

## The impact of openness to experience personality trait on attitudes of medical students toward euthanasia: the moderating role of spiritual intelligence

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### Abstract

Euthanasia is the most important ethical challenges in the entire field of medicine. Various factors may influence the medical students' attitudes toward euthanasia, including personal beliefs, values, and personality traits. This research aimed at examining spiritual intelligence as a moderator of the relationship between openness to experience and attitude toward euthanasia. In this cross-sectional study, a total of 219 medical students (85 men and 134 women) in Zahedan, Iran, in 2022, were selected by convenience sampling method and evaluated using the socio-demographic information form (including age, gender, and medical education level), Spiritual Intelligence Self-Report Inventory, 24-item Brief HEXACO Inventory, and Euthanasia Attitude Scale, followed by using SPSS v25 for data analysis. The study results showed that openness to experience positively and spiritual intelligence negatively associated with attitude toward euthanasia. Also, the regression analysis revealed that spiritual intelligence had a moderating role in the relationship between openness to experience and attitude toward euthanasia. It seems that paying attention to personality differences and spiritual intelligence training among medical students can play an important role in changing their attitudes toward euthanasia.

**Key Words:** euthanasia; openness to experience; personality; spiritual intelligence.

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The issues around life termination and the discontinuation of maintenance therapy for terminally ill or dying patients are considered one of the 10 major ethical challenges in the entire field of medicine. Euthanasia is the most important term discussed in this context.<sup>1</sup> By definition, euthanasia is the act of ending the life of terminally ill patients to prevent further pain and suffering.<sup>2</sup> In recent decades, due to significant advances in biochemical technologies and the development of novel disciplines in bioethics and evidence-based medicine, a greater range of ethical concerns have been raised about euthanasia.<sup>3</sup> The euthanasia debates have mainly focused on the ideological conflicts between sanctity and quality of life. This ideological discourse not only does include practical questions about the acceptability or non-acceptability of euthanasia but also raises concerns about its possible abuses.<sup>4</sup> Regardless of current controversial concerns, what is increasingly clear is that attitude toward euthanasia may be influenced by a variety of psychological and sociological factors.<sup>4</sup>

From a psychological perspective, although there are few specific studies to investigate the association between psychological factors and attitude toward euthanasia, available clinical evidence suggests that personality may be a relevant consideration.<sup>4,5</sup> In this regard, Lester et al.<sup>6</sup> reported significant relationships between different personality dimensions and pro-death attitude but stated that more research is needed to clarify the contradictions in their results. Lately, Aghababaei et al.<sup>5</sup> examined 165 Iranian students through the HEXACO Personality Inventory-Revised, showing that attitude toward euthanasia had a significant negative correlation with honesty-humility, extroversion, and agreeableness, and a significant positive correlation with openness to experience. However, in this study, only openness to experience remained significant after controlling for spirituality in the regression analysis.<sup>5</sup> Openness to experience encompasses six facets, namely attentiveness to inner feelings, aesthetic sensitivity, active imagination (fantasy), intellectual curiosity, preference for variety

**Table 1.** Demographic information about participants (N = 219).

Variables	M ± SD; range	N (%)
Age	25.40 ± 3.05; 20-43	
Gender	Male	85 (38.8)
	Female	134 (61.2)
Medical education level	Stagership	96 (43.8)
	Internship	91 (41.6)
	Residency	32 (14.6)

(adventurousness), and challenging authority (psychological liberalism),<sup>7</sup> many psychometric studies have shown them to be significantly correlated. Therefore, openness to experience can be assumed as a universal personality factor including a set of specific tendencies, traits, and habits that are combined.<sup>7,8</sup> As it is supposed that individuals with higher levels of openness to experience are more likely to insist on their own independent thinking and be less affected by social norms,<sup>5</sup> we hypothesized that openness to experience has a positive relationship with attitude toward euthanasia. From a sociological perspective, although it is difficult to make strict statistical comparisons between studies conducted in different countries and cultures, emerging studies have jointly introduced spirituality as the strongest negative predictor of euthanasia.<sup>4,5,9-13</sup> Spirituality is characterized by knowing oneself as a spirit/soul and understanding the highest human spiritual attributes, namely purity, love, bliss, and peace. Spirituality forms the main part of a broad understanding of intelligence, known as spiritual intelligence. According to the theistic approach, spiritual intelligence is considered the ability to know oneself and the universe through God-centeredness (and not self-centeredness and ego) and adapt one's life accordingly.<sup>14</sup> Hence, spiritual intelligence as an ideal concept beyond context and human thought can help one to see things as they are, without self-distortions.<sup>15</sup> Similarly, Kass and Lenox inferred that living with spiritual progress facilitates the attainment of full human potential.<sup>16</sup> Also, according to the study by Rogers and Dantley,<sup>17</sup> spiritual intelligence is expressed as the root of thought and in advance of any accepted collections, structures, or categories during thinking. In this regard, Wolman emphasized the manifestations of spirituality and spiritual intelligence in relationships and everyday activities.<sup>18</sup> This perspective on spiritual intelligence as a lived experience forms the conceptual model of our study, i.e., spiritual intelligence has a negative moderating effect on the relationships between openness to experience and attitude toward euthanasia. Figure 1 shows the conceptual model where

openness to experience is the main predictor, spiritual intelligence is the moderator, and attitude toward euthanasia is the outcome.

## Materials and Methods

### Study design, setting, and participants

The present cross-sectional study was conducted in July 2022 in Zahedan, Iran. The sample size was estimated at 204 people using G\*Power software v3.1.9.7 for 95% power,  $\alpha = 0.05$ ,  $d = 0.10$ , and 5 potential predictors, which increased to 224 people according to a 10% attrition rate [5, 19]. The participants were selected from among the students of Zahedan University of Medical Sciences using the convenience sampling method. The inclusion criterion was: (i) the engagement in studying medicine in stagership, internship, and residency. The exclusion criteria were: (i) suffering from an acute physical or mental illness; (ii) failure to complete the questionnaires correctly.

Finally, 219 medical students completed the questionnaires correctly [Mage = 25.40, SDage = 3.05, Males = 85 (38.8%), Females = 134 (61.2%)] (see Table 1). Furthermore, a sampling error of 1% was also obtained, indicating sampling sufficiency.<sup>20</sup>

### Procedure

The current research was approved by the Ethics Committee of Zahedan University of Medical Sciences with approval ID: IR.ZAUMS.REC.1400.321. After giving the necessary information about the study objectives to and completing the informed consent by the participants, the demographic information form (including age, gender, and medical education level), the Spiritual Intelligence Self-Report Inventory (SISRI),<sup>21</sup> the 24-item Brief HEXACO Inventory (BHI),<sup>22</sup> and the Euthanasia Attitude Scale (EAS) were provided.<sup>23</sup> Additionally, in order to comply with the Helsinki Declaration, subjects were told that their participation was voluntary and that they could leave the study for any reason. All participants were also assured of the principles of confidentiality.<sup>24</sup>

**Table 2.** Correlation matrix of study variables among medical students (N = 219).

Variables	1	2	3	4	5	6
1. Age	-					
2. Gender	0.06	-				
3. Medical education level	0.28***	-0.00	-			
4. Openness to experience	-0.02	0.07	-0.08	-		
5. Spiritual intelligence	-0.08	-0.04	0.13*	-0.11*	-	
6. Euthanasia	0.06	-0.04	-0.11	0.21**	-0.41***	-

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

### Instruments

In this study, the Persian version of the following instruments was used (Cronbach’s alpha equal to or above 0.70 produces an acceptable internal consistency).<sup>25</sup>

### SISRI

This 24-item inventory has four dimensions, namely critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion, and is scored on a 5-point Likert scale from 0 to 4.<sup>21</sup> The SISRI total scale has acceptable validity and reliability in Iran (Cronbach’s alpha coefficient = 0.91).<sup>26</sup> In our study, Cronbach’s alpha coefficient for the SISRI total scale was obtained of 0.89.

### BHI

BHI was used to examine the mean scores of openness to experience. This 24-item inventory measures six personality dimensions, including honesty-humility, emotionality, extroversion, agreeableness, conscientiousness, and openness to experience (i.e., 4 items per domain). BHI scoring is based on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).<sup>22</sup> The reliability and validity of BHI in Iran have been reported to be suitable by Basharpour et al.<sup>27</sup> In the present study, Cronbach’s alpha coefficient for the openness to experience domain was obtained of 0.80.

### EAS

The Persian version of EAS contains 20 items and is scored on a 5-point Likert scale from 1 to 5. Higher EAS scores imply a more positive attitude toward euthanasia and the total ordinal score range is 20-100.<sup>23</sup> In Iran, Aghababaei has reported Cronbach's alpha for EAS total scale to be 0.88.<sup>28</sup> In our study, Cronbach’s alpha coefficient for the EAS total scale was 0.90.

### Statistical analysis

The variables examined in this study included attitude towards euthanasia (as the dependent variable), openness to experience personality trait (as the independent variable), spiritual intelligence (as the moderator

variable), and age, gender, and medical education level (as the covariates).<sup>29,30</sup> In order to analyze the data, descriptive (including frequency, mean and standard deviation) and inferential (including Spearman's correlation coefficient regarding the statistical significance of the Kolmogorov-Smirnov test) statistical methods were used in SPSS v25 software. Hierarchical linear regression was also used to investigate the moderating effect of spiritual intelligence on the relationship between openness to experience and attitude toward euthanasia among medical students. This analysis has three steps of inclusion, (i) the mean scores of openness to experience, the mean scores of attitude towards euthanasia, and the two-way interactive term. In all stages of analysis, a significance level of less than 0.05 was considered.

### Results

The results presented in Table 2 suggest a significant positive correlation between openness to experiences and attitude toward euthanasia ( $r = 0.21$ ,  $p = 0.001$ ), and a significant negative correlation between spiritual intelligence and attitude toward euthanasia ( $r = -0.41$ ,  $p < 0.001$ ). However, no significant relationship was observed between attitude toward euthanasia and factors such as age ( $r = 0.06$ ,  $p = 0.342$ ), gender ( $r = -0.04$ ,  $p = 0.508$ ), and medical education level ( $r = 0.11$ ,  $p = 0.096$ ). To evaluate the spiritual intelligence’s moderating effect on the relationship between openness to experiences and attitude toward euthanasia, hierarchical linear regression was performed. In the first stage, based on Table 2, openness to experience was entered into the analysis. In Model 1, the coefficient of determination ( $R^2$ ) was obtained of 0.04, i.e., openness to experience accounts for 4 percent of attitude towards euthanasia. Considering the significance of the model ( $p = 0.002$ ) in the Fisher test, it can be inferred that openness to experience can be related to attitude toward euthanasia among medical students.

In the second stage, spiritual intelligence was incorporated into the analysis by controlling the effects of openness to experience. In Model 2,  $R^2$  was calculated at 0.25, showing that openness to experience and spiritual

**Table 3.** Summary of the regression analysis for identifying factors associated with the acceptance of euthanasia among medical students (N = 219).

Variables	Model 1		Model 2		Model 3	
	B (β)	SEB	B (β)	SEB	B (β)	SEB
Openness to experience (OE)	1.02 (0.20)**	0.33	0.70 (0.14)*	0.29	2.21 (0.44)*	1.00
Spiritual intelligence (SI)			-0.42 (-0.46)***	0.05	-1.23 (-1.35)***	0.27
OE × SI					-0.06 (-1.01)**	0.02
R <sup>2</sup>	0.04		0.25		0.28	
F	F (1, 217) = 9.48**		F (2, 216) = 37.06***		F (3, 215) = 28.68***	
ΔR <sup>2</sup>	0.04		0.21		0.03	
ΔF	ΔF (1, 217) = 9.48**		ΔF (1, 216) = 61.97***		ΔF (1, 215) = 9.13**	

\*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

intelligence account for 25 percent of the attitude toward euthanasia. Considering the significance of the model in the Fisher test, it can be inferred that spiritual intelligence can have an association with attitude toward euthanasia among medical students (ΔR<sup>2</sup> = 0.21, p < 0.001).

In the third and final stage, the two-way interactive term was included in the analysis. In Model 3, R<sup>2</sup> was calculated at 0.28, implying that 28 percent of the variable of attitude towards euthanasia is explained by the role of the predicting variables. Considering the significance of the model in the Fisher test, it can be inferred that the two-way interactive effect of “openness to experience × spiritual intelligence” can affect the attitude towards euthanasia among medical students (ΔR<sup>2</sup> = 0.03, p = 0.003) (see Table 3).

### Discussion

Although a few previous studies have repeatedly demonstrated the significant relationships of openness to experience and spiritual intelligence with the attitude toward euthanasia,<sup>5,9-13</sup> to the best of our knowledge, the present study is the first to investigate the moderating role of spiritual intelligence in the link between openness to experience and attitude toward euthanasia among medical students. Our preliminary findings showed a significant positive correlation between openness to experience and attitude toward euthanasia. This finding was consistent with existing literature on the relationships between openness to experience and attitude toward euthanasia.<sup>4,5</sup> This relationship demonstrates that individual differences (i.e., personality variables) have a critical culture-independent function, which is a significant contribution of our study since it provides the assessment of sociological variables-related attitude toward euthanasia and explains additional variations. Although group-level variables help to identify cross-cultural tendencies, a higher fidelity explanation of differences and similarities is offered by personality predictors. In other words, examining personality factors (such as Openness to experience) gives a better understanding of attitudes heterogeneity,

even within specific cultural contexts with intense social norms against euthanasia.<sup>4,5</sup>

The results presented in this paper also revealed that spiritual intelligence would be a key factor in euthanasia-related attitudes. As presented in References,<sup>9-13</sup> spiritual intelligence had a significantly negative association with attitudes toward euthanasia; even once openness to experience was controlled. Although SISRI is a technical measure of spiritual intelligence, it is strongly correlated with religiosity, thus reflecting the relatively-wide negative perspective on euthanasia, which is manifested in both Islam and Christianity.<sup>5</sup> However, pro-social characteristics might be captured by this measure since the significance of the openness to experience factor is eliminated by adding spiritual intelligence to the model in multiple regression analyses. In other words, those with more participation in religious activities are also likely to get lower scores on openness to experience and higher scores on the SISRI.

Besides, no association was found between attitude toward euthanasia and socio-demographic factors (e.g., age, gender, and medical education level), which was inconsistent with the results obtained by Borovecki et al.<sup>29</sup> and Lau and Wong.<sup>30</sup> This inconsistency between our results and preceding studies might be attributed to different personality traits and religious beliefs, as well as their cultural expectations.

When addressing the main study hypothesis, the regression analysis results revealed that the association of spiritual intelligence with attitude toward euthanasia was independent and stronger than openness to experience. Results from this study also showed that spiritual intelligence has a considerable negative moderating effect on the significant positive association between openness to experience and attitude towards euthanasia among medical students. To explain this finding, empirical and theoretical evidence has shown that individuals with higher levels of openness to experience are definitely motivated for seeking new experiences (e.g., euthanasia) and engaging in self-examination. Structurally, due to their fluid style of consciousness,

they can make novel associations between remotely connected ideas.<sup>31</sup> These psychological aspects of openness to experiences (including motivational and structural components) make people think more independently and less influenced by social norms.<sup>5,31</sup> The current explanations suggest that a higher probability of deviating from social norms would result in a more positive attitude toward euthanasia.<sup>4</sup> By increasing self-understanding and achieving a high degree of conscience, compassion, and commitment to human values, spiritual intelligence can help people to choose a socially relevant purpose in life and make high-level decisions despite the presence of stress, complexity, and high rates of change.<sup>14,32</sup>]. Therefore, it seems that spiritual intelligence training can simultaneously moderate the positive relationship between openness to experience and attitude toward euthanasia.

The present study had some limitations. First of all, the current research was conducted in a student group; thus, the generalization of the results needs careful consideration. Since medical students have a more open-minded attitude, it is expected that the general society's attitude toward euthanasia will be different from what was obtained in this research. Therefore, it seems that investigating the topic of euthanasia in the general community will be the next step in this field. The second limitation is the lack of random sampling in this study and population selection bias, which can be reduced by carefully choosing the correct sampling method so that the study results can be generalized to the target population. As the third limitation, the cross-sectional study design cannot contribute to causal inference in most cases. Therefore, this limitation can be dealt with by designing longitudinal studies. The fourth limitation was the increased chance of recall bias in the study due to using self-reported data, which can be resolved by interviewing individual participants. As a fifth limitation, since euthanasia is illegal in Iran, our data may not be able to determine whether attitude toward euthanasia is related to openness to experience or reflection of moral judgments about euthanasia itself. So, it is unlikely to generalize the data to a more secular society; however, they seem informative for Islamic countries adhering to Islamic law (especially end-of-life issues). Sixth and lastly, it is necessary to examine other factors that influence medical students' attitudes toward euthanasia, such as cultural contexts, comorbidity of psychiatric disorders (particularly depressive disorders), death anxiety, and openness to experience facets.<sup>4,5,33,34</sup>

In conclusion, the contribution of this study to the literature on attitudes toward euthanasia is provided in three key ways. First, to the degree that personality factors can cast light on individual differences in attitudes toward euthanasia, they are capable of informing end-of-life conversations in actual clinical practice. It seems feasible that the needed texture could be added to end-of-life counseling using a personality profile, or more specifically a religiosity (spirituality) and openness

profile of an individual patient. Second, the findings of this study indicated the moderating role of spiritual intelligence in the link between openness to experience and attitude toward euthanasia, which highlights the importance of implementing strategies to improve the spirituality level of medical students in controversial moral situations such as euthanasia. Third, the individual differences approach adopted in this study gives insight into future cross-cultural research to examine models of personality predictors of attitude toward euthanasia in other cultural contexts. In other words, the individual differences approach allows for examining predictive models for euthanasia attitudes that might pay off across divergent cultures; thus, cultural similarities are highlighted, which might otherwise be obscured by group-level variables sensitive to cultural differences.

### List of acronyms

BHI - The 24-item Brief HEXACO Inventory

EAS - The Euthanasia Attitude Scale

R2 - The coefficient of determination

SISRI - Spiritual Intelligence Self-Report Inventory

### Contributions of Authors

MKH: conceptualization, methodology; data collection and analysis, writing-original draft preparation, writing and editing of the manuscript. The author has read and approved the final edited typescript.

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### Conflict of Interest

The author declares no conflicts of interest.

### Ethical Publication Statement

We confirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

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