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Published online: 06 May 2024.

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Validation of the Self-Efficacy Questionnaire (SE-12-Gr) Assessing the Healthcare Professionals' Self-Reported Communication Skills with Older Healthcare Users in Greece

Areti Efthymiou [a], Argyroula Kalaitzaki [a,b], and Michael Rovithis [a,c]

aQuality of Life Lab, Social Work Department, Hellenic Mediterranean University; bAffiliated Researcher of the Research Centre 'Institute of Agri-Food and Life Sciences', Hellenic Mediterranean University; cDepartment of Business Administration and Tourism, Hellenic Mediterranean University

ABSTRACT

Patients' satisfaction with their interaction with the healthcare providers has been found to correlate with adherence to therapeutic plans and better health outcomes. Healthcare providers are experiencing barriers when communicating with specific population subgroups, such as people with low health literacy, low education, and older age. Enhancing the communication skills of the healthcare providers working with older adults could facilitate their interaction with the patients. This study presents the validation of the Self-efficacy-12 (SE-12) in Greek. This is an instrument measuring healthcare providers' self-efficacy of communication skills used during their interaction with older patients. A sample of 230 healthcare providers working with older adults participated in the study. The scale showed good psychometric properties (S-CVI=.97, Cronbach a = .95, ICC = .81). A medium to high correlation was found with the generalized self-efficacy questionnaire. Exploratory Factor Analysis (EFA) yielded two factors ("Self-efficacy in communication skills and strategies" and "Self-efficacy of successful interaction") with good psychometric properties. The SE-12-GR is a brief, valid, and reliable tool for assessing self-efficacy of communication skills and it could be integrated as part of the health literacy tools for healthcare providers working with older people in Greece.

Introduction

Healthcare providers and patients cope with many different barriers while communicating, for example, inappropriate time and place, understaffed facilities, lack of providers' knowledge regarding a health concern and ability to provide solution to the patient and patient obstacles (cognitive and physical deficits, low health literacy level, older age, low educational level, socio-economic status and diverse cultural factors) (Charlton et al., 2008; Nantsupawat, 2020; Speros, 2009). With the term healthcare providers, we consider all healthcare professionals as listed in the international classification of occupations (medical, nursing, midwifery, dentists, pharmacists, complementary medical professions, paramedical practitioners, dieticians, physiotherapists and other therapy-related professions) (International Labour Organisation, 2012).

Three aspects influencing the patient-provider interaction were described by Barello et al. (2016) from the patient perspective: a) the cognitive (patients' knowledge of the disease and available resources, symptoms, progress of the disease, treatment choices, health and disease beliefs and self-efficacy), b) the behavioral (disease management, information-seeking, medication adherence, shared decision-making) and c) the emotional (satisfaction of care, stress reaction to the diagnosis, confidence in managing). The cognitive aspect of this interaction may affect the association between disease management, information seeking and the level of health literacy (Park & Ahmed, 2021).

A satisfied patient by the patient – provider interaction is more likely to comply with treatment guidelines, and not complain about the interaction and therefore a healthcare provider can benefit by reaching an accurate diagnosis and enhance their job satisfaction (Capone et al., 2022; Fong Ha et al., 2010). Patients' sense of control during the medical encounter (asking questions, participating in decision making etc.) has been correlated with better health outcomes, decreased days of hospitalization, and fewer referrals (Fong Ha et al., 2010). Shared decision making affects the relationship of the patient-provider interaction and medication adherence (Deniz et al., 2021). Shared decision making entails the use of effective communication skills to inform the patient about the available options, to explain the treatment outcomes and to encourage the patient to ask for detailed information to decide on the most appropriate therapy for themselves (Elwyn et al., 2012). Healthcare providers' communication skills facilitate patients' empowerment and health literacy level, defined as the skills to access, appraise and apply health information to improve quality of life (Hironaka & Paasche-Orlow, 2008; World Health Organization, 2013). Healthcare providers' basic communication skills were defined as exchanging verbal and non-verbal information including interview skills, interpersonal communication, assertiveness skills, oral and written communication, active listening, and non-verbal communication (de Sousa Mata et al., 2021). This study focuses on the

CONTACT Areti Efthymiou ✉ aefthymiou@hmu.gr 🌐 Quality of Life Lab, Social Work Department, Hellenic Mediterranean University, Heraklion, Crete 71410, Greece

healthcare providers' self-efficacy in communication as a way of communication skills assessment. Questionnaires usually measure the patient's response to consultation leaving a black box in relation to the healthcare provider's behavior (Sustersic et al., 2018). Self-efficacy in communication and available self-efficacy instruments are presented in the introductory part. Followed by the methodology section where validation steps of a healthcare providers' self-efficacy scale in Greek and the self-efficacy scores per profession and type of health service are presented.

Self-efficacy concept

Self-efficacy in communication facilitates changes in behavior (de Sousa Mata et al., 2021). The self-efficacy concept is part of the socio-cognitive theory of Bandura (1977), interrelated with competence, defined as "*the conviction that one can successfully execute the behavior required to produce the outcomes*" (p. 193). People behavior is influenced by how well they think they can perform (Bandura, 1977). According to Bandura, the expectation of a person's own ability influences the outcome, even if the person is aware of the exact steps, they need to make to complete a task. Sources of self-efficacy are the task performance (e.g., how well the person performs the relevant task), observed behavior (e.g., seeing others accomplish a specific task), verbal persuasion (e.g., other people's belief in the person's ability to cope), and physiological indicators (e.g., high levels of stress produce cues for avoidance; Bandura, 1977). Bandura discussed self-efficacy in everyday life and how perceived mastery can directly impact people's selected coping styles (Bandura, 1977). Self-efficacy influences people's behavior and the effort that they put into a task. High self-efficacy does not guarantee success if people are not adequately skilled. People who attribute failure to internal factors may perceive themselves as less competent in comparison with people who attribute failure to external factors (Graham, 1991). Another factor that influences the level of self-efficacy is the amount of effort. If a person succeeds after a lengthy attempt, the outcome has not an added value to perceived self-efficacy (Bandura, 1994). Self-efficacy is considered a way to assess the healthcare providers' communication skills and research has shown that it can be increased with tailored training courses (Ammentorp et al., 2007; de Sousa Mata et al., 2021; Doyle et al., 2011). The self-efficacy concept is associated with the cognitive aspect of the patient-healthcare provider interaction (Barello et al., 2016). A higher level of general self-efficacy has been associated with a higher level of self-esteem and emotional intelligence in a sample of 386 healthcare providers (Pérez-Fuentes et al., 2019).

Self-efficacy instruments

There are general and specific self-efficacy instruments (Frei et al., 2009). General self-efficacy is defined in the socio-cognitive theory, as the ability to perform in novel and diverse tasks (Bandura, 1977; Schwarzer et al., 1999). Specific self-efficacy focuses on specific chronic disease areas or may investigate task-specific areas common in several diseases such as

medication adherence, coping strategies, and self-care. For example, in the case of questionnaires measuring diabetes self-efficacy, many different factors are assessed (diabetes management, nutrition, glycemic index efficacy, difficult situations, activity, blood sugar) (Frei et al., 2009; Lee et al., 2020). Other specific self-efficacy instruments include the assessment of self-efficacy in arthritis (Frei et al., 2009), asthma (Frei et al., 2009) and Chronic Obstructive Pulmonary Disease patients (Frei et al., 2009), maternal self-efficacy (Alinejad Naeini et al., 2019), breast-feeding self-efficacy (Tuthill et al., 2016), parenting self-efficacy (Fang et al., 2021), self-efficacy instruments for cancer patients (F. F. Huang et al., 2018). The validation of the above self-efficacy scales had limitations, for example they included factorial analysis providing several factors, lack conceptual framework for the development of the scale, test-retest reliability, criterion validity and the way the items were selected were not always described (Fang et al., 2021; F. F. Huang et al., 2018; Lee et al., 2020; Tuthill et al., 2016).

There is a lack of self-efficacy tools focusing on the communication skills of healthcare providers. This is also the case in Greece, where most questionnaires focus on the nursing profession (Kounenou et al., 2011; Sarafis & Malliarou, 2013). The Self-Efficacy-12 is considered an appropriate measure to assess personal belief in performance and has been used to assess trainees' personal belief of their communication skills before and after communication skills training courses (Axboe et al., 2016). The original version was developed in English and was validated in Spanish and Korean (Escribano et al., 2022; Gil & Sung, 2020). As in the case of Spanish and Korean validation, a cultural adaptation in Greek is needed since the scale is developed to another language and for another population. Linguistic translation does not reassure that the translated scale measures the same concepts as in the case of the original scale (Gjersing et al., 2010). In the case of the cultural adaptation of an already developed scale, the establishment of an expert panel to assess the translated questionnaire and its content validity is also necessary (Tsang et al., 2017). In the development and validation process of the SE-12, the 7 out of 9 core steps by Boateng et al. (2018) were included: content validity, pre-testing of questions, piloting of the tool, factors analysis, and test of dimensionality, reliability, and validity.

In Eastern European countries, as in the case of Greece, provider-patient interaction follows a paternalistic model, with the provider becoming the authority for all patient decisions (Athanasiou & Bachtsetzis, 2022). In Greece, COVID-19 and the need to access and assess disease information and follow health protocols brought into the spotlight the need for healthcare providers to improve their communication skills and establish effective interactions with their patients assisting them in enhancing their health literacy levels (Efthymiou et al., 2022). The difficulty in COVID-19 vaccination acceptance by the public, the belief of multiple conspiracy theories in social media calling for action against the COVID-19 measures and the availability of multiple online sources provided evidence of the important role of provider-patient communication during the COVID-19 pandemic (Constantinou et al., 2021).

Furthermore, in the aftermath of the COVID-19 pandemic mental health issues continue to persist among

healthcare providers. Particularly, burnout, psychological trauma and increased levels of anxiety and stress have had a substantial impact on individual aspects such as self-efficacy and the communication abilities of healthcare professionals. In a relevant study it was found that burnout among health care providers significantly influenced individual factors such as self-efficacy (Alfonsi et al., 2023; Li et al., 2023) and especially on their ability on communication skills. Leaving job burnout unaddressed may have negative consequences on the quality of health providers' interactions with patients. For example, by exhibiting dehumanized behaviors and jeopardizing effective communication skills.

Thus, in the context of healthcare providers' self-efficacy of communication skills used during their interactions with older patients should be taken into serious consideration when conducting research and utilizing tools related to personality factors such as the perception of self-efficacy of health professionals, the differentiation that has occurred in their psychological health. In context with this, it is essential not to proceed exclusively with the translation of a questionnaire but to also validate the chosen questionnaire considering the alterations in the mental health of health care providers due to the pandemic.

The aim of this study is the validation of the SE-12 in the Greek language (Axboe et al., 2016). SE-12 is a short (12-items) , cost-saving, unidimensional instrument with good psychometric properties, focusing on the healthcare provider's communication skills.

Method

Participants

The psychometric properties of the SE-12 were assessed in a sample of 230 healthcare providers working with older adults. Most of the providers were nurses, social workers, psychologists ($n = 147$, 64%), women ($n = 205$, 89%), of mean age 42 years, working in the public sector ($n = 213$, 83%) and with almost 50% having working experience over 10 years.

The number of the sample was estimated based on the rule of thumb for validating scales, 10 participants per item and considering the heterogynous sample of health providers (Tsang et al., 2017).

Table 1 presents the detailed demographics of the participants.

Measures

Self-efficacy-12 (SE-12)

The SE-12 consists of 12 items measuring healthcare providers self-efficacy of skills used during the patient-clinician encounter, using a 10-point Likert scale ranging from 1=very uncertain to 10=very certain according to the recommendations provided by Bandura for developing self-efficacy scales (Bandura, 2006). The score ranges from 12–120 and a higher score indicates a higher level of self-efficacy of skills (Axboe et al., 2016). Example items are "*How certain are you that you are able to successfully identify the issues the patient wishes to address during the conversation?*" and "*How certain are you*

Table 1. Socio-demographic characteristics of the healthcare professionals.

Variable	N (%)
Sex	
Female	205(89%)
Male	25 (11%)
Age (M/SD)	42 (9.2)
Profession	
Doctor	13 (5.7%)
Nurse	67 (29.3%)
Social Worker	35 (15.3%)
Occupational Therapist	2 (0.9%)
Physiotherapist	8 (3.5%)
Assistant Nurse	16 (7%)
Psychologist	45 (19.7%)
Health Visitor	21 (9.2%)
Other	22 (9.6%)
Previous Training on Communication	
Yes	115 (50%)
No	115 (50%)
Type of Service	
Open Protection Center for older adults	24 (10.4%)
Community Center for Frail and people with dementia	3 (1.3%)
Social Service	23 (10%)
Hospital or other public healthcare service	70 (30.4%)
Nursing Home	28 (12.2%)
Dementia Day Center/Consultation Centre	42 (18.3%)
Home Care Service	11 (4.8%)
Non-for-profit association	2 (0.9%)
Private practice	15 (6.5%)
Other (education, ministry of health, unemployment)	12 (5.2%)
Working experience	
Less than a year	16 (7%)
1 year to less than 2	24 (10.5%)
2 years to less than 5	43 (18.8%)
5 years to less than 10	32 (14%)
10 years and more	114 (49.8%)

Table 2. Descriptive characteristic of the scale, internal consistency and factor loadings.

	English version	Greek translation	Mean (SD)	Median	Skewness	Kurtosis	Cronbach if Item deleted	Factor loadings
Q1	How certain are you that you are able to successfully identify the issues the patient wishes to address during the conversation?	Πόσο βέβαιοι είστε ότι μπορείτε να εντοπίσετε με επιτυχία τα ζητήματα που ο ασθενής επιθυμεί να αναπτύξει κατά τη διάρκεια της συζήτηση;	7.62 (1.38)	8	−.70	.64	.94	.85
Q2	How certain are you that you are able to successfully make an agenda/plan for the conversation with the patient?	Πόσο βέβαιοι είστε ότι μπορείτε να σχεδιάσετε με επιτυχία ένα πλάνο συζήτησης με τον ασθενή;	7.5 (1.44)	8	−.66	.15	.94	.88
Q3	How certain are you that you are able to successfully urge the patient to expand on his or her problems/worries?	Πόσο βέβαιοι είστε ότι μπορείτε να παροτρύνετε με επιτυχία τον ασθενή να επεκταθεί στα προβλήματα/τις ανησυχίες του;	7.73 (1.46)	8	−.78	.46	.94	.84
Q4	How certain are you that you are able to successfully listen attentively without interrupting or changing of focus?	Πόσο βέβαιοι είστε ότι μπορείτε να ακούσετε προσεκτικά χωρίς να διακόψετε ή να αλλάξετε το θέμα της συζήτησης;	8.72 (1.17)	9	−.89	.51	.94	.78
Q5	How certain are you that you are able to successfully encourage the patient to express thoughts and feelings?	Πόσο βέβαιοι είστε ότι μπορείτε να ενθαρρύνετε με επιτυχία τον ασθενή να εκφράσει σκέψεις και συναισθήματα;	8.22 (1.28)	8	−.68	.60	.94	.70
Q6	How certain are you that you are able to successfully structure the conversation with the patient?	Πόσο βέβαιοι είστε ότι μπορείτε να δομήσετε με επιτυχία τη συζήτηση με τον ασθενή;	7.83 (1.32)	8	−.40	−.24	.94	.77
Q7	How certain are you that you are able to successfully demonstrate appropriate non-verbal behavior (eye contact, facial expression, placement, posture, and voicing)?	Πόσο βέβαιοι είστε ότι μπορείτε να επιδείξετε επιτυχώς την κατάλληλη μη λεκτική συμπεριφορά (οπτική επαφή, εκφράσεις προσώπου, τοποθέτηση, στάση σώματος και τόνος φωνής);	8.06 (1.31)	8	−.40	−.51	.94	.76
Q8	How certain are you that you are able to successfully show empathy (acknowledge the patient's views and feelings)?	Πόσο βέβαιοι είστε ότι μπορείτε να δείξετε ενσυναίσθηση με επιτυχία (να αναγνωρίσετε τις απόψεις και τα συναισθήματα του ασθενούς);	8.22 (1.28)	8	−.66	.30	.94	.75
Q9	How certain are you that you are able to successfully clarify what the patient knows in order to communicate the right amount of information?	Πόσο βέβαιοι είστε ότι μπορείτε να διευκρινίσετε με επιτυχία τι γνωρίζει ο ασθενής προκειμένου να του μεταφέρετε τη σωστή ποσότητα πληροφοριών;	7.68 (1.25)	8	−.49	.69	.94	.75
Q10	How certain are you that you are able to successfully check patient's understanding of the information given?	Πόσο βέβαιοι είστε ότι μπορείτε να ελέγξετε με επιτυχία σε ποιο βαθμό ο ασθενής έχει κατανοήσει τις πληροφορίες που του δίνονται;	7.66 (1.33)	8	−.46	.69	.94	.69
	Total mean score (SD) 1st dimension		79.23 (10.8)					
	Cronbach a (1st dimension)						.95	.95
Q11	How certain are you that you are able to successfully make a plan based on shared decisions between you and the patient?	Πόσο βέβαιοι είστε ότι μπορείτε να αναπτύξετε επιτυχώς ένα πλάνο (θεραπευτικό) βάσει κοινών αποφάσεων ανάμεσα σε εσάς και τον ασθενή;	7.35 (1.62)	8	−1.10	2.10	.94	.92
Q12	How certain are you that you are able to successfully close the conversation by assuring, that the patient's questions have been answered?	Πόσο βέβαιοι είστε ότι μπορείτε να ολοκληρώσετε με επιτυχία τη συζήτηση εξασφαλίζοντας ότι όλες οι ερωτήσεις του ασθενούς έχουν απαντηθεί;	7.6 (1.61)	8	−1.23	2.55	.94	.89
	Total mean score (SD) 2nd dimension		14.95 (3.12)					
	Cronbach a (2nd dimension)						.93	
	TOTAL Mean score (SD)		94.19 (13.08)					

that you are able to successfully make a plan based on shared decisions between you and the patients?." All items of the original scale are available in Table 2. The original scale is one-dimensional and has good internal consistency (Cronbach α = .95) and test-retest reliability (ICC agreement = .71).

General self- efficacy

The General Self-Efficacy questionnaire (Schwarzer, 1993) is a 10-item unidimensional instrument measuring generalized perceived self-efficacy, using a four-point Likert scale, ranging from 1=not at all true to 4= Exactly true. Sum of scores ranges from 10 to 40 with a higher score indicating a higher perceived self-efficacy. Example items are "*It is easy for me to stick to my aims and accomplish my goals,*" and "*I can remain calm when facing difficulties because I can rely on my coping abilities*". The questionnaire is available in 32 languages including Greek and has a high internal consistency ranging from .82 to .93 (Schwarzer, 1993). It has medium positive correlations with

other measures of optimism, self-esteem, general anxiety, performance anxiety and shyness (Schwarzer, 1993).

Procedure

The validation of the SE-12 followed two phases: a) translation/cultural adaptation and b) assessment of its content validity, reliability and structural validity.

Translation

Permission was granted by the authors who developed the SE-12 to the authors of this paper to validate the questionnaire in the Greek cultural context (Axboe et al., 2016). The translation process followed the steps provided by Tsang et al. (2017). The questionnaire was translated from English to Greek (forward) by two translators, with a background in psychology andfluent in both languages. The two forward translated versions were then back translated from Greek to English (backward translation) by two bilingual translators, who were psychologists. They were not the same individuals as those who translated the questionnaire from English to Greek and they had not seen the initial version. The three-member validation team (authors of the present study) proceeded with necessary modifications of the Greek translated items taking into consideration all four versions. Modifications mostly concerned the use of words in the Greek language in a few items to better depict the meaning of them. For example, the translation of the word "certain" in Greek in the items "How certain are you . . . " could receive two different translations and "you" could be translated either in plural of nobility or second person singular. Overall, the two Greek translations were quite similar in the terminology making the modification process easier. The validation team selected the most accurately translated items by both backward translations (Table 2).

Reliability and validity phase

In the second phase of the process reliability and validity were assessed. A panel of eight experts were then invited to assess the content validity of the SE-12; they were educators of healthcare providers and clinicians working with older adults. All but one had over 10 years of professional experience. Most of the experts were women ($n = 7$, 86%), with a mean age of 46.7 years (SD = 3.59). Three of them were lecturers in nursing departments; another three were healthcare providers in dementia centers for over ten years; one was a supervisor for the municipal social services and the last one was a researcher involved in developing training courses for healthcare providers working with people with dementia. These experts were asked to decide how relevant the items of the SE-12 were to the concept of self-efficacy in communication on a four-point Likert scale (1= not relevant at all to 4 = totally relevant).

To assess the internal consistency and structural validity of the scale, the piloting of the translated scale in Greek was conducted in a sample of healthcare providers following the recommendations for cultural adaptation and validation of a questionnaire by Tsang et al. (2017). The healthcare providers were invited through social media sites, relevant groups, networks, organizations, associations and announcements at nursing and social work departments of universities asking for participation in the piloting of the scale. Demographic questions (sex, age, profession, work experience, type of service) and questionnaires (the SE-12-Gr and the GSE) were administered as an online survey in a Google form template. The first page of the questionnaire included the consent form and the survey link. The duration of the data collection was from July 2021 to October 2021 including the retest period. A small group of participants were registered for the retest period after a two-month interval. This was possible by declaring their interest in participating on the Google form. The researcher contacted the participants by e-mail at the end of the two-month period (September – October 2021) to complete the scale. During the recruitment period, healthcare services in Greece were experiencing staff shortages due to the first and second COVID-19 pandemic waves.

Data analysis

Initially, the data cleaning technique including editing, correcting and structuring the data when necessary was performed (Huang, 2019). Anomaly index was used to identify unusual cases. Providers were grouped into four categories: mental health professionals (psychologists and social workers), medical professionals (physicians, nurses, nurse assistants, health visitors), rehabilitation professionals (occupational therapists, physiotherapists) and other social-related professionals (educators, sociologists). The health facilities were grouped into five categories: public hospital and medical services, public social services, not-for-profit health services (dementia centers, consultation centers for dementia), for-profit nursing homes and other services (private practice).

For assessing content validity three indices were calculated: item-CVI, Scale-CVI/Average and Scale-CVI/UA. Scores over .80 indicate high content validity for the scale (Polit & Beck, 2006). Item-CVI calculates the number of experts who agreed with the item in its relevance to the concept, divided by the total number of experts. Scale-CVI/Average is the average score of all item-CVIs. The Scale-CVI/UA was calculated by summarizing the number of items that all experts agreed as relevant, divided by the total number of the scale items, e.g., as in the case of two experts, both agreed to two of three items, scale-CVI/UA = 2/3 (Polit & Beck, 2006).

The ceiling and floor effects of the questionnaire were assessed based on the criterion of 15% of the highest or lowest responses (Mchorney & Tarlov, 1995). The reliability and validation followed the Classical Test Theory. Cronbach alpha was used to examine the internal consistency of SE-12. Initially, confirmatory factor analysis assessed the one-dimensionality of the original SE-12. Given that the model did not provide a good fit, exploratory factor analysis (Principal axis factoring with oblimin with Kaiser Normalization) examined its dimensionality and confirmatory factor analysis (CFA) and assessed its model fit. The model provided indices of good fit except for statistically significant Chi square and root mean square error of approximation. The CFA models in the two cases of one and two factors were compared with the use of Chi squared difference test to assess if the model for the two factors had a better fit in comparison with the unidimensional CFA model. In the case of CFA for the two-factor model,

Table 3. Fit indices of confirmatory factor analysis for one factor and two factors SE-12.

Model	AIC	BIC	χ^2	χ^2 p value	df	User vs baseline CFI	User vs baseline TLI	RMSEA	RMSEA p value	RMSEA CI[90]	SRMR
Unidimensional											
User model	7637.258	7719.772	422.036***	<.001	54	.84	.81	.17	<.001		.064
Baseline Model			2371/694***	<.001	66					.157-.188	
Two-dimensional											
User model	7446.354	7532.306	229.132***	<.001	53	.92	.91	.12	<.001	.104-.136	.042
Baseline Model			2371/694***	<.001	66						
Two-dimensional Model with covariances											
User model	7315.052	7435.385	77.830***	.001	43	.99	.97	.059	<.001	.038	.026
Baseline Model			2371.694*	<.001	66					.080	

***p < .001.
CFI = comparative fit index, RMSEA = root mean-square error of approximation, SRMR = standardized root mean square.
Modification indices of Q1 and Q2, Q9 and Q10, Q7 and Q8, Q2 and Q5, Q3 and Q8, Q4 and Q8, Q5 and Q6, Q1 and Q6.

modification indices over 10 were calculated to improve the fit indices (Hooper et al., 2008). The research team decided to proceed with the modification indices to improve the two-factor model fit since RMSEA and χ2/df did not comply with the acceptable cutoffs (Hooper et al., 2008). Convergent validity was calculated with Pearson r. Test-retest reliability was calculated with the interclass correlation. ANOVA examined differences of self-efficacy among groups of different professions and type of service.

SPSS v.25.0 was used for all analyses except for confirmatory factor analysis, modification indices and Chi squared difference test for which R software was used. R software was selected to be used together with SPSS as the latter does not include the calculation of Confirmatory factor analysis taking into consideration the availability of software resources of the research team in order to continue with the specific analysis.

Results

Content validity

The scale provided a high item-CVIs ranging from .88 to 1.00 and high S-CVI/Ave score (.97). The S-CVI/UA was satisfactory (.75). Healthcare providers agreed that the scale and its items were relevant to the concept it was intended to measure. The healthcare providers agreed on 9 out of the 12 items. Items Q2, Q3 and Q7 were considered non-relevant by three professionals. The experts' comments focused on a few syntactic errors of the items in the Greek language, providing evidence for good item interpretability. The Greek translation is available in Table 2.

Distribution of the items

The means of the 12 items were close to the median and standard deviations were lower than half of the mean in all cases. Most of the items (10/12) were symmetrically or moderately skewed and mesokurtic (a distribution with Gaussian shape). Two items (Q11 and Q12) were highly skewed and leptokurtic. The estimated means and median revealed ceiling effects for 3 out of 12 items (Q4, Q5 and Q8). In Table 2, the descriptive characteristics of the scale items are presented (mean, median, skewness and kurtosis).

Reliability of the scale

The reliability of the scale was high (α =.95). Cronbach α was decreased if item was deleted for all twelve items (Table 2).

Construct validity

The authors of the original SE-12 scale identified one factor with EFA and this was confirmed by the validation in Spanish (Axboe et al., 2016; Escribano et al., 2022). The confirmatory factor analysis on the unidimensional structure of the SE-12 in the Greek version provided low scores in model fit indices and overall, a bad model fit (Table 3). The Chi square (χ^2) of the model was statistically significant (p < .001) and the χ^2/degrees of freedom ratio (CMIN/DF) above 3 (422,036/54), the Root mean square error of approximation (RMSEA) was over .06 (RMSEA =.17), Comparative fit index and Tucker-Lewis index below .90 (CFI=.84, TLI = .81) (Hooper et al., 2008; Kline, 2005). Only the standardized root mean square residual was within the acceptable intervals of .00 to .08 (SRMR=.064) (Hooper et al., 2008; Hu & Bentler, 1999).

Exploratory factor analysis with varimax rotation extracted two factors with an eigenvalue greater than 1. The sample size was adequate according to the measure of Kaiser-Meyer-Olikin sampling (.92) and the Bartlett's Test of Sphericity (p > .0001). The first factor explained 63% of the variance, and the second factor 8% of the variance. Items Q1 to Q10 loaded in the first factor and it was named "Self-efficacy in communication skills and strategies" (M = 79.23, SD = 10.8). Items Q11 and Q12 loaded in the second factor, and it was named "Self-efficacy of successful interaction" (M = 14.95, SD = 3.12). Cronbach alpha was high for both factors (factor1: α = .95 and factor 2: α = .93) (Table 2).

The CFA confirmed the two factors derived from the EFA with an adequate model fit. The CFI (.92), TLI (.91), SRMR (.042). RMSEA (.12) and χ^2/df (229,132/53) were calculated (Table 3). The two factors model had a better fit than the one – factor model ($\Delta\chi^2$ = 192.9, Δdf = 1, p > .001) (Table 3). The RMSEA (.056) and χ^2/df (77,830/43) of the two-factor model were improved with the calculation of the modification indices, providing a good model fit (Table 3). The path diagram is available in Figure 1.
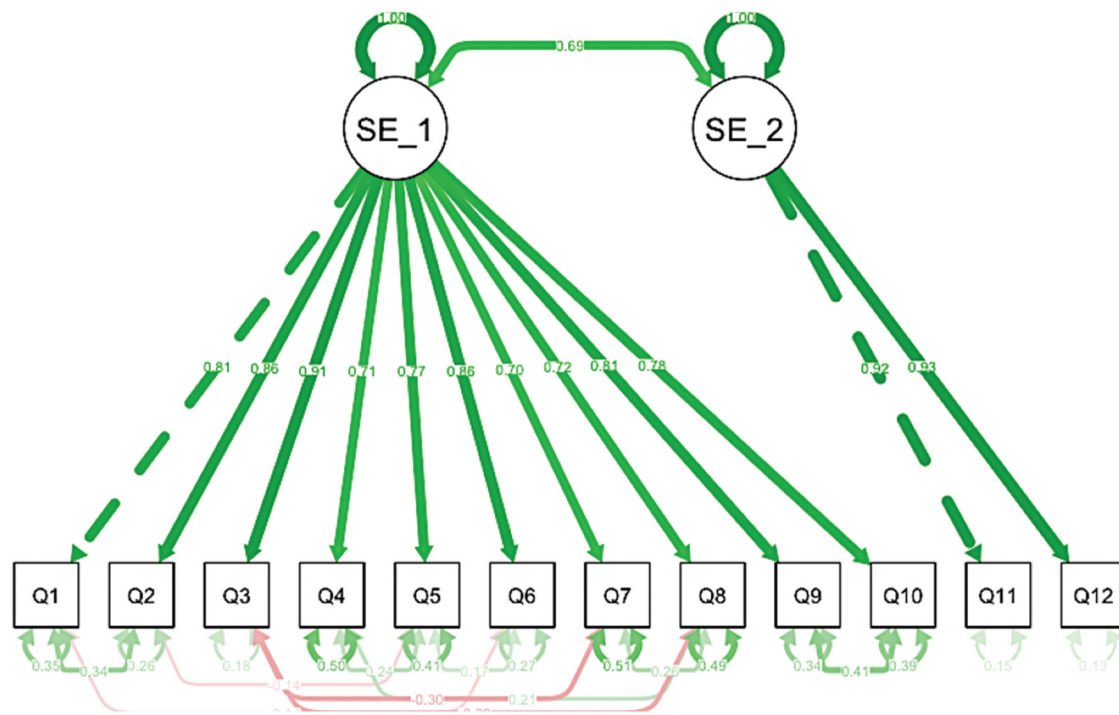
Figure 1. Path diagram.

Table 4. Inter-item correlations.

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Q1	1	.										
Q2	.80**	1										
Q3	.75**	.77**	1		.							
Q4	.60**	.60**	.63**	1								
Q5	.56**	.59**	.71**	.66**	1							
Q6	.64**	.73**	.78**	.60**	.72**	1						
Q7	.57**	.60**	.54**	.54**	.52**	.62**	1					
Q8	.56**	.60**	.56**	.62**	.54**	.57**	.64**	1				
Q9	.66**	.68**	.71**	.55**	.61**	.70**	.55**	.66**	1			
Q10	.63**	.67**	.68**	.56**	.64**	.66**	.52**	.58**	.78**	1		
Q11	.45**	.50**	.57**	.43**	.54**	.59**	.41**	.46**	.54**	.55**	1	.
Q12	.51**	.55**	.56**	.44**	.51**	.56**	.40**	.47**	.58**	.60**	.86**	1

**p < .01.

Inter-item correlations

The inter-item correlations of the 10 items of the first factor ranged from .52 to .80 (M = .63, SD = 1.17) whereas the inter-item correlation of items 11 and 12 of the second factor was .86 (Table 4).

Convergent validity

The total mean score of GSE was 20.44 (SD = 3.7, score range from 8 to 30). Statistically significant positive correlations were found between GSE with SE-12 ($r = .56$, $p = .01$), SE-12 factor 1 (Self-efficacy in communication skills and strategies) ($r = .56$,

p. = 01) and SE-12 factor 2 (Self-efficacy of successful interaction) ($r = .038$, $p = .01$).

Test-retest reliability

A total of 53 participants (83% were women) completed the SE-12 after one month. The inter-class coefficient correlation (ICC) was over .70 (ICC = .81, CI = 0.66–.88) for SE-12, over .70 (ICC = .81, CI = 0.66–.90) for SE-12 factor 1 (Self-efficacy in communication skills and strategies) and below. 70 (ICC = .51, CI = .11–.73) for SE-12 factor 2 (Self-efficacy of successful interaction).

Table 5. Means, standard deviations and one-way analyses of variance in type of services and SE-12.

Measure	Public Hospitals and Medical Services M (SD)	Public Social Services M (SD)	Non-for-profit Health Services M (SD)	For-profit Nursing Homes M (SD)	Other Services M (SD)	$F_{(4, 225)}$	p
Self-Efficacy	89.43 (15.42)	95.93 (10.32)	98.41 (10.85)	94.46 (14)	95.19(11.43)	3.997	.004***

***p < .001.

Self-efficacy score per profession, and type of health service

A statistically significant difference (F = 4.650, df = 225, p = .004) was found between mental health professionals and medical professionals with mental health professionals reporting a higher SE-12 total mean score (M = 97.16, SD = 9.9) compared to medical professionals (M = 91, SD = 1.4).

A statistically significant difference was identified between the type of the health services and SE-12 scores (F = 3.997, df = 225, p = .004). Bonferroni post-hoc tests showed lower SE-12 mean scores among those working in public hospitals and medical services compared to those working in public social services and not-for-profit health services (Table 5).

These differences were not confirmed for each of the two SE-12-Gr dimension mean scores.

Discussion

This study aimed to validate the SE-12 in a sample of healthcare providers working with older adults in Greece. This tool is a short, easy to use, with good psychometric properties that assesses healthcare providers self-efficacy of communication skills.

The results of this study were comparable with those of the original scale. Although the one-factor structure of the original SE-12 was not confirmed, the two factors that were revealed were reliable and had a better model fit, as confirmed by the Chi-Square difference test. The two-factors model was improved when item covariances were included in CFA. The Chi-square remained statistically significant even if the ratio χ^2/df decreased. Taking into consideration the relatively small sample and the number of variables included in the model, we might face the Chi-square bias, leading to falsely rejecting the model even if there were a good overall fit (Kenny & McCoach, 2003).

The psychometric properties of the SE-12-Gr (i.e., internal consistency, test-retest reliability, and convergent validity) were satisfactory using one or two factors. As expected, the SE-12-Gr correlated with GSE, indicating that the SE-12-Gr measures a specific domain of a person's general self-efficacy related to communication skills (Luszczynska et al., 2005). Self-efficacy cannot be considered as a general personality characteristic but is tailored according to specific situations (Bandura, 2006).

The first factor (i.e., "Self-efficacy in communication skills and strategies"), consisting of ten items, pertained to healthcare providers' self-efficacy of verbal and non-verbal communication skills, whereas the second one (i.e., "Self-efficacy of successful interaction"), consisting of two items, pertained to healthcare providers perception of planning with the use of shared decision making and successfully closing the interaction. The second factor aligns with the suggestion that healthcare providers need to explain treatment plans, communicate in simple language and confirm their patients' understanding (Rudd, 2010; Rudd & Andersen, 2006). The two items of the second factor strongly correlated with each other, had a high internal consistency and low factor loadings in the first factor. Theoretically, this finding is consistent with the

existing literature on shared decision making as the process requires effective communication skills (Roodbeen et al., 2020). According to Feldman-Stewart & Brundage's conceptual framework of the provider-patient interaction (2009), both parties enter this interaction with specific goals, needs, beliefs, skills and values, considering also the external factors of the environment that may influence this interaction.

The tool discriminated healthcare providers in terms of their specialty and the service they worked in. Medical professionals (i.e., physicians, nurses, assistant nurses, and health visitors) reported lower self-efficacy scores in comparison with the mental health professionals (i.e., psychologists and social workers). This finding aligns with the literature showing that, although communication skills and self-efficacy are interrelated in nurses and impact the patient health outcomes (Leal-Costa et al., 2020), they usually do not prioritize health education and communication skills as their important tasks in their work (Aiken et al., 2013; Jones et al., 2015). As part of a European study in 12 countries on nursing tasks prioritization and job satisfaction, educating patients and family was considered as a task left undone (Aiken et al., 2013). There is a lack of research related to task prioritization in mental health professions, such as psychology and social work. Professionals working in public hospitals and medical services had lower self-efficacy scores compared to those working in public social services and not-for-profit healthcare services. The hospital environment could influence the healthcare providers self-efficacy (X. Huang et al., 2022; Zamani-Alavijeh et al., 2019) and public healthcare services in low and middle-income countries provide limited time in the healthcare provider – patient interaction (Basu et al., 2012). We should also consider the academic curricula of the medical specialties. In medical professions, communication is a minor part of the academic curricula also considered as a hidden curriculum and may be presented early in academic studies making it difficult for students to practice these skills or to understand the benefit of effective provider-patient interaction (Glick, 2011). On the other hand, in mental health curricula, such as psychology and social work, a core part of the students' education is communication skills practicing and providing appropriate consulting skills, and empathy (Reith-Hall & Montgomery, 2022).

The strengths and weaknesses of this study should be acknowledged. Even though the sample was not homogenous, the comparisons regarding professions and type of service were possible. Because of the non-representative and small sample sizes of the different health care provider specialties, comparisons among them should be cautiously interpreted. This is especially the case for physicians, physiotherapists and occupational therapists. Since the pharmacists' role in empowering healthcare users in making healthcare decisions is important worldwide (Kripalani & Jacobson, 2007), not being included in the sample was a limitation. Due to the COVID-19 restriction measures, the survey was administered online making the recruitment of the sample easier, but difficult to assess the validity of the healthcare providers' responses. The period of recruitment (during the pandemic) needs to be considered when the results are interpreted. The pandemic changed the way

of communication making face-to-face interaction more difficult and adding the virtual dimension as an option (Patra et al., 2022). The self-report online format of the questionnaire may have resulted in associated biases (e.g., selection bias and social desirability). The convenience sampling method, which recruited overwhelmingly more women than men may have decreased the representation of the sample. Notwithstanding the limitations of this study, the strengths and implications should be also acknowledged. The SE-12-Gr is the first validated instrument to assess the self-efficacy of healthcare providers working with older adults in the public or private healthcare sector in Greece.

The validation of this scale contributes to the provider-patient communication instruments. In practice, the SE-12-Gr has been incorporated in a health literacy toolkit culturally adapted in Greek for healthcare providers working with older adults (Efthymiou et al., 2023). The toolkit includes 11 tools and one core tool is the "Raise awareness" (Tool 1). It focuses on the development of a Health Literacy promoting team within an organization. The SE-12 is used as part of this specific tool to provide an assessment of self-efficacy in communication to the Health Literacy promoting team (X. Huang et al., 2022). Free download is available for adult educators, academics of health sciences studies, and healthcare providers working with older adults. The SE-12-Gr could also be promoted by the Hellenic Health Literacy Association, recently established by HL experts in Greece. Additionally, this scale could be used with other Greek-speaking healthcare professionals (e.g., from Cyprus) always taking into consideration that the scale was validated in a Greek context.

In future studies, it would be interesting to validate the tool per healthcare profession specialty, compare findings and assess the correlation of the SE-12-Gr with other concepts such as stress, depression and well-being among healthcare professionals or satisfaction of the provider-patient encounter among healthcare users. Research could also focus on the development of assessment tools for health and ehealth literacy in older healthcare users, thus, assisting healthcare professionals in their everyday clinical practice.

Acknowledgements

Disclosure statement

Funding

ORCID

Areti Efthymiou 🔵 http://orcid.org/0000-0001-8838-1669
Argyroula Kalaitzaki 🔵 http://orcid.org/0000-0002-6416-9740
Michael Rovithis 🔵 http://orcid.org/0000-0003-0471-0117

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