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The Relationship Between Paranormal Beliefs, Personality, Creativity, and Death Anxiety: An Interfaculty Comparison

Abstract

This study aimed to evaluate the levels of paranormal beliefs among university students in relation to personality traits, death anxiety, and creativity, and to examine how these beliefs differ between students from different academic disciplines, namely Medicine and Theology. A total of 200 students aged 18–30 years (100 from the Faculty of Medicine and 100 from the Faculty of Theology) at Erciyes University were included. Participants completed the Paranormal Belief Scale, the short form of the Eysenck Personality Questionnaire, the Controlled Word Association Test, and the Death Anxiety Scale. Data were analyzed using SPSS 26.0 through group comparisons and correlation analyses. The findings revealed that medical students had significantly higher paranormal belief scores than theology students ($p < 0.001$). Among medical students, both age and year of study were positively associated with higher levels of paranormal beliefs, while theology students achieved higher scores on the verbal association test. A positive correlation was also observed between death anxiety and both neuroticism and psychoticism. Overall, the results indicate that paranormal beliefs are closely associated with individuals' education, personality traits, and cognitive processes. The educational content offered by different academic disciplines may shape students' approaches toward irrational beliefs. Future research with larger and more diverse samples is needed to further elucidate these relationships.

Keywords: Creativity, medical education, paranormal beliefs, theology.



Paranormal İnançların Kişilik, Yaratıcılık ve Ölüm Kaygısıyla İlişkisi: Fakültelerarası Bir Karşılaştırma

Öz

Bu çalışma, üniversite öğrencilerinin paranormal inanç düzeylerini kişilik özellikleri, ölüm kaygısı ve yaratıcılıkla ilişkilendirerek değerlendirmeyi ve farklı akademik disiplinlerde (Tıp ve İlahiyat) eğitim alan öğrenciler arasında bu inançların nasıl farklılaştığını incelemeyi amaçlamaktadır. Çalışmaya Erciyes Üniversitesi Tıp ve İlahiyat Fakültelerinde öğrenim gören 18–30 yaş aralığında toplam 200 öğrenci (100 Tıp, 100 İlahiyat) dahil edilmiştir. Katılımcılara Paranormal İnanç Ölçeği, Eysenck Kişilik Anketi'nin kısa formu, Kontrollü Kelime Çağrışım Testi ve Ölüm Kaygısı Ölçeği uygulanmış; elde edilen veriler SPSS 26.0 programı ile analiz edilerek grup karşılaştırmaları ve korelasyon analizleri yapılmıştır. Bulgular, Tıp Fakültesi öğrencilerinin paranormal inanç puanlarının İlahiyat Fakültesi öğrencilerine kıyasla anlamlı düzeyde daha yüksek olduğunu göstermiştir ($p < 0.001$). Ayrıca tıp öğrencilerinde yaş ve öğrenim yılı arttıkça paranormal inanç puanlarının yükseldiği, ilahiyat öğrencilerinin ise sözel çağrışım testinde daha yüksek puan aldığı belirlenmiştir. Ölüm kaygısı ile nörotisizm ve psikotisizm arasında pozitif korelasyon bulunmuştur. Sonuçlar, paranormal inançların

bireyin eğitimi, kişilik özellikleri ve bilişsel süreçleriyle yakından ilişkili olduğunu ortaya koymaktadır. Akademik disiplinlerin sunduğu farklı eğitim içerikleri öğrencilerin irrasyonel inançlara yönelik yaklaşımlarını şekillendirebilir. Daha geniş ve çeşitli örneklerle yapılacak ileri çalışmalar, bu ilişkilerin daha kapsamlı biçimde anlaşılmasına katkı sağlayacaktır.

Anahtar kelimeler: Yaratıcılık, tıp eğitimi, paranormal inançlar, ilahiyat.



Introduction

The term paranormal belief refers to phenomena that lie beyond human comprehension and the explanatory scope of science, without established cause–effect relationships.¹ Such beliefs include concepts such as ghosts, rituals, astrology, telepathy, and precognition.² In Muslim societies, religious concepts such as God, angels, jinn, the afterlife, and the evil eye are also considered within the scope of paranormal beliefs.³

Although researchers have used different definitions and instruments to measure paranormal beliefs, studies have shown that approximately 50% of individuals endorse at least one paranormal belief and that most believe they have experienced a genuine paranormal event.^{4,5} Despite scientific and technological advances, these beliefs persist. This persistence has been attributed to limited understanding of scientific processes and the tendency to adopt supernatural explanations in situations of uncertainty.^{6,7} Individual differences in cognitive and perceptual systems may further increase susceptibility to paranormal beliefs.^{5,8}

Individuals with paranormal beliefs have been associated with cognitive biases, including decision-making errors, misinterpretation of coincidences, and reliance on intuitive rather than analytical thinking.^{9,10} Religious beliefs also play a significant role in shaping such beliefs, and paranormal beliefs embedded within religious frameworks may be more readily accepted.^{10,11} Paranormal beliefs are further thought to reduce death-related anxiety by fostering belief in an afterlife.¹² However, findings regarding the relationship between religiosity and paranormal belief are inconsistent, with studies reporting both positive and negative associations.^{13,14} Additionally, paranormal beliefs have been observed even among atheists, highlighting the complexity of this relationship.¹⁵

Some studies suggest that education is associated with lower levels of paranormal beliefs.^{16,17} This may be due to the development of critical thinking and analytical skills through higher education. Levels of paranormal belief have also been shown to differ across academic disciplines, with students in fields emphasizing critical thinking, such as Medicine and Psychology, reporting lower levels compared to those in Education or Theology.¹⁸ These findings indicate that educational environments may shape individuals' attitudes toward unscientific beliefs.

Paranormal beliefs have been suggested to function as a coping mechanism for death anxiety by providing explanations for uncertainty and beliefs in an afterlife.^{19,20} However, findings are inconsistent, as some studies report higher levels of death anxiety among individuals with stronger paranormal beliefs.²¹ Overall, the relationship between paranormal beliefs and death anxiety remains unclear.

Creativity has also been associated with paranormal belief. Studies suggest that individuals with stronger paranormal or magical thinking tend to generate more original and distant associations in word-based tasks.²²⁻²⁴ In this context, the present study aimed to examine the relationship between creativity and paranormal beliefs.

Moreover, the relationship between paranormal and religious beliefs with personality traits has been a debated issue in the literature. Early personality studies using Eysenck's three-dimensional model reported that individuals with higher paranormal belief scores were more extroverted, without significant differences in neuroticism or psychoticism.²⁵ Another study, however, found that individuals high in both extraversion and neuroticism also reported higher paranormal belief scores.²⁶

Therefore, the present study aimed to examine the relationships between paranormal beliefs and personality traits, creativity, and death anxiety, and to compare these variables across students from two distinct academic disciplines, namely Medicine and Theology. By integrating psychological, cognitive, and educational variables within a single framework, this study contributes to the literature by providing a more comprehensive understanding of the factors associated with paranormal beliefs. In addition, the interfaculty comparison offers insight into how different educational environments may shape individuals' tendencies toward such beliefs.

In light of the literature and the aims of the present study, the following hypotheses were formulated:

Hypothesis 1: Medical students will report higher levels of paranormal beliefs compared to theology students.

Hypothesis 2: Higher levels of paranormal belief will be positively associated with (a) age, (b) year of study, and (c) gender.

Hypothesis 3: Death anxiety will be positively correlated with (a) neuroticism and (b) psychoticism.

Hypothesis 4: Paranormal beliefs will be negatively associated with creativity, as measured by the Controlled Word Association Test.

Materials and Methods

Participants

This study included a total of 200 undergraduate students, aged between 18 and 30 years, enrolled at Erciyes University. Among them, 100 participants were students from the Faculty of Medicine and 100 were from the Faculty of Theology. The rationale for selecting students from these two faculties was to evaluate the potential impact of differences in educational curricula on levels of paranormal belief. While students in the Faculty of Theology receive training predominantly focused on religious knowledge and metaphysical issues, students in the Faculty of Medicine are primarily educated in scientific methodology, analytical reasoning, and evidence-based practices. The study thus aimed to assess how these contrasting educational environments influence students' endorsement of paranormal beliefs.

Participants were included on a voluntary basis. Individuals with known psychiatric, neurological, metabolic, or endocrine disorders were excluded based on self-report. However, no structured psychiatric interview was conducted.

Sociodemographic data were collected from all participants who consented to take part in the study. In addition, the following standardized instruments were administered: the Paranormal Belief Scale, the Revised Short Form of the Eysenck Personality Questionnaire, the Controlled Word Association Test, and Templer's Death Anxiety Scale. All measures were self-reported and completed by the students.

The study was approved by the Ethics Committee of Erciyes University Faculty of Medicine, with decision number 2024/218. The research was conducted in accordance with the principles of the Declaration of Helsinki, and informed consent was obtained from all participants.

Paranormal Belief Scale

To assess paranormal beliefs, the Paranormal Belief Scale originally developed by Tobacyk, whose validity has been established internationally, was employed.²⁷ The scale has been widely used across different cultures and languages through various adaptations. The Turkish version of the scale was validated and standardized for use in Turkey by Arslan in 2010.²⁸ During the adaptation process, the items were translated into Turkish, and necessary cultural modifications were made. In the present study, this Turkish version was administered. Participants' responses to the scale items were evaluated to determine their individual levels of paranormal belief. The instrument consists of 27 items scored on a five-point Likert scale, ranging from "Strongly Agree" (5) to "Strongly Disagree" (1). The total score ranges from 27 to 135.³

Revised Short Form of the Eysenck Personality Questionnaire

In this study, personality traits were assessed using the short form of the Eysenck Personality Questionnaire, developed by Francis, Brown, and Philipchalk and widely used in the field.²⁸ This instrument consists of 24 items and examines personality structure across three core dimensions: extraversion, neuroticism, and psychoticism. In addition, the questionnaire includes a lie subscale designed to reduce response bias and to check for the validity of participants' answers. Scores for each personality dimension range from 0 to 6, reflecting the extent to which the respective trait is dominant in the individual. The Turkish adaptation and validation of the scale were conducted by Karancı, Dirik, and Yorulmaz in 2007.²⁹ In the present study, this Turkish version was administered.

Controlled Word Association Test

The Controlled Word Association Test (COWAT), originally developed by Benton and colleagues, has established normative values across different age groups and educational levels.³⁰ The test is designed to evaluate individuals' thought organization, behavioral persistence, attention and concentration capacity, as well as verbal functions and language skills. During administration, participants are asked to generate as many words as possible within one minute, starting with designated letters, while avoiding proper nouns and derivatives of the same root. This procedure is repeated separately for three different letters, and the total number of words generated is used as the performance score. In the Turkish standardization of the test, the letters K, A, and S were used instead of the F, A, and S employed in the original English version.³¹ In the present study, this Turkish adaptation protocol was implemented.

Death Anxiety Scale

The Death Anxiety Scale, developed by Templer in 1970, is employed to assess individuals' levels of anxiety concerning the phenomenon of death. The scale consists of 15 items and utilizes a dichotomous True–False response format. True responses are scored as 1 point and False responses as 0 points, yielding a total score ranging from 0 to 15. Higher scores are interpreted as reflecting higher levels of death anxiety. The mean score has been established as 7, with individuals scoring above this threshold considered to exhibit clinically relevant death anxiety. The Turkish adaptation of the scale was carried out by Şenol,³² and its validity and reliability studies were conducted by Akça and Köse.³³ In the present study, this Turkish version was administered.

Procedure

All participants were informed about the aims and procedures of the study prior to data collection, and written informed consent was obtained. Data were collected in classroom settings during scheduled sessions under the supervision of the researchers. After completing a brief sociodemographic form, participants were instructed to respond to the standardized instruments in the following order: the Paranormal Belief Scale, the Revised Short Form of the Eysenck Personality Questionnaire, the Controlled Word Association Test, and the Death Anxiety Scale. The administration of the measures took approximately 25–30 minutes for each participant.

Statistical Analysis

The data obtained in this study were analyzed using the Statistical Package for the Social Sciences (SPSS), version 26.0. The normality of distribution for continuous variables was assessed using the Kolmogorov–Smirnov test and visual inspection methods. All continuous variables distributed normally. Independent-samples t-tests were employed, group comparisons adjusted for age were performed using analysis of covariance (ANCOVA). Correlation analyses were performed using the Pearson correlation test (r). Gender was coded as a binary variable (1=female, 2=male) and included in the Pearson partial correlation analyses. Data are presented in tables as “mean±standard deviation” for continuous variables and “frequency (percentage)” for categorical variables. A p -value of <0.05 was considered statistically significant.

Results

The study sample consisted of 49 female and 51 male students from the Faculty of Medicine, and 56 female and 44 male students from the Faculty of Theology. The mean age of the participants was 22.22 ± 2.30 years for medical students and 22.39 ± 1.87 years for theology students. No significant differences were observed between the two groups in terms of sociodemographic variables. Similarly, no significant differences were found between the groups regarding smoking status ($p=.462$) or the average number of cigarettes smoked per day ($p=.168$). The sociodemographic characteristics of the participants are summarized in Table 1.

Table 1. Comparison of sociodemographic characteristics between groups.

Variables	Faculty of Medicine (n = 100)	Faculty of Theology (n = 100)	Comparison
Age (mean ± SD)	22.22 ± 2.30	22.39 ± 1.87	$t = -0.575$; $p = 0.566$
Gender distribution (Female/Male)*	49/51	56/44	$\chi^2 = 0.982$; $p = 0.322$
Academic year*			
1st year	16	15	-
2nd year	11	23	-
3rd year	7	21	-
4th year	13	41	-
5th year	33	-	-
6th year	20	-	-
Psychiatric illness		None	
Physical illness (Yes/No)	7/93	8/92	$\chi^2 = 0.72$; $p = 0.788$
Smoking (Yes/No)	16/84	20/80	$\chi^2 = 0.542$; $p = 0.462$

*Since the sample size was 100 in both groups, values also indicate frequencies.

Comparison of Scale Scores

Paranormal belief levels among medical students were found to be significantly higher compared to theology students ($F=30.781$; $p<.001$). No significant differences were observed between the two groups in terms of the total score on the Death Anxiety Scale ($p=.938$) or the subscale scores of the Eysenck Personality Questionnaire, including the lie scale ($p=.061$), extraversion ($p=.107$), neuroticism ($p=.210$),

and psychoticism ($p=.289$). In contrast, theology students obtained higher total scores on the Controlled Word Association Test compared with medical students ($p=.003$) (Table 2).

Table 2. Comparison of scale scores between groups.

Variables	Faculty of Medicine (n = 100)	Faculty of Theology (n = 100)	Comparison
Paranormal Belief Scale (Total)	75.45 ± 13.21	66.99 ± 8.28	F = 30.781; $p < 0.001^a, b$
Death Anxiety Scale (Total)	58.95 ± 12.80	59.09 ± 12.74	t = -0.078; $p = 0.938$
Eysenck Personality Questionnaire			
Lie subscale	3.14 ± 1.63	2.72 ± 1.53	t = 1.884; $p = 0.061$
Extraversion	3.07 ± 1.16	3.32 ± 1.02	t = -1.618; $p = 0.107$
Neuroticism	3.30 ± 1.39	3.04 ± 1.53	t = 1.258; $p = 0.210$
Psychoticism	2.88 ± 0.96	2.74 ± 0.91	t = 1.063; $p = 0.289$
Controlled Word Association Test			
K subtest	9.83 ± 3.13	10.97 ± 3.25	t = -2.529; $p = 0.012^c$
A subtest	6.35 ± 2.35	6.60 ± 2.43	t = -0.740; $p = 0.460$
S subtest	6.87 ± 2.50	8.03 ± 2.78	t = -3.104; $p = 0.002^c$
Total score	23.05 ± 5.84	25.60 ± 6.11	t = -3.019; $p = 0.003^c$

^a Adjusted for age and gender.

^b Higher among medical students.

^c Higher among theology students.

Correlation Analyses

Correlation Analyses Among Medical Students

A positive correlation was found between age and the total score of the Paranormal Belief Scale ($r=0.347$; $p<.001$). Similarly, there was a positive correlation between the academic year and the Paranormal Belief Scale total score ($r=0.354$; $p<.001$). Paranormal belief scores were significantly higher in males compared to females ($r=0.271$; $p=.006$). Moreover, positive correlations were observed between the Death Anxiety Scale total score and both the neuroticism score ($r=0.299$; $p=.003$) and psychoticism score ($r=0.277$; $p=.005$) of the Eysenck Personality Questionnaire.

Correlation Analyses Among Theology Students

No significant correlations were identified between age or academic year and Paranormal Belief Scale scores. However, the Death Anxiety Scale total score was positively correlated with the psychoticism subscale of the Eysenck Personality Questionnaire ($r=0.202$; $p=.043$).

Correlation Analyses in the Overall Sample

Across the entire sample, age was positively correlated with Paranormal Belief Scale scores ($r=0.205$; $p=.004$). Paranormal belief scores were significantly higher in males compared to females ($r=0.224$; $p=.001$) and lower among theology students compared to medical students ($r=-0.360$; $p<.001$). Positive correlations were also found between the Death Anxiety Scale total score and the neuroticism ($r=0.150$; $p=.034$) and psychoticism ($r=0.240$; $p=.001$) subscales of the Eysenck Personality Questionnaire. Additionally, both the K subtest score and the total score of the Controlled Word Association Test were significantly lower in males compared to females ($r=-0.165$; $p=.020$ and $r=-0.168$; $p=.018$, respectively). Finally, higher paranormal belief scores were associated with a tendency toward lower total scores on the Controlled Word Association Test ($r=-0.191$; $p<.001$) (Table 3).

Table 3. Correlation analysis by direction

	Correlation coefficient (r)	p-value
Age – Paranormal Beliefs (Faculty of Medicine)	0.347	<0.001
Gender – Paranormal Beliefs (Faculty of Medicine)	0.271	0.006
Death Anxiety – Psychoticism (Faculty of Medicine)	0.277	0.005
Death Anxiety – Psychoticism (Faculty of Theology)	0.202	0.043
Age – Paranormal Beliefs (General)	0.205	0.004
Gender – Paranormal Beliefs (General)	0.224	0.001
Faculty – Paranormal Beliefs (General)	-0.360	<0.001
Death Anxiety – Psychoticism (General)	0.24	0.001
Paranormal Beliefs – Word Association Test (General)	-0.191	<0.001

Note: r = Pearson correlation coefficient; $p < 0.05$ considered statistically significant.

Discussion

Paranormal beliefs have persisted throughout history and have been present across all cultures. With the advancement of science and technology, it was assumed that the prevalence of such cultural beliefs would decline. However, studies investigating this issue indicate that the influence of paranormal beliefs

continues to manifest in individuals' daily lives and still occupies a significant place in human existence. In this study, the relationships between paranormal beliefs and sociodemographic variables such as age, gender, and education, as well as personality traits, were evaluated.

When the relationship between paranormal beliefs and education is considered, previous research involving participants from various educational levels has reported that paranormal beliefs are less prevalent among more educated individuals.^{16,34} Moreover, studies conducted in Western countries have demonstrated significant differences in paranormal belief levels across academic disciplines. For instance, research among university students has revealed that medical and psychology students scored significantly lower on paranormal belief measures compared to students in education, theology, or the arts.^{16,35} Similarly, a study conducted in Turkey in 2024 found that students enrolled in Islamic studies reported higher levels of paranormal belief, whereas medical students exhibited lower levels.³⁶ Conversely, another study examining education levels and paranormal beliefs concluded that participants with postgraduate education displayed higher levels of paranormal belief.³⁷

In the present study, contrary to the initial expectation and previous findings, medical students were found to exhibit higher levels of paranormal belief compared to theology students. This result may be explained by the possibility that medical students, due to their heavy academic workload, exam-related stress, and uncertainties concerning future professional responsibilities, are more likely to experience anxiety, which they attempt to alleviate by turning toward paranormal beliefs. Conversely, it may also be considered that theology students, throughout their religious education, tend to approach paranormal beliefs with a more critical and analytical perspective.

Although education provides individuals with a rational outlook, it has been observed that during stressful and uncertain periods, people may resort to irrational beliefs outside the framework of scientific knowledge. Furthermore, the culture of the environment in which individuals live, as well as the cultural characteristics of the communities where they spend most of their lives, may also be influential factors in shaping paranormal beliefs. In conclusion, the impact of educational level and academic discipline on paranormal beliefs appears to be multidimensional and complex, requiring the simultaneous consideration of individual, cultural, and environmental factors.

In the literature, a relationship between the perception of meaningful coincidences and creativity has been reported.³⁸ A review has indicated that across the studies analyzed, there was a significant association between creative personality and paranormal belief.³⁹ More recent research has demonstrated that highly creative individuals tend to perceive greater meaning in random arrangements, and this tendency also applies to individuals with paranormal beliefs.⁴⁰ However, in our study, theology students—who exhibited lower levels of paranormal belief—achieved higher scores on the verbal association test used to assess creativity. Moreover, when all participants were evaluated together, an inverse relationship was observed between levels of paranormal belief and creativity. These findings suggest that the relationship between creative thinking and paranormal beliefs may not be as strong or consistent as previously proposed. Several possible explanations may account for this discrepancy. First, the verbal association test employed in our study may have measured a different dimension of creative thinking. Second, in groups characterized by lower levels of paranormal belief, the predominance of more analytical and critical thinking processes may have enhanced verbal creativity performance.

In this study, it was found that total scores on the Paranormal Belief Scale increased progressively from females to males. Previous studies in the literature have generally reported that women exhibit higher levels of paranormal belief compared to men.^{38,41,42} However, the findings of the present study contradict this general trend. This discrepancy may be explained by the characteristics of the sample group and the influence of sociocultural factors. In contemporary contexts, shifting perceptions of gender roles and the diversification of social norms suggest that the shaping of paranormal beliefs may be less dependent on gender and more influenced by individuals' life experiences and cognitive frameworks. Thus, it can be argued that this divergence is attributable not so much to gender itself, but rather to the combined effects of cultural, social, and individual factors.

In this study, a significant positive correlation was observed between age, as well as academic year, and total scores on the Paranormal Belief Scale among medical students. In contrast, no significant relationship was found between age or year of study and scale scores among theology students. The increase observed specifically in the medical faculty may be associated with students' growing sense of awe toward human physiology and the complexity of life as they progress in their education. Furthermore, their direct encounters with phenomena such as death, illness, and human limitations during clinical training may also foster greater interest in paranormal beliefs. Indeed, while some studies have reported that younger individuals display a greater tendency toward paranormal beliefs,⁴³ other studies have found that

older individuals are more prone to such beliefs.^{18,41} These discrepancies may be attributable to cultural and individual experiences, limited sample sizes, or age-related cognitive changes. Overall, these findings suggest the necessity of conducting further research with larger and more diverse samples to enhance the generalizability of the results.

This study has several strengths. First, it examines paranormal beliefs in relation to multiple psychological variables, including personality traits, creativity, and death anxiety, within a single framework. Second, the inclusion of students from two distinct academic disciplines allows for a meaningful comparison in terms of different educational and cognitive backgrounds. Third, the use of standardized and widely validated measurement tools strengthens the reliability of the findings.

This study also has several limitations. First, the research was conducted with a limited sample of medical and theology students from a single university, which restricts the generalizability of the findings. Second, an a priori sample size or power analysis was not conducted, which may limit the statistical strength of the study. Third, psychiatric status was not assessed through a structured clinical interview, and exclusion criteria were based on self-report, which may have introduced bias. In addition, because the scales employed in this study were based on self-report, participants may have been inclined to respond in a socially desirable manner. Finally, creativity was assessed solely through a verbal association test, without considering other dimensions of creativity.

Conclusion

The findings of this study demonstrate that paranormal beliefs are shaped through the interplay of individual, environmental, and cultural factors, and therefore represent a phenomenon too complex to be explained by a single variable. Educational level and cultural interactions play a decisive role in understanding individuals' tendencies toward paranormal beliefs. Accordingly, this research provides a valuable framework for future studies on the subject.



Reviewer: External, Independent

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Declarations:

1. Originality Statement: This study is original and has not been published previously. This study was not derived from any thesis.

2. Author Contributions: Conceptualization: EE; Idea: EE; Literature Review: SY, ÖOE; Data Collection: SY; Data Processing: SY, AA; Analysis: AA; Writing – Original Draft: ÖOE, AA; Writing – Review and Editing: ÖOE, EE.

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6. Generative Artificial Intelligence Statement: No generative artificial intelligence tools were used at any stage of this study.

7. Sustainable Development Goals: This work is related to the following United Nations Sustainable Development Goals



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