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The Relationship Between Individual Factors and Critical Thinking: A Multidimensional Approach

Tamás DÁVID[1]*, Sándor-Ágoston BOTH[1], Andrea BARTA[1]

ABSTRACT. Critical thinking has received increasing attention in recent years with the aim of eliminating the shortcomings of traditional education. Numerous interventions and programmes have been created to develop this skill, which is a significant factor in students' educability, academic performance.

In spite of the rising attention, a much smaller proportion of research on critical thinking examines factors outside the classroom that nevertheless contribute significantly to critical thinking skills.

The aim of our research is to examine critical thinking dispositions and the factors that influence them, with a particular focus on conformity, religious beliefs, impulsivity and negative life events.

The research questions we formulated are as follows: Do conformity and impulsivity predict critical thinking dispositions? How do religious beliefs and negative life events predict critical thinking dispositions?

The research strategy is quantitative, predictive research, and the target population is Hungarian-speaking psychology and special education students at Babeş-Bolyai University. A non-probability, quota sampling procedure was used.

According to the results of the research, impulsivity ($p < .001$) and conformity ($p < .001$) predict lower critical thinking dispositions, while experiencing negative life ($p < .001$) events predict higher critical thinking dispositions. Religious beliefs ($p = 0.309$) did not show a significant correlation with critical thinking dispositions.

Keywords: critical thinking, conformity, religious beliefs, impulsivity, negative life events

[1] Department of Applied Psychology, Faculty of Psychology and Educational Sciences, Babeş-Bolyai University, Cluj-Napoca, Romania

* Corresponding author: dtamee21@gmail.com

1. INTRODUCTION

One of the greatest shortcomings of modern education is said to be the difficulty or lack of teaching critical thinking skills, which has been the subject of numerous studies and research projects with varying results in recent years. Paul (1992) points out that traditional school education does not encourage the development of higher-level thinking skills, such as critical thinking. Paul explains that knowledge coincides with thinking, especially effective or critical thinking. However, traditional school education, which emphasises content comprehension, is designed as if the use of memory were equivalent to knowledge. This type of lower-level learning occurs only through rote learning or association, and as a result, students memorise material without understanding its logic.

The aim of teaching critical thinking skills is to develop thinking in different fields of science and thus ensure its application in life. The traditional education system appears to be highly effective in terms of imparting subject-specific information, but it often fails to teach students how to think critically about a given topic. In the words of Donald Norman (1980), "It is strange that we expect students to learn, but rarely teach them how to learn."

Many who work in the field of critical thinking regretfully note that critical thinking skills are weak among most educated adults and children. For example, Halpern (1998) refers to research in the field of psychology and concludes that many adults, if not most, are unable to think critically in many situations. Kennedy et al. (1991) and Van Gelder (2005) also concluded that many adults lack basic reasoning skills. This tendency leads people to jump to the first explanation that seems intuitively reasonable without thoroughly examining alternative possibilities, a phenomenon that Perkins, Allen, and Hafner (1983) called "reasonable-seeming epistemology."

By investigating this specific combination of variables, this study addresses a distinct and underexplored gap in the literature. While the scarcity of prior research inherently limits direct comparative grounding, this novelty allows us to offer unique empirical insights into critical thinking.

1.1 Definition of critical thinking

The increased focus on critical thinking is a significant result of the philosophy of education movement that originated in the United States at the end of the 20th century. As a result, several approaches to critical thinking have emerged, and different disciplines and professionals have used different definitions to describe critical thinking (Lai, 2011).

The definition of critical thinking from a cognitive psychological approach is as follows: "Examining both sides of an issue, being open to new evidence that may challenge our ideas, arguing dispassionately, expecting claims to be supported by evidence, drawing conclusions from available facts, problem solving, and so on." (Willingham, 2007).

1.2 The role of personal factors in critical thinking

Critical thinking is influenced by numerous personal factors, just as critical thinking skills can have a significant impact on many aspects of our lives. Critical thinkers examine problems, ask questions, formulate new answers that challenge the status quo, oppose dogmas and doctrines, and often wield greater power in society than their numbers would suggest. It is possible that a functioning society or culture can tolerate only a small number of critical thinkers and that the acquisition, internalisation and practice of scientific and critical thinking are not encouraged (Schafersman, 1991).

Most people follow authority, therefore do not think independently. They tend to think in a desire-driven, hopeful and emotional way. This is why most people do not think critically (Schafersman, 1991).

In Halpern's interpretation (1998), improvements in critical thinking, if they occur at all, are slow and gradual, and he warns that it is not worth expecting dramatic improvements in critical thinking over time, even with educational interventions.

For this reason, the relationship between critical thinking skills and individual factors may be significant in terms of the success of educational approaches and programmes.

1.3 The relationship between critical thinking and conformity

The concept of conformity was defined by Asch (1956), who examined how people tend to align their opinions with those of the majority. According to research, there are two main mechanisms of conformity: normative influence and informational influence (Deutsch & Gerard, 1955). Normative influence describes the motivation of individuals to conform to group norms in order to cooperate with others and be accepted by the group. Informational influence refers to people using the opinions or behaviour of others as a guide when they are uncertain about something or unsure of what the right decision is, believing that the group understands better the given situation.

Conformity and global thinking styles are two interesting psychological concepts that have a significant impact on individuals between the ages of 18 and 25. This stage of life presents many challenges and opportunities as young adults enter adulthood. During this critical period, individuals are under increased

pressure to conform to social norms, expectations, and peer influences, while their cognitive abilities are also developing, allowing them to process information in a more comprehensive and sophisticated manner (Milan et al., 2023). The interaction between conformity and comprehensive thinking can have a significant impact on personal development, decision-making and identity formation. Peer pressure and social expectations can pose a challenge to the development of independent thinking, which can hinder the emergence of diverse perspectives among young adults (Milan et al., 2023).

Teaching critical thinking in the classroom builds on a rich historical and philosophical tradition – the Socratic method or elenchos (Owens, 2007). "The purpose of elenctic questioning is not only to prepare students to passively supplement their existing knowledge, but also to actively seek new learning experiences" (Paraskevas & Wickens, 2003).

Research examining the effectiveness of neo-Socratic teaching pedagogies has shown that many of them promote productive learning outcomes in disciplines as diverse as physics (Hake, 1998), political science (Kenski & Kenski, 1975), medicine (Huang, 2005), economics (Benzing & Christ, 1997), and adult vocational training (Paraskevas & Wickens, 2003).

Giancarlo and Facione (2001) examined critical thinking tendencies among university students and found that students who had developed critical thinking skills in one area tended to apply them in other areas as well. These findings suggest that critical analysis in the classroom can promote the development of critical thinking, rigorous analysis, and creative problem solving in other areas as well.

Proponents of critical thinking hope that this skill will develop conceptual analysis, clarification of arguments, and critical evaluation, ultimately contributing to informed, rational, and tolerant decision-making in a democratic society. However, Milan and colleagues (2023) caution that overemphasising critical thinking can lead to a one-sided approach in which students may believe that this is the only valid way to understand reality. This absolutism can stifle creativity, discourage speculative thinking, and result in intolerance towards alternative modes of expression and methods of acquiring knowledge.

1.4 The relationship between critical thinking and religiosity

The definition of religiosity itself poses a challenge for experts. Schnitker and Emmons' theory, interpreting religion as a search for meaning in our lives affects three psychological areas: motivation, cognition and social relationships (Emmons & Paloutzian, 2003). The cognitive aspects are related to God and purposefulness, the motivational aspects to the need for control, and the search for religious meaning is also woven into social communities (Emmons & Paloutzian, 2003).

Precisely because of the high degree of subjectivity of the concept, the terms religious beliefs or religiosity are used less and less in modern clinical psychology, with the term spirituality being used instead, as this concept better reflects the role of personal, subjective beliefs (Argyle, 2005).

To date, there has been little scientific research on the relationship between critical thinking and religious beliefs, but there are numerous studies examining the relationship between various paranormal beliefs, pseudoscientific beliefs, and conspiracy theories. In many cases, these studies also mention traditional religious beliefs as a dependent variable (Dyer & Hall, 2019; Wilson, 2018).

James A. Wilson (2018) examined changes in paranormal beliefs and religiosity as a result of a programme designed to develop critical thinking. They developed a number of belief surveys to measure how much control a person feels they have over their life, how willing they are to apply magical thinking, or how open they are to accepting topics based purely on belief. For example, how much someone feels that they control their own destiny (internal control) as opposed to how much they are at the mercy of external forces (external control, control situation); whether someone interprets random events as if they were directly related to them (referential thinking).

The critical thinking skills development programme appeared to cause a significant decrease in participants' paranormal and pseudoscientific beliefs, but interestingly, there was also a demonstrable change in traditional religious beliefs, namely a decrease in participants' convictions (Wilson, 2018). Participants' belief in their religious convictions showed an average decline of 16.8% (Wilson, 2018).

At the same time, research in the field of religious education puts critical thinking and students' personal beliefs in a different perspective. According to this, critical thinking skills do not necessarily have to refute students' personal religious beliefs; in fact, religious education can even develop critical thinking skills (Dyer & Hall, 2019).

To this day, it remains a challenge to develop an integrative education system that would be capable of developing scientific thinking as well as personal convictions (Dyer & Hall, 2019). Among the attempts to develop such educational models, the DBUS learning model stands out as an integrative discovery model based on the integration of the unity of science. Through this learning model, students are able to develop their learning skills constructively and meaningfully, thereby shaping their thinking skills and personal convictions (Khasanah et al., 2019).

Critical thinking is essential for the moral development of citizens in democratic, multicultural and pluralistic societies, as the discussion of different epistemological and normative assumptions requires citizens to listen to each other and develop reflective civic and inclusive civic discourse (Jarmer, 2024).

Teaching must be objective, neutral and critical, which means that it must neither promote nor condemn religions or worldviews (Jarmer, 2024). This does not mean that religious education cannot be affirming or critical. For example the general aim of Norwegian religious education is to approach religion from a wide range of academic perspectives, from internal viewpoints to critical, external viewpoints. According to Bråten and Skeie (2020), another goal of religious education is to develop a critical understanding of religion as a diverse and multidimensional phenomenon and to develop cultural competence that enables students to become competent citizens in a democracy operating in a pluralistic society.

1.5 The relationship between critical thinking and negative life events

Few studies have examined the relationship between critical thinking and real-life behaviour, so further empirical data is needed to gain a more accurate understanding of how critical thinking also influences everyday decisions and challenges. However, if critical thinking does indeed influence the outcomes of everyday decisions and actions, then this effect may also depend on individual characteristics, such as age or educational attainment.

According to Howenstein, Bilodeau, Brogna and Good (1996), the number of years spent in school is a significant factor in the development of critical thinking. Butler (2012) supports this correlation with data: in his research, years of education – rather than age – were the best predictors of critical thinking. However, these results may only reflect individual differences and are not necessarily the consequences of life events or outcomes, so they should be interpreted with caution.

In reality, people do not systematically analyse and evaluate all available information before making every decision (Ajzen, 2011). Behaviour can be the result of conscious processes, but it can also be the product of automatic mechanisms in which the individual is not necessarily conscious (Wood, Quinn & Kashy, 2002). According to Daniel Kahneman's (2011) theory, there are two types of thinking: the first is intuitive, rapid thinking, which we use in routine situations, and the second is logical, deliberate thinking, which we use mainly in new situations and when making important decisions.

University students' decisions, as well as the skills and willingness with which they consider them, can be well understood based on the Reflective Judgment Model (RJM) developed by King and Kitchener (2004). This model is similar to models of critical thinking and assumes that cognitive processes undergo development, so that reasoning becomes increasingly complex by the end of adolescence and into adulthood. An individual's assumptions about their beliefs and knowledge change, gradually enabling them to consider less clear-

cut problems, ambiguous questions and complex dilemmas. This development moves from dualistic (black-and-white) thinking to a relativistic (more nuanced, 'grey area') approach, with the individual able to apply one or the other depending on the situation. Most university students are at the fourth stage of cognitive development, the so- called "quasi-reflective reasoning" level (King & Kitchener, 2004). At this level the nature and verification of knowledge is still personal and situation-dependent.

In their research, Franco et al. (2017) identified four clusters among university students based on critical thinking and the negative consequences of everyday life. The first is the reflective group: these students adapt well to university life and experience few negative consequences. The second, the risk-taking group: these students are prone to impulsive and risky behaviour. They are also characterised by academic negligence, such as absenteeism and cheating on exams. The third group, the "lost in transition" group: these students have difficulty adjusting to university life. They generally have difficulty adjusting to university requirements, which also has a negative impact on their academic performance. The fourth group is the mature group: these older students tend to be careless with their finances and possessions. Most of them work and have to balance their university studies with other commitments.

According to their findings, age is an important factor in the first and fourth clusters, as the older a student is, the more likely they are to neglect their personal belongings and finances and make rash decisions, while not showing a lack of impulse control or neglecting their health. At the same time, these characteristics do not lead these students to neglect their studies. Furthermore, an unimportant factor in the third and fourth clusters, i.e. male students, are those who face greater difficulties in transitioning to university and have not yet adapted to the new requirements of higher education. Negative consequences are more common among male students in their everyday lives, such as poor time management, neglect of their health, and carelessness with their personal belongings and finances. As a result, their academic life also appears to be somewhat neglected. Last but not least, hypothesis testing skills are strongly related to the second cluster, i.e. students who excel at formulating and testing hypotheses and apply an empirical approach to their everyday decisions are more prone to risk- taking. These students are not yet able to control their impulses, so they may engage in risky behaviour. Conversely, students who excel at analysing arguments are less likely to belong to the second cluster (Franco et al., 2017).

According to the meaning-making model, negative life events (stress, trauma, etc.) often create a profound discrepancy between an individual's core beliefs and the appraised meaning of the stressor (Park, 2010). This discrepancy generates psychological distress, which functions as a primary drive for meaning-

making efforts. Crucially, when an event cannot be assimilated into existing beliefs, individuals must engage in accommodation—a deliberate cognitive process of restructuring their core beliefs, allowing their reorientation to more promising goals and thus promoting better adjustment (Park, 2010).

These positive changes share the common factor of struggling with adversity, hence we refer to them collectively as adversarial growth (Linley & Joseph, 2004). It is through this process of struggling with adversity that changes may arise that propel the individual to a higher level of functioning than that which existed prior to the event (Linley & Joseph, 2004). These positive changes have been labelled posttraumatic growth, stress-related growth, perceived benefits, thriving, blessings, positive by-products, positive adjustment, and positive adaptation. In this process, the development of critical thinking skills might be a key element in reevaluating the existing situation.

1.6 The relationship between critical thinking and impulsivity

Impulsivity is a central element of human cognition and behaviour. Controlling external stimuli, thoughts or response tendencies requires factors that have a wide-ranging impact on our everyday lives, cognition and behaviour (Stahl et al., 2014). For example, when driving to work in the morning, we may be exposed to a number of external influences, such as a phone call, that can distract us from getting to work safely.

Recent theoretical and empirical research on impulsivity, impulse control, and inhibitory function suggests that there are at least three main components of interference control (Stahl et al., 2014). Goal-directed behaviour can be disrupted by stimuli in the environment, stimulus representations stored in memory, or tendencies to activate involuntary or dominant responses (Stahl et al., 2014). Controlling interference due to external stimuli, internal representations, and response tendencies is a fundamental part of impulse control and is closely related to motivational processes (Nigg, 2000), such as delayed gratification (Mischel et al., 2011). Impulse control can be understood as the set of processes that enable individuals to set a long-term goal system and to maintain and achieve these goals without being interrupted by interfering impulses (Stahl et al., 2014).

However, how does all this relate to critical thinking? Some studies have compared certain differences between impulsive and reflective thinkers (Kruijt et al., 2022). Impulsive people are characterised by more impulsive thinking, which leads to quick and sometimes inaccurate decisions, so we can assume that they use critical thinking skills less frequently (Baron, 2019). In contrast, reflective thinkers carefully gather information and evaluate their actions (Kruijt et al., 2022). This active, open-minded thinking allows them to better evaluate information (Baron, 2019).

However, certain studies comparing people prone to impulsive and reflective thinking styles in terms of their critical evaluation of various social media content failed to show any significant results between the two groups, thus conclusion that impulsive people do not have lower critical thinking skills (Kruijt et al., 2022).

Research conducted among students shows different results (Kertiyani & Sarjana, 2022). In this research, cognitive style referred to reflective and impulsive cognitive styles. Reflective students use an analytical process and have cognitive maturity. They tend to answer questions slowly but carefully, and their answers are usually correct. In contrast, impulsive students are those who solve questions quickly but with less accuracy, and their answers are often incorrect (Kertiyani & Sarjana, 2022).

Another study examining prospective natural scientists showed that there was no significant difference in critical thinking levels between different cognitive styles, but at the same time, no one from any group produced the highest level of critical thinking. (Vranic et al. 2019) (Yasir & Dwiyanti, 2023). However, reflective science teacher candidates have a higher level of critical thinking than impulsive teacher candidates in ethnoscience learning, although the differences are not significant (Yasir & Dwiyanti, 2023).

Impulsivity has also been linked to constructive thinking, which, although a different process, is closely related to critical thinking and they complement each other. Both play an important role in problem solving, decision making and information evaluation (Urben et al., 2015). This ability, a personality trait, shapes emotional and rational attitudes to changing circumstances. It is based on sensitivity and openness to change, which improves the chances of successful adaptation (Epstein & Meier, 1989).

In adolescents with conduct disorder, it was observed that this way of thinking was less prevalent and that inflexible, black-and-white thinking and superstition were much more characteristic of them (Urben et al., 2015). This may be due to the fact that impulsivity or a lack of sustained attention (i.e., poor behavioural control responses) causes people to form strong personal convictions, such as not daring to talk about something they really want because they fear it may prevent it from happening (Urben et al., 2015).

2. OBJECTIVE

The aim of our research is to examine the personal dispositions described above in relation to critical thinking, thereby contributing to a deeper understanding of the topic and potentially identifying some areas that, if taken into account by

professionals, could lead to better critical thinking skills. In our research, we seek to answer whether conformity and impulsivity predict a lower critical thinking disposition, while religious beliefs and negative life events predict a higher critical thinking disposition.

3. HYPOTHESES

H1. Higher levels of conformity and impulsivity predict lower critical thinking dispositions.

First and foremost, conformity – according to Asch (1956) – refers to the tendency to align oneself with the majority opinion, often at the expense of individual autonomous thinking. Deutsch and Gerard (1955) also pointed out that both normative and informational influence can encourage individuals to accept the opinions of others without critically evaluating them. Young adults are particularly sensitive to this pressure (Milan et al., 2023), as their identity and independent thinking skills are still developing.

Furthermore, Kerry S. Walters (1987) emphasises that intellectual conformity poses a threat to critical thinking, as uncritical conformity leads to passive acceptance of existing knowledge rather than active pursuit of new knowledge. All of this is consistent with our findings, which show that higher conformity is associated with a lower propensity for critical thinking.

Secondly, impulsivity, as a lack of behavioural inhibition, is associated with forms of behaviour that are often incompatible with long-term goals (Stahl et al., 2014). Impulsive people tend to make quick, often inaccurate decisions and weigh information less carefully (Baron, 2019). In contrast, individuals who are prone to reflective thinking process information more thoroughly and are more analytical (Kruijt et al., 2022). This is also evident, for example, in the recognition of fake news: impulsive thinkers are more likely to be misled, while reflective thinkers are more effective at identifying it (Pennycook & Rand, 2021; Batailler et al., 2022).

However, the evidence is not entirely clear. Some studies have found no significant difference in critical thinking between people with impulsive and reflective cognitive styles (Kruijt et al., 2022), especially in certain contexts, such as evaluating social media content. In the school environment, however (Kertiyani & Sarjana, 2022), impulsive style was a disadvantage in critical thinking, but with appropriate educational strategies (e.g., PDEODE), this disadvantage could be reduced.

H2. Religiosity and experiencing negative life events predict a higher critical thinking disposition.

First, the relationship between religious beliefs and critical thinking is complex, but research by Wilson (2018) and Dyer & Hall (2019) show that programmes designed to develop critical thinking, even if not directly targeting religious beliefs, resulted in a significant decrease in participants' religious beliefs. Religious students also typically scored higher on psychological characteristics such as magical ideation, referential thinking, or absorption.

At the same time, research by Dyer and Hall (2019), among others, points out that certain types of religious education can develop critical thinking, especially if it is multi- perspective, reflective, and artificially based interpretations. For example, some studies have shown that children's development from more religious families was also positively influenced when they were able to discuss religious topics with their parents, which can lead to the development of prosocial behaviours and skills and build bridges between generations (Bartkowski et al., 2008). At the same time, there are also findings that show that while fundamentalist religions correlate negatively with openness, which is an important subscale of critical thinking, religions that emphasise acceptance correlate positively with it (Baron et al., 2008).

A recent study confirmed that students who engage more in spiritual and religious activities reported a significantly higher mean score in stress reduction compared to those who engage less (Orekoya, 2025). The study found that religious coping strategies are more impactful than other methods for stress reduction among undergraduates, reinforcing the descriptive results. Under reduced stress students can preform better, while they can further develop their thinking skills, such as their critical thinking skills.

Secondly, although the relationship between critical thinking and the experience of negative life events has been little explored, some findings suggest that individual life experiences, especially those with negative consequences, often require cognitive restructuring, during which individuals must re-evaluate their own experiences, beliefs and decisions. In many cases, this process promotes the development of deeper reflective thinking, which is the basis of critical thinking (King & Kitchener, 2004). Furthermore, according to research by Franco et al. (2017), it has been observed among university students that groups who have faced more negative everyday life events were more inclined to restructure their cognitive patterns and thus show improvement in certain aspects of critical thinking, especially when these experiences were processed through reflection.

Accord to Parks (2010) the discrepancy between core beliefs and the appraised meaning of the stressor creates psychological distress which functions as a primary drive for meaning-making efforts, and these efforts can lead to more critical approaches in evaluating and adjusting to negative life events.

4. METHODS

4.1 Participants

Multiple linear regression was used to test the hypotheses. Based on the G*Power program, with a medium effect size (r= 0.15) and 80% statistical power, 68 participants were needed to perform the multiple linear regression. The sample reached the required number of participants in both cases.

The questionnaire was completed by 223 Hungarian-speaking students from the Faculty of Psychology and Educational Sciences at Babeş-Bolyai University. During data collection, students majoring in psychology and special education were surveyed. In both cases, undergraduate students were included in the research. The sampling method used was convenience sampling, specifically quota sampling, which sought to improve representativeness.

The sample consisted of participants aged 18-38 (M=20.60 SD=1.80), of whom 207 were women (92.8%) and 16 were men (7.1%). The distribution by subject shows that 148 psychology students (66.36%) and 75 special education students (33.63%) participated in the research, while 74 (33.18%) were from the first year, 84 were in their second year (37.66%), and 65 were in their third year (29.14%). During sampling, an attempt was made to establish quotas based on the two variables discussed above (year and major) in order to ensure representativeness. As a result, 18 first-year special education students (8.7%), 27 second-year special education major students (12%), 30 third-year specializing in special education (13%), 55 first-year psychology students (25.1%), 56 second- year psychology students (25.5%) and 35 third-year psychology students (15.6%) took part.

4.2 Instruments

During the research, a total of six questionnaires were used, completed once by each participant. The six questionnaires used were as follows: demographic questionnaire, Student-Educator Negotiated Critical Thinking Dispositions Scale (SENCTDS), Hungarian standardised version of Eysenck's "Impulsivity-Risk Taking-Empathy" (IIKE) questionnaire, shortened version of Real-World Outcomes (RWO) Questionnaire, Mehrabian & Stefl Conformity Scale, Tobacyk Belief Scale.

In the questionnaire on demographic data, we asked about gender, age, field of study, year of study.

The Student-Educator Negotiated Critical Thinking Dispositions Scale (SENCTDS) is a 21-item tool that measures six dispositions: reflective ability, attentiveness, openness, organisation, perseverance and intrinsic motivation. Participants were asked to rate their agreement with each statement on a 7-

point Likert scale, where 1 (strongly disagree) and 7 (strongly agree). The reliability of the scale is .82 based on Cronbach's alpha, which indicates good internal consistency (Quinn, 2020).

From the *Hungarian standardised version of Eysenck's "Impulsivity-Risk Taking- Empathy"* (IIKE), we used the impulsivity subscale, which consists of 21 items. Participants had to indicate whether the given statement was true or false for them. The reliability of the scale based on Cronbach's alpha is .78, which indicates acceptable internal consistency. (Kozéki, 1998).

The *shortened version of Real-World Outcomes* (RWO) Questionnaire was used, which consists of 21 items. Participants had to indicate whether the given statement was true or false for them in the past year. Questions 1-3 refer to neglecting health, questions 4-6 refer to mismanagement, questions 7-9 measure slackness, questions 10-13 measure poor impulse control, questions 14- 17 measure academic negligence, and questions 18-21 measure rashness. The reliability of the scale is .72 based on Cronbach's alpha, which indicates acceptable internal consistency (Franco & Almeida, 2017).

The *Mehrabian & Stefl Conformity Scale* is a self-report conformity scale consisting of 11 items. Participants were asked to rate the extent to which each statement applied to them on a scale of 1 (Not at all true) to 5 (Completely true). The reliability of the scale is .78 based on Cronbach's alpha, which indicates acceptable internal consistency (Mehrabian & Stefl, 1995).

A *subscale Tobacyk Belief Scale*, which consists of 4 items. Participants had to rate on a scale of 1 to 5, where 1 – I do not believe in this at all, 2 – I rather doubt it, 3 – I am neither convinced nor unconvinced, 4 – I am more convinced than unconvinced, and 5 – I am completely convinced. They had to indicate how convinced they were about the given statement. The reliability of the scale is based on Cronbach's alpha .82, which indicates good internal consistency (Tobacyk, 2004).

4.3 Research design

In the study, a cross-sectional predictive research design was used in order to explore and understand in more detail the relationship between critical thinking disposition and the measured intrapersonal factors. The predictive design is important because it allows to investigate not only the relationship itself, but also the tendency of critical thinking disposition based on individual psychological characteristics. At the same time, the results obtained in this way and the conclusions drawn from them may be more relevant in how traditional teaching methods could be modified.

4.4 Procedure

Participants provided their informed consent for the use of their data for statistical analysis. The questionnaire was administered via the Google Forms platform and required approximately 15 to 20 minutes to complete per participant. Participation in the study was voluntary, and no randomization was applied.

4.5 Statistical analyses

As a first step, we examined the normality and the descriptive statistical data in our sample. We examined both demographic variables and the independent variables used in the research. The examination of standardised residuals is particularly important in the case of the outcome variable, critical thinking skills. Based on the Shapiro-Wilk test indicators, the test is not significant, so it can be concluded that the sample is normally distributed. The histogram also supports this conclusion. The relationship between each predictor and the outcome variable was linear. Multiple linear regression was used to test our hypotheses in both cases. This allowed us to examine the relationship between the personal factors we studied and critical thinking tendencies, we also examined the extent to which certain variables predict critical thinking dispositon. Furthermore, we were able to demonstrate the combined predictive value of negative and positive predictors.

5. RESULTS

5.1 Descriptive statistical results

There were 223 participants in the entire study, and the normality of the entire sample for the predictor and outcome variables were all examined. No one was excluded from the study. The distribution of the different variables was separately examined, comparing each value to the normal distribution, and classifying them as skewed to the right or left, or peaked or flattened in the analysis. According to the kurtosis and skewness indicators, all of the variables examined fall within the -1 to +1 interval. At the same time, we also used the Shapiro-Wilk test for normality testing with regard to the regression model. In the case of critical thinking dispositon, the Shapiro-Wilk test shows no significant deviation from normal distribution.

Table 1. *Descriptive statistics*

	N	M	SD	Min	Max	Skewness	Kurtosis
CritThink	223	5.01	0.65	3.33	6.67	0.06	-0.44
Impulse	223	1.61	0.19	1.0	2.00	-0.42	-0.30
NegLifeEv	223	1.60	0.17	1.14	1.95	-0.25	-0.59
SocCom	223	2.76	0.58	1.00	4.00	-0.33	-0.05
Reli	223	3.49	1.02	1.00	5.00	-0.40	-0.59

Note: CritThink = Critical thinking, Impulse = Impulsivity, NegLifeEv = Negative life events, Reli = Religiosity

5.2 Predictive statistical results

H1. Higher levels of conformity and impulsivity predict lower critical thinking skills.

Table 2. *Results of multiple linear regression on the predictive effect of impulsivity and conformity on critical thinking*

		95% CI for B					
Variable	B	LL	UL	SE B	β	R	R^2
Constant	8.15	7.41	8.90	0.37		0.51	0.26
Impulsivity	-1.40	-1.85	-0.95	0.22	-0.35***		
Conformity	-0.39	-0.52	-0.27	0.06	-0.35***		

*Note: Results were obtained from 223 participants. CI = Confidence Interval LL = Lower Limit UL = Upper Limit ***p < .001.*

Multiple linear regression was used to predict critical thinking, examining the effects of two negative predictors, impulsivity and conformity. The analysis yielded a statistically significant model, R = .51, R^2 = .26, which means that the model explained 26% of the variability of critical thinking. Impulsivity proved to be a significant negative predictor, B= –1.40, 95% CI [–1.85, – 0.95], SE = 0.22, β = –.35, p < .001. This result suggests that higher impulsivity is associated with lower critical thinking dispositions. Conformity was also significantly negatively related to critical thinking, B= –0.39, 95% CI [–0.52, –0.27], SE= 0.06, β= –.35, p< .001, meaning that higher levels of conformity were also associated with lower critical thinking dispositions.

Table 3. *Results of multiple linear regression on the predictive effect of negative life events and religiosity on critical thinking (95% CI for B)*

Variable	B	LL	UL	SE B	β	R	R^2
Constant	3.47	2.67	4.27	0.40		0.28	0.08
NegLifeEv	1.04	0.57	1.51	0.23	.28***		
Religiousness	-0.04	-0.12	0.03	0.04	-.06		

*Note: The results were obtained from 223 participants. NegLifeEv = Negative Life Events CI = Confidence Interval LL = Lower Limit UL = Upper Limit ***p < .001.*

We examined the positive predictors of critical thinking in a separate model, where we analysed the role of experiencing negative life events and religiosity. The regression model proved to be significant, R = .28, R^2 = .08, which means that the model explains 8% of the variability of critical thinking.

Experiencing negative life events was a statistically significant positive predictor, B= 1.04, 95% CI [0.57, 1.51], SE = 0.23, β = .28, p < .001, meaning that the more negative life events the respondent experienced, the higher their level of critical thinking tendency. Religiousness did not prove to be a significant predictor, B= –0.04, 95% CI [–0.12, 0.03], SE = 0.04, β = –.06, p = 0.309, so this variable did not contribute significantly to the prediction of critical thinking skills in this model.

6. INTERPRETATION OF RESULTS AND CONCLUSIONS

When interpreting these results, it is critical to note that the sample's homogeneity, specifically the high proportion of female participants (92.8%) and the focus on a single university's psychology and special education students, inherently limits the external validity of the findings.

In our first hypothesis, we examined whether higher levels of conformity and impulsivity predict lower critical thinking skills. Based on the statistical results, the model significantly explains 26% of the variability in critical thinking, meaning that the more conformist a person is, the more likely they are to have weaker critical thinking skills.

This is not an unexpected result, as according to Asch's (1956) definition of conformity. Young adults are particularly sensitive to this pressure (Milan et al., 2023), as their identity and independent thinking skills are still developing.

Furthermore, our findings are supported by Kerry S. Walters' (1987) study, which argues that intellectual conformity is dangerous because it leads to passive acceptance of existing knowledge.

Impulsivity also proved to be a significant negative predictor. The current study is consistent with the findings of other authors who assumed a significant relationship between the two variables and, on the other hand, pointed out that people with an impulsive cognitive style have a weaker tendency towards critical thinking. (Baron, 2019; Batailler et al., 2022; Pennycook & Rand, 2021). In the case of students, this is mainly confirmed by the research of Kertiyani and Sarjana, who pointed out that students with a more impulsive cognitive style are more prone to making faster and less accurate decisions (Kertiyani & Sarjana, 2022). Our results contradict other studies that found no significant relationship between impulsivity and critical thinking (Kruijt et al., 2022).

Our second hypothesis, that religiosity and experiencing negative life events are significant predictors of critical thinking, was only partially confirmed. We based our hypothesis on the results of studies that showed a significant relationship between paranormal beliefs and religiosity (Eder et al., 2011). Certain studies have shown that programmes aimed at developing critical thinking were able to reduce belief in paranormal beliefs, while at the same time causing a change in the personal beliefs of religious people (Wilson, 2018). Contrary to these findings, our research confirmed that there is no direct correlation between critical thinking and religiosity. Although previous studies have not examined religiosity in relation to critical thinking, numerous other studies have examined variables related to critical thinking or its subscales, such as racism. One such study found no relationship between church attendance, strength of belief, and racism, and found that orthodox believers were only slightly more prejudiced than relativists (Duriez & Hutsebaut, 2000).

In contrast, experiencing negative life events predicts a higher level of critical thinking. Based on the statistical results, the model is significant, and experiencing negative life events explains 8% of the variability in critical thinking skills, meaning that experiencing negative life events can have an impact on critical thinking skills. Although this is an inadequately researched topic, our results support the existing literature, which suggests that individual life experiences, especially those with negative consequences, may influence the functioning of critical thinking (Franco et al., 2017). According to the reflective judgement model, negative life events often require cognitive restructuring, during which individuals must re-evaluate their own experiences. In many cases, this process promotes the development of deeper reflective thinking, which is the basis of critical thinking (King & Kitchener, 2004).

7. LIMITATIONS OF THE RESEARCH AND OPPORTUNITIES FOR IMPROVEMENT

Our research is innovative in the sense that other studies have not yet examined critical thinking tendencies in relation to these personal variables mentioned above. In many cases, we did not have access to previous research specifically related to the variables under investigation, so in many cases we formulated our hypotheses and explained our conclusions based on similar theoretical constructs that had been investigated previously. The literature on critical thinking is even more lacking in research conducted in the Hungarian speaking population. For this reason, the results must be supported by other studies in order to be able to draw general conclusions.

The homogeneity of the sample is also considered a limitation in our research. Although this is not confirmed by previous studies, it is worth raising the question of whether university students studying psychology or special education differ significantly from their peers studying other subjects in terms of the variables examined. At the same time, in the case of religiosity, for example, it would be worth clarifying which religion and how fundamentalist the participants' beliefs are, which could also nuance the relationship with critical thinking. In the future, it would be worthwhile to conduct more inclusive research covering more areas, possibly covering different age groups and social classes.

Another limitation may be the sampling method used, which is non-probabilistic and therefore does not guarantee the representativeness of the sample. However, the quota sampling method was used precisely for this reason, as it allowed us to improve the distribution of our sample in relation to the distribution of the population, thus increasing its representativeness.

We see the long-term perspective for the application of our results primarily in drawing attention to aspects of the traditional higher education system which, although they can be considered intrapersonal, nevertheless deserve significant attention from the point of view of critical thinking. At the same time, there are already existing programmes whose certain elements would be particularly important to transfer to Romanian higher education. A study aimed at exploring the effectiveness of the PDEODE (Predict - Discuss - Explain - Observe - Discuss - Explain) learning strategy on the critical thinking skills of students at Ronggolawe University in Indonesia, taking into account the differences in cognitive styles between reflective and impulsive learners, showed that the PDEODE learning strategy proved to be effective among both impulsive and reflective learners. Reflective learners were more likely to think thoroughly and deliberately, while impulsive learners responded more quickly but often inaccurately.

The strategy promoted students' active participation, independent thinking, reasoning and problem-solving skills in the online environment (Wulandari, 2021).

Another technique used to develop critical thinking is the "5 Whys" technique. The essence of this technique is to ask the question "Why?" at least five times in succession about a problem or phenomenon, asking again after each answer. In Herbert Nold's (2017) research, although the independent effect of this technique was not measured, when applied as part of the overall learning methodology it showed significant development in the critical thinking of university students thinking. According to the students' self-assessment, their level of critical thinking increased in the during the course, and this increase was statistically significant ($t = 2.18$, $p < .05$).

Statements and declarations

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