well-adjusted students who combine sociability with emotional stability and cognitive flexibility. Table 2 illustrates the outcomes of the Mann-Whitney U-test calculations, facilitating the pairwise comparison of the identified types across the researched indicators.

Table 2. Pairwise comparison of the identified types across the researched indicators (Mann–Whitney U–test)

Indicator	Type 1/2		Type 1/3		Type 1/4		Type 2/3		Type 2/3		Type 3/4	
	U	p	U	p	U	p	U	p	U	p	U	p
Curiosity	1,105.00	0.15	717.00	0.01	865.00	0.07	3,165.00	0.10	3,817.00	0.95	2,630.50	0.11
Creative curiosity	1,098.50	0.14	692.50	0.01	821.00	0.04	3,135.50	0.09	3,823.00	0.96	2,612.00	0.10
Aesthetic sensitivity	1,002.00	0.03	864.00	0.11	880.00	0.09	3,481.50	0.50	3,734.50	0.76	2,993.50	0.76
Creativity	1,083.50	0.12	677.50	0.00	831.50	0.04	3,129.00	0.08	3,825.00	0.97	2,587.00	0.08
Sensitivity	1,004.00	0.04	810.00	0.05	928.00	0.18	3,669.00	0.93	3,627.00	0.53	2,890.50	0.50
Consciousness	1,160.50	0.27	843.50	0.08	1,007.50	0.43	3,487.00	0.52	3,670.00	0.61	2,739.50	0.22
Mental imbalance	777.50	0.00	960.00	0.39	658.50	0.00	1,695.00	0.00	932.50	0.00	1,989.00	0.00
Disinhibition	1,331.50	0.94	841.00	0.08	1,038.50	0.57	2,918.00	0.02	3,586.00	0.45	2,653.00	0.13
Dominance tendency	1,081.50	0.11	852.00	0.10	657.50	0.00	2,174.00	0.00	1,519.00	0.00	2,354.00	0.01
Depression	963.00	0.02	915.00	0.23	574.50	0.00	2,172.00	0.00	1,264.50	0.00	1,919.50	0.00
Risk	1,062.50	0.09	867.50	0.13	1,013.50	0.46	3,692.50	0.99	3,512.00	0.33	2,836.00	0.39
Emotional insensitivity	1,004.00	0.04	810.00	0.05	928.00	0.18	3,669.00	0.93	3,627.00	0.53	2,890.50	0.50

Table 2. Continued

Indicator	Type 1/2		Type 1/3		Type 1/4		Type 2/3		Type 2/3		Type 3/4	
	U	p	U	p	U	p	U	p	U	p	U	p
Asociality	1,176.00	0.30	950.00	0.34	1,089.50	0.83	2,850.00	0.01	3,299.50	0.11	2,807.00	0.33
Neuroticism	1,032.00	0.06	767.50	0.02	659.00	0.00	1,638.00	0.00	1,365.50	0.00	2,546.50	0.06
Shyness	107.00	0.00	122.00	0.00	989.00	0.36	3,114.50	0.07	286.50	0.00	342.00	0.00
Femininity	1,139.50	0.21	889.50	0.15	1,068.50	0.72	3,677.50	0.95	3,167.00	0.05	2,495.00	0.03
Imagination	1,286.00	0.73	706.50	0.01	799.00	0.02	2,639.50	0.00	3,016.00	0.01	2,772.50	0.28
General activity	1,008.00	0.04	709.50	0.01	779.50	0.02	3,385.00	0.33	3,682.00	0.64	2,940.50	0.62
Friendliness	551.50	0.00	515.50	0.00	1,027.00	0.52	3,382.50	0.31	1,188.00	0.00	1,175.50	0.00
Complexity	983.00	0.03	782.50	0.03	1,017.50	0.47	3,663.00	0.92	3,078.00	0.02	2,441.00	0.02

Note: U – Mann–Whitney U–test calculations; p – statistical significance level
Source: developed by the author

Types 1 and 2 differ significantly across 9 indicators, including aesthetic sensitivity, sensitivity, mental imbalance, depression, emotional insensitivity, shyness, general activity, friendliness, and complexity. Types 1 and 3 (12 indicators): curiosity, creative curiosity, creativity, sensitivity, emotional insensitivity, neuroticism, shyness, imagination, general activity, friendliness, and complexity. Types 1 and 4 (7 indicators): creative curiosity, creativity, mental imbalance, dominance tendency, depression, imagination, and general activity. Types 2 and 3 (7 indicators): mental imbalance, disinhibition, dominance tendency, depression, asociality, neuroticism, and imagination. Types 2 and 4 (8 indicators): mental imbalance, dominance tendency, depression, neuroticism, shyness, femininity, imagination, and complexity. Types 3 and 4 (7 indicators): mental imbalance, dominance tendency, depression, shyness, femininity, friendliness, and complexity.

Mental imbalance and depression show the largest number of significant differences, highlighting the importance of emotional stability across types. Shyness and friendliness reflect varying levels of social adaptation and interpersonal interaction. Additionally, imagination, dominance tendency, and complexity distinguish types based on creative and cognitive traits. These findings suggest that the most notable differences between types are related to emotional instability, social behaviour, and cognitive abilities.

The next step of typology construction was to fill distinguished types of interaction with psychological content. Those psychological traits for which significant differences were identified through analysis of variance and the Mann-Whitney U-test were deemed typological. The following is a characteristic of the interaction types based on the degree of manifestation of the selected typological characteristics "high", "average", and "low" (relative to other types, rather than the absolute expression of a specific psychological trait within the research sample). Figure 1 shows the psychological attributes identified as typological for each of the four interaction types defined.

Figure 1. Psychological attributes identified as typological for each of the four interaction types defined
Source: developed by the author

Type 1 can be described as highly active and socially engaged, with a strong inclination toward exploration and creativity. Individuals of this Type demonstrate intellectual curiosity and innovative thinking while maintaining a friendly and outgoing nature. Their low shyness and introversion suggest confidence in social interactions, making them more adaptable and expressive in dynamic environments. However, their heightened neuroticism and susceptibility to depression may indicate emotional sensitivity and psychological vulnerability. High levels of depression and psychoticism in this Type may be indicators of a tendency toward competition because of the desire for self-affirmation – high creativity, activity, and friendliness may contribute to engagement in competitive environments, where they seek to prove their uniqueness and abilities; nonconformity and individualism – high psychoticism might manifest in a tendency to act against conventional rules, making them competitors who do not follow standard norms. They might intentionally deviate from group norms, demonstrating alternative approaches. This Type may be characterised by contradictory social behaviour – they could be friendly but at the same time competitive, striving to stand out, sometimes even manipulatively or aggressively competing. Thus, competition is important to this type, but simultaniously, it can be draining and emotionally unstable, making them participants in a competitive environment with high risks of psychological burnout. High depression could suggest that competition causes them significant stress, feelings of inadequacy, or fear of failure.

Type 2 can be described as intellectually driven due to a strong drive for knowledge (curiosity) and creative exploration, making them innovative thinkers. They often have a deep interest in new ideas but may struggle with how to implement them due to mental instability. The combination of depression, neuroticism, and mental instability suggests that individuals in this Type may be prone to emotional turmoil. They might experience intense mood swings, anxiety, and difficulty managing stress, affecting their overall well-being. The dominance tendency reflects a desire for control over their environment, relationships, or situations. However, this can be challenging, especially when paired with asocial behaviour and introversion, leading them to prefer working alone or in solitary settings. Despite having imagination and creativity, these individuals often experience social isolation or difficulty connecting with others. Asocial behaviour and introversion may make them less likely to engage in social interactions or group activities, as they may find social environments overwhelming or draining. Shyness and asocial behaviour may prevent them from asserting themselves socially, yet their dominance tendency suggests they want to assert control when they do engage. This can create tension between their desire for social interaction and their avoidance or discomfort with it. Individuals of Type 2, with characteristics such as dominance tendency, mental instability, asocial behaviour, and neuroticism, could be prone to manipulative behaviours. The desire for control and influence, paired with emotional vulnerability, might lead them to manipulate others to gain a sense of power or stability in social interactions. The dominance tendency might drive them to manipulate situations or people to assert control, especially when they feel emotionally insecure or threatened. The mental instability and neuroticism might lead them to manipulate others' emotions to serve their own needs, using tactics like guilt-tripping or playing on others' emotions to maintain power or influence. Their asocial behaviour, combined with shyness, might make it difficult for them to openly communicate or express needs. Instead, they might resort to indirect strategies to influence others without directly confronting or engaging in healthy interpersonal communication. Due to their introversion and shyness, they may prefer subtle, less overt tactics for manipulating others, using indirect actions like withdrawing or acting distant to achieve their goals.

Type 3 can be characterised as socially withdrawn and passive. Individuals of this Type tend to be reserved, introspective, and hesitant in social interactions. Their low curiosity and creativity suggest a lack of intrinsic motivation to explore new experiences or engage in dynamic activities. The high levels of shyness and introversion indicate discomfort in social situations, leading to self-isolation and minimal engagement with others. Additionally, their low overall activity and disinhibition imply a preference for structured, predictable environments, avoiding risks or spontaneous actions. The low level of asocial behaviour suggests that while they do not actively reject social norms, they may struggle to initiate or maintain connections due to their introverted tendencies. This Type closely resembles social withdrawal patterns, such as hikikomori tendencies, where individuals disengage from external social life, preferring solitude over social interaction.

Type 4 can be described as: stable and emotionally balanced – with low mental instability, low levels of depression, and low neuroticism, these individuals tend to maintain a calm, balanced emotional state, and are less likely to experience mood swings or emotional extremes; non-dominant and cooperative – the low tendency towards dominance suggests that these individuals are not inclined to assert control over others or engage in power struggles, they are more likely to be cooperative, seeking mutual understanding rather than competition or conflict; socially comfortable and friendly – low shyness and low introversion indicate that these individuals are socially comfortable, open to interacting with others, and may thrive in group settings, their high level of friendliness shows that they are approachable, easy-going, and enjoy socialising.

Despite their high sociability and emotional stability, the low overall activity could suggest that they may not be highly motivated to engage in vigorous or competitive activities, preferring instead more relaxed and harmonious environments. With low levels of mental instability, low levels of neuroticism, and high levels of friendliness, these individuals tend to be peaceful and non-confrontational, and they are likely to prioritise maintaining harmonious relationships over seeking attention or being the centre of social events. The attributes of the delineated interaction modalities, as per the sociability and psychoticism quotient, are corroborated through the scrutinised research, alongside the theoretical frameworks posited and extensive empirical observations during direct engagements with students within the educational process.

Type 1 (students showing high levels of sociability coupled with high psychoticism) is provisionally termed "Competitive". Sociability is described as the "inclination and skills necessary for seeking out social interactions, engaging in relationships with others, and participating in group events" (American Psychological Association, n.d.). Originating from the Latin word socius, meaning "companion" (companion, partner), the term emphasises the importance of social bonds (Stevenson, 2010). Thus, sociability is an aspect of personality focused on forming connections with others and fostering interpersonal relationships.

The inclination of this Type towards competitive conduct is perceived as the aspiration to prevail in interpersonal scenarios (Fletcher & Nusbaum, 2008). The concept of this attribute is encapsulated by the term "competitiveness," defined as "the propensity to seek out objectively competitive situations and to benchmark one's performance against a standard or another individual of comparable capabilities" (American Psychological Association, n.d.). Competition is characterised as "any achievement-oriented scenario structured in such a manner that success is contingent upon an individual's ability to outperform others" (American Psychological Association, n.d.). Within the realm of interpersonal competition, adversaries strive to surpass one another, frequently through actions that detrimentally impact the outcomes of competitors, potentially leading to conflict (American Psychological Association, n.d.).

Exploring the impact of personal attributes on the predisposition towards competitive conduct, sociability, conscientiousness, and perseverance were identified by M. Fong *et al.* (2021) as positive predictors of competitive behaviour. Conversely, traits such as benevolence, politeness, and empathy were associated with a low propensity for competitive conduct. These traits are indicative of individuals with lower levels of psychoticism (and the "cooperating" Type according to the proposed classification). Further research findings, such as by D. Urbig *et al.* (2021), indicate that a heightened propensity for competitive behaviour correlates with reduced honesty-modesty and diminished benevolence, alongside increased extraversion and heightened conscientiousness. Investigations into the influence of external and internal determinants on competitive conduct, namely by Z.A Reese *et al.* (2022), have revealed that individuals with a minimal inherent competitive inclination exhibit competitive behaviour solely in contexts that explicitly necessitate it, whereas individuals with a pronounced manifestation of this trait identify competitive opportunities even in minimal competitive contexts.

Type 2 (students characterised by a low level of sociability and a high level of psychoticism) is conditionally termed "Manipulative". Manipulative behaviour is delineated as conduct aimed at exploiting, controlling, or otherwise exerting influence over others for personal gain (American Psychological Association, n.d.). A personality trait inclined towards manipulation is referred to as "Machiavellianism," characterised by a self-serving approach to interpersonal relationships and the conviction that the end justifies the means, irrespective of the ruthlessness of those means. Machiavellians regard others as tools to be manipulated to achieve their objectives, if necessary, through deliberate deceit (American Psychological Association, n.d.).

It is imperative to note that representatives of types I and II, unified by a high level of psychoticism, are characterised by high levels of creativity, curiosity, and creative curiosity. The correlation between psychoticism and creativity (notably, divergent thinking and originality) has been highlighted by M.A. Runco (2023), referencing empirical studies.

Proceeding to the delineation of Type 3 (characterised by individuals with low sociability and low psychoticism levels), this category is conditionally termed "Hermits", or "Hikikomori", indicative of a pronounced disinterest in initiating social interactions. As researchers T. Kato *et al.* (2019) noted, the "hikikomori" phenomenon, initially identified in Japan, is now recognised globally. It coincides with characteristics of Type 3 with elevated shyness and introversion, suggesting unease in social settings, resulting in self-imposed isolation and limited interaction. This behaviour aligns with social withdrawal tendencies, like hikikomori, where individuals retreat from society and favour solitude over social engagement.

P. Muris & T. Ollendick (2023) described it as "excessive social withdrawal". Predominantly affecting the youth, characteristics of these "socially withdrawn individuals" include solitude, absenteeism from educational institutions leading to potential expulsion, engagement in remote or freelance employment (freelancing), or a complete lack of employment or educational pursuits. The researchers found that contributing factors to this condition encompass certain temperamental traits, psychological states,

unfavourable family processes, including parenting styles, negative peer interactions, societal pressures, and an over-reliance on the Internet and digital platforms, constituting a complex developmental psychopathology framework. J.Y.K. Yung *et al.* (2021) made a comprehensive review of the aetiology of excessive social withdrawal, that identified commonalities among those experiencing hikikomori, such as adverse childhood events, peer victimisation, familial discord, diminished social bonds, excessive parental dependency, labour market shifts, overprotective parenting styles, psychological conditions, introversion, timidity, low academic achievements juxtaposed with lofty expectations, and the Internet usage. The occurrence of such a condition in students can be facilitated by forced social isolation. Researc by M.K. Alshammari *et al.* (2023) showed that various forms of social isolation negatively affect the mental health of students, which manifests through increased levels of stress, anxiety, depression, and emotional burnout. Z. Liang *et al.* (2021) analysed factors such as anxiety, depression, and stress levels, identifying key contributors to psychological distress during the pandemic, including academic pressure, financial difficulties, and social isolation. O.S. Avramchuk (2021) studied students' social anxiety during COVID-19 and highlighted how quarantine measures, by enabling avoidance of social correction experiences, may reinforce avoidant behaviour and cognitive strategies as significant.

Type 4 (encompassing students with high sociability coupled with low psychoticism) is called "Cooperating". The low psychoticism trait, characteristic for Type 4 according to the author's findings, among these individuals is evident in their propensity for empathy, altruism, collaboration, and engagement with their surroundings. Cooperation is elucidated as a "process wherein multiple individuals collaborate towards shared or complementary objectives" (American Psychological Association, n.d.). Such points coincide with the features of Type 4, which are likely to be easy-going, friendly, and emotionally stable, preferring cooperative and harmonious interactions. They are characterised by low levels of anxiety and stress, social comfort, and overall positive and agreeable dispositions, although they might not be driven by competitive motivations. This is in stark contrast to competitiveness, wherein one individual's pursuit of a goal diminishes the likelihood of success for others. Analogous to the animal kingdom, cooperation facilitates outcomes such as enhanced food acquisition, predator evasion, or kin survival, rendering this behaviour more adaptive (American Psychological Association, n.d.).

Empirical studies by F.M. Podshyvailov *et al.* (2020b) indicated an increase in the pressure of the academic environment on the student's personality, which forces him/her to switch from energy-saving learning methods to energy-consuming ones.

The analysis of the results showed that a highly competitive educational environment has a harmful effect on personality, causing instability and requiring significant effort to meet the demands of the environment. Individuals of the "Competitive" Type tend to have elevated levels of various negative personality traits. A competitive educational environment demands high levels of engagement, resource mobilisation, and constant adaptation to competitive pressure. This dynamic may initially be stimulating, but in the long run, it leads to exhaustion. Thus, creating a more cooperative environment where students can interact, support each other, and work toward common goals is the optimal approach for healthy personality development.

The constant depletion of personal resources forces them to rely on the resources of others through manipulative behaviour (as observed in Type 2 individuals). In addition, a high level of psychoticism is associated with a lack of empathy and increased impulsivity, which may push individuals toward manipulative strategies to achieve success. A competitive environment does not provide equal opportunities for everyone: some students adapt quickly, while others experience constant pressure. Those who struggle to maintain a high level of competitiveness may feel compelled to seek alternative ways to achieve their goals. Type 2 ("Manipulative") students resort to social and psychological mechanisms to achieve results without direct competition.

Manipulative behaviour is not always successful; when these strategies fail, students may experience frustration, a loss of control, and a decline in self-esteem. The inability to achieve desired outcomes leads to a loss of initiative and gradual disengagement from the environment. This corresponds to the characteristics of Type 3 ("Hermits"), who avoid competition, abandon personal ambitions, and transition into social withdrawal. Consequently, when manipulative strategies fail to lead to success, these individuals may withdraw from their goals, initiative, and active participation, transitioning into Type 3, which is marked by a retreat from personal aspirations and disengagement from the environment. Type 4 ("Cooperating") demonstrates a healthier form of interaction with the environment. This Type has low psychoticism, high sociability, and is focused on cooperation and collaboration. This orientation allows individuals to conserve resources and thrive in a healthy environment, where success depends on interaction with others rather than competition.

Considering the above, the educational environment should be oriented towards cooperation rather than competition, as it allows students to conserve emotional and psychological resources, fostering their development without unnecessary stress and conflict, especially in conditions of prolonged stress and permanent uncertainty. The validity of this statement is also confirmed by other studies. O.Y. Sarkisova (2009)

emphasised that among the most effective forms of student education are group, cooperative, and interactive learning strategies, which promote engagement and the development of social skills beyond formal education. Research shows that incorporating group-based cognitive activities and active interaction is key to fostering cooperation and humane relationships. Properly organised cooperation enhances personal development and academic achievement. The ability to interact and cooperate is crucial for a democratic society and for overcoming the dominance of competitive strategies.

D.W. Johnson *et al.* (2014) have conducted extensive research on the effects of cooperative, competitive, and individualistic efforts in educational settings. Their studies have demonstrated that cooperative learning environments enhance various outcomes, including achievement, motivation, and social development, while competitive settings may lead to increased anxiety and reduced collaboration. The researchers emphasised that cooperative learning is a research-supported instructional strategy that significantly improves university teaching and student outcomes.

Recent studies continue to support the positive impact of cooperative learning on student outcomes. For example, B. Öztürk (2023) examined the impact of cooperative learning on students' academic performance. The study synthesised findings from 23 meta-analyses between 2010-2021, using second-order meta-analysis. It suggests that cooperative learning is a crucial factor in enhancing student outcomes. S. Mendo-Lázaro *et al.* (2022) demonstrated that cooperative learning programmes in university settings enhanced academic goal achievement through techniques promoting high levels of responsibility and interdependence among students. F-F. Cheng *et al.* (2021) explored the impact of collaborative learning and personality traits on learning satisfaction in flipped classrooms. The researcher examined how group collaboration in flipped learning environments, where students engage in self-study outside class and interactive activities inside, influences their learning satisfaction. The study also looked at how personality traits, such as extraversion or introversion, affect students' willingness to participate in collaborative activities and, consequently, their satisfaction with the learning process. The findings highlighted the importance of both collaboration and individual personality characteristics in enhancing students' learning experiences in flipped classrooms.

The proposed study has both strengths and certain limitations. This investigation examined the types of interaction in an academic environment, delineating them through the prism of sociability versus psychoticism ratios. The research stands out for its foundation on the quadripolar model, diverging from the conventional approach of correlating individual personality traits with the observed phenomena. While the psychodiagnostic test scales serve as a viable measure for sociability, psychoticism, and other psychological indicators, their direct comparison with findings from studies employing the Big Five personality model presents challenges. An exploration into the correlations between PDT scales and the Big Five factors, particularly Openness and its six facets – Fantasy, Aesthetics, Feelings, Actions, Ideas, and Values – would enrich the discourse. Additionally, insights into variations across age and gender, and a comparative analysis involving students, graduates, and professionals, would contribute valuable perspectives.

Conclusions

Based on an in-depth analysis of empirical data, this study proposes a typology of student interaction in the educational environment, classified by the balance between sociability and psychoticism. Four types of interaction were identified. Type 1 – "Competitive" students are highly active, socially engaged and intellectually curious. They demonstrate adaptability and creativity, low introversion and shyness, which indicates social confidence. However, their increased neuroticism and emotional sensitivity indicate vulnerability. The desire for self-assertion and non-conformity pushes them to high achievement, but prolonged exposure to competitive environments can lead to emotional exhaustion, instability, and burnout due to the constant need to succeed. Type 2 – "Manipulative" – combines creativity and intellectual drive with neuroticism, introversion, and emotional instability. Despite being innovative, they struggle with stress and mood regulation. Their shyness and antisocial tendencies contrast with their desire to control social interaction. As a result, they may resort to indirect, manipulative strategies to assert influence, seeking stability through covert dominance rather than open communication.

Type 3 – "Hermits" or "Hikikomori" prefer solitude, demonstrate low curiosity and activity, and are characterised by high introversion and shyness. Their avoidance of social interaction is related to passive withdrawal rather than active rejection. They seek predictable environments and withdraw from social life, displaying patterns similar to hikikomori behaviour, where social isolation becomes a coping mechanism. Type 4 – "Cooperative" students demonstrate emotional balance, sociability and a tendency to cooperate. With a low level of neuroticism, shyness and dominance, they form stable interpersonal relationships and are resistant to stress. Although they are less active than Type 1, they thrive in groups and prefer mutual understanding over competition, preferring a supportive and harmonious environment.

The research findings indicate that a competitive educational climate can destabilise personal development, especially for Type 1 people who face unbearable pressure. This can lead to manipulative behaviour (Type 2) or, ultimately, to withdrawal from education (Type 3). In contrast, Type 4 is the most favourable,

as it supports healthy development without depleting the individual's internal resources. Thus, educational systems should emphasise cooperation rather than competition, fostering an environment that promotes emotional well-being and mutual support.

Future research should focus on the development of psychological support programmes for higher education institutions to create a supportive and sustainable academic environment, especially in the face of constant stress and uncertainty.

Acknowledgements

Conflict of Interest

None.

References

[1] Alshammari, M.K., Othman, M.H., Mydin, Y.O., & Mohammed, B.A. (2023). The effect of social isolation on the mental health of international students. *Information Sciences Letters*, 12(4), 1235-1240. doi: 10.18576/isl/120438.

[2] American Psychological Association. (2017). *Ethical principles of psychologists and code of conduct*. Retrieved from https://www.apa.org/ethics/code/ethics-code-2017.pdf.

[3] American Psychological Association. (n.d.). *APA dictionary of psychology*. Retrieved from https://dictionary.apa.org/.

[4] Araújo, F.J., de Lima, L.S., Cidade, P.I., Nobre, C.B., & Neto, M.L. (2020). Impact of SARS-COV-2 and its reverberation in global higher education and mental health. *Psychiatry Research*, 288, article number 112977. doi: 10.1016/j.psychres.2020.112977.

[5] Avramchuk, O.S. (2021). Social anxiety among students during Covid-19: The role of early dysfunctional schemes. *Psychological Journal*, 7(9), 136-145. doi: 10.31108/1.2021.7.9.11.

[6] Bielska, N.A., Melnyk, M.Yu., & Novhorodska, M.M. (2021). *Diagnosis of creativity in career guidance work: Methodical recommendations*. Kyiv: Institute of Gifted Child of the National Academy of Educational Sciences of Ukraine.

[7] Cheng, F.-F., Wu, C.-S., & Su, P.-C. (2021). The impact of collaborative learning and personality on satisfaction in innovative teaching context. *Frontiers in Psychology*, 12, article number 713497. doi: 10.3389/fpsyg.2021.713497.

[8] De Castella, K., Byrne, D., & Covington, M. (2013). Unmotivated or motivated to fail? A cross-cultural study of achievement motivation, fear of failure, and student disengagement. *Journal of Educational Psychology*, 105(3), 861-880. doi: 10.1037/a0032464.

[9] Fletcher, T.D., & Nusbaum, D.N. (2008). Trait competitiveness as a composite variable: Linkages with facets of the big-five. *Personality and Individual Differences*, 45(4), 312-317, doi: 10.1016/j.paid.2008.04.020.

[10] Fong, M., Zhao, K., & Smillie, L.D. (2021). Personality and competitiveness: Extraversion, agreeableness, and their aspects, predict self-reported competitiveness and competitive bidding in experimental auctions. *Personality and Individual Differences*, 169, article number 109907. doi: 10.1016/j.paid.2020.109907.

[11] Husky, M.M., Kovess-Masfety, V., & Swendsen, J.D. (2020). Stress and anxiety among university students in France during COVID-19 mandatory confinement. *Comprehensive Psychiatry*, 102, article number 152191. doi: 10.1016/j.comppsych.2020.152191.

[12] Jamil, M.Y. (2024). *Mann-Whitney U test: A guide to non-parametric analysis*. Retrieved from https://medicalbiochem.com/mann-whitney-u-test/.

[13] Johnson, D.W., Johnson, R.T., & Smith, K.A. (2014). Co-operative learning: Improving university instruction by basing practice on validated theory. *Journal on Excellence in College Teaching*, 25(3&4), 85-118.

[14] Karing, C. (2021). Prevalence and predictors of anxiety, depression, and stress among university students during the period of the first lockdown in Germany. *Journal of Affective Disorders Reports*, 5, 100-174. doi: 10.1016/j.jadr.2021.100174.

[15] Kato, T.A., Kanba, S., & Teo, A.R. (2019). Hikikomori: Multidimensional understanding, assessment, and future international perspectives. *Psychiatry and Clinical Neurosciences*, 73(8), 427-440. doi: 10.1111/pcn.12895.

[16] Kato, T.A., Shinfuku, N., & Tateno, M. (2020). Internet society, internet addiction, and pathological social withdrawal. *Current Opinion in Psychiatry*, 33(3), 264-270. doi: 10.1097/yco.0000000000000601.

[17] Killgore, W.D., Cloonan, S.A., Taylor, E.C., & Dailey, N.S. (2020). Loneliness: A signature mental health concern in the era of COVID-19. *Psychiatry Research*, 290, 113-117. doi: 10.1016/j.psychres.2020.113117.

[18] Kovalenko, O. (2024). Online learning in Ukraine: Challenges and tools for identifying difficulties in adaptation and socialization of Chinese students in a university environment: A case study. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 10(1), 128-141. doi: 10.52534/msu-pp1.2024.128.

[19] Letiago, G., Chernuskyi, V., Vodolazhskyi, M., Tolmachova, S., Nosova, O., Nikolska, O., & Bilopolska, M. (2024). Characteristics of risky behaviors formed against the background of prolonged social isolation during quarantine, and their impact on the health of student youth. *Bulletin of V. N. Karazin Kharkiv National University*, 32(2(49)), 151-160. doi: 10.26565/2313-6693-2024-49-03.

[20] Liang, Z., Kang, D., Zhang, M., Xia, Y., & Zeng, Q. (2021). The impact of the COVID-19 pandemic on Chinese postgraduate students' mental health. *International Journal of Environmental Research and Public Health*, 18(21), article number 11542. doi: 10.3390/ijerph182111542.

[21] Melnikov, V. & Yampolsky, L. (1985). *Introduction to experimental research of personality*. Retrieved from http://ir.nmu.org.ua/handle/GenofondUA/53911.

[22] Mendo-Lázaro, S., León-del-Barco, B., Polo-del-Río, M.-I., & López-Ramos, V.M. (2022). The impact of cooperative learning on university students' academic goals. *Frontiers in Psychology*, 12, article number 787210. doi: 10.3389/fpsyg.2021.787210.

[23] Muris, P., & Ollendick, T.H. (2023). Contemporary hermits: A developmental psychopathology account of extreme social withdrawal (hikikomori) in young people. *Clinical Child Family Psychology Review*, 26, 459-481. doi: 10.1007/s10567-023-00425-8.

[24] Öztürk, B. (2023). The effect of cooperative learning models on learning outcomes: A second-order meta-analysis. *Educational Psychology Review*, 45(2), 345-378. doi: 10.1007/s10648-022-09674-5.

[25] Podshyvailov, F., Podshyvailova, L., & Shepelova, M. (2020a). Psychological characteristics of students' types by the personality and individity integral attributes correlation. *Psychological Journal*, 6(7), 61-84. doi: 10.31108/1.2020.6.7.6.

[26] Podshyvailov, F.M., Podshyvailova, L.I., & Shepelova, M.V. (2020b). The construction of students' typology by the relation of aesthetic sensibility and depression. *Technologies of Intellect Development*, 4(3(28)). doi: 10.31108/3.2020.4.3.12.

[27] Reese, Z.A., Garcia, S.M., & Edelstein, R.S. (2022). More than a game: Trait competitiveness predicts motivation in minimally competitive contexts. *Personality and Individual Differences*, 185, article number 111262. doi: 10.1016/j.paid.2021.111262.

[28] Runco, M.A. (2023). Personality and motivation. In M.A. Runco (Ed.), *Creativity* (pp. 37-79). Cambridge: Academic Press. doi: 10.1016/B978-0-08-102617-5.00008-4.

[29] Sarkisova, O.Y. (2009). Cooperation and interaction in the world of modern trends in the development of society, education, and professional training. *Visnyk NTUU "KPI". Philosophy. Psychology. Pedagogy: Collection of Scientific Papers*, 3(27), 204-208.

[30] Stevens, C., Zhang, E., Cherkerzian, S., Chen, J.A., & Liu, C.H. (2020). Problematic internet use/computer gaming among US college students: Prevalence and correlates with mental health symptoms. *Depression and Anxiety*, 37(11), 1127-1136. doi: 10.1002/da.23094.

[31] Stevenson, A. (Ed.). (2010). *Oxford dictionary of English* (3rd ed.). Oxford: Oxford University Press. doi: 10.1093/acref/9780199571123.001.0001.

[32] Urbig, D., Bönte, W., Schmutzler, J., Zambrano, C.A.F., & Andonova, V. (2021). Diverging associations of dimensions of competitiveness with gender and personality. *Personality and Individual Differences*, 176, article number 110775. doi: 10.1016/j.paid.2021.110775.

[33] Yung, J.Y.K., Wong, V., & Ho, G.W.K. (2021). Understanding the experiences of hikikomori through the lens of the CHIME framework: Connectedness, hope and optimism, identity, meaning in life, and empowerment: Systematic review. *BMC Psychology*, 9, article number 104. doi: 10.1186/s40359-021-00605-7.

Соціальна контактність та психотизм
як предиктори типів взаємодії студентської молоді

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Анотація. Актуальність дослідження полягає в висвітленні впливу різних типів взаємодії за співвідношенням соціальної контактності та психотизму на здатність студентів адаптуватися до освітнього середовища. Оскільки заклади вищої освіти все більше зосереджуються на психологічному благополуччі та академічних досягненнях студентів, визначення сприятливих і несприятливих моделей взаємодії є важливим для створення підтримуючої навчальної атмосфери. Метою написання статті була побудова типології студентів за співвідношенням соціальної контактності та психотизму, що забезпечує взаємодію студентів з освітнім середовищем, а також визначення на її основі сприятливих та несприятливих форм такої взаємодії для особистості студента. Для збору емпіричних даних було застосовано «Психодіагностичний тест» В. М. Мельникова та Л. Т. Ямпольського та опитувальник особистісних творчих характеристик Ф. Е. Вільямса. Статистична обробка емпіричних даних здійснювалася за допомогою дисперсійного аналізу та U-критерію Манна-Уітні для виявлення відмінностей між чотирма типами взаємодії у вираженні психологічних характеристик студентів. За співвідношенням соціальної контактності та психотизму виокремлено 4 типи взаємодії студентів: конкуруючий: високий рівень допитливості, творчої допитливості, творчості, депресії, невротизму, уяви, загальної активності, товариськості, низький рівень сором'язливості, інтроверсії; маніпулюючий: високий рівень допитливості, творчої допитливості, творчості, психічної неврівноваженості, схильності до домінування, депресії, асоціальності, невротизму, сором'язливості, уяви, інтроверсії; відлюдники (хікікоморі»): низький рівень допитливості, творчої допитливості, творчості, розгальмованості, асоціальності, уяви, загальної активності, високий рівень сором'язливості та інтроверсії. співпрацюючий: низький рівень психічної неврівноваженості, схильності до домінування, депресії, невротизму, сором'язливості, інтроверсії, загальної активності, високий рівень товариськості. Практичне значення дослідження полягає в можливості застосування його результатів для вдосконалення освітнього середовища та стратегій підтримки студентів, підкреслюючи необхідність сприяння співпраці, а не конкуренції, що матиме позитивний вплив на психологічне благополуччя студентів та загальну академічну залученість

Ключові слова: особистість; типологічні властивості; співпраця; конкуренція; маніпуляція; соціальна ізоляція; освітнє середовище