Development and Validation of Sensitivity for Needs of Elderly Scale Among Caregivers Based on Maslow's Theory

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ABSTRACT
The world currently lives in an aging society. Demand for elderly caregivers and services is rapidly rising. Elderly care encompasses not only medical care, but also the art of human care. Love and respect are usually considered the backbone of the modality of caregivers. This study aimed at developing a sensitivity for needs of elderly scale (SNES) among caregivers. Maslow's theory of hierarchical needs, especially stage 3 (love and belongingness needs) and stage 4 (esteem needs), was used as a conceptual framework. This study consisted of four steps. The sample groups for the first two steps of item quality and exploratory factory analysis were 420 nursing students. A three-factor model emerged, which includes the sensitivity of needs for love and empathy, the sensitivity of needs for respect, and the sensitivity of needs for honor and dignity. The newly constructed measure consisted of 10 items, which explained the variance by 52.18%. The third step of confirmatory factor analysis, using a new group of 384 nursing students, indicated the model fit. In the final step, the scale was validated using 171 elderly caregivers. Moderate to strong absolute magnitudes of correlations between the new scale and psycho-moral strength, core self-evaluation, future orientation and self-control, moral disengagement, and caring behavior were found. Incremental validity was tested. Discussion and recommendations for further research and implications of the newly constructed measure were offered.

1. Introduction

The world is currently confronted with numerous significant challenges and issues, particularly those related to the population ratio. In the past, societies in each country rarely encountered challenges with the elderly, which might be due to the small number of elderly persons. Moreover, less advanced and effective public health systems and medical treatments in the past resulted in a shorter lifespan for people in earlier times compared to today. The elderly population aging more than 60 years old in each country is now expanding rapidly. The proportion of this age group population in many countries exceeds 20%. Thailand experiences the same situation. It is currently grappling with a population that was born between 1963 and 1983, a period marked by an annual birth rate of 1 million. These individuals began reaching the age of 60 starting in 2023, resulting in a "tsunami" population entering old age. This group of individuals will reach at least 20 million within the next 20 years.

People perceive old age as a stage of decline in various aspects such as physical, mental, financial, and social. These changes and declines often require close care, and attention from family members. However, their care needs differ from those of other stages in early life, as they require more time and are more delicate in both quantity and quality. Due to necessity and the pressure of work obligations, family members or relatives have to go out to work to earn money to support the family, which often leaves them with insufficient time to properly care for these elderly individuals., for instance, accompanying to see the doctors on the appointed dates, or helping/reminding to take medicines on time. Family members often neglect to take extended leaves of absence from their jobs to care for the elderly. These activities are life matter for most of elderly persons. Additionally, the trend of elderly people living alone without relatives to take care of them is increasing.

As a result, the elderly care business is growing very rapidly in both public and private sectors. There is an increasing demand for elderly care service personnel, such as nurses and caregivers in hospitals and nursing homes. Trainings for these personnel often focus on nursing care, such as food preparation and feeding, daily medicine treatment (e.g., wound dressing and applying medication, routine blood pressure measurement, or preparing medicine for each meals) and taking care of daily routines (e.g., bathing, accompanying to the

bathroom, and exercising). These elderly care personnel must possess additional ability and competence beyond those required for regular patient care.

Taking care of elderly people presents numerous challenges, particularly when caring for multiple individuals simultaneously. This can lead caregivers to lose their attentiveness and awareness in various ways. Furthermore, the accumulative stress and misunderstanding of the needs of people including elderly can result in harsh treatment toward them (Sakdapat, Cheewakoset, Ngamcharoen, & Bhanthumnavin, 2024) both physically (e.g., hurrying to finish meals, pulling to walk faster, or placing objects with a bang) and verbally (e.g., disrespectful teasing, sarcastic remarks, inappropriate comparisons). The elderly may perceive these (un)intentional maltreatments as impolite, disrespectful, contemptuous, and humiliating, leading to feelings of fear, resentment, and depression.

Therefore, elderly care must not only involve physical well-being but also address the mental and social well-being of these elderly individuals. The concept of "compassionate care" has been a longstanding concern. Scholars and researchers in nursing and public health care have been studying many relevant, important topics and issues relating to the needs and feelings of the elderly, such as empathy (e.g., Hart, Klick, & Tsai, 2023; Weng & Ku, 2024) and high-tech assistive robotics (e.g., Aggarwal, Shabu, Siddiqui, Shanmathi, Malathi, & Murthy, 2025; Costanzo, Smeriglio, & Di Nuovo, 2024). The quality of life for the elderly depends on caregivers understanding and being sensitive to their psychosocial needs. However, research on measuring caregivers' sensitivity to elderly needs remains limited. Therefore, we should focus on constructing assessments of these characteristics in elderly caregivers to increase awareness and enhance the spirit of caring with love and respect.

2. Literature Review

The needs of individuals are diverse. It may depend on age and the passage of time. Previously responsible for caring for others, the elderly now finds themselves in a position where they require care, particularly from the younger generation, whose beliefs, thoughts, and habits differ significantly. In such an environment, caregivers in younger generation are tough and time-consuming since many of them frequently lack sensitivity to the elderly's psychosocial requirements. Furthermore, caregivers' verbal and physical actions might have emotional impacts on the elderly, making them feel like a "burden" rather than "beloved." As a result, caregivers should be aware and alert to the elderly's reasonable requirements, including their psychological and social components.

Maslow's Theory of Hierarchical Needs

There has long been in existence of an important theory that classified human needs from the most basic to the highest level, known as Maslow's theory of hierarchical needs (1943). This theory explains that human needs are prioritized in a hierarchical order based on the necessity for fulfillment. Lower-level needs must be met before moving on to higher-level needs. Individuals' needs often accumulate in order according to the stages of their lives.

This theory suggested five hierarchical categories of human needs, conceptualized as a five-level pyramid (Figure 1). Level 1 refers to the basic needs and foundation of living, also known as the physical stage. This stage includes the essential needs that allow humans to sustain life, such as food, water, shelter, medicine, and clothing. Level 2 is the stage of safety and security needs, such as physical and property safety, financial stability, and emotional stability. Level 3 is the psychological needs stage, which involves feelings of love, care, and belongingness from significant others, such as family members, siblings, friends, and caregivers. Level 4 is the social needs stage, which includes respect and honor from those around them, leading to self-esteem. Finally, level 5 is self-actualization, in which individuals grow, achieve their goals, and do passionate work. Although all humans have hierarchical needs, the extent of those needs at each level varies from person to person.

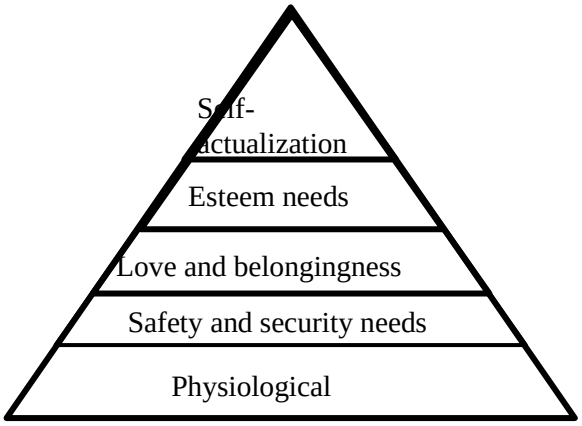

Figure 1: Maslow's theory of hierarchical needs (1943)

Physical and safety needs are basic responsibilities that individuals, whether they are relatives, friends, nurses, or caregivers, must fulfill for the elderly. They should be obviously sensitive to these two types of needs. However, holistic care for the elderly to enhance their quality of life must also consider their needs at levels 3 and 4, according to Maslow's theory. The art of elderly care and healing depend on the perception and awareness, as well as responding to their psychosocial needs.

According to Maslow's theory in level 3, known as love and belongingness needs, this level involves psychological needs that emphasize acceptance and care, as well as the feeling of being part of a group, being accepted, and having good relationships that express love, concern, and generosity. In the past, these elderly individuals sought acceptance, but it was often in terms of their wealth and lifestyle. However, nowadays, these elderly people, especially in Asian culture seek acceptance in a different form, focusing on interpreting acceptance through the words and behaviors of the younger generation who inevitably becomes their caregivers in care centers. Caregivers' genuine concern for their care recipients is an important expression of acceptance, treating them as if they were relatives or family members.

The fourth level of Maslow's theory, esteem needs, progresses from level 3's love and belonging needs. The essence of this level lies in its direct impact on a person's ability to gain recognition and feel respected. Pride in the early stages of a person's life is often based on work achievements and social status. However, retired elderly individuals often derive their sense of respect from the actions and responses of their significant others, including their caregivers. Caregivers should treat older persons with recognition and understanding of their reduced capability and increased limitations. These modality expresses the caregiver's respect and honor for the elderly.

Interpersonal relationships that address psychosocial needs represent the next level of human well-being. Kindness and respect are two of the key cultures embedded in Asian countries, but they are also welcomed worldwide. Elderly persons need respect from caregivers. According to Shamsikhani, Ahmadi, Kazemnejad, & Vaismoradi (2022), caregivers can give respect for the elderly in three dimensions: respect for their interests, kindness and sincerity, and also respect for their autonomy. It can be displayed in terms of both verbal (e.g., using polite words, using nice and gentle sound) and physical (e.g., appropriate and gently touching, avoiding forcing, notifying in advance of the next move or activity). These caregivers' modalities of love and respect make elder persons feel at ease, comfortable, and peaceful, which can also lead to better medical treatment outcomes and a higher quality of life.

Validation of Test Score

One of the important characteristics of measurement is validity. Validity refers to the extent to which the test accurately assesses what it intends to measure (Kerlinger, & Lee, 2000). There are various ways to test validity. One of the common approaches is the convergent validity test, which is a type of criterion-related validity. The test demonstrates a high magnitude relationship with other measures that assess similar or the same characteristics. The magnitude of $r \geq 0.50$ is acceptable for convergent validity (Carlson & Herdman, 2012). Its absolute value should be used rather than the value with direction.

Scholars recommended that other types of validity should also be tested. This research also utilized incremental validity for the additional approach to test newly constructed measure. It shows that a new psychometric assessment significantly enhances the ability to predict outcomes or explain the variance in the variable of

interest beyond the existing measures (Cronbach & Meehl, 1955).

3. Research Methodology

This study aimed at constructing a sensitivity scale for elderly needs in caregivers regarding psychosocial needs based on Maslow's theory, with a focus on sensitivity to needs at the third level (love and belongingness needs) and the fourth level (esteem needs). There were two sample groups employed in this study. The study used groups of nursing students as samples in the item quality and factor analysis steps. Caregivers from elderly care centers were respondents in the validation step. This research was approved by the Ethics Committee in Human Research (ECNIDA 2023/0127). Participants at each step were informed about the research project and their rights to withdraw at any time. We collected data using an online questionnaire via Google Form. Participants who gave consents and completed the questionnaire received a small token of appreciation. This study consisted of four steps. The research methodology and findings are presented below.

Samples

In this study, there were four sample groups for each analysis step. In the first and final steps, G*power was used to calculate the sample size. In the second and third steps, 10 times rule (Hair, , Black, Babin, & Anderson, 2010) was employed to calculate the sample size. The first step was item quality analysis. The sample group comprised 120 nursing students, with 119 (99.20%) being in their second year and 1 (8.00%) in their third year. Out of the total, 10 (8.30%) were male and 110 (91.70%) were female. The average age of the students was 20.34 years, with a standard deviation of 1.21. The average grade of the students was 2.93, with a standard deviation of 0.46. In the second step of exploratory factor analysis (EFA), a new sample group of 300 nursing students consisted of 135 second year (45.00%) and 165 third year (55.00%). With these numbers, there were 28 males (9.30%) and 272 females (90.70%) with an average age of 20.85 years (SD = 1.51) and an average grade of 3.23 (SD= 0.29).

For the third step of confirmatory factor analysis (CFA), a new sample group of 384 nursing students consisted of 193 second year (50.30%) and 191 third year (49.70%). With these numbers, there were 32 males (8.30%) and 352 females (91.70%) with an average age of 20.70 years (SD = 1.13) and an average grade of 3.17 (SD= 0.29). The final step of validation, a new sample group of 171 caregivers included 48 males (28.10%) and 123 females (71.90%). The average age is 33.35 years (SD = 11.269).

Statistical Approaches, Criteria, and Additional Measurements

The initial theoretical measurement model of sensitivity for needs of elderly scale (SNES) was based on Maslow's theory, emphasizing two levels of needs: 1) love and belongingness, and 2) esteem. This measure was intended to assess the perceptions or reactions of caregivers on psychosocial needs in older people. There were 23 initial items. The statistics used to analyze the data for item quality step were item-discrimination using a selection criterion at $t \geq 2.00$ (Nunnally & Bernstein, 1994).

For exploratory factor analysis step, two criteria (Hair, Black, Babin, & Anderson, 2010) were as follows: 1) Kaiser-Meyer-Olkin Measure of Sample Adequacy ≥ 0.60 and 2) Chi-square (χ^2) must be statistically significant. For the selected component, the following criteria must be achieved: 1) Eigenvalue of the component with value ≥ 1.00; 2) Factor loading should be ≥ 0.30; and 3) All components combined should explain the variation of construct for at least 50%.

For confirmatory factor analysis step, criteria for model fit in the confirmatory factor analysis step (Hair, Black, Babin, & Anderson, 2010) were as follows: 1) χ^2 is not significant, 2) CFI and TLI ≥ 0.95, 3) SRMR ≤ 0.06, and 4) RMSEA ≤ 0.06.

For validation step, all of the additional measures were summated rating scales. Each item was attached with a 6-point scale, which ranged from "absolutely true" to "absolutely not true." The first measure was psycho-moral strength (PMS), which originated from the psychological theory of work and moral behavior (Bhanthumnavin, 1995). The measurement was adapted from Bhanthumnavin (2022). It assessed four constructs, namely, locus of control, need for achievement, future orientation, and morality. The reliability of 12 items was 0.73. 2) Core self-evaluation (CSE), based on the concepts and measurements of Judge, Erez, Bono, and Thoresen (2003), consisting of 12 items with a reliability of 0.75. 3) Future orientation and self-control (FOSC), which concept and measurement were based on Bhanthumnavin (2021). It consisted of 9 items with a reliability of 0.71. 4) Moral disengagement (MD), based on Bandura's theory (2002). The measurement consisted of 12 items from

Caprara, Fida, Vecchione, Tramontano, and Barbaranelli (2009), assessing three aspects of MD, namely, euphemistic language, diffusion of responsibility, and dehumanization, with a reliability of 0.80. 5) The career choice personality (CP), based on Holland's theory (RIASEC) (1968), assessed two personality aspects, namely, social and investigative. The reliability of 14 items was 0.80. 6) Caring behavior (CB) was based on Watson's theory of caring behavior (1997). The measure was adapted from Wonghipthong, Khom-u, Danjittisiri, Thiangtrong, Thiangian, Thongdonngow, Thamicharoenthawon, Kinzang, and Suwannakeeree (2020). This theory concerns the interaction between caregivers and patients. The core principle is that caregivers should not treat patients as objects, but should act with compassion. There are ten principles, which include embrace, inspire, trust, nurture, forgive, deepen, balance, co-create, minister, and open. The measure consisted of 40 items with a reliability of 0.97. Pearson's Product Moment Correlation Coefficient was employed to test convergent validity. Furthermore, hierarchical multiple regression was computed for incremental validity test.

4. Research Results

Item Quality Analysis

Employing the 23 items into item quality testing, the data analyses revealed that 1 items were excluded. Twenty-two items were selected for further analysis in the next step.

Exploratory Factor Analysis of SNES

The exploratory factor analysis approach was employed to analyze the 22 selected items in step 1 and to extract the important components. The initial results showed that the KMO and Bartlett's test yielded a value of .740, with χ^2 values of 414.264, df = 45, and p-vale =.000, which justified the emerging measurement model. Table 1 displays the specific numbers for the cumulative percentage and factor loadings.

Table 1 shows that the first component, known as the "sensitivity of need for respect", consists of four items, including listening, providing comfort, and expressing appreciation. These items have an eigenvalue of 2.68, accounting for 26.83% of the total variation. The second factor, consisting of three items, encompasses "sensitivity of need for honor and dignity", which involves kindness and reverence towards elders, and has an eigenvalue value of 1.47. This component enhanced the construct explanation by 14.66%, resulting in a total increase to 41.49%. The third component,

comprising three items with an eigenvalue of 1.07, conveyed the concept of "sensitivity of the need for love and empathy", which involves showing consideration and concern for any incidents that may occur to the elderly under supervision. This component produced an incremental of 10.69%. In sum, the newly constructed measure, consisting of 10 items, could explain the variance of the construct by 52.18%.

Table 1 : Factor loading and cumulative percentage

Item no.	Code	Items	Component		
			1	2	3
1	SS13	A caregiver should show respect to elderly persons.	.80		
2	SS11	When an elderly person grouses or feels hurt, caregiver should listen to and give comfort.	.78		
3	SS23	I agree with the saying. "Elderly people are wise and knowledgeable".	.56		
4	SS18	I am sincerely thankful when the elderly show appreciation or give something to me.	.55		
5	SS17	It is difficult to realize what behavior is polite or rude to older persons.		.77	
6	SS8	Treating an elderly person with respect for human rights and dignity is hard to do.		.69	
7	SS19	It's hard to notice whether the elderly is satisfied or not with what I'm saying.		.63	
8	SS1	When washing elderly's hair, caregiver may pour water on their head without telling them ahead of time.			0.77
9	SS6	When the elderly is exercising, caregiver should be alert and closely monitor.			0.64
10	SS22	Everyone is equal. There is no need to be too considerate to the elderly.			0.57
	Eigenvalue		2.68	1.47	1.07
	% of Variance		26.83	14.66	10.69
	Cumulative %		26.83	41.49	52.18

Notes. Each sentence was attached by a 6-point Likert scale, ranging from "absolutely true" to "absolutely not true". Negative items must be reversed scoring. Participants who get high score from this measure are those who are sensitive to the needs of elderly.

Confirmatory Factor Analysis of SNES

The findings indicated that the three components model with the total of 10 items was fit with χ^2= 38.067, p-value = 0.2895, df = 34, RMSEA = 0.018, CFI = 0.989, TLI = 0.985, and SRMR =0.039 (Figure 2).

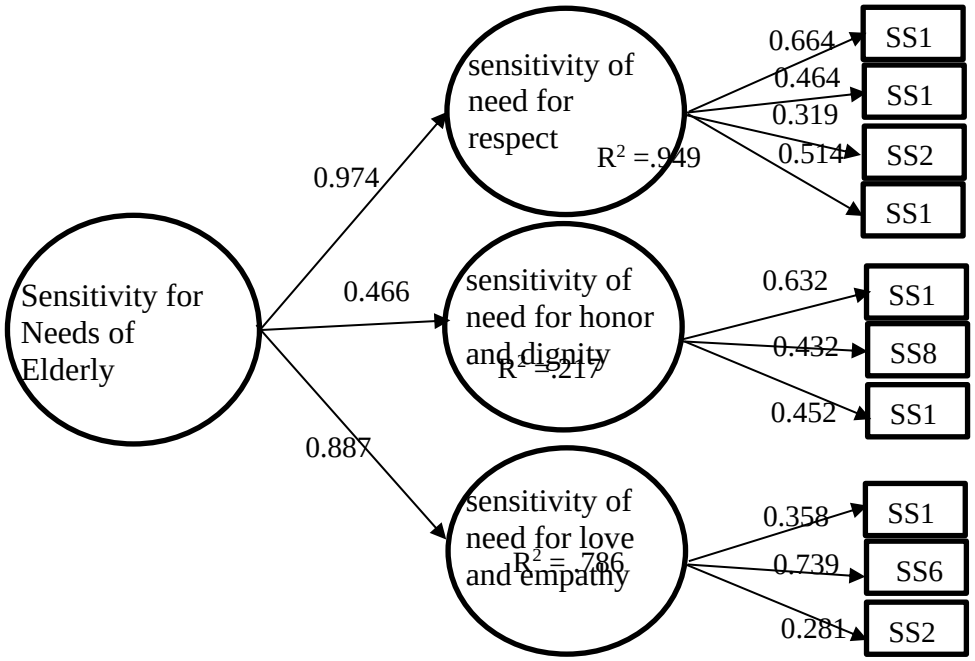

Figure 2: Measurement model of sensitivity for needs of elderly scale

Validation of SNES

The findings indicated that the medium to high magnitude of the relationship between SNES and most of the standardized measures ranging from ⎪.50⎪ to ⎪.70⎪. Only relationship between CP and SNES was .17, p<.01 which indicated a low correlation.

Table 2: Correlations among variables

Variables	Mean	SD	1	2	3	4	5	6	7
1. SNES	47.90	6.30	1	.					
2. PMS	53.48	8.22	.70**	1					
3. FOSC	56.72	7.36	.65**	.66**	1				
4. CSE	52.54	7.93	.50**	.60**	.53**	1			
5. CP	60.61	10.61	.17*	.21**	.41**	.26**	1		
6. MD	30.21	9.80	-.70**	-.77**	-.59**	-.49**	-.03	1	
7. CB	203.25	25.06	.59**	.57**	.72**	.46**	.56**	-.37**	1

Note. * p<.05;** p<.01 Reliabilities of SNES with 10 items in caregiver group were 1) Cronbach's α = 0.68, 2) McDonald's ω =0.64, and 3) Greatest Lower Bound= 0.78.

Hierarchical multiple regression analysis was computed to test incremental power. The findings revealed that SNES and CP were significantly predicted CB beyond PMS, CSE, FOSC, and MD (Table 3) which yielded 6.60% of incremental power. However, in this stage, the only beta value of SNES was found significantly.

Table 3: Hierarchical multiple regression on CB

Variables		R^2	ΔR^2	B	Std. Error	Beta	t	sig
1	(Constant)	0.501	-	-7.96	23.480		-.339	.735
	PMS			1.210	.252	.397	4.808	.000
	CSE			.513	.218	.162	2.358	.020
	FOSC			2.068	.304	.406	6.808	.000
	MD			.476	.280	.121	1.700	.091
2	(Constant)	0.567	0.066	-64.682	28.329		-2.283	.024
	PMS			.679	.259	.223	2.626	.009
	CSE			.391	.205	.124	1.903	.059
	FOSC			1.910	.287	.375	6.661	.000
	MD			.862	.275	.219	3.141	.002
	CP			.244	.295	.044	.827	.409
	SNES			1.488	.301	.374	4.940	.000

5. Discussion and Conclusion

This research aimed to develop and evaluate sensitivity for needs of elderly scale (SNES). The sample groups consisted of 1) 804 nursing students in sophomore and junior levels, and 2) 171 elderly care service providers working at elderly care centers, with the total of 975 participants. Theory of hierarchical needs, specifically sensitive to needs for love, belongingness, and esteem of the elderly, forms the basis of the newly constructed measure. Exploratory factor analysis revealed the emerging three-component model with a total of 10 items. The measurement model was confirmed with another group of participants in the confirmatory factor analysis. Convergent and incremental validities were tested.

Sensitivity and empathy are close concepts (Baryła-Matejczuk, Ferrer-Cascales, Robledillo, & Poleszak, 2023; Hojat, Gonnella, Nasca, Mangione, Vergare, & Magee, 2002). They both relate to 1) interpersonal situations, 2) cognitive and affective activities, and 3) having both positive and negative aspects. These psychological characteristics are considered one of the crucial competencies of elderly caregivers.

Although the components of this measurement model covered two levels of needs as follows. First, "love and belongingness needs" level was indicated in the third component of "needs for love and empathy". As a caregiver, it is important to act appropriately, which may include explaining the steps of the procedure before taking actions. Item 8 (SS 1) was a good example of expressing of care and concern that descendants often show towards elderly family members. This may be because, the head is considered an important organ of the body in Asian culture. It is also an important part of the body in medical anatomy. Therefore, the sensitivity to perform such an act on this important organ in caregiver reflected the perception of love and belonging needs of elderly. Furthermore, maintaining a comfortable distance, and being prepared to intervene when the elderly engage in risky activities were also significant indicators. This awareness and action demonstrated the caregivers' sensitivity to the elderly's need for love and care. We can infer that this component pertains to the caregivers' perception of how their possible actions could impact the elderly's feelings.

"Needs for respect" and "needs for honor and dignity" are two additional components that are connected to "esteem needs". Furthermore, it can be interpreted in alternative way that "needs for respect" component is the caregivers' own concerns and perceptions about whether their current actions support the elderly's self-worth, or give them appropriate recognition of their social status. It is obviously indicated in item 1 (SS13). On the other hand, the "needs for honor and dignity" component reflects the fact that the caregivers may not perceived or sense about the feelings or reactions of elderly. Thus, this component seemed to reflect having low awareness or even denying that it is difficulty to evaluate whether some actions of taking care is appropriate or not. Therefore, this newly construct measure might revealed another approach of interpretation in terms of timing of sensitivity. In other words, it could be interpreted the "needs for love and empathy" and the "needs for respect" as anticipatory sensitivity, while the "needs for honor and dignity" as immediate sensitivity.

In addition, it should be pointed out that even though, RIASEC personality and SNES were both moderately correlated with caring behavior. However, they related to each other with low magnitude ($r = .17$) which signified divergent validity between the two variables. Other studies also found low correlation between social and investigative dimensions of RIASEC and self-actualization (Šverko, Babarović, & Kos, 2017). RIASEC serves as a natural preference that guides career selection. However, in order to predict work effectiveness in each career, other important psychological characteristics may have more effect than RIASEC. In this study, SNES, which reflects TACT (target, action, context, and time) (Ajzen, 2006) can be an empirical evidence. Since SNES was more compatible in content with Waston's caring behavior than the RIASEC measure.

This research stands out for its creation of a measure that addresses 1) sensitivity among caregivers, 2) elderly needs, and 3) Maslow's theory. Furthermore, it was carefully constructed according to the ABC approach (Ziegler, 2022) using nursing student group, and validated in the group of in-service caregivers who actually work in elderly care centers. However, further testing is still necessary to validate this measure. For example, second order confirmatory factor analysis is encouraged to be applied in caregivers working in the care centers. In addition, measurement invariance should also be examined among diverse participant types, such as , nursing students vs. caregivers, or caregivers working in governmental care centers vs. in private care centers.

In the meantime, we extend a warm invitation to all researchers worldwide to utilize this newly developed measure in a variety of beneficial applications. For instance, it can be used in studies investigating the possible indicators, in terms of psychological and situational, of sensitivity for the needs of the elderly. Furthermore, this measure can be considered a prototype. Other researchers can construct better measures in similar ways or

concepts, e.g., based on Maslow's theory or the timing of sensitivity. We encourage practitioners to use this measure or the component we discovered to identify "good-heart" caregivers who are aware of and sensitive to the psychosocial needs of the elderly. Together, we can take good care, enhance the quality of life for the elderly and yourselves, and live harmoniously and happily in society.

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