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ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

Artificial Intelligence Attitude Scale
Translation and validation in Greek

OBJECTIVE **To translate and validate the Artificial Intelligence Attitude Scale (AIAS-4) in a sample of the general population in Greece.** METHOD **We employed the forward-backward method to translate and adapt the AIAS-4 in Greek language. We examined the reliability of the AIAS-4 by calculating Cronbach's alpha. Also, we performed a test-retest study to examine the reliability of the AIAS-4 by calculating the intraclass correlation coefficient. We examined the construct validity of the AIAS-4 by performing confirmatory factor analysis. We examined the concurrent validity of the AIAS-4 using the Attitudes Towards Artificial Intelligence Scale (ATAI) and the Short Trust in Automation Scale (S-TIAS).** RESULTS **We found that the AIAS-4 demonstrated very good reliability, since the intraclass correlation coefficient for the test-retest was 0.972 (95% confidence interval [CI]=0.940 to 0.986, p<0.001). Moreover, Cronbach's coefficient alpha for the AIAS-4 was 0.920. The Greek version of the AIAS-4 had a one-factor structure as the original version. All indices indicated an acceptable one-factor model. In particular, x^2/df was 1.108, RMSEA was <0.001, GFI was 0.995, AGFI was 0.973, TLI was 1.000, IFI was 1.000, NFI was 0.996, and CFI was 1.000. Concurrent validity of the Greek version of the AIAS-4 was very good since we found statistically significant correlation between the AIAS-4 and the ATAI (acceptance scale: r=0.759, p<0.001; fear scale: r=-0.161, p=0.102), and the S-TIAS (r=0.581, p<0.001).** CONCLUSIONS **The Greek version of the AIAS-4 is a reliable and valid tool to measure attitudes towards artificial intelligence in the general population.**

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2026, 43(5):648–652

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Κλίμακα "Artificial Intelligence Attitude Scale": Μετάφραση και στάθμιση στην ελληνική γλώσσα

Περίληψη στο τέλος του άρθρου

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Artificial Intelligence (AI) is transforming core sectors such as healthcare, education, and public administration, with rapid diffusion since the emergence of large-scale, user-facing systems (e.g., generative AI) accelerating both opportunities and anxieties about equity, safety, and workforce impacts. Understanding attitudes toward AI is therefore critical because attitudes shape acceptance, trust, and actual use of AI-enabled services and tools. Recent empirical studies in healthcare and public services shows that expectations and acceptance are tightly linked

to trust in providers, institutions, and AI governance, and that perceived threats to the "human touch" can dampen support for AI-enabled care even when efficiency gains are expected. These findings underscore the need for reliable instruments that capture nuanced public sentiment so that implementation strategies and communication can be tailored to local contexts.[1–4]

Over the last few years, several AI attituded instruments have been proposed. For the general public, Grassini introduced the Artificial Intelligence Attitude Scale (AIAS-4) –a concise, unidimensional four-item measure with evidence for acceptable structural validity and internal consistency across diverse samples– explicitly designed to gauge overall positive attitudes toward AI's societal impact.[5] Other studies have developed group-specific scales or broader instruments capturing benefits, risks, and use intentions. Collectively, this growing measurement landscape demonstrates feasibility but also heterogeneity in factor structures, item content, and target populations – raising questions about cross-cultural transportability and the comparability of scores across languages and settings.[6–9]

From a theoretical perspective, attitudes toward AI are intertwined with established models of technology acceptance. The Technology Acceptance Model posits that perceived usefulness and perceived ease of use shape attitudes and behavioral intentions toward a technology. The Unified Theory of Acceptance and Use of Technology integrates eight prior models to identify performance expectancy, effort expectancy, social influence, and facilitating conditions as core predictors, moderated by factors such as age and experience. Although these frameworks were not designed specifically for "AI writ large", they provide constructs (usefulness, ease, social influence, facilitating conditions) that map closely to contemporary AI perceptions (e.g., expected benefits, usability, norms, and institutional readiness), and thus motivate convergent validity tests for any AI-attitude scale.[10–12]

At the same time, the attitude-trust nexus is increasingly salient for AI. Scoping and survey research in healthcare indicates that trust can be conceptualized at multiple levels (technology capability, clinician relationships, and institutional context) and functions as a mediator or moderator of adoption outcomes. Population surveys report relatively modest expectations of direct benefit from AI in care and emphasize the importance of governance, communication, and evidence of patient benefit – implications that reinforce the need for culturally sensitive measurement of AI attitudes to inform local policy and practice.[13]

In this context, we translated and validated the AIAS-4[5] in a sample of the general population in Greece.

MATERIAL AND METHOD

The study population included 105 participants in Greece. We performed our study during September 2025. We employed the forward-backward method to translate and adapt the AIAS-4 in Greek language.[14] In particular, two scholars translated the English version of the AIAS-4 in Greek, and then two other scholars translated the Greek version in English. Another scholar overviewed the translation procedure solving any discrepancies.

The AIAS-4 measures general attitude toward AI and includes four items with answers on a scale from 1 to 10. Total score is the mean score of the 10 items, and, thus, total AIAS-4 score ranges from 1 to 10. Higher scores indicate more positive attitudes towards AI.[5]

We examined the reliability of the AIAS-4 by calculating Cronbach's alpha. Cronbach's alpha higher than 0.6 indicates acceptable internal reliability. Also, we performed a test-retest study to examine the reliability of the AIAS-4 by calculating the intraclass correlation coefficient (absolute agreement method).

We examined the construct validity of the AIAS-4 by performing confirmatory factor analysis.[15] We examined the concurrent validity of the AIAS-4 using the Attitudes Towards Artificial Intelligence Scale (ATAI),[16] and the Short Trust in Automation Scale (S-TIAS).[17]

The ATAI measures acceptance and fear of AI. It includes five items with answers on a scale from 0 to 10. Acceptance score is the mean score of two items, and fear score is the mean score of three items. These two scores range from 0 to 10. A higher acceptance score indicates higher levels of acceptance of AI. Higher fear score indicates higher levels of fear of AI.[16]

The S-TIAS measures trust in AI, and includes three items with answers on a scale from 1 to 7. Total score is the mean score of the three items, and, thus, total S-TIAS score ranges from 1 to 7. Higher scores indicate higher levels of trust in AI.[17]

Ethical considerations

We applied the guidelines of the Declaration of Helsinki to perform this study.[18] Additionally, the study protocol was approved by the Ethics Committee of Faculty of Nursing, National and Kapodistrian University of Athens (protocol approval #01, September 14, 2025).

Statistical analysis

We performed confirmatory factor analysis (CFA) to examine the construct validity of the AIAS-4. In particular, we calculated Chi-square/degree of freedom (x^2/df); root mean square error of approximation (RMSEA); goodness of fit index (GFI); adjusted goodness of fit index (AGFI); Tucker-Lewis index (TLI); incremental fit index (IFI); normed fit index (NFI); comparative fit index (CFI).[19,20]

Acceptable value for x^2/df is <5, for RMSEA is <0.10, and for all other measures in the CFA >0.90. We used the AMOS version 21 (Amos Development Corporation, 2018) to conduct the CFA.

We calculated Pearson's correlation coefficient between the AIAS-4 and the ATAI and the S-TIAS to examine the concurrent validity of the AIAS-4. Also, we calculated intraclass correlation coefficients between the two AIAS-4 measurements in a test-retest study.

P-values less than 0.05 were considered as statistically significant. We used the Statistical Package for Social Sciences (SPSS) (IBM Corp released 2021, IBM SPSS Statistics for Windows, IBM Corp, Armonk, NY), version 28.0 for the analysis.

RESULTS

The study population included 105 participants from the general population. Among them, 81.9% (n=86) were females and 18.1% (n=19) were males. The mean age of our sample was 34.9 years (standard deviation [SD]: 14.8).

We found that the AIAS-4 had very good reliability since the intraclass correlation coefficient for the test-retest was 0.972 (95% confidence interval [CI]=0.940 to 0.986, p<0.001). Moreover, Cronbach's coefficient alpha for the AIAS-4 was 0.920.

We found that the Greek version of the AIAS-4 had a one-factor structure as the original version (fig. 1). All indices indicated an acceptable one-factor model (tab. 1). In particular, x^2/df was 1.108, RMSEA was <0.001, GFI was 0.995, AGFI was 0.973, TLI was 1.000, IFI was 1.000, NFI was 0.996, and CFI was 1.000 (tab. 1). Moreover, standardized regression weights for the four items ranged from 0.81 to 0.90.

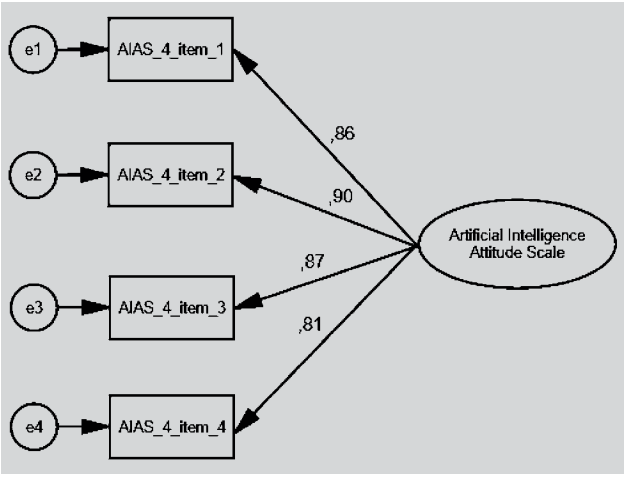

Figure 1. Confirmatory factor analysis for the Greek version of the Artificial Intelligence Attitude Scale (AIAS-4).

Concurrent validity of the Greek version of the AIAS-4 was very good since we found statistically significant correlation between the AIAS-4 and the ATAI (acceptance scale: r=0.759, p<0.001; fear scale: r=-0.161, p=0.102), and the S-TIAS (r=0.581, p<0.001).

DISCUSSION

In this context, we translated and validated the AIAS-4 in the Greek language to provide a tool for scholars and healthcare professionals to measure attitudes towards artificial intelligence in the general population. Our study showed that the Greek version of the AIAS-4 exhibits very good psychometric characteristics, confirming its validity and reliability as a tool for assessing attitudes towards AI in the general population. We found that the AIAS-4 is a uni-dimensional measure for attitudes towards AI measurement in the general population.

In particular, we found that the AIAS-4 had very good reliability since the intraclass correlation coefficient for the test-retest was 0.972, and Cronbach's coefficient alpha was 0.920. Moreover, we found that the Greek version of the AIAS-4 had a one-factor structure as the original version. All indices indicated an acceptable one-factor model since x^2/df was 1.108, RMSEA was <0.001, GFI was 0.995, AGFI was 0.973, TLI was 1.000, IFI was 1.000, NFI was 0.996, and CFI was 1.000. Finally, the concurrent validity of the Greek version of the AIAS-4 was very good since we found statistically significant correlation between the AIAS-4 and the ATAI (acceptance scale: r=0.759, p<0.001; fear scale: r=-0.161, p=0.102), and the S-TIAS (r=0.581, p<0.001).

Our study encountered a few limitations. We utilized a convenience sample of the general population to validate the AIAS-4 in Greek, which limits the generalizability of our findings. It is important to validate this tool with other samples in Greece. Additionally, we used self-reported questionnaires, such as the AIAS-4 and the ATAI to examine the concurrent validity of the AIAS-4. Researchers could

Table 1. Confirmatory factor analysis for the Greek version of the Artificial Intelligence Attitude Scale.

Model	x^2	df	x^2/df	RMSEA	GFI	AGFI	TLI	IFI	NFI	CFI
Four items	1.108	2	0.554	<0.001	0.995	0.973	1.000	1.000	0.996	1.000

also explore various other types of validity for the AIAS-4.

In summary, the Greek version of the AIAS-4 demonstrated very good psychometric properties, making it a valid and reliable instrument for assessing attitudes towards AI in the general population. By providing a Greek-validated AI attitude instrument, this study enables rigorous surveillance of public and professional sentiment toward AI, supports evaluation of educational or implementation interventions, and facilitates cross-cultural comparisons with studies using the original AIAS-4 or other validated measures. In turn, policymakers and organizational leaders can anchor AI adoption strategies in reliable, locally interpretable evidence about how people perceive AI's benefits, risks, and appropriate use.

ΠΕΡΙΛΗΨΗ

Κλίμακα "Artificial Intelligence Attitude Scale": Μετάφραση και στάθμιση στην ελληνική γλώσσα

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ΣΚΟΠΟΣ Η μετάφραση και η στάθμιση της κλίμακας "Artificial Intelligence Attitude Scale" (AIAS-4) στα Ελληνικά. **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ** Για τη μετάφραση της κλίμακας στα Ελληνικά εφαρμόστηκε η διαδικασία της «προς τα εμπρός-προς τα πίσω» μετάφρασης. Για τον έλεγχο της αξιοπιστίας της AIAS-4 υπολογίστηκε ο συντελεστής Cronbach's alpha. Επί πλέον, εφαρμόστηκε η μέθοδος ελέγχου-επανελέγχου για τον έλεγχο της αξιοπιστίας της AIAS-4, υπολογίζοντας τον συντελεστή ενδοταξικής συσχέτισης. Για τον έλεγχο της εγκυρότητας κατασκευής της AIAS-4 πραγματοποιήθηκε η επιβεβαιωτική ανάλυση παραγόντων. Για τον έλεγχο της συγκλίνουσας εγκυρότητας της AIAS-4 χρησιμοποιήθηκε η κλίμακα "Attitudes Towards Artificial Intelligence Scale" (ATAI) και η κλίμακα "Short Trust in Automation Scale" (S-TIAS). **ΑΠΟΤΕΛΕΣΜΑΤΑ** Διαπιστώθηκε ότι η AIAS-4 έχει πολύ καλή αξιοπιστία, καθώς ο συντελεστής ενδοταξικής συσχέτισης στη μέθοδο ελέγχου-επανελέγχου ήταν 0,972 (95% διάστημα εμπιστοσύνης: 0,940–0,986, p<0,001). Επί πλέον, ο συντελεστής Cronbach's alpha για την AIAS-4 ήταν 0,920. Η ελληνική έκδοση της AIAS-4 είχε έναν παράγοντα, όπως ακριβώς και η πρωτότυπη έκδοση της κλίμακας. Όλοι οι δείκτες επιβεβαίωσαν τη μονοδιάστατη μορφή της AIAS-4. Πιο συγκεκριμένα, ο δείκτης x^2/df ήταν 1,108, ο δείκτης RMSEA ήταν <0,001, ο δείκτης GFI ήταν 0,995, ο δείκτης AGFI ήταν 0,973, ο δείκτης TLI ήταν 1, ο δείκτης IFI ήταν 1, ο δείκτης NFI ήταν 0,996 και ο δείκτης CFI ήταν 1. Η συγκλίνουσα εγκυρότητα της AIAS-4 ήταν πολύ καλή, καθώς βρέθηκαν στατιστικά σημαντικές συσχετίσεις μεταξύ της AIAS-4 και της ATAI (παράγοντας «αποδοχή»: r=0,759, p<0,001, παράγοντας «φόβος»: r=-0,161, p=0,102) και της S-TIAS (r=0,581, p<0,001). **ΣΥΜΠΕΡΑΣΜΑΤΑ** Η κλίμακα AIAS-4 είναι ένα αξιόπιστο και έγκυρο εργαλείο για την εκτίμηση των στάσεων του γενικού πληθυσμού στην Ελλάδα απέναντι στην τεχνητή νοημοσύνη.

Λέξεις ευρετηρίου: Αξιοπιστία, Εγκυρότητα, Ελληνικά, Κλίμακα "Artificial Intelligence Attitude Scale", Τεχνητή νοημοσύνη

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