ORIGINAL INVESTIGATION

The engagement in Healthy Ageing Promotion Scale: development and validation

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Purpose of the study: This article reports the development and Italian validation of a new self-report instrument (The Engagement in Healthy Ageing Promotion Scale) that assesses older people engagement in healthy ageing promotion and is grounded on an ecological operational definition of this phenomenon.

Methods: 14 items were developed basing on a previously conducted qualitative study exploring older adults' experiences and meanings of engagement in health promotion. Analyses were conducted on an Italian sample of 540 adults aged 60 years and older, randomly split into an exploratory (n = 308) and a confirmatory (n = 232) group. A final scale of 8 items was validated with confirmatory factor analyses. Concurrent and criterion validity of the final items were evaluated with measures of patient activation, readiness to change lifestyle and wellbeing.

Results: Both exploratory and confirmatory factor analyses confirmed the one-factor structure of the eightitems scale, with a variance explained of 44% and an eigenvalue equal to 3.5. The fit values of the final model indicated a good model fit. Internal consistency of the scale was good, with a Cronbach's Alpha equal to 0.81. Finally, concurrent and criterion validity revealed significant relationships with the patient activation construct (r = .401; p = .000), with the readiness to change lifestyle (r = .211; p = .000), and with older people's wellbeing (r = .205; p = .000).

Implications: The developed instrument can represent a useful tool to estimate the extent to which older citizens are engaged in health promotion activities, as well as to develop and evaluate interventions aimed to improve wellbeing and preventive behaviours of older citizens.

Key words: Health promotion, Scale validation, Health engagement, Older people

INTRODUCTION

Worldwide societies are becoming older and older. For the first time in history, the majority of people can expect to live 60 years or over. Indeed, in the last 50 years, life expectancy has increased by about 10 years in Europe ¹, and projections show a stead and continuous increase in the upcoming decades ². This is surely a public health success, but social and economic challenges of managing the health of an increasing older population are consistent. Keeping older adults healthy is becoming a necessary condition to prevent disease conditions which can substantially lower the quality of life and reduce the autonomy of older adults, and which can represent an unsustainable burden for healthcare systems. Considering these assumptions, a global health priority is now allowing older adults ageing successfully and strengthening their individual and social resources in order to help them maintaining a good health status as long as they can ³.

With this goal, different labels (e.g., active ageing,

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successful ageing, healthy ageing, optimal ageing) advocate for a new vision of ageing as a source of opportunities which - if properly sustained - can improve the quality of life and the health status of older citizens ⁴. As literature demonstrated, health-promoting behaviors during old age can delate age-related physical, mental, and functional problems ⁵⁶. For this reason, there is a growth of policies and interventions specifically devoted to promote the active healthy ageing of older citizens 7-9. However, these generally lack to consider older people's needs, expectations, and desires to play an active role in their health promotion ^{8 10}. Even though older citizen's disposition and attitude to be engaged in health efforts might be an important factor able to explain health promoting behaviours ^{11 12}, this has been rarely explored and measured in literature. Indeed, it is possible to advise in literature kindred concepts and measures of adults' engagement in health promotion, such as salutogenic wellness promotion ¹³, perceived control in healthcare ¹⁴, health promoting lifestyle ¹⁵, perceived wellness ¹⁶, readiness to change health behaviors ¹⁷, or self-efficacy for health behaviors ¹⁸. All these concepts cover important aspects of health promoting efforts. However, they focus on health behavioral attempts (i.e., health promoting lifestyle, readiness to change), on perceived health components (i.e., perceived wellness, salutogenic wellness promotion), or on intrapsychic psychological variables (i.e., selfefficacy, perceived control) which can impact on health behaviors. They lack to consider the disposition and attitude of citizens to engage in health promoting behaviors, and do not focus on specific population targets such as older citizens. There are also other concepts and measures within the healthcare domain (i.e., patient activation, patient engagement, self-management of chronic diseases, patient empowerment, shared decision-making), which however do cover control only with healthcare conditions and target chronically ill patients ¹⁹⁻²³, or focus on population from different age ranges ²⁴.

Consequently, the need arises for a valid measure of older people engagement in healthy ageing promotion that is specifically attuned to older citizens' experiences, that covers health promotion domains, and that specifically addresses the "engagement" construct. Indeed, a qualitative study exploring older adults' experiences of engagement towards health promotion and health management revealed that this concept is grounded in older adults' experiences, can be operationalized, and deserves a different operationalization from that ones of patient engagement or patient activation ²⁵.

With this study, we aim to report the development and validation process of a new instrument specifically measuring older people engagement in healthy ageing promotion (*The Engagement in Healthy Ageing Promotion Scale*, EHAP-S). The instrument grounded on an ecological operational definition of the phenomenon of older people engagement in healthy ageing promotion and resulted from a taxonomy of health engagement experiences co-constructed with older citizens in a previously conducted qualitative study ²⁵.

DESIGN AND METHODS

ETHICS PROCEDURES

Ethical approval was obtained by the Ethical Committee of the Catholic University of Milan before starting the study. Written consent to treat data for research purposes was obtained from all participants who consented to be involved in the study.

SCALE DEVELOPMENT

The items of the scale were developed basing on a qualitative study exploring the older Italian adults experiences of engagement - and disengagement - in health promotion ²⁵. 25 semi-structured repeated interviews with Q-sorting tasks designed according to the Ethnoscience method were conducted with a group of older adults aged 65 years and over to deeply understand the phenomenon of health engagement and depict a shared vocabulary and taxonomy of experiences. A first taxonomy of meanings and experiences of the phenomenon of older people health engagement comprised 45 units of analysis. The second interviews round allowed a final taxonomy to be participatory selected and depicted, comprising four main semantic areas (e.g., physical care, soul care, daily lifestyle, contact with ageing) and a set of experiential domains graduated into three positions of engagement (i.e., locked position; awakening position; climbing position). Basing on this taxonomy and on interviewees' feedbacks which suggested to group items on emotional, cognitive, and behavioral dimensions, an initial set of 14 items was developed (see Tab. I). The last (the "higher") engagement position (i.e., the climbing position) was chosen for the items to represent the phenomenon, and a 5-points Likert scale ranging from strongly disagree through strongly agree was adopted.

SET OF INCLUDED MEASURES

Basing on the results of the previously conducted qualitative study ²⁵, a set of validated questionnaires was defined to explore construct and concurrent validity. More in details, for construct validity, the Italian translation ²⁶ of the 13-items Patient Activation Measure (PAM) ²⁴ and the 4-items stage of change questionnaire adapted for

I include in my daily life activities that positively impact Item 1-I on my health Item 2-I I listen to my body to consequently adapt my lifestyle I am able to understand what it is good for my health Item 3-I and what it is not Item 4-I I am happy when I manage my health Item 5-I I take care of my health because I love myself Item 6-I I am satisfied with how I am managing my health Item 7-I Over years I improved my way of managing my health Item 8-I I have life plans that make me feel good The way I am managing my health reflects what I think Item 9-I it should be done Item 10-I My health is in my hands Item 11-I Thinking on what I can do to feel better is a daily habit I ask help to others to promote and manage at best my Item 12-I health **Item 13-I** | I have enough information to follow a healthy lifestyle Item 14-I I encourage the people I care to lead a healthy lifestyle

Table I. Initial set of items (english translation).

lifestyle's change assessment ¹⁷ were adopted. The Italian multidimensional Wellbeing and Cognitive Abilities in Older Adults (BEN-SSC) questionnaire of the Wellbeing and Cognitive Abilities (BAC) portfolio was chosen for concurrent validity so to have an ecological measure of wellbeing specifically constructed for the older Italian population ²⁷. The questionnaire is a validated 32-items on a 4-point Likert scale that provides a total wellbeing score featured by three main factors: personal life satisfaction (for the past, the present, and the future life), coping strategies (as ability to deal with daily problems, self-efficacy, and perception of autonomy), and emotional competence (as awareness of own feelings and social satisfaction). Finally, clinical (self-reported type and number of chronic illnesses) and socio-demographical (age, gender, marital status, educational level, place of residence) questions were introduced to characterize the sample of participants.

DATA COLLECTION

A cross-sectional survey was conducted between January 2014 and January 2016 to collect data among a non-representative sample of Italian adults aged equal or over 60 years. A minimum sample size of 300 participants – also considering potential missing values and drop-out rates – was defined before starting recruitment. Participants were recruited through different senior centers (e.g., community centers, aggregative centers, recreation associations), which were contacted by telephone and invited to take part in the study. Most of participants were recruited by a national senior association (ANCeSCAO, Associazione Nazionale Centri Sociali, Comitati Anziani e Orti), which disseminated the questionnaire in the senior centers distributed along the Italian territory. The anonymous questionnaire included a cover letter explaining the length (about 10 minutes) and the aim of the study, providing contact information, and informing participants about the possibility to refuse in every moment to participate. The informed consent was collected at this moment. Participants were free to participate and no incentive was given to them to participate.

DATA ANALYSIS

The first goal of the study was to obtain a scale comprising a low number of items measuring the latent construct of interest. The initial scale comprised 14 items. In order to calibrate the scale and to reduce the number of items, several analyses were conducted. Descriptive analyses were performed on each item of the developed scale to observe distributions, kurtosis, asymmetry, eventual ceiling and floor effects and missing values. Thereafter, a Partial Credit Rasch Model was performed to check unidimensionality and the fit of each item to the construct of interest. In particular, to check whether the items fitted to the expected model, a Chi square test and two item fit mean square (MNSQ) statistics (infit and outfit) were computed. MNSQ determines how well each item contributes to defining a single underlying construct. Infit is more sensitive to misfitting responses to items closest to the person's ability level, while outfit is more sensitive to misfitting items that are farther away. If the data fit to the Rasch model, the fit statistics should be between 0.6 and 1.4²⁸. Analyses of difficulty and step parameters were conducted to guarantee a sufficient ranking of the different categories of response and to respect the monotonic order. The conjoint use of these different procedures permitted to calibrate the questionnaire and to eliminate problematic items which presented one or more drawbacks. The validation study was thereafter conducted on the remaining items. A further Partial Credit Model was conducted on the whole sample. Then, construct validity was determined through exploratory and confirmatory factor analyses on two different samples, obtained by the initial sample randomizing the assignation to the two sub-sample. Exploratory factor analysis (EFA) was performed using a principal axis factoring with Oblimin rotation. Appropriateness of EFA was evaluated through Kaiser-Meyer-Olkin (KMO) values (excellent if > .90) and significance of Bartlett score. Explained variance, factor loadings evaluation and eigenvalue > 1 were used to define the factorial structure of the scale. Furthermore, a model was considered acceptable if factors

loadings exceeded r = .40. Therefore, confirmatory

factor analysis (CFA) was performed to test the model.

Goodness-of-fit indexes (i.e., chi-square with degrees of freedom, comparative fit index – CFI –, root mean square error of approximation – RMSEA –) were evaluated. A CFI > .90 was considered a good model fit ²⁹, whereas a RMSEA < .08 indicated an acceptable fit ³⁰. Finally, Hoelter test scores were used to evaluate suitability of the sample size.

Concurrent validity with the PAM and with the Stage of Change Scale scale was also determined by using Pearson's correlation. Criterion validity of the developed scale was evaluated by comparing the results from the EHAP-S to a selected a priori measure of wellbeing of older Italian citizens (BEN-SSC). Indeed, we hypothesized that engagement in healthy ageing promotion would be positively related to an overall measure of perceived wellbeing. Criterion-related validity was assessed by examining Pearson's correlation coefficients and by conducting linear regression analyses.

Internal consistency reliability was determined through the Cronbach's alpha. A reliability coefficient exceeding 0.70 was considered acceptable, exceeding 0.80 was considered good. Moreover, Item-Total Correlation index and Cronbach's Alpha if Item Deleted were calculated.

Analyses were conducted using SPSS 23 version with a level of significance set at 0.05 and R.3.2.4 (package eRm).

RESULTS

SAMPLE'S DESCRIPTION

540 participants aged 60 years and older participated in the study. The overall response rate was 91%. 51.7% of participants were female. 253 participants (46.9%) did not report to be affected by a chronic disease condition. Respondents' age ranged from 60 to 92 years (average = 69.3; SD = 8.5), with 27.4% of participants being in the range 60-74 years, 45.2% of participants being in the range 75-84, and 27.4% of participants being in the range > 85 years-old. Looking at the civil status, 63% of participants was married/widowed. 74.4% of respondents was retired, 8.3% was unemployed, 5.4% worked full-time, and 2.2% worked part-time. 32.8% of participants completed a secondary education, 31.1% completed an upper secondary education, 18% completed an elementary education, 8% received a postsecondary education, and 0,4% received no education. In Table II further details about the socio-demographic characteristics of the sample are provided.

TEM ANALYSIS FOR CALIBRATION

Descriptive statistics of the individual items were calculated to conduct the initial exploration of the data. Table III provides the item-level descriptive statistics for **Table II.** Characteristics of participants (n = 540).

	mean (SD)/n (%)
Age	69.3 (8.5)
Sex	210 (38.9%)
Male	279 (51.7%)
Female	2 (0.4%)
Education	97 (18%)
No education	177 (32.8%)
Elementary	168 (31.1%)
Upper-secondary	43 (8%)
Post-secondary	238 (44.1%)
Diagnosis	253 (46.9%)
Yes	340 (63%)
No	33 (6.1%)
Civil status	26 (4.8%)
Married/widowed	90 (16.7%)
Single/unmarried	402 (74.4%)
Divorced	
Widowed	
	45 (8.3%)
unemployed	
Full-time work	29 (5.4%)
Part-time work	12 (2.2%)

all items (range, minimum, maximum, mean, standard deviation, asymmetry and kurtosis). The frequencies of the response categories showed little use of the category "Strongly Disagree" and "Disagree". The categories "Agree" and "Strongly Agree" were used with the highest frequency for all the items.

The mean scores ranged from 3.47 (item 12) to 4.11 (item 4). Standard deviations showed a constant variability in all items, ranging from 0.76 (item 4) to 0.96 (item 12). Calibration and validation analyses were conducted only on the 500 participants' responses without missing values.

Items 1-I, 3-I, 4-I and 5-I presented drawbacks of kurtosis (out of normal range between -1 and +1) and ceiling effect (more than 80% of responses were distributed in the two highest categories).

A Partial Credit Rasch Model (PCM) was implemented to examine the psychometric properties of the items, and to calibrate the questionnaire. PCM is useful to investigate uni-dimensionality of the construct (fundamental requisite of the summarization of the raw scores), the fit and the reliability of each item (Tab. IV). Items 1-I, 4-I and 5-I presented drawbacks of monotonicity of steps (in particular Item 1-I between categories 2 and 3, Items 4-I and 5-I between categories 1 and 2). Item 12-I had an Outfit MSNQ value over the acceptable range (Outfit value equal to 1.57, acceptable range between 0.6-1.4). Moreover, Items 12-I and 13-I resulted

Item	Range	Min	Мах	Mean	Std. Dev.	Asymmetry	Kurtosis
Item 1-I	1-5	1	5	3.88	.79	99	1.57
Item 2-I	1-5	1	5	3.84	.81	85	0.97
Item 3-I	1-5	1	5	3.96	.78	89	1.53
Item 4-I	1-5	1	5	4.11	.76	86	1.48
Item 5-I	1-5	1	5	3.98	.84	81	1.10
Item 6-I	1-5	1	5	3.78	.83	73	.79
Item 7-I	1-5	1	5	3.82	.87	75	.69
Item 8-I	1-5	1	5	3.64	.80	45	.03
Item 9-I	1-5	1	5	3.65	.84	57	.12
Item 10-I	1-5	1	5	3.80	.93	58	.08
Item 11-I	1-5	1	5	3.76	.81	57	.47
Item 12-I	1-5	1	5	3.47	.96	57	12
Item 13-I	1-5	1	5	3.72	.80	70	.76
Item 14-I	1-5	1	5	3.74	.87	70	.52

Table III. Item-Level Descriptive Statistics for each item.

Table IV. Item fit statistics.

Item	Difficulty	Step 1	Step 2	Step 3	Step 4	Outfit MSNQ	Infit MSNQ	Chi Square (df=499)	P-value
Item 1-I	.64	-1.20	.17	.07	3.52	1.07	1.08	536.09	0.12
Item 2-I	.65	-1.21	.01	.36	3.46	0.83	0.84	415.32	1.00
Item 3-I	.52	74	49	.20	3.09	0.95	0.97	475.66	0.76
Item 4-I	.30	34	-1.15	.09	2.59	0.88	0.85	438.58	0.98
Item 5-I	.55	06	-1.03	.56	2.72	0.70	0.74	349.63	1.00
Item 6-I	.76	-1.00	19	.69	3.54	0.76	0.74	378.40	1.00
Item 7-I	.75	67	20	.71	3.18	0.84	0.84	420.64	1.00
Item 8-I	.66	-2.39	06	1.09	4.01	0.87	0.90	436.95	0.98
Item 9-I	.79	-1.81	.21	.92	3.85	0.85	0.84	426.79	0.99
Item 10-I	.72	77	21	1.06	2.82	1.02	1.02	510.75	0.36
ltem 11-l	.67	-1.38	35	.86	3.56	0.78	0.79	392.58	1.00
Item 12-I	1.28	64	.61	1.20	3.95	1.57	1.31	787.68	0.00
Item 13-I	.82	-1.24	20	.79	3.91	1.09	1.07	556.40	0.04
Item 14-I	.82	-1.02	.02	.77	3.49	1.04	1.00	521.29	0.24

significant in Chi square test, which compared the observed answer distribution with the estimated one.

For all these reasons (drawbacks of distribution, asymmetry, kurtosis, ceiling effect, monotonicity of steps in PCM, outfit MSNQ value and Chi square test), Items 1-I, 3-I, 4-I, 5-I, 12-I and 13-I were eliminated.

Only 8 items (2-I, 6-I, 7-I, 8-I, 9-I, 10-I, 11-I and 14-I) were selected for the validation study.

ITEM ANALYSIS FOR VALIDATION

The validation study was conducted on 8 items, reported, with new labels, in Table V.

A new estimate of PCM was performed on the 8 selected items. Results are reported in Table VI. Problems of monotonicity of steps, of Chi square test and of Outfit MSNQ and Infit MSNQ values (ranging, respectively, from 0.75 to 1.04 and from 0.70 to 1.04) were not observed among the selected items. Rasch Model confirmed the uni-dimensionality of the EHAP scale and the fit of each item to the data. To explore and verify the factorial structure of the scale, the overall sample was randomly divided into two main groups: Group 1 (n = 308) was used to conduct the exploratory analysis, Group 2 (n = 232) was used to conduct the confirmatory analysis.

EHAP-1	I listen to my body to consequently adapt my lifestyle
EHAP-2	I am satisfied with how I am managing my health
EHAP-3	Over years I improved my way of managing my health
EHAP-4	I have life plans that make me feel good
EHAP-5	The way I am managing my health reflects what I think it should be done
EHAP-6	My health is in my hands
EHAP-7	Thinking on what I can do to feel better is a daily habit
EHAP-8	I encourage the people I care to lead a healthy lifestyle

Table V. Set of items for validation study (english translation).

EXPLORATORY ANALYSES

The KMO value was good (.856) and the Bartlett's Test of Sphericity reached statistical significance (p < 0.01), supporting the use of EFA. EFA revealed a one-factor structure explaining 44% of variance and with an eigenvalue equal to 3.5. Factor loadings are reported in Tables VII-VIII, and they ranged from .51 to .72.

CONFIRMATORY ANALYSES

CFA were conducted to verify the latent structure of the hypothesized eight-items one-factor model. Hoelter test score for .05 was 242, indicating an adequate sample size. The chi-square (df), CFI, and RMSEA values of the final model were 81.38(20), .937, and .079, respectively. Those values indicated a good model fit. The factor loadings from the CFA of all 8 items ranged from .43 to .72 and they were absolutely comparable with the correspondent obtained by EFA.

INTERNAL CONSISTENCY AND RELIABILITY

EHAP scale had a very good internal consistency, since the value of the Cronbach's Alpha was equal to 0.81. In Table IX, the Cronbach's Alpha was evaluated after deleting individual items. Moreover, Item-Total Correlation

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EHAP-1	I listen to my body to consequently adapt my life- style	.71
EHAP-2	I am satisfied with how I am managing my health	.72
EHAP-3	Over years I improved my way of managing my health	.68
EHAP-4	I have life plans that make me feel good	.70
EHAP-5	The way I am managing my health reflects what I think it should be done	.70
EHAP-6	My health is in my hands	.55
EHAP-7	Thinking on what I can do to feel better is a daily habit	.71
EHAP-8	I encourage the people I care to lead a healthy lifestyle	.51

Table VII. Factor loadings.

Table \	VIII.	ltem	loading	s in	confir	matory	factor	analysis	of the
8-items	enga	igeme	ent in H	ealt	hy Ag	eing Pr	omotio	n Scale.	

	Estimate
EHAP-1	,580
EHAP-2	,720
EHAP-3	,653
EHAP-4	,577
EHAP-5	,663
EHAP-6	,467
EHAP-7	,630
EHAP-8	,435

index was calculated for each item. Each item contributed significantly to the EHAP scale score. The internal consistency of the 8-item EHAP scale was satisfactory.

CONCURRENT VALIDITY

Pearson's correlation revealed good correlation levels with the PAM scale (r = .401; p = .000) and with the

Item	Difficulty	Step 1	Step 2	Step 3	Step 4	Outfit MSNQ	Infit MSNQ	Chi Square (df = 499)	P-value
EHAP-1	0.69	-1.21	-0.18	0.13	3.68	1.01	1.02	500.02	0.42
EHAP-2	0.82	-1.01	-0.18	0.76	3.70	0.71	0.70	354.99	1.00
EHAP-3	0.81	-0.69	-0.19	0.78	3.32	0.80	0.79	396.539	1.00
EHAP-4	0.73	-2.40	-0.03	1.17	4.21	0.84	0.86	414.912	1.00
EHAP-5	0.86	-1.82	0.24	1.01	4.03	0.81	0.79	400.488	1.00
EHAP-6	0.78	-0.79	-0.20	1.14	2.96	1.03	1.03	509.552	0.33
EHAP-7	0.74	-1.39	-0.33	0.94	3.73	0.75	0.76	370.351	1.00
EHAP-8	0.88	-1.03	0.04	0.85	3.65	1.09	1.04	539.069	0.08

Table	VI.	Item	fit	statistics.
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ltem	Cronbach's Alpha if item deleted	Corrected item-total correlation
EHAP-1	.79	.52
EHAP-2	.77	.62
EHAP-3	.78	.56
EHAP-4	.79	.50
EHAP-5	.78	.58
EHAP-6	.80	.43
EHAP-7	.78	.58
EHAP-8	.80	.41

Table IX. Internal consistency and reliability analysis.

Stage of Change Scale (r = .211; p = .000), revealing that the developed scale is significantly related but sufficiently divergent from these reference measures.

CRITERION VALIDITY

Significant and positive correlation levels were revealed by Pearson's correlation analyses with the BEN-SSC scale of Italian older adults' wellbeing (r = .205; p = .000). To further examine criterion validity, linear regression with overall perceived wellbeing as dependent variable and the factors of engagement in healthy ageing promotion as independent variables was employed. The regression analysis was significant (F 1,499 = 21.971, p < .001) and explained 42% of the variance of the model. Therefore, results suggest that the proposed one factor of older people engagement in health promotion is related to the construct of wellbeing (has criterion validity).

DISCUSSION

With this study, we aimed to develop and validate a new brief scale to measure older people engagement in health promoting behaviors. Although there are some scales assessing health promoting behaviors or activation of people towards their health management and promotion, there are no instruments specifically developed for older citizens. However, engagement in health promoting behaviors during ageing is a particularly relevant issue to date, as measuring this aspect can help collecting the needs for engagement of a similar population and assessing active healthy ageing initiatives. The development and validation of a scale measuring a similar dimension might help covering an essential prerequisite of promoting healthy ageing that is the emotional, cognitive, and behavioral disposition and attitude of older citizens to engage in healthy aging. The EHAP-Scale appears to have both good reliability and good content validity. Furthermore, it is easy to complete, as demonstrated by the fact that most of participants completed the questions (91%). In terms of content validity, the principal components analysis supports the view that the scale is tapping into one unique meaningful constructs of engagement in healthy ageing, as proposed by other scales measuring similar constructs of engagement and activation ^{23 24}. The high correlation between EHAP-S score and activation towards care management suggests that the disposition to engage in health promoting behaviors and being behaviorally active in managing physical health problems are connected aspects of one's life. Furthermore, also the correlation of the scale with readiness to change lifestyle suggests that there is a relationship between the EHAP scale and behavioral health outcomes. Finally, results suggest that the factor of older people engagement in health promotion is significantly related to the construct of wellbeing. This highlights the importance of a similar variable to develop targeted intervention that can be able to improve the wellbeing of older citizens. Indeed, this scale can be considered a useful tool to implement monitoring strategies of attitudes of older citizens towards health promotion activities as well as to develop intervention focused on improving preventive behaviors and wellbeing outcomes in older citizens and evaluate their effectiveness.

Some limitations can be observed in our study. First, the purposive sample adopted for this study does not allow generalization to the entire Italian population to be driven. A stratified random population sample would have allowed to provide normative data. However, the balanced representation of socio-demographical categories in the sample suggests that results of this study can probably be applied to a wider population. It will also be necessary to demonstrate the predictive validity of the scale and its sensitivity to change following interventions. Furthermore, the next step in the validation of the EHAP scale will be to demonstrate that it has comparable reliability and validity across a range of languages and cultural settings.

To conclude, the developed scale to measure the engagement in healthy ageing promotion among older Italian adults has close continuity with the best existing measure of activation and readiness to change, its psychometric properties are excellent, and it is able to assess aspects relating to the attitude and disposition of individuals towards engaging in health promoting activities in the specific population of older citizens.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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