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Personality traits associated with less favourable attitudes toward end-of-life care among hospital nurses: a cross-sectional predictive study

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Article

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Abstract

Context:

End-of-life care is frequently provided by hospital nurses outside specialist palliative care units. Although education and clinical experience have been linked to nurses' attitudes toward caring for dying patients, the role of personality traits remains insufficiently understood.

Objectives:

To examine associations between work-related factors, Five-Factor Model personality traits, and attitudes toward end-of-life care among hospital nurses, and to explore a clinically interpretable model for identifying less favourable attitudes.

Methods:

This single-centre cross-sectional study included 303 registered nurses working in hospital units with regular exposure to end-of-life care. Attitudes were assessed using the Frommelt Attitudes Toward Care of the Dying Scale (FATCOD), and personality traits using the NEO Five-Factor Inventory. Multivariable linear regression examined factors associated with total FATCOD score. An exploratory logistic regression model estimated the probability of low FATCOD, defined as a score at or below the 25th percentile.

Results:

Higher conscientiousness, openness, and agreeableness were independently associated with higher FATCOD scores. Working in Critical Care was associated with lower FATCOD scores compared with General Emergency. Palliative care training showed a positive but non-significant association. The probability of low FATCOD decreased progressively across profiles with higher agreeableness, openness, and conscientiousness. The exploratory model showed moderate within-sample discrimination, with an area under the ROC curve of 0.71.

Conclusion:

Conscientiousness, agreeableness, and openness were associated with more favourable attitudes toward end-of-life care among hospital nurses. Personality-informed approaches may help tailor palliative care education and professional support, but should not be used for labelling or staffing decisions.

INTRODUCTION

End-of-life care is a core component of nursing practice and has become increasingly important in the context of population ageing and the growing burden of chronic disease (1). The World Health Organization estimates that 56.8 million people require palliative care each year, although only a minority currently receive it. In hospital settings, much of this care is delivered outside specialist palliative care units, where nurses are often required to manage symptom control, communication, emotional support, and family-centered care under demanding clinical conditions (2). Nurses' attitudes toward caring for dying patients may therefore influence not only the quality of care provided, but also the experience of patients and families during the final phase of life (3). However, these attitudes show considerable variability and are influenced by educational, personal, and professional factors that are not yet fully understood.

The Frommelt Attitudes Toward Care of the Dying Scale (FATCOD) has become the reference instrument for assessing these attitudes across multiple clinical and educational settings (3). Previous studies have reported that palliative care education, professional experience, and personal characteristics are associated with more favorable attitudes toward end-of-life care (4). In Spain, palliative care training has been associated with more positive attitudes among nurses, and recent hospital-based evidence has suggested that psychosocial aspects of care may also contribute to more favorable FATCOD scores (5). However, most previous research has focused on educational and professional determinants, whereas the role of stable personality characteristics in shaping nurses' attitudes toward end-of-life care remains less well understood.

The NEO Five-Factor Inventory (NEO-FFI) provides a robust theoretical framework for assessing stable personality domains: Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness. These dimensions have been associated with occupational outcomes relevant to nursing, including burnout, empathy, coping, work engagement and quality of care (6). Personality traits may influence how nurses respond to emotionally demanding clinical situations, communicate with patients and families, tolerate uncertainty, and integrate death and dying into their professional role. Despite the potential relevance of these findings, few studies have explicitly explored the association between NEO-FFI personality traits and attitudes toward end-of-life care among nursing professionals.

Understanding these associations may have practical implications for palliative care education and workforce support. Personality-informed approaches should not be used to label professionals or guide staffing decisions, but they may help identify groups who could benefit from targeted training, reflective practice, communication support, or interventions aimed at strengthening preparedness for end-of-life care.

Therefore, the aim of the present study was to examine the association of work-related factors and NEO-FFI personality dimensions with attitudes toward caring for dying patients, as measured by the FATCOD, in nurses working in hospital areas with regular exposure to end-of-life care. As an exploratory secondary

aim we developed a clinically interpretable predictive model of low FATCOD based on the personality dimensions most strongly associated with the outcome.

METHODS

2.1. Study design, setting, and participants

This cross-sectional study included registered nurses working in clinical areas of Hospital Puerta del Mar-San Carlos with regular exposure to end-of-life care during the period from May 1 to June 30, 2021. Eligible units were General Emergency, Critical Care, Medical Area, Surgical Area, Oncology Area, and Maternal-Child Area.

Units were considered eligible if they had registered at least two deaths per year during each of the previous three years. Nurses were eligible if they were full-time registered nurses working in one of these units during the study period. Newly hired nurses who were still undergoing supervised orientation or practical training were excluded.

All eligible nurses were invited to participate. Participation was voluntary and anonymous. Data were collected using a self-administered questionnaire. The study was approved by the Research Ethics Committee of Hospital Universitario Puerta del Mar (Comité de Ética de la Investigación [CEI] de Hospital Universitario Puerta del Mar). All methods were performed in accordance with the relevant guidelines and regulations, including the Declaration of Helsinki, and informed consent was obtained from all participants.

2.2. Variables

Sociodemographic variables included age, sex, marital status, having children, religion and perceived influence of religion. Work-related variables included work area, years of experience in the Health Service, years of experience in the current unit, palliative care training, care of patients with COVID-19, frequency of exposure to death-related situations at work, work experience outside Spain or Andalusia, having a severely ill relative at home and recent bereavement.

Attitudes toward end-of-life care were assessed using the Frommelt Attitudes Toward Care of the Dying Scale. Personality traits were assessed using the NEO Five-Factor Inventory.

2.3 FATCOD and NEO-FFI measures

The main outcome variable was the total score FATCOD, which was used to assess nurses' attitudes toward caring for patients at the end of life. This scale consists of 30 items rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The instrument includes 15 positively worded items and 15 negatively worded items, and total scores range from 30 to 150 points, with higher scores indicating a more favorable attitude toward end-of-life care.

Personality was assessed using NEO-FFI, a widely used instrument for evaluating personality in adults based on the Five-Factor Model. The questionnaire comprises 60 Likert-type items, with 12 items assigned to each of the five dimensions: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. Higher scores indicate greater expression of each personality trait.

The validated Spanish versions of both instruments were used.

For the predictive analysis, because no established clinical threshold for low FATCOD is available, low FATCOD was operationally defined as a score at or below the 25th percentile of the sample distribution. Participants with scores in the lowest quartile were classified as having low FATCOD. To facilitate clinical interpretation, the continuous scores for the NEO-FFI dimensions Conscientiousness, Agreeableness, and Openness were categorized into three approximately balanced groups according to their empirical distribution in the sample: Conscientiousness 17–34, 35–38, and 39–48; Agreeableness 11–32, 33–35, and 36–47; and Openness 8–25, 26–30, and 31–46. These three dimensions were retained for the exploratory probability model because they showed the largest beta coefficients among the personality variables significantly associated with the total FATCOD score in the multivariable regression model. These categories were used to facilitate interpretation of predicted probabilities and were not intended to define clinical personality groups.

2.4 Statistical analysis

A descriptive analysis of the study variables was performed. Categorical variables are presented as frequency (percentage). Quantitative variables are expressed as mean ± standard deviation (SD) or median and interquartile range [IQR], depending on their distribution. Demographic variables were compared using Pearson's chi-square test or Fisher's exact test for categorical data, and Student's t test or the Mann-Whitney U test for continuous variables after assessment of their distribution.

Linear regression models were used to study the relationship between the variables analyzed and the total FATCOD score. A multivariable regression model was built including variables selected according to the theoretical background, and a backward approach was then applied to exclude non-significant variables whenever they were not considered necessary for adjustment. Regression coefficients, 95% confidence intervals, and p values were reported. Model assumptions were assessed by inspection of residuals and evaluation of multicollinearity.

To complement the analysis of the total FATCOD score and provide a clinically interpretable predictive approach, a análisis exploratory logistic regression model was developed to identify profiles with a higher probability of less favorable attitudes toward end-of-life care. A binary logistic regression model was used with low FATCOD as the dependent variable and the categorized Conscientiousness, Agreeableness, and Openness dimensions as explanatory variables, because they showed the largest beta coefficients among the NEO-FFI dimensions significantly associated with the total FATCOD score in

the multivariable linear regression model. This selection was based on criteria of statistical relevance, parsimony, and interpretability.

Predicted probabilities of low FATCOD were estimated for each combination of Conscientiousness, Agreeableness, and Openness categories. These probabilities were intended to support interpretation of the study findings and should not be considered a validated clinical prediction tool.

The discriminative ability of the exploratory model was assessed using a receiver operating characteristic (ROC) curve, and the area under the curve (AUC) was calculated as a summary measure of model performance. Given the exploratory nature of the model and the absence of external validation, predictive results were interpreted cautiously.

Statistical analysis was performed using Stata 16.0 (Stata Statistical Software: Release 16. College Station, TX: StataCorpLP). Statistical significance was defined as a two-sided p value < 0.05.

RESULTS

4.1. Study population

Among the 504 nursing professionals working in different areas of Hospital Puerta del Mar-San Carlos, 303 participants (60.1%) were recruited. The mean age of the participants was 47.5 ± 8.8 years. Women accounted for the majority of the sample, with 239 participants (78.9%). Regarding marital status, 184 (60.7%) were married, and 214 (70.6%) had children. A total of 138 participants (45.5%) reported exposure to death-related situations at work at least once per month, and 165 (54.5%) had completed some form of palliative care training. Full details of the remaining sociodemographic variables are shown in Table 1.

Table 1
Descriptive characteristics of the study participants. Values are presented as n (%) or mean (± SD).

Variable		Value
Age (years)		47.5 (± 8.8)
Female sex		239 (78.9%)
Participants with children		214 (70.6%)
Marital status	Married	184 (60.7%)
	Single	78 (25.7%)
	Separated	6 (2.0%)
	Divorced	32 (10.6%)
	Widowed	3 (1.0%)
Religion	Catholic	215 (71.0%)
	Agnostic	34 (11.2%)
	Atheist	35 (11.5%)
	Protestant	1 (0.3%)
	Other	18 (5.9%)
Influence of religion	High	74 (24.4%)
	Low	146 (48.2%)
	None	83 (27.4%)
Worked outside Spain (> 6 months)		27 (8.9%)
Worked outside Andalusia (> 6 months)		76 (25.2%)
Severely ill relative at home		94 (31.1%)
Loss of a loved one in the previous year		107 (35.8%)
Exposure to death-related situations at work (≥ 1 time/month)		138 (45.5%)
Completed palliative care courses		165 (54.5%)
Cared for a COVID patient		231 (76.2%)
Experience in the Andalusian Health Service (years)		19.1 (± 8.8)
Experience in the current unit (years)		10 (± 9.4)

The study was conducted in clinical areas with at least two deaths per year during the previous three years, including General Emergency, Critical Care, Medical Area, Surgical Area, Oncology Area, and Maternal-Child Area. The sample was distributed across these units as follows: General Emergency, 58 participants (19.1%); Critical Care, 83 (27.4%); Medical Area, 64 (21.1%); Surgical Area, 52 (17.2%); Oncology Area, 12 (4.0%); and Maternal-Child Area, 34 (11.2%).

Complete FATCOD and NEO-FFI data were available for 303 participants, who were included in the regression analyses. The mean total FATCOD score was 117.8 ± 10.4, and the threshold used to define low FATCOD was ≤ 111. Overall, 86 participants (28.5%) were classified as having low FATCOD.

4.2. Multivariable analysis of the total FATCOD score

A multiple linear regression model was fitted with the total FATCOD score as the dependent variable, including work area, palliative care training, and the NEO-FFI dimensions as explanatory variables. General Emergency was used as the reference category for work area. In the adjusted model, the Conscientiousness dimension showed a positive and statistically significant association with the total FATCOD score (β = 0.376; p = 0.002), as did Openness (β = 0.264; p = 0.002) and Agreeableness (β = 0.345; p = 0.013). In contrast, Neuroticism (β = 0.065; p = 0.674) and Extraversion (β = 0.127; p = 0.185) were not significantly associated with the outcome.

Regarding work-related variables, only the Critical Care Area showed a significant association with a lower total FATCOD score compared with the reference category (β = -3.594; p = 0.018). The Medical Area (β = -3.088; p = 0.065), the Surgical Area (β = -0.874; p = 0.604), Oncology Area (β = -3.938; p = 0.228), and Maternal-Child Area (β = -0.832; p = 0.650) were not significantly associated with the outcome. Palliative care training showed a positive association of moderate magnitude, although it did not reach statistical significance (β = 2.111; p = 0.058). Overall, these findings suggest that higher Conscientiousness, Openness, and Agreeableness are associated with more favorable attitudes toward end-of-life care, as measured by the total FATCOD score (Table 2).

Table 2
Association between total FATCOD score, work area, palliative care training, and NEO-FFI dimensions. NEO-FFI: NEO Five-Factor Inventory.

Variable	Category / Dimension	β	CI 95%	P value
Work area	Critical Care	-3.594	-6.559 to -0.628	0.018
	Medical	-3.088	-6.362 to 0.185	0.065
	Surgical	-0.874	-4.166 to 2.420	0.604
	Oncology	-3.938	-10.326 to 2.451	0.228
	Maternal-child	-0.832	-4.424 to 2.760	0.650
Palliative care training		2.111	-0.065 to 4.28	0.058
NEO-FFI	Conscientiousness	0.376	0.143 to 0.608	0.002
	Neuroticism	0.065	-0.238 to 0.369	0.674
	Extraversion	0.127	-0.060 to 0.315	0.185
	Openness	0.264	0.097 to 0.431	0.002
	Agreeableness	0.345	0.075 to 0.616	0.013

4.3. Predicted probability of low FATCOD according to ranges of Conscientiousness, Openness and Agreeableness

To facilitate the clinical interpretation of the findings, a table of predicted probabilities of low FATCOD (Table 3) was built according to different ranges of Conscientiousness, Agreeableness, and Openness, as these were the NEO-FFI dimensions with the largest beta coefficients among the personality variables significantly associated with FATCOD. The table showed a consistent pattern: the probability of low FATCOD progressively decreased as scores in Agreeableness and Openness increased, and to a lesser extent as Conscientiousness increased. These profiles may help identify nurses who could benefit from additional training or support in end-of-life care, rather than being used for staffing decisions.

The highest probability of low FATCOD was observed among participants with low scores in all three dimensions, specifically within the ranges Conscientiousness 17–34, Agreeableness 11–32, and Openness 8–25, with an estimated probability of 53.7%. In contrast, the lowest probabilities were found in profiles with high Agreeableness and Openness. For participants with Conscientiousness 35–38, Agreeableness 36–47, and Openness 31–46, the estimated probability of low FATCOD was 5.8%, whereas for those with Conscientiousness 39–48, Agreeableness 36–47, and Openness 31–46, it was 5.9%.

Overall, these results support the existence of a gradient in which personality profiles characterized by lower Conscientiousness, lower Agreeableness, and lower Openness show a higher probability of less favorable attitudes toward end-of-life care. Conversely, higher scores in these dimensions are associated with a lower probability of presenting low FATCOD.

Table 3
Probability of low FATCOD scores (< 111) according to ranges of conscientiousness, agreeableness and openness. FATCOD: Frommelt Attitudes Toward Care of the Dying Scale; CI 95%: Confidence Interval 95%

Conscientiousness	Agreeableness	Openness	Low FATCOD probability (%)	95% CI
17–34	11–32	8–25	53.7	41.3–66.1
17–34	11–32	26–30	46.9	32.6–61.2
17–34	11–32	31–46	32.1	17.5–46.7
17–34	33–35	8–25	47.8	31.4–64.2
17–34	33–35	26–30	41.1	25.1–57.1
17–34	33–35	31–46	27.2	13.2–41.1
17–34	36–47	8–25	21.8	9.5–34.1
17–34	36–47	26–30	17.5	6.5–28.5
17–34	36–47	31–46	10.2	1.7–18.7
35–38	11–32	8–25	39.0	22.1–55.8
35–38	11–32	26–30	32.7	15.9–49.5
35–38	11–32	31–46	20.7	7.4–33.9
35–38	33–35	8–25	33.5	17.0–50.0
35–38	33–35	26–30	27.7	12.9–42.6
35–38	33–35	31–46	17.0	6.4–27.7
35–38	36–47	8–25	13.3	2.9–23.7
35–38	36–47	26–30	10.5	1.7–19.2
35–38	36–47	31–46	5.9	0.0-11.7
39–48	11–32	8–25	38.8	21.9–55.7
39–48	11–32	26–30	32.6	17.2–48.0
39–48	11–32	31–46	20.6	7.6–33.5
39–48	33–35	8–25	33.4	15.6–51.1
39–48	33–35	26–30	27.6	12.9–42.4
39–48	33–35	31–46	17.0	5.8–28.1
39–48	36–47	8–25	13.2	3.7–22.7

Conscientiousness	Agreeableness	Openness	Low FATCOD probability (%)	95% CI
39–48	36–47	26–30	10.4	2.9–17.9
39–48	36–47	31–46	5.8	0.5–11.2

4.4. Discriminative performance of the predictive model

The discriminative performance of the predictive model for identifying participants with low FATCOD was assessed using receiver operating characteristic (ROC) curve analysis. The area under the ROC curve (AUC) was 0.71, indicating a moderate discriminative ability (Fig. 1). These findings suggest that the model based on the NEO-FFI dimensions Conscientiousness, Agreeableness, and Openness was able to distinguish, with moderate accuracy, between participants with lower and higher probabilities of presenting a low FATCOD score.

Given the exploratory nature of the model and the absence of external validation, these findings should be interpreted as descriptive estimates of model performance within the study sample.

DISCUSSION

In this cross-sectional study of hospital nurses working in areas with regular exposure to end-of-life care, three main findings were observed. First, Conscientiousness, Agreeableness, and Openness were independently associated with more favorable attitudes toward end-of-life care. Second, working in Critical Care was associated with lower FATCOD scores compared with the reference clinical area. Third, an exploratory model based on these personality dimensions showed a clear gradient in the probability of low FATCOD and moderate within-sample discriminative performance..

These findings are consistent with previous research showing that personality traits such as conscientiousness, agreeableness, and openness are associated with lower burnout, higher work engagement, and better death-coping self-efficacy in nursing professionals (7), suggesting that personality may influence not only occupational well-being but also readiness to care for dying patients.

Our findings are in line with previous research showing that personality traits are relevant to the quality of nursing care. In particular, Agreeableness and Openness may help explain more favorable attitudes toward end-of-life care, as they are linked to compassion, empathy, cognitive flexibility, and a more holistic understanding of patients' needs (7, 8). Notably, Conscientiousness showed the strongest association with FATCOD in our model, which is in line with earlier studies suggesting that nurses with a stronger sense of duty and commitment are more willing to engage in emotionally demanding care and may be less vulnerable to compassion fatigue (9). This finding may reflect the relevance of responsibility, professional commitment, persistence, and perceived duty in emotionally demanding care situations. However, these associations should not be interpreted as deterministic. Personality traits may contribute

to how nurses approach end-of-life care, but attitudes are also shaped by education, clinical experience, team culture, institutional support, and repeated exposure to dying patients.

A relevant finding was the negative association between working in the Critical Care Area and FATCOD scores. This result should be interpreted in the context of the specific clinical and emotional demands of critical care. Nurses in intensive care units frequently experience moral distress when balancing life-sustaining treatment with the need to relieve suffering (10). Qualitative studies have further suggested that ICU nurses face specific ethical challenges, in which organizational barriers, limited palliative care protocols, and a traditional focus on life-saving interventions may hinder more favorable attitudes toward dignified end-of-life care (11). In addition, ICU nurses often report higher levels of emotional exhaustion (12), which may partly mediate the relationship between work setting and attitudes toward terminal care. It is therefore plausible that the emotional and physical demands characteristic of critical care units, particularly in the absence of structured integration of a palliative approach, promote a more biomedical than existential orientation to end-of-life care (13).

Recent research has suggested that the relationship between personality and attitudes toward palliative care may be partly mediated by psychological constructs such as sense of coherence and resilience (14). Nurses with higher Conscientiousness and Agreeableness may show a stronger sense of coherence, that is, a greater ability to find meaning in challenging experiences, which could facilitate a more compassionate orientation toward dying patients. Likewise, openness to experience has been associated with greater psychological flexibility and a greater willingness to consider multiple perspectives on death and dying, both of which are central to high-quality palliative care (15). Qualitative research has also shown that nurses with more favorable attitudes toward end-of-life care often report having meaningfully integrated these experiences into their professional identity, a process that likely requires the reflective capacity and emotional integration typically associated with Openness (16).

These findings may have practical implications for palliative care education and professional support. Personality-informed approaches should not be used to label nurses, restrict clinical roles, or guide staffing decisions. Instead, they may help design more individualized educational strategies. For example, nurses with lower openness may benefit from reflective practice and narrative-based training; those with lower agreeableness may benefit from communication and empathy-focused interventions; and those with lower conscientiousness may benefit from structured protocols, mentoring, and feedback. More broadly, the findings support the need to combine palliative care training with emotional support, team-based reflection, and organizational strategies, particularly in high-intensity clinical areas such as Critical Care.

This study has several strengths. First, it addresses an important and underexplored aspect of end-of-life care, focusing on nurses working in units with regular exposure to dying patients. Second, it combines an explanatory and a predictive approach by examining both the association between personality traits and FATCOD scores and the probability of low FATCOD according to clinically interpretable personality profiles. Third, the use of validated instruments, including the FATCOD and the NEO-FFI, strengthens the

methodological robustness of the study. Finally, the identification of Conscientiousness, Agreeableness, and Openness as relevant correlates of end-of-life care attitudes provides a novel and potentially useful framework for future research and professional support strategies.

This study also has limitations that should be acknowledged. Its cross-sectional design precludes causal inference, and the direction of the observed associations cannot be established. The use of a single-center convenience sample may limit the generalizability of the findings to other settings. Although the response rate was acceptable, non-response bias cannot be excluded. All variables were assessed through self-report measures, which may introduce reporting and social desirability bias. Low FATCOD was defined using the lowest quartile of the sample distribution rather than an established clinical threshold, and the categorization of personality scores may have reduced information from the original continuous measures. Furthermore, the exploratory model was developed and evaluated in the same sample and was not externally validated; its performance should therefore be interpreted cautiously. Finally, relevant constructs such as burnout, moral distress, resilience, empathy, previous personal experiences with death, and the quality or intensity of palliative care training were not fully assessed and may partly explain the observed associations.

In conclusion, the present study suggests that Conscientiousness, Agreeableness, and Openness are relevant personality correlates of more favorable attitudes toward end-of-life care among hospital nurses, whereas working in Critical Care may be associated with less favorable attitudes in this domain. An exploratory model based on these personality dimensions showed a gradient in the probability of low FATCOD, with moderate within-sample discrimination. These findings suggest that personality-related profiles may provide useful information for tailoring palliative care education and professional support, but they should not be used as a basis for labeling professionals or making staffing decisions. Future multicenter studies are needed to confirm these findings, externally validate probability models, and determine whether tailored educational and organizational interventions can improve nurses' preparedness for end-of-life care.

Declarations

Author Contribution

MCFG, CRB, IBF, and SPLL contributed to conceptualization. MCFG, SPLF, and NJL contributed to data curation. CRB and IBF performed the formal analysis. MCFG, CRB, NJL, SPLF, SPLL, and IBF contributed to the investigation. MCFG, NJL, IBF, CRB, and SPLF contributed to the methodology. IBF and SPLL were responsible for project administration. MCFG, IBF, and SPLL supervised the study. CRB wrote the original draft. SPLL and IBF reviewed and edited the manuscript. All authors read and approved the final manuscript.

Declaration of generative AI use

During the preparation of this work, the authors used ChatGPT to improve the writing and readability of the manuscript. After using these tools/services, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

Data availability

The anonymised datasets generated and/or analysed during the current study are not publicly available due to participant confidentiality and ethical restrictions, but are available from the corresponding author on reasonable request and subject to approval by the relevant ethics committee.

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Figures

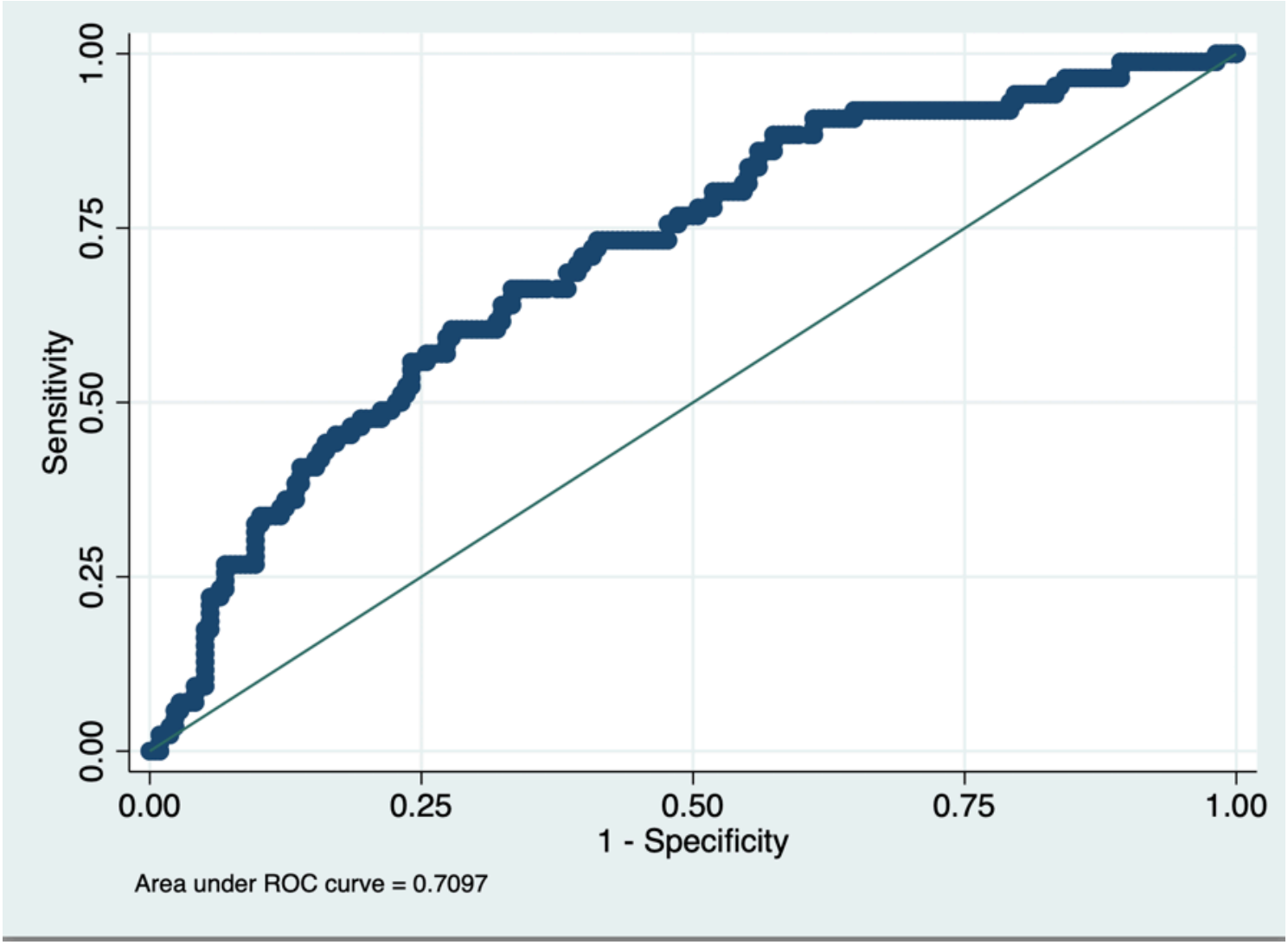


Figure 1

ROC curve of the logistic model for predicting low FATCOD as a function of the NEO-FFI dimensions Conscientiousness, Agreeableness, and Openness.