


Research paper

Why do psychology students believe in neuromyths? A study of personality, contextual and cognitive predictors

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ABSTRACT

Background: Neuromyths—misconceptions arising from misinterpretations of neuroscientific findings—are widely endorsed by educators and students, including those in psychology. Their persistence has been linked to contextual, cognitive, and personality-related factors, but evidence is mixed, especially among psychology students. This study examined predictors of neuromyth endorsement in Argentine psychology undergraduates.

Objective: To identify contextual (neuroscience training, interest), personality (Need for Cognition; NFC), and cognitive (Cognitive Reflection Test; CRT) predictors of neuromyth beliefs.

Methods: A convenience sample of 320 psychology students (82.5% women; $M_{age} = 27.39$ years) completed online measures assessing neuromyth endorsement, general brain knowledge, NFC, CRT, and self-reported neuroscience training and interest. Spearman correlations and hierarchical regressions were conducted to examine associations and predictive effects.

Results: Participants endorsed 41.22% of neuromyths on average, with learning styles (76.25%) and sensory-rich environments benefits (74.37%) being the most accepted. CRT scores negatively predicted neuromyth endorsement ($\beta = -.175, p < .001$), whereas the NFC “enjoyment of thinking” factor positively predicted endorsement ($\beta = 0.145, p = .024$). Age also showed a positive effect ($\beta = 0.175, p = .002$). Neuroscience interest, courses taken, and general brain knowledge did not predict neuromyth acceptance, although they were positively associated with neuroscience knowledge.

Conclusions: Analytical thinking emerged as the strongest protective factor against neuromyths, while enjoyment of thinking unexpectedly predicted higher endorsement, possibly reflecting exposure to low-quality sources of information and/or Dunning-Kruger effects. Factual neuroscience knowledge and training did not decrease neuromyth endorsement, underscoring the importance of fostering critical thinking skills within psychology education.

1. Introduction

The term “*neuromyth*” applies to misconceptions or oversimplified interpretations of neuroscientific findings that are common in educational and psychological contexts despite being scientifically unfounded [1,2]. These myths are the result of the misapplication of legitimate neuroscientific concepts—such as hemispheric specialization, neuroplasticity, or critical periods—to complex cognitive and educational phenomena [3,4]. They arise from distortions of scientific facts (claims that people are “right or left-brained” based on lateralization of neurocognitive functions), scientific hypotheses that have already been abandoned (such as the “Mozart effect” – the idea that Mozart music

improves cognitive performance or development) or misinterpretations of experimental results (such as the myth of the first three years – the idea that experiences in the first three years of life irreversibly determine a child’s cognitive, emotional, and social development, based on the high synaptic plasticity window occurring within this period) [4]. The origin of neuromyths can be traced to the popularization of neuroscience in the 1990s, when rapid advances in brain imaging and cognitive neuroscience led to an influx of brain-based explanations in media and education [3]. They were rapidly spread by mass media, commercial “brain-based” training programs, teacher education materials, and the oversimplification of neuroscientific studies in secondary sources [4,5]. Nowadays, social media and the web contribute to neuromyth

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viralization [6,7], in the same way they propagate several forms of disinformation [8].

The popularity and persistence of neuromyths is tied to several factors. First, intuitive appeal and cognitive biases (e.g., the representativeness heuristic, confirmation bias) make myths like “learning styles” or “left/right-brain dominance” psychologically compelling [2,9]. Second, insufficient neuroscience literacy and the prestige associated with brain-based explanations (“*neurorealism*”) encourage uncritical acceptance [10]. Third, educational and psychological training often lacks critical integration of neuroscience content, leaving professionals vulnerable to misinformation [11]. Neuromyths’ prevalence has been widely studied among teachers and education students, where it’s typically found around 50%. However, the most popular myths, such as learning styles, hemispheric dominance or brain training effects, are usually endorsed by >80% of participants [12,7]; for a recent review see: [33]. Similar results have been found among psychology students (43–47%), although this population has been much less studied [12,13]. Neuromyth endorsement by education and health professionals poses significant risks, as it can influence pedagogical and clinical decision-making, leading to ineffective or even harmful practices, wasted resources, and an erosion of scientific credibility [3].

Different contextual factors have been found to influence susceptibility towards neuromyths, but the evidence tends to be mixed in most cases. Formal education and training in neuroscience, as well as exposure to peer-reviewed sources have been found to reduce overall endorsement, but does not suppress it altogether [5]. Another study showed that taking an educational psychology course that directly addressed relevant topics increased neuroscience literacy but did not affect neuromyths [9]. In the same line, [13] did not observe higher rejection of neuromyths in psychology students after attending neuroscience lectures. Among teachers, general knowledge about the brain has even been found to increase neuromyth beliefs [2], a fact that was interpreted as indicator of higher exposure to misinformation from popular media and less rigorous sources. To sum up, while neuroscientific knowledge and specific training in psychology and neuroscience seem to act as protective factors against neuromyths, this finding is generally inconsistent, and the opposite effect has also been observed [14].

Personality-related factors have also been linked to neuromyth acceptance. *Need for Cognition (NfC)* is a relatively stable disposition reflecting a person’s tendency to engage in and enjoy effortful cognitive activities such as thinking deeply, analyzing information, and solving complex problems [15]. While some evidence suggests that individuals high in NfC may be less likely to endorse neuromyths [16], most studies with teachers have reported null or non-significant associations [17,18]. Another relevant construct is *Cognitive Reflection*, a cognitive-dispositional measure rooted in dual-process theories of reasoning. It reflects the ability and willingness to override intuitive responses in favor of deliberate, analytic reasoning and is typically assessed with the *Cognitive Reflection Test (CRT)* [19,20]. CRT performance has been shown to negatively predict endorsement of other types of misinformation, including fake news [21] and conspiracy beliefs [22]. Only one prior study has directly examined CRT performance in relation to neuromyths in a general public sample [23], finding that it negatively predicted endorsement alongside scientific literacy. Similarly, [24] found that higher CRT scores were associated with rejection of psychological misconceptions among psychology students. Collectively, these findings suggest that cognitive reflection may act as a protective factor against neuromyth beliefs, although the evidence remains limited and warrants further investigation.

In the present study, these variables were selected to capture partially distinct pathways that may contribute to neuromyth endorsement. *Cognitive Reflection* was included as an index of epistemic vigilance and the ability to inhibit intuitively appealing explanations. *Need for Cognition* was included as a motivational trait reflecting self-perceived engagement with and enjoyment of cognitive activity and

information-seeking. It should be noted that, unlike CRT performance, which reflects the capacity to evaluate and override intuitive responses, NfC primarily indexes motivation to engage with cognitively demanding material and does not necessarily imply skeptical or corrective processing. Finally, neuroscience coursework, interest, and general brain knowledge were included as indicators of domain-specific exposure, whose effectiveness in reducing misconceptions may depend on accompanying reasoning skills. This distinction allows us to examine whether neuromyth endorsement is better explained by evaluative reasoning processes, motivational engagement, or informational exposure.

Since most previous neuromyth research has focused on education students, teachers, and pre-service educators, the present study targeted another population whose knowledge and misconceptions about the brain are also highly relevant for their future professional and clinical practice: psychology students. Although some evidence indicates that psychology training reduces neuromyth endorsement compared to teachers [13] and non-psychologists [25], certain misconceptions remain prevalent among psychology students, and attending neuroscience lectures appears to have little effect on their acceptance [13]. Psychology students constitute a particularly informative population for examining neuromyth endorsement, as they typically receive formal and specialized training in neuroscience—including neurobiological theories of learning and development—together with explicit instruction in scientific methodology and research practices. This combination of disciplinary knowledge and methodological training would be expected to foster more effective critical evaluation of scientific claims and greater sensitivity to misconceptions. Accordingly, psychology students, especially those more advanced in their studies, might be expected to be better prepared to detect and reject neuromyths (see [13,25]), not only on the basis of content knowledge but also as a result of their training in scientific and analytical thinking.

At the same time, other factors may play an important role, such as individual interest in neuroscience, trait-like dispositions toward effortful cognitive activity (*Need for Cognition*), and the ability to override fast, intuitive responses in favor of more deliberate analytical reasoning (*Cognitive Reflection*). By considering these variables jointly, the present study aims to clarify their relative contributions to neuromyth endorsement in a population for whom such beliefs may have important implications for future professional practice and who might be expected to be comparatively well equipped to evaluate scientific information critically.

Examining whether individual trait- and skill-level variables (*Need for Cognition*, *Cognitive Reflection*) account for neuromyth endorsement more strongly than formal instruction or general neuroscience knowledge allows the study to directly test whether epistemic attitudes and reasoning styles, rather than disciplinary exposure alone, constitute the primary line of defense against neuromyths—even in populations extensively trained in the scientific method.

Accordingly, the main goal of this study was to examine neuromyth endorsement in a sample of Argentine psychology students, considering as potential predictors sociodemographic variables, interest in neuroscience, number of neuroscience courses taken, general knowledge about the brain, dispositional enjoyment of cognitive effort (*Need for Cognition*), and the ability to favor deliberate analytical reasoning over intuitive heuristics (*Cognitive Reflection*). Based on prior findings, we expected analytic reasoning tendencies to be negatively associated with neuromyth endorsement, while the role of neuroscience knowledge and formal instruction was examined as an open theoretical question, given the mixed evidence regarding their protective effects.

2. Methods

2.1. Participants

The sample study consisted of 320 Argentine university psychology

students (82.5 % women, average age: $M = 27.39$, $SD = 7.91$ years, range: 18 - 58 years). The age range was distributed as following: 18–25 years = 47.5 %, 26 – 39 years = 45.3 %, <40–58 years> 7.2 %). Their more frequent institutional affiliations were: Universidad Nacional de Buenos Aires (35.4 %), Universidad Nacional de Mar del Plata (9.3 %), Pontificia Universidad Católica Argentina, (6.4 %), Universidad Abierta Interamericana y Universidad Nacional de Córdoba (both 5 %) (the rest of the universities were below 5 %). Their median of neuroscience courses taken was 2 (IQR = 2) (see Table 1 for details).

Due to practical and logistical constraints, sampling method was non-probabilistic, by convenience. Participants were recruited through social media and university mailing lists, and completed an informed consent form before the activity. It explained that their participation was voluntary, anonymous and that they could withdraw at any moment, without any negative consequence. According to data privacy law 25.326, no information that could identify participants was collected. Study proceedings were approved by CONICET’s research ethics committee (ref.: C04–2024).

2.2. Instruments

Neuromyth questionnaire: The questionnaire consisted of 10 statements written in Spanish, which items were taken from previous studies [26,2], including studies on local and regional samples [27,28]. These items included some of the most popular neuromyths, e.g.: learning styles, critical learning periods, hemispheric dominance and cognition, brain training exercises and the Mozart effect. A complete list of the neuromyths can be found on supplementary materials (Table 1). Participants were required to classify the statements as “true”, “false” or to respond “don’t know” in case they weren’t sure. Neuromyth endorsement was calculated as the sum of “true” responses. The internal consistency of the questionnaire was adequate ($\alpha = 0.72$), considering previously published studies used instruments ranging from $\alpha = 0.67$ [29] to 0.84 [30]. The questionnaire items were randomly intermixed with the brain knowledge questions, which had the same response format.

General knowledge about the brain: In addition to neuromyths, 20 statements regarding general knowledge about the brain were included, 15 correct and 5 incorrect. These statements were shown in the same list that neuromyth statements, in a randomized order. In this way, the complete list included 30 items, 15 that should be classified as “true” and 15 as “false” (including the 10 neuromyth and 5 incorrect statements that were not myths). These statements were also taken from previous studies [2,26–28] and addressed topics about cognitive functions and brain development. A complete list can be found in the supplementary materials (Table 2). Internal consistency of the questionnaire was adequate ($\alpha = 0.72$).

Need for Cognition questionnaire: Need for Cognition was assessed using the Spanish adaptation of the original scale [15] validated by [31].

Table 1
Descriptive statistics.

Variable	Mean	Median	SD	IQR	Minimum	Maximum
Age	27.397	25.00	7.911	8.25	18.00	58.00
Neuromyth	4.122	4.00	1.667	2.00	0.00	8.00
Brain Kwnol.	12.828	13.00	2.654	3.00	6.00	19.00
NFCf1	31.313	32.00	6.817	8.25	13.00	45.00
NFCf2	20.559	20.00	5.675	7.00	9.00	39.00
CRT	0.925	1.00	1.063	2.00	0	3
Courses	2.194	2.00	1.291	2.00	0	9
Interest	3.000	3.00	0.830	2.00	0	4

Notes. **Neuromyth:** neuromyth endorsement score; **Brain Knowl.:** brain knowledge score (number of correct responses); **NFCf1:** Need for Cognition factor 1 score; **NFCf2:** Need for Cognition factor 2 score; **CRT:** Cognitive Reflection Test score (number of correct responses); **Courses:** number of neuroscience courses taken; **Interest:** interest in neuroscience score.

The scale measures individuals’ tendency to engage in and enjoy effortful cognitive activities. It consists of 18 items that tap into preferences for complex thinking, enjoyment of problem-solving, and motivation to process information deeply. Responses are provided on a 1–5 Likert-type scale. The Spanish version has shown good reliability and validity in samples from Spanish-speaking populations. It possesses a two-factor structure: a “positive” factor (reflecting a tendency toward cognitive elaboration) ($\alpha = 0.83$) and a “negative” factor (reflecting a tendency to avoid or reject deep cognitive effort) ($\alpha = 0.84$).

Cognitive Reflection Test: Cognitive reflection was measured using the *three-item Cognitive Reflection Test* (CRT; [19]). The CRT assesses the tendency to override an initial intuitive response and engage in deliberate, analytical reasoning. Each item presents an intuitively appealing but incorrect answer, requiring participants to inhibit the heuristic response and apply reflective thinking to arrive at the correct solution. Responses are scored dichotomously (correct = 1, incorrect = 0), and scores are summed to produce a total ranging from 0 to 3, with higher scores reflecting greater cognitive reflection. Although brief, the CRT shows adequate internal consistency for a three-item cognitive measure ($\alpha = 0.74$) [32]. The original validation reported strong predictive validity for decision-making tasks [19].

Ad hoc survey: Participants completed an ad hoc survey where they indicated: in which university they were studying, how many neuroscience courses they have taken and how interested they were in neuroscience (0–4 Likert-scale).

2.3. Procedure

The study was administered through a questionnaire created on the Google Forms platform, which was distributed via social media (WhatsApp, Facebook, and Instagram) and university mailing lists. Participants received a flyer inviting them to take part in a study on neuroscience knowledge among psychology students, including a direct link to the questionnaire.

Upon accessing the survey, participants first read and provided informed consent. The consent form specified that participation was voluntary and anonymous, that they could withdraw at any time without negative consequences, and that no financial compensation was provided.

Participants then completed a sociodemographic section (age and gender), followed by an ad hoc survey (see Instruments section). Next, they completed the neuromyth and general knowledge of the brain questionnaires, which were presented together in a pseudo-randomised order to ensure that no more than two consecutive items belonged to the same category. These items were organised into two sections of 15 items each. Participants were instructed to respond based on their own knowledge and to refrain from searching for answers online.

Subsequently, participants completed the Cognitive Reflection Test (CRT), followed by the Need for Cognition scale, with the same instructions regarding independent responding. No time limits were imposed for any part of the questionnaire.

To ensure anonymity and confidentiality, no personally identifying information was collected, and the participants were coded numerically in the study’s database.

2.4. Statistical analysis

Statistical analysis was carried out in JAMOVI software version 2.3. Associations between variables were examined with Spearman correlation coefficients. Then, multiple regression analyses were performed to identify significant predictors of the dependent variable and quantify their contribution. Assumptions of normality, homoscedasticity, and linearity were verified through Kolmogorov-Smirnov test, residual Q–Q plots, standardized residual scatterplots, and observed vs. predicted plots. Independence of errors was confirmed ($2.08 < \text{Durbin-Watson} < 2.2$). Variance inflation factors (VIFs) indicated no multicollinearity

Table 2
Spearman correlation matrix.

	Age	Neuromyth	Brain Kwnol.	NFCf1	NFCf2	CRT	Courses	Interest
Age	—							
Neuromyth	0.187***	—						
Brain Kwnol.	0.092	0.042	—					
NFCf1	0.124*	0.129*	0.133*	—				
NFCf2	-0.030	-0.057	-0.085	-0.467***	—			
CRT	0.005	-0.184***	0.193***	0.227***	-0.119*	—		
Courses	0.111*	0.013	0.118*	0.067	-0.001	0.081	—	
Interest	-0.025	-0.035	0.119*	0.087	-0.082	0.100	0.149**	—

Notes. *Neuromyth*: neuromyth endorsement score; *Brain Kwnol.*: brain knowledge score (number of correct responses); *NFCf1*: Need for Cognition factor 1 score; *NFCf2*: Need for Cognition factor 2 score; *CRT*: Cognitive Reflection Test score (number of correct responses); *Courses*: number of neuroscience courses taken; *Interest*: interest in neuroscience score. * $p < .05$, ** $p < .01$, *** $p < .001$.

(1.13 < VIF < 1.52). We report adjusted R^2 , standardized β coefficients with 95 % confidence intervals (CI), and the change in explained variance (ΔR^2) at each step, as shown in Table 3.

3. Results

3.1. Descriptive statistics and associations between variables

Descriptive statistics for study variables are provided on Table 1. Mean neuromyth endorsement was 41.22 ± 16.67 %. The most frequently accepted neuromyths were *the learning styles hypothesis* (76.25 %) and *“sensory-rich environments improve brain development in kindergarten children”* (74.37 %). In turn, the least popular neuromyths were: *“brain shrinkage due to insufficient water intake”* (1.25 %) and *“classic music enhances babies’ language development”* (16.25 %). A complete description of neuromyth endorsement frequencies is provided on supplementary Table 1. Regarding CRT performance, almost half the students (48.1 %) did not respond correctly to any of the problems, and around a third (38.5 %) was able to solve two or all of them.

Spearman correlations indicated weak positive associations between neuromyth endorsement, age and NFC “enjoyment of thinking” scores ($0.129 < rho < 0.187, p < .05$), and a negative association with CRT scores ($rho = -0.184, p < .001$). In turn, neuroscience knowledge increased with neuroscience studies, interest in neuroscience, NFC “enjoyment of thinking” and CRT scores ($0.119 < rho < 0.193, p < .05$), but no association with neuromyths was observed. In addition, CRT scores were associated with NFC “enjoyment of thinking” ($rho = 0.193, p < .001$) and “cognitive effort” ($rho = -0.119, p = .033$).

3.2. Linear regression analysis of belief in neuromyths

The first step of the model ($R^2 = 0.0262, F = 5.3, p = .005$), showed that age was a positive predictor of neuromyth scores ($\beta = 0.175, p = .002$). In the second step of the model ($\Delta R^2 = 0.0676, p < .001; R^2 =$

$0.0768, F = 4.32, p < .001$), neuromyth endorsement decreased with CRT performance ($\beta = -0.175, p < .001$) but increased with NFC “enjoyment of thinking” scale ($\beta = 0.145, p = .024$). No significant effects of NFC “cognitive effort” scale, neuroscience knowledge, interest in neurosciences or neuroscience studies were observed (see Table 3). We further explored the possibility that NFC effects might depend on CRT scores, but the addition of this interaction term did not contribute to increase explained variance ($\Delta R^2 < 0.0001, p > .936$), so we did not consider this step of the analysis. Since the age range of our sample included a small proportion of subjects over 40 years old, we ran the analysis again on a smaller subset ($n = 240$) within the more typical 18–30 years range (which better describes the typical university population). We observed a similar pattern of results, most notably, the age effect still held ($R^2 = 0.019, F = 3.33, p = .167; \beta = 0.168, p = .011$).

4. Discussion

To our knowledge, this is the first study to examine contextual, personality, and cognitive predictors of neuromyth endorsement among psychology students (see [23] study of the general public; and [24] study on psychological misconceptions among students). The overall neuromyth acceptance rate was relatively lower than those reported in previous studies, but some of the most frequently endorsed myths from the literature remain popular within our sample. Regression analyses indicated that endorsement was stronger among those subjects with high age and NFC “enjoyment of thinking” scores, and weaker among those with higher analytical thinking scores. No significant contributions from interest in neurosciences, general neuroscience knowledge or neuroscience studies were observed. It should be noted that the proportion of neuromyth variance explained by the model was small-to-moderate, indicating that while these predictors contribute significantly (particularly CRT), a large portion of variability remains attributable to other factors. These findings are discussed in detail below.

Table 3
Regression model coefficients.

Linear regression Model – step 2							95 % Confidence Interval	
Predictor	β	SE	t	p	Stand. β	Lower	Upper	
Age	0.032	0.012	2.789	0.006	0.152	0.045	0.259	
Gender	0.158	0.242	0.654	0.513	0.095	-0.190	0.380	
NFCf1	0.036	0.016	2.275	0.024	0.145	0.020	0.271	
NFCf2	0.001	0.018	-0.049	0.961	-0.003	-0.125	0.119	
Brain Kwnol.	0.043	0.035	1.232	0.219	0.069	-0.041	0.180	
Interest	-0.018	0.111	-0.166	0.869	-0.009	-0.118	0.100	
Courses	-0.006	0.071	-0.084	0.933	-0.005	-0.113	0.104	
CRT	-0.393	0.089	-4.427	<0.001	-0.250	-0.362	-0.139	

Notes. *Neuromyth*: neuromyth endorsement score; *Brain Kwnol.*: brain knowledge score (number of correct responses); *NFCf1*: Need for Cognition factor 1 score; *NFCf2*: Need for Cognition factor 2 score; *CRT*: Cognitive Reflection Test score (number of correct responses); *Courses*: number of neuroscience courses taken; *Interest*: interest in neuroscience score.

Our participants endorsed around 41 % of the neuromyths, similarly to Russian psychology students in [12] and Austrian students from [13]. Across all these studies—including ours—the most frequently endorsed neuromyths concerned learning styles and hemispheric dominance as determinant of cognition and personality. Our sample also behaved similarly to teachers and education students (see [2] seminal study, and a recent review that estimated it around 52.1 % [33]). This review also found that learning styles and hemispheric dominance were the most widely accepted myths in educational settings, probably due to their perceived relevance and implications for pedagogy and learning [33].

The main goal of the study was to examine which context, personality or cognitive factors were associated with stronger belief in neuromyths. We found that a more analytical thinking style (higher CRT score) was the strongest negative predictor of neuromyth endorsement among the variables considered, yielding a small-to-moderate effect size. This finding is congruent with [23], who found neuromyth acceptances was higher in participants with a more intuitive thinking style, a stronger need for cognitive closure, a simpler view of epistemic cognition and endorsement of a fixed mindset, while it was inversely related to scientific literacy. In the same line, [24], reported that analytical thinking increased rejection of psychological misconceptions among psychology students, after controlling for GPA and psychology courses taken. Furthermore, CRT scores had been found to predict lower acceptance of fake news [21], pseudoscience [34], paranormal beliefs (for a review, see: [35], “*pseudo-profound bullshit*” [36] and conspiracy theories (see [22] for a meta-analysis). These findings are consistent with dual-process theories of reasoning [19,37], which propose that individuals who habitually engage in deliberative, analytical processing are better able to override intuitively compelling but inaccurate explanations, and less likely to rely on superficial or affective cues when evaluating information. In Kahneman’s terms, pseudoscientific claims, myths, and misinformation often activate fast, intuitive system-1 processes by offering simple, emotionally engaging, and cognitively fluent explanations. Individuals more inclined to engage in system-2 processing are therefore more likely to detect the implausibility of the claim and either reject it outright or scrutinize it further [38].

NfC “enjoyment of thinking”, on the other hand, was associated with higher endorsement of neuromyths in our sample, although its effect was relatively small. Previous evidence is mixed in this case: most studies have been conducted on teachers and indicated null or non-significant effects [17,18], or a significant indirect protective effect mediated by frequency of accessing relevant neuroscience information [16]. A similar pattern was observed for psychological misconceptions, with NfC predicting rejection in one study [39] and having no association in the other [40]. NfC has been defined both as the enjoyment of, and the tendency to, engage in effortful cognitive activity, tackling complex problems and conducting in-depth analyses. Some studies suggest that subjects high on this trait are more likely to be well-informed and spend more time researching about their topics of interest, which may help them to develop a more skeptical attitude towards unjustified claims in some cases [16,39]. However, unlike CRT, NfC primarily reflects a self-reported tendency to enjoy and engage in effortful information seeking, rather than the ability to critically evaluate or inhibit intuitively appealing but unsupported claims. High NfC may therefore be associated with greater engagement with neuroscience-related information without necessarily implying heightened epistemic vigilance. In contrast, higher CRT scores index the tendency to override intuitive responses and engage in deliberative, analytic (Type 2) processing when evaluating new information. Although related, these constructs capture distinct aspects of cognitive engagement and do not necessarily co-occur. Moreover, even though most studies treat NfC as a unidimensional concept, it can be also analyzed as two related but distinct factors: “enjoyment of thinking” and “cognitive effort” [31]. While it may seem counterintuitive that participants who enjoy cognitively engaging activities are more vulnerable to neuromyths (as we saw in our study), we find it significant that no

effects were found for the tolerance to cognitive effort. It might be the case that these subjects are likely to come upon neuromyths while researching or reading for pleasure and find them appealing and interesting due to their scientific curiosity. However, this does not necessarily mean that they will approach neuromyth claims with caution or try to research the subject further. Notably, NFC (combined with openness) also has been found to predict higher susceptibility to conspiracy theories [41], leading to a similar interpretation. We explored the possibility that cognitive style might modulate NFC effects, since higher enjoyment of cognitive activity combined with a tendency to engage type 2 processes could have led to more skeptical attitudes towards neuromyths, however, we found no evidence for this interaction.

Besides cognitive style and personality, age was the only additional predictor of neuromyth acceptance, although its effect size was comparably smaller. This has been observed in some studies (e.g. [5], although this effect is usually inconsistent [2], see [14] for a review). One possible explanation might be that some older participants may have been exposed to outdated information or have less access to peer-reviewed sources due to lower digital literacy. We cannot discard that these age-related differences reflect educational background or information access variability within our sample. Although the relevance of this predictor should not be overstated due to its relatively small effect size, it should be noted that its significance held when we repeated the analysis in a more age-restricted sample. Considering the inconsistency of age effects in previous studies, this finding should be interpreted as a modest but statistically significant association, the precise meaning of which remains unclear.

On the other hand, higher interest in neuroscience and courses taken on the subject (and interestingly, CRT and NFC) predicted general neuroscience knowledge but had no effect over neuromyth endorsement. Once again, available evidence is mixed: while formal neuroscience training reduces acceptance of some neuromyths, others seem to be immune [5], see also [25] for a study on the effects of psychology formal training), and other studies found no effect of attendance to neuroscience lectures among psychology students [13]. Moreover, neuroscience knowledge was not associated with neuromyth acceptance in our study, while in other studies, it was found to predict higher endorsement [2]. While this may seem paradoxical, more brain knowledge may be indicative of greater information exposure, which does not necessarily come with a skeptical attitude and critical thinking skills. Some authors have suggested that neuromyth prevalence may rely on a Dunning-Kruger effect in which individuals with moderate levels of neuroscience knowledge overestimate their expertise, making them more vulnerable to confidently endorsing misconceptions [42]. While our current results cannot directly inform this question, it constitutes an intriguing hypothesis that deserves further exploration in future works. At any rate, neither factual knowledge nor the amount of formal training exhibited any significant effects in our sample, showing that the attitude towards new information and the will to engage in deeper analysis were more strongly associated to neuromyth rejection than participants’ learning abilities or their access to high-quality information.

An important emerging factor shaping students’ exposure to neuroscience-related information is the increasing use of large language models (LLMs) as learning and information-seeking tools. Recent evidence suggests that, although LLMs can outperform humans in neuromyth detection when they are explicitly instructed to critically evaluate such claims, their ability to spontaneously identify or correct neuromyths embedded or implied in users’ discourse remains limited, even when models are prompted to rely on scientific evidence [43]. In this sense, LLMs may function as double-edged tools with respect to neuromyth dissemination: they may support more epistemically vigilant students (e.g., those with higher Cognitive Reflection) by facilitating verification of the lack of empirical support for specific claims, but are less likely to correct more naïve users who have already endorsed a neuromyth and incorporate it as an implicit assumption in their reasoning. Consequently, LLMs cannot be relied upon as a general

safeguard against the spread of neuromyths; rather, their educational value may depend on explicitly training students to use them in ways that actively prompt the identification and correction of unsupported claims.

Among the limitations of the present study, we need to point out the convenience-sampling method (which might have led to selection bias and reduced representativity of our sample, hindering the generalizability of our findings). Furthermore, the correlational nature of the design prevents to make strong inferences about causal relationships. In this sense, our use of the word “predictor” refers to the presence of a significant statistical association, while our potential causal interpretation remains speculative. Moreover, the online format of the survey prevented us from adequately controlling the data collection settings (participants might have used the internet to search for correct responses). This lack of control might have influenced the level of neuromyth acceptance if participants disobeyed the instruction and searched the statements online, leading to lower endorsement levels. Future studies conducted within lab or classroom settings may help to reduce this potential source of error. Furthermore, it could be of interest to further control cognitive variables such as general intelligence, which is closely related to CRT performance and might have significant effects on neuromyth acceptance as well (although previous work has shown that CRT effects on heuristics and biases performance are independent of general cognitive abilities, see [20]). Other relevant personality measures, such as openness [41] or Need for Closure [23] might be also taken into account. In addition, it would be interesting to consider students’ preferred sources of information about neuroscience (scientific journals, divulgation media, social media, generative AI, etc.) and their attitude towards them. Finally, future studies might benefit from considering and comparing endorsement of different types of neuromyths, relevant to specific fields of psychology (such as neurodevelopmental disorders myths) [44].

To sum up, our study identified cognitive style as the most significant negative predictor of neuromyth endorsement among our variables, possibly because a greater tendency for deep analytical thinking might counteract the appeal of their intuitive narratives and emotional impact. Conversely, *enjoyment of thinking* predicted higher neuromyth acceptance. This may indicate that students high on this trait were more exposed to, or more attentive to, low-quality information due to their strong interest in learning. It is also worth noting that students who completed more neuroscience courses possessed greater general knowledge about the brain, yet this did not reduce their belief in neuromyths. This suggests that the narrative appeal of neuromyths is not easily overridden by accurate or conflicting neuroscience knowledge. This is particularly relevant in psychology students, who receive specific training in scientific thinking, methodology and research, as well as exposure to high-quality sources, as part of their curricula. The fact that this kind of instruction alone does not improve neuromyth rejection highlights the need to promote an epistemically vigilant attitude among students to prevent misinformation spread. A possible solution may rely on the pedagogical strategies used in neuroscience education. It has been suggested that the APA guidelines emphasizing scientific inquiry and critical thinking skills in psychology curricula might explain why students who took more courses were less likely to endorse psychological misconceptions — a finding that likely extends to neuromyths [24]. Similarly, there is evidence that refutational teaching (explicitly addressing a myth and refuting it with evidence in class) was the most effective strategy for promoting the rejection of psychological misconceptions, with effects lasting up to one year [45]. Thus, it is possible that engaging in research activities, critically discussing course topics, and examining examples of neuromyths in neuroscience classes help students develop a healthy skeptical attitude toward pseudoscientific claims and misconceptions, thereby reducing their endorsement. In addition, an intriguing possibility is to train students to use LLMs as research assistants, explicitly prompting them to point out possible misconceptions, unjustified assumptions or false premises in their

reasoning [42]. In a world increasingly vulnerable to rapid misinformation spreads and recurring “infodemics” [46], fostering these critical thinking skills among psychologists, educators and health professionals is more essential than ever. Finally, a considerable proportion of variance in neuromyth acceptance remained unexplained by the model, suggesting that additional factors should be examined in future research.

During the preparation of this work the author(s) used ChatGPT in order to assist bibliographic research. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Ethical approval

This research was conducted in compliance with the ethical guidelines for social research of the National Scientific Technical Council of Argentina (Resolution code: 2857/2006). Participation was anonymous, preceded by information about the study, and informed consent. Study proceedings were approved by CONICET’s research ethics committee (ref.: C04–2024).

Informed consent

Informed consent was obtained from all individual participants included in the study.

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CRediT authorship contribution statement

Ángel Javier Tabullo: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.tine.2026.100284](https://doi.org/10.1016/j.tine.2026.100284).

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