

The Interaction Between Critical Thinking, Education and Belief in Conspiracy Theories among Young People (Aged 25–30)

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Abstract. The goal of educational institutions (especially universities) is to foster critical thinking. However, with the rising popularity of social media and the rapid spread of unchecked information there, more and more people, especially young ones, are inclined to believe in conspiracy theories. This raises the question of whether university students are truly being taught critical thinking skills that would help combat misinformation. Therefore, this study attempts to analyze the interaction between education, critical thinking, and belief in conspiracy theories among young people (aged 25–30). The study involved 73 participants ($M = 26.9$; $SD = 1.7$). 36 have a university education (bachelor's or master's degree), 37 a nonuniversity education (secondary, secondary with professional qualification, or nonuniversity bachelor's degree). Participants were provided with instruments to determine their level of belief in conspiracy theories and their critical thinking. The results show that critical thinking fully mediates the relationship between education and belief in conspiracy theories. Additionally, individuals with a university education have a higher level of critical thinking and are less likely to believe in conspiracy theories compared to those without a university education. Finally, a significant negative correlation was found between the critical thinking of young people and their belief in conspiracy theories.

Keywords: conspiracy theories, critical thinking, education.

Jaunų žmonių (25–30 m.) kritinio mąstymo, išsilavinimo ir tikėjimo sąmokslų teorijomis sąveika

Santrauka. Švietimo įstaigų (ypač universitetų) tikslas – skatinti kritinį mąstymą. Vis dėlto, populiarėjant socialiniams tinklams ir ten greitai plintant nepatikrintai informacijai, vis daugiau žmonių, ypač jaunų, yra linkę tikėti sąmokslų teorijomis. Tai verčia susimąstyti apie tai, ar studentai universitetuose iš tiesų yra išmokomi kritinio mąstymo įgūdžių, kurie padėtų kovoti su dezinformacija. Tad šiame tyrime bandoma išanalizuoti jaunų žmonių (25–30 m.) išsilavinimo, kritinio mąstymo ir tikėjimo sąmokslų teorijomis sąveiką. Tyrimo dalyvių buvo 73 ($M = 26,9$; $SD = 1,7$), iš jų 36

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turi universitetinį išsilavinimą (bakalauro arba magistro laipsnį), 37 – neuniversitetinį išsilavinimą (vidurinį, vidurinį su profesine kvalifikacija arba neuniversitetinį bakalauro laipsnį). Dalyviams pateikti įrankiai, leidžiantys nustatyti jų tikėjimo sąmokslų teorijomis ir kritinio mąstymo lygį. Rezultatai rodo, kad kritinis mąstymas visiškai medijuoja ryšį tarp išsilavinimo ir tikėjimo sąmokslų teorijomis. Be to, turinčių universitetinį išsilavinimą asmenų aukštesnis ir kritinio mąstymo lygis, taip pat jie mažiau tiki sąmokslų teorijomis nei neturintys universitetinio išsilavinimo. Galiausiai, nustatytas reikšmingas neigiamas jaunų žmonių kritinio mąstymo ir tikėjimo sąmokslų teorijomis ryšys.

Pagrindiniai žodžiai: sąmokslų teorijos, kritinis mąstymas, išsilavinimas.

Introduction

Conspiracy theories have become increasingly relevant in recent times, frequently appearing in the media, press, and social networks. They are considered as a perspective on historical, current, or future events that attributes the primary cause to a secretive group of powerful individuals who act behind the scenes for their personal gain, often at the detriment of the public interest (Uscinski, 2018). Their prevalence has a significant impact on society, including political decisions, public health, and social relationships. For example, during the COVID-19 pandemic, conspiracy theories caused significant chaos and distrust in official sources, leading people to refuse safety measures, complicating pandemic management (Moffitt et al., 2021). Following Donald Trump's defeat in the 2020 election, conspiracy theories about "stolen elections" caused distrust in the electoral system and violent attacks such as the storming of the Capitol (Moffitt et al., 2021). These examples show that conspiracy theories not only mislead people but can also have serious consequences for society.

Although conspiracy theories are not a new phenomenon, their popularity in recent years is inseparable from the expansion of social networks. These platforms allow information to spread quickly and widely, regardless of its accuracy or reliability. Indeed studies show that social media provides a space where unchecked information can flourish and conspiracy theories are amplified (Allington et al., 2021; Manalu et al., 2018). Lately social media usage has reached unprecedented levels worldwide, with over half of the world's population engaging on these platforms, leading to greater exposure to both credible and misleading information (Kemp, 2024; McGrew et al., 2018). In 2024, there were 5.04 billion (62.3% of the world's population) active social network users, an increase of 266 million or 5.6% compared to the previous year (Kemp, 2024). This trend underscores how the digital environment facilitates the rapid spread of conspiracy beliefs, which can impact public perception on a global scale.

Young people are particularly vulnerable to the influence of fake news, which may be related to their more frequent use of social media. A study by Manalu et al. (2018) revealed that younger individuals, aged 15–30, are especially sensitive to the impact of fake news, including its dissemination, due to the greater amount of time spent on social networks. Additionally, an analysis by McGrew et al. (2018) showed that students and pupils often have difficulty recognizing the reliability of information. Meanwhile, Allington et al. (2021) found that individuals inclined to trust conspiracy theories are more likely to use

social networks as their primary information source rather than traditional media such as radio or newspapers.

Therefore, it is not surprising that young people, encountering such a large amount of information online, cannot always recognize what is true and what is false, what is conspiracy and what is scientific evidence. However, are they being taught to do this? One of the main goals of any educational institution or system (especially universities) is to promote critical thinking among students (Nickname & Royafar, 2019). Critical thinking helps to constructively review a situation and belongs to the category of rational thinking (Nickname & Royafar, 2019). For this study, critical thinking is defined as a “cognitive style” that enables individuals to evaluate information rationally and distinguish fact from fiction. Gjonneska (2021) characterizes critical thinking as a personal cognitive approach that encompasses skepticism, open-mindedness, and analytical capacity, helping individuals critically assess information in uncertain situations. Therefore, supposing that university students are taught critical thinking skills, one can assume that people with a higher level of education are more likely to seek reliable sources, critically evaluate various theories, and reject those that do not support scientific facts. Furthermore, higher education should lead to greater trust in official institutional sources and scientific research, reducing the likelihood of accepting beliefs that contradict empirical evidence (van Prooijen, 2017).

However, recently, there has been increasing concern about a decline in critical thinking skills, especially regarding the evaluation of conspiracy theories (Peters & Besley, 2020). This indicates that to understand whether education indeed promotes critical thinking and whether having this skill reduces belief in conspiracy theories, broader analysis is necessary. It is particularly relevant to choose the age group of young adults, from 25 to 30 years old, as during this age people may already have a university education or have decided not to pursue it. Additionally, despite the relevance of the topic, no such studies have been found conducted in Lithuania or globally. Research on the interaction between education and belief in conspiracy theories often focuses on various constructs beyond just critical thinking. For instance, van Prooijen (2017) examined how education influences belief in conspiracy theories by identifying three key mediating variables: belief in simple solutions to complex problems, feelings of helplessness, and subjective social class. These variables mediate the relationship between education and conspiracy belief, suggesting that higher education might indirectly reduce conspiracy belief.

Meanwhile, Lantian et al. (2021) analyzed the relationship between critical thinking and conspiracy beliefs and found that a significant negative relationship emerged only when critical thinking was measured using open-ended questionnaires. Self-assessed levels of critical thinking did not show the same effect, raising important questions about the reliability of different methods of assessing critical thinking and their relationship to conspiracy belief.

This suggests that while education might reduce belief in conspiracy theories, the effect is not always straightforward, particularly in the context of young people. Mediating factors, such as those identified by van Prooijen (2017), may explain why some young individuals with higher education still subscribe to conspiracy theories. Furthermore, the

inconsistent results regarding critical thinking measurement highlight the need to examine how critical thinking is developed and whether current educational methods effectively reduce belief in conspiracy theories.

Given that universities aim to cultivate critical thinking, it becomes essential to explore whether higher education consistently promotes these skills. Therefore, this study aims to examine the interaction between education, critical thinking, and conspiracy beliefs among young people (aged 25–30).

Method

Participants and Procedure

The online survey consisted of sections aimed at assessing the level of critical thinking, belief in conspiracy theories, and obtaining demographic indicators. Participants were contacted in person as well as through social media groups and the “Messenger” app. Prior to the study, participants were informed that they could independently choose whether to participate, thus providing informed consent. Participants also had the option to withdraw from the study at any time or decide not to submit their responses at the end of the study. The complete anonymity of participants was ensured.

Initially, 77 participants took part in the study. The results of 4 participants were excluded due to inconsistent answers. While they indicated having a university degree in one question, they later specified nonuniversity or vocational education in another, suggesting they did not fill out the questionnaire attentively. Thus, the final sample consisted of 73 people, aged 25 to 30. The average age is 26.9 ($SD = 1.7$). Participants: 30 women, 41 men, and 2 of other gender. 36 respondents indicated having a university education, while 37 have not completed university. Exact education levels: 29 with a bachelor’s degree (university), 2 with a bachelor’s degree (nonuniversity), 21 with a secondary education, 14 with a secondary education and professional qualification, 7 with a master’s degree. It is important to note that while 37 participants had not completed university, they may include current students at various levels of education, as this detail was not explicitly captured. 10 respondents live in rural areas or towns, 33 in cities, and 30 in large cities. Participants were recruited using nonprobability convenience sampling.

Instruments

Belief in Conspiracy Theories

Based on media and social network analysis, 12 news items were generated. Some examples: “Two hundred years ago, more than 40% of all continents were underwater, but this is being hidden from the public.”, “Only up to 10% of ordinary people can use the latest and most advanced high medical technologies, while the majority of such technologies are intended only for the wealthy.” The respondents had to rate how strongly they believe these items to be true on a 5-point Likert scale (1 – “Strongly disagree”, 2 – “Disagree”, 3 – “Neither agree nor disagree”, 4 – “Agree”, 5 – “Strongly agree”). The total score of the

12 news items was used to determine belief in conspiracy theories. Higher scores indicate a greater belief in conspiracy theories. The scale was developed by a group of researchers from the Laboratory of Applied Psychology at Vilnius University's Faculty of Philosophy; authors: V. Jurkuvėnas, V. Mikuličiūtė, A. Radzevičienė, A. Kairys. Permission to use the scale in this study was obtained from the authors. The scale has been previously used in several pilot studies. The calculated Cronbach's Alpha of 0.863 indicated high internal consistency. Cronbach's Alpha calculated based on the data of this study is 0.914. Similar scales, such as the Conspiracy Mentality Questionnaire (Bruder et al., 2013) and the Generic Conspiracist Beliefs Scale (Brotherton et al., 2013), which measure generalized conspiracy beliefs across varied topics and show comparable reliability in research, have been used by many different researchers.

Critical Thinking Questionnaire (CThQ)

Authors: A. Kobylarek, L. Ślósarz, K. Błaszczński. Published in 2022. This questionnaire is a tool for testing critical thinking, designed for adolescents and adults. It was developed based on and classifying the educational objectives identified by Benjamin Bloom. Permission to use and translate the questionnaire into Lithuanian was obtained from the authors. A double translation of the questionnaire was performed (from English to Lithuanian, and then back from Lithuanian to English). In cases where translations did not match, synonyms were used without changing the meaning of the statements. The questionnaire, consisting of 25 statements across six scales – remembering, understanding, application, analysis, evaluation, and creation – assesses subjective critical thinking, a concept Gjoneska (2021) describes as reflecting personal cognitive style rather than objective ability. The questionnaire allows for the assessment of individual constructs and the overall level of critical thinking by summing the scores. Statements are rated on a 5-point Likert scale from 1 – “strongly disagree” to 5 – “strongly agree”. Some statements are reversed, and then the scores of the 25 statements are summed. Higher scores indicate a higher level of critical thinking. The reliability of the questionnaire was evaluated by the authors using Cronbach's Alpha, which was 0.87, indicating high internal consistency. In this study, Cronbach's Alpha is 0.97.

Socio-demographic factors

The last part of the study consists of questions about demographic indicators: gender, age, education – completed or not completed university, exact education level, and place of residence.

Data Analysis

IBM SPSS Statistics software was used for data analysis. To assess the normality of the data, the ± 2 rule for skewness and kurtosis was applied, as supported by Hair et al. (2010). According to this guideline, skewness and kurtosis values within the range of ± 2 generally indicate acceptable normality for most statistical analyses. Additional checks included

significance level (p), distribution in histogram and Q-Q plot, and identifying outliers. It was found that belief in conspiracy theories did not significantly deviate from normality, whereas critical thinking data were not normally distributed.

Main analyses conducted

Mediation analysis using regressions was performed with the following variables: education was an independent binary variable (completed university or not), belief in conspiracy theories was a dependent interval variable, critical thinking was a mediating interval variable.

First, the total effect was calculated, i.e. the impact of education on belief in conspiracy theories using linear regression. Since the effect was significant, a mediation analysis was performed. Second, the direct effect was measured – the impact of education on critical thinking (linear regression). Third, the direct effect was measured – the impact of critical thinking and education on belief in conspiracy theories (multiple regression). Due to non-normal distribution and small sample size, regressions with bootstrapping (1000 samples) were used. Then, a Sobel test was conducted to determine if critical thinking acts as a mediating variable in the relationship between education and belief in conspiracy theories. Finally, the size of the mediation analysis effect was calculated.

Also, to analyze the data, a combination of other statistical tests was utilized. To explore the relationship between critical thinking and belief in conspiracy theories, Spearman correlation analysis was performed. Independent samples Student's t -test was conducted to examine whether there were significant differences in belief in conspiracy theories between individuals who had completed university and those who had not. Following this, the Mann–Whitney U test was employed to assess differences in critical thinking levels between the same groups, as the data for critical thinking did not meet the normality assumption. This approach provided a comprehensive understanding of how education and critical thinking are related to beliefs in conspiracy theories.

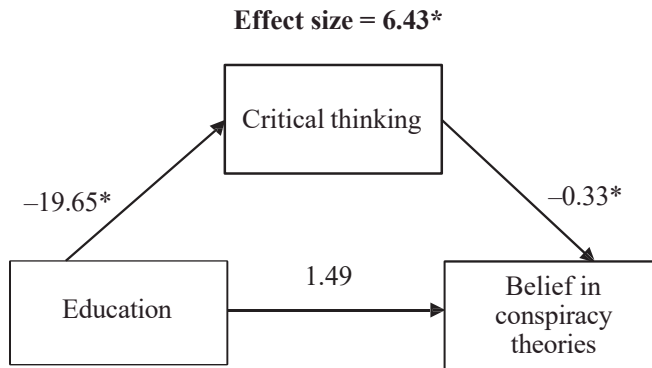
Results

The study aimed to explore how critical thinking, education, and belief in conspiracy theories interact among young adults aged 25–30. Mediation analysis, including bootstrapped regressions and a Sobel test, revealed that critical thinking significantly mediates the relationship between education and belief in conspiracy theories (Figure 1). Statistical tests showed significant differences in conspiracy beliefs and critical thinking levels between university graduates and nongraduates. Specifically, graduates had lower conspiracy beliefs (Table 1) and higher critical thinking levels (Table 2). Additionally, there was a strong negative correlation between critical thinking and belief in conspiracy theories (Table 3). Results are detailed in Figure 1 and Tables 1–3.

From Figure 1, it can be observed that critical thinking significantly mediates the relationship between education and belief in conspiracy theories.

Figure 1

Research model: critical thinking as a mediating variable between education and belief in conspiracy theories



Note. Significant effects are denoted by (*) asterisks.

Table 1

Belief in conspiracy theories and education

	Do you have a uni- versity education?	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Belief in conspiracy theories	Yes	31	9.08	-3.19	67.11	0.025
	No	38.92	11.95			

Note. Analysis was conducted using the independent samples Student t-test.

Table 1 shows a significant difference in belief in conspiracy theories between young people who completed university and those who did not. Individuals with a university degree (bachelor's or master's) tend to believe less in conspiracy theories, whereas those without a university education (secondary, secondary with vocational qualification, or nonuniversity bachelor's degree) tend to believe more in conspiracy theories.

Table 2

Critical thinking and education

	Do you have a university educa- tion?	<i>N</i>	Mean ranks	<i>U</i>	<i>Z</i>	<i>p</i>
Critical thinking	Yes	36	45.46	361.5	-3.36	< 0.001
	No	37	28.77			

Note. Analysis was conducted using the Mann–Whitney U test.

Table 2 indicates a statistically significant difference in critical thinking between the two groups, with university graduates exhibiting higher levels of critical thinking.

Table 3

Link between critical thinking and belief in conspiracy theories

Variables	<i>rs</i>	<i>p</i>
Belief in conspiracy theories * critical thinking	–0.64	<0.001

Note. Analysis was conducted using Spearman’s correlation statistical method.

Table 3 reveals a strong negative correlation between belief in conspiracy theories and critical thinking, which is also statistically significant.

Discussion

The aim of this study was to analyze the interaction between education, critical thinking, and belief in conspiracy theories among young adults aged 25–30. Previous research has shown that higher education levels are associated with decreased belief in conspiracy theories (Douglas et al., 2016; van Prooijen et al., 2015), but the reasons for this relationship have remained unclear. Therefore, this research is among the few attempts to investigate the underlying mechanisms linking education and belief in conspiracy theories.

This study demonstrates that critical thinking serves as a mediating variable between education and belief in conspiracy theories among young adults aged 25–30. Studies by van Prooijen (2017) and Ballova Mikušková (2023) identified several independent mediators of the relationship between education and belief in conspiracy theories, including feelings of powerlessness, analytic thinking, and subjective social class (the latter showing mixed results). Our study partially replicates these findings as critical and analytical thinking are related concepts (Gjoneska, 2021). However, it extends these results by showing that it is not education itself, but rather the critical thinking developed through higher education, that reduces susceptibility to conspiracy theories. The insight has practical implications: implementing critical thinking educational programs could help diminish belief in conspiracy theories. These findings could also explain why in some studies no relationship between education and belief in conspiracy theories was found (Galliford & Furnham, 2017; Vranic et al., 2022) – relationship between these variables appears not to be linear and mediating variables play an important role.

In addition to previous findings, our study reveals that (1) young people with a university education are less likely to believe in conspiracy theories compared to those without, and (2) university-educated individuals exhibit higher levels of critical thinking. This suggests that universities probably play a significant role in teaching critical thinking skills necessary for evaluating information critically and making informed decisions. It is important to note that not so much a university itself, but specific teaching methodolo-

gies, such as active learning approaches focused on problem-solving rather than mere knowledge acquisition, enhance critical thinking skills (Bezanilla et al., 2019). However, it is also possible that individuals with stronger critical thinking skills are more likely to pursue higher education, rather than universities alone improving these skills. Experimental designs are needed to establish causation in future research. Additionally, while intelligence is a debated construct in the context of critical thinking (Halpern & Dunn, 2021), it could be an important mediating variable between education, critical thinking, and belief in conspiracy theories.

The current study has several notable limitations. First, to ensure comparability between groups with and without university education, factors such as gender, place of residence, and age were considered. Significant differences were found, with a majority of the higher education group being women from larger cities or urban areas. Even though this reflects the general gender disparities in Lithuanian higher education institutions (Official Statistics Portal, 2024), suggesting that factors such as gender and/or living conditions may also influence belief in conspiracy theories, this issue should be addressed in future research. Second, the correlational nature of this research does not fully answer the question if education and critical thinking diminish belief in conspiracy theories (even if the theoretical context allows for such conclusions). One should construct an experiment in which education and/or critical thinking act as independent variables and belief in conspiracy theories as a dependent variable. It might even be worth examining the idea of how belief in conspiracy theories motivates individuals to pursue education or develop their critical thinking skills. Other limitations include a small sample size, which restricts the generalizability of the findings and complicates precise mediation analysis, and the potential inclusion of student participants, which may affect the representativeness of the sample.

However, this study holds practical and theoretical significance. Integrating critical thinking skills into educational, professional, and public information efforts could help reduce the influence of conspiracy theories by enhancing people's ability to critically assess information. For example, educational curriculum or public campaigns could emphasize to be mindful of own cognitive biases, like confirmation bias (the tendency to favor information that supports our preexisting beliefs) or the Dunning–Kruger effect (overestimating our competence in areas we know little about).

In conclusion, our study highlights the role of critical thinking in the context of conspiracy theories. Future research should continue to explore this complex interaction between education, critical thinking and belief in conspiracy theories and identify other potential mediating and moderating factors, such as the influence of intelligence as a mediating variable, as well as gender or place of residence. Experimental design is also strongly encouraged.

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