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To cite this article: Anna Bratt & Cecilia Fagerström (2019): Self-compassion in old age: confirmatory factor analysis of the 6-factor model and the internal consistency of the Self-compassion scale-short form, *Aging & Mental Health*, DOI: [10.1080/13607863.2019.1569588](https://doi.org/10.1080/13607863.2019.1569588)

To link to this article: <https://doi.org/10.1080/13607863.2019.1569588>



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Published online: 29 Jan 2019.



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Self-compassion in old age: confirmatory factor analysis of the 6-factor model and the internal consistency of the Self-compassion scale-short form

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ABSTRACT

Objectives: Self-compassion is a psychological construct associated with self-acceptance and coping with the aging process. The Self-Compassion Scale (SCS), in both long and short forms, is the most widely used measure of self-compassion. Studies on the psychometric properties of the short form (SCS-SF) are scarce. The aim of this study was to translate into Swedish and test the psychometric properties of the SCS-SF. Another aim was to investigate whether self-compassion differs by age and gender in older adults.

Method: We tested the Swedish SCS-SF in a sample of 594 randomly selected older adults, aged 66 to 102 years, for internal consistency, construct validity, and factor structure.

Results: The results showed the SCS-SF had acceptable internal consistency in the total sample (Cronbach's alpha = 0.68) and somewhat higher (Cronbach's alpha = 0.76) in the youngest old (age 66 years). The six-factor structure found in the original study was not observed in confirmatory factor analyses in our older sample. Exploratory factor analyses showed that a two-factor solution, formed by the positive and negative components had the best fit; however, only the negative component had good internal consistency.

Conclusion: Overall, the SCS-SF seemed to have insufficient reliability in this sample of older adults and further studies are needed to see whether new instruments are needed for this population. Self-compassion was generally higher in men than women, but did not differ by age in this sample of older adults.

ARTICLE HISTORY

Received 31 October 2017
Accepted 10 January 2019

KEYWORDS

Self-Compassion Scale – Short Form; older adults; psychometric properties

Introduction

Self-compassion is a relatively new concept in psychology conceptualized as the ability to care for oneself in difficult life circumstances, to endure painful feelings, and to feel connected with others in moments of suffering (Neff, 2003). In later life, self-compassion can be particularly important, since a self-compassionate mindset can provide an accepting perspective on facing hardships related to ageing (Allen, Goldwasser, & Leary, 2012). For example, older adults with high levels of self-compassion had a more positive attitude to ageing than those with lower scores on this measure (Allen & Leary, 2013). Self-compassionate older adults in need of assistance were also found to be less reluctant to use assistive devices than those who were less self-compassionate (Allen et al., 2012). Self-compassion in older adults also seemed to be associated with higher levels of wisdom, integration, acceptance of one's past life experiences, and higher levels of meaning in life (Phillips & Ferguson, 2013).

Self-compassion seems to increase with age (Neff & Vonk, 2009; Przedziecki et al., 2013; Potter, Yar, Francis, & Schuster, 2014; Homan, 2016). However, results are inconsistent, and most studies include young or middle-aged adults. In the Phillips and Ferguson study (2013) of 185 non-randomly selected older adults aged 65–92, 56.8% women, age and self-compassion were not related.

Men have been found to have slightly higher levels of self-compassion than women in several studies (Neff, 2003, Neff, Hsieh, & Dejitterat, 2005) including a meta-analysis conducted by Yarnell et al. (2015) on 88 different samples with a total of 13,339 non-randomly selected participants aged 15–73 (mean age 28, 66% women). Whether levels of self-compassion differ by gender in adults aged ≥ 66 years is not yet fully known. Phillips and Ferguson (2013) found no gender differences, other than women's higher scores on the subscale of common humanity (CH).

The most widely used measure of self-compassion in research is the Self-Compassion Scale (Neff, 2003, 2016), developed in two versions, a long and a short form. The SCS Long Form (SCS-LF) includes 26 items measuring three major aspects of self-compassion, each of which includes two ways of relating to oneself: compassionately or uncompassionately. These six types of self-relating constitute the six factors of the scale: *self-kindness* (SK) – the ability to be warm and kind to oneself rather than *self-judgmental* (SJ); *common humanity* (CH) – seeing one's suffering as part of the human condition rather than feeling *isolated* (I); and finally, *mindfulness* (MI) – keeping a balanced perspective towards difficult experiences rather than *over-identifying* (OI) with them (Neff, 2003). The SCS-LF has shown good internal consistency in young to middle-aged adults in American

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(Neff, 2003), Spanish (Garcia-Campayo et al., 2014), Portuguese (Castilho, Pinto-Gouveia, & Duarte, 2015), Greek (Mantzios, Wilson, & Giannou, 2015), and Turkish (Deniz, Kesici, & Sümer, 2008) samples. However, several studies have not been able to replicate the six-factor SCS-LF described above (Phillips & Ferguson, 2013; López et al., 2015; Costa, Marôco, Pinto-Gouveia, Ferreira, & Castilho, 2016). For instance, in the study by López et al. (2015) in a sample of 1643 participants aged 20–97 (54.8% women), confirmatory factor analyses (CFAs) showed that the original six-factor structure of the SCS-LF could not be replicated. Exploratory factor analyses showed that a two-factor solution, formed by the positive (SK, CH, and MI) and negative (SJ, I, and OI) items had the best fit and good internal consistency. Similar results were found by Costa et al. (2016) in their study with 361 participants aged 13–56 (84.5% women), in which a CFA supported the two-factor model proposed by López et al. (2015), but the six-factor model was a poor fit to the data. In another CFA, Phillips and Ferguson (2013) also found that the six-factor model had a poor fit. When they conducted principal axis factoring, the two-factor solution again provided the best fit, with an internal consistency for the SCS-LF of $\alpha = 0.88$. Neff (2016) argued that most psychometric problems have been found when the scale has been translated to other languages or cultural contexts. The generalizability of the scale to different populations or older adults should thus also be considered.

The SCS-SF, reported to have a high correlation with the SCS-LF, includes only two items from each of the subscales. In constructing the SCS-SF, some items were selected to reflect the breadth of the original scale, but most were chosen for their high intercorrelations with the SCS-LF (Raes, Pommier, Neff, & Van Gucht, 2011). Good internal consistency ($\alpha \geq .86$) was reported for the SCS-SF in two samples: a Dutch sample of psychology students (214 women and 57 men, $M = 18.14$ years) and an English sample (131 women and 54 men, $M = 33.04$ years). Homan's study (2016) also showed good internal reliability for the SCS-SF ($\alpha = 0.85$) in a non-randomly selected sample of 126 older adults, aged 59–95. Although high internal consistency for total scores on the SCS-SF have been described (Raes et al., 2011; Garcia-Campayo et al., 2014; Castilho et al., 2015; Homan, 2016), internal consistency in the SCS-SF subscales has been found to be relatively low (Raes et al., 2011). Results seem to indicate that the total score on the SCS-SF is a better measure of self-compassion than subscale scores, which are not as valid individually. The reasons for these inconsistencies are not fully known, but it could be that the subscales contain too few items. In one exception, however, a Spanish study of 271 professionals (mean age 38.43, 67.9% women), Cronbach's α was 0.85 for the total SCS-SF and between 0.71 and 0.77 for the six subscales (Garcia-Campayo et al., 2014).

In summary, the most widely used measure of self-compassion is the SCS-LF, checked for internal consistency in several different countries in samples mainly consisting of university students. Thus, the assessment of self-compassion among older people has been based on measurements designed and developed for younger age groups. Studies exploring the reliability and validity of the SCS-SF are scarce, and their results are contradictory, especially in the older population. Because of concerns about assessing

older cohorts, existing instruments may need to be adapted. Whether self-compassion differs by age and gender in older ages needs further exploration. The psychometric properties of the Swedish version of the SCS-SF have, as far as we know, not yet been tested. Thus, the aims of this study were to translate the SCS-SF and test its psychometric properties with a focus on reliability (internal consistency) and validity, including factor structure, in a randomly selected sample of older Swedish adults.

Method

Participants and procedure

The sample of 698 participants aged 66–102 years, 300 men (43%) and 398 women (57%), was drawn from the region of Blekinge, one of four research areas in the Swedish National Study of Aging and Care (SNAC). The Blekinge part (SNAC-B) covers one municipality in the south-eastern part of Sweden, Karlskrona, with approximately 66,000 inhabitants in urban and rural areas. Karlskrona resembles other municipalities in Sweden in terms of age distribution, gender, and functional ability. Survey data were collected in 2013–2015 from randomly selected members of 10 age cohorts (66, 72, 78, 81, 84, 87, 90, 93, 96, and 99). Most participants in the total sample had higher education than Swedish elementary school ($n = 383$), 12 had lower education than elementary school, and 235 had completed elementary school (missing $n = 34$). The study was approved by the Regional Ethics Review Board of Lund (Dnr 128-00, LU 604-00). For more information about the sample see earlier studies (Bratt, Stenström, and Rennemark, 2016; Bratt, Stenström, and Rennemark, 2017).

Invitations to participate in the study were posted to potential participants on two occasions. Those who did not respond to the letter were invited by telephone. The response rate was 73.3% and all participants provided written informed consent. Of those who did not participate, 13.5% died before the study started. Other reasons for non-participation were poor health (2.6%), having moved from the area (2.4%), not contacted (1.6%), or unknown (6.6%). Data were collected at the research centre if possible or in the respondents' homes. If necessary, respondents were offered help to complete the questionnaire by staff on the research team. Four individuals received help from staff to fill in the form and 34 participants with reading difficulties were assisted by a family member.

Measures

Self-compassion

In this study, the 12-item Self-Compassion Scale – Short form (SCS-SF) was used to measure self-compassion (Raes et al., 2011). The SCS-SF items are rated on a 5-point response scale ranging from 1 (almost never) to 5 (almost always) including two items on each of the six components. The six components represent three compassionate and three uncompassionate approaches to oneself in the face of suffering. The first component, SK (supporting and being kind to oneself in times of suffering), opposes the second component, SJ (being self-critical about one's inadequacies); the third component, CH (feeling connected to

Table 1. Age, total SCS-SF scores, SCS-SF item scores, and mean differences between women and men.

	Total sample			Women			Men			p-value women vs. men
	M	(SD)	N	M	(SD)	n	M	(SD)	n	
Age	76.55	9.21	698	77.41	8.71	398	75.42	9.49	300	**
SCS-SF	41.64	5.31	594	40.75	5.48	324	42.72	4.90	270	***
1. Consumed by feelings of inadequacy (OI)	2.86	0.975	590	2.74	0.965	324	3.10	0.967	269	***
2. Understanding of aspects I don't like (SK)	3.58	0.784	590	3.56	0.779	324	3.60	0.791	269	ns
3. Balanced view of situation (MI)	3.86	0.797	590	3.75	0.833	324	3.99	0.731	270	***
4. Other people happier than I am (I)	3.73	1.003	590	3.55	1.063	324	3.94	0.880	270	***
5. Part of human condition (CH)	3.73	0.818	590	3.74	0.755	324	3.72	0.888	269	ns
6. The caring and tenderness I need (SK)	3.23	0.987	590	3.20	1.016	324	3.26	0.952	269	ns
7. Keep my emotions in balance (MI)	3.70	0.859	590	3.62	0.856	324	3.79	0.855	270	*
8. Feel alone in my failure (I)	3.10	1.015	590	2.96	0.985	323	3.27	1.027	268	***
9. Fixate on everything that's wrong (OI)	3.62	1.074	590	3.46	1.095	324	3.81	1.018	270	***
10. Feelings shared by most people (CH)	3.35	0.950	590	3.42	0.907	323	3.26	0.995	269	*
11. Judgemental about my own flaws (SJ)	3.36	1.050	590	3.32	1.078	324	3.40	1.015	270	ns
12. Impatient towards aspects I don't like (SJ)	3.53	0.941	590	3.43	0.951	324	3.65	0.915	270	**

*p < 0.05,

**p < 0.01,

***p < 0.001

Note: SJ, I, and OI are negative, and scores are reversed, meaning higher scores show lower levels of SJ, I, and OI.

Table 2. Cronbach's alphas and means for total SCS-SF and subscale scores in total sample and in 66-year-olds

	Total sample, n = 594			66-year-old sample, n = 191		
	α	M	SD	α	M	SD
Total SCS-SF score	0.68	41.63	5.30	0.76	41.46	6.24
Self-kindness	0.15	6.81	1.31	0.27	6.70	1.41
Self-judgement	0.72	6.89	1.77	0.75	7.14	1.80
Common humanity	0.35	7.08	1.38	0.19	6.88	1.40
Isolation	0.49	6.83	1.65	0.55	6.90	1.77
Mindfulness	0.49	7.55	1.35	0.47	7.45	1.45
Over-identification	0.46	6.49	1.656	0.66	6.38	1.84
Positive (SK, CH, MI)	0.53	21.43	2.86	0.54	21.03	3.06
Negative (SJ, I, OI)	0.76	20.20	4.09	0.82	20.43	4.54

Note: min 2 and max 10 per subscale item

other human beings) opposes the fourth, I (feeling alone in times of hardship); and the fifth component, MI (keeping difficult emotions in balance) opposes the sixth, OI (fixating on negative ideas when feeling troubled) (Raes et al., 2011). Each of the two subscale items on the components SJ, OI, and I are negative and are reversed before computing the total score. Thus, scores range from 12 to 60, with higher scores indicating higher self-compassion.

Missing values

A total of 104 (17.5%) respondents did not fill in the SCS-SF questionnaire, 36 because of poor health. If there were missing values in one or two of the SCS-SF items, the mean score of the rest of the items was used. However, if there were more than two values of the 12 items missing, the individual's response was excluded. One participant was excluded because of missing data. Of the included participants with missing data, two individuals had one missing item and one individual had two.

Translation procedure

The original SCS-SF in American English was translated into Swedish by a forward-backward translation process (Brislin, 1986). In the first step, a bilingual native English-speaker with excellent knowledge of the field as a therapist translated the American version of SCS-SF into Swedish. The translation was controlled, and after minor revision for clarity and meaning, the Swedish version was translated back to English by another native American English-speaker who has lived in Sweden for

many years and has exceptionally good knowledge of and interest in the English language. In the last step, the English translation was retranslated to Swedish and the researchers (AB, CF) checked the three translations' correspondence to each other to identify possible differences in meaning between the forward-backward translations. Differences in meaning and nuance were discussed and sent back to the translators for review until agreement was reached.

Cognitive telephone interviews were conducted to strengthen the content validity and reliability of the SCS-SF instrument (Knafl et al., 2007). The questionnaire was administered to 10 older adults (5 men and 5 women aged 75–87 years) after they provided informed verbal consent. The interviews started with the interviewer reading each item and asking respondents to repeat them in their own words. Respondents were then asked to explain how they had reached each answer, their understanding of each question, and whether anything in the questions was difficult to understand. None of the participants found the questions hard to understand. However, all participants explained that the questions were abstract and different to other questionnaires in the SNAC-B survey. Two women and one man had difficulty remembering the reverse scores. Question 12 (I am intolerant and impatient towards those aspects of my personality I do not like) was considered difficult by two participants. One participant was unsure of the meaning of 'aspects of my personality' and the other had difficulty with 'intolerant and impatient' since he understood these two words to be very different and thought himself impatient but not intolerant.

Statistical analysis

Descriptive statistics for the 12 SCS-SF items were calculated. The data were checked for normality as assessed by histogram, box plots, and levels of skewness, and kurtosis. Skewness indicated normality (-0.079 , SE .100), while kurtosis was slightly pointy and heavy-tailed (.575, SE .200). Differences between men and women in age and self-compassion were investigated using independent-samples *t*-test (Table 1). Effect size was calculated using Cohen's criteria (Cohen 1992) to evaluate the substantive significance of the mean differences (i.e., small effect size = 0.20, medium = 0.50, and large effect size = 0.80). Cronbach's alphas and

Table 3. Spearman's rho between total score and the 12 items on the SCS-SF

	1	2	3	4	5	6	7	8	9	10	11	12
1. Total SCS-SF												
2, SCS-SF1	.538**											
3, SCS-SF2	.416**	.101*										
4, SCS-SF3	.427**	.130**	.269**									
5, SCS-SF4	.565**	.318**	.201**	.194**								
6, SCS-SF5	.336**	-.062	.373**	.223**	.125**							
7, SCS-SF6	.375**	.131**	.089*	.159**	.069	.110**						
8, SCS-SF7	.372**	.141**	.107**	.339**	.113**	.122**	.155**					
9, SCS-SF8	.563**	.434**	.114**	.130**	.326**	-.038	.061	.071				
10, SCS-SF9	.597**	.311**	.151**	.193**	.395**	.108**	.064	.169**	.370**			
11, SCS-SF10	.118**	-.097*	.106**	.082*	.072	.230**	.112**	.069	-.136**	-.085*		
12, SCS-SF11	.554**	.281**	.134**	.035	.262**	.099*	.092*	.032	.312**	.296**	-.127**	
13, SCS-SF12	.585**	.307**	.137**	.107**	.293**	.109**	.138**	.072	.322**	.328**	-.126**	.576**

Note: N = 594;

*p < 0.05

**p < 0.01;

SCS-SF 1, SCS-SF 4, SCS-SF 8, SCS-SF 9, SCS-SF 11, and SCS-SF 12 are negative, and scores are reversed

Table 4. Spearman's rho between total score, age, gender, and subscale scores

	1	2	3	4	5	6	7	8	9	10
1. Total SCS-SF										
2. Age	-.031									
3. Gender	-.195**	.105**								
4. SK	.511**	.034	-.030							
5. SJ	.626**	-.194**	-.082*	.151**						
6. CH	.262**	.117**	.060	.226**	-.062					
7. I	.683**	-.033	-.213**	.138**	.398**	-.057				
8. MI	.482**	.060	-.155**	.250**	.065	.160**	.172**			
9. OI	.692**	.019	-.192**	.144**	.394**	-.066	.558**	.215**		
10. POS	.597**	.081*	-.059	.695**	.067	.660**	.118**	.655**	.121**	
11. NEG	.850**	-.097*	-.205**	.194**	.747**	-.067	.802**	.192**	.815**	.137**

Note: N = 594;

*p < 0.05

**p < 0.01;

Note: man = 1, woman = 2; POS = SK, CH, MI; NEG = SJ, I, OI

means for total SCS-SF and subscales were calculated (Table 2) to test the scales' internal consistency. An acceptable Cronbach's value is usually considered to be 0.7 to 0.9, although these cut-off values can be discussed (Lance, Butts, & Michels, 2006). Sub-analyses were also performed to investigate whether internal consistency differed between all the age cohorts included in the SNAC-B. Higher internal consistency of the SCS-SF was found in the group of participants aged 66 years; therefore, results from this age group and of the total group are presented in Table 2.

To test bivariate correlations between total score and the 12 SCS-SF items (Table 3) and between total score, age, gender, and subscale scores (Table 4), we used Spearman rank order correlation (rho). The bivariate correlations were followed by principal component analysis (PCA) to identify the latent structures of all 12 SCS items in our data set. Thereafter, structural equation modelling and CFAs were performed. The modelling was conducted to investigate whether the same six-factor structure as in the original version by Raes et al. (2011) could be confirmed, and also to compare it with the two-factor model, which has been described as having a better fit (López et al., 2015; Costa et al., 2016) and with a single factor model. Analyses using structural equation modelling (here CFA) can be reported using different goodness-of-fit statistics (Jackson, Gillaspay Jr et al., 2009). The estimator used in the analysis of a moment structures (AMOS) to fit the model is the maximum likelihood (ML) estimation method. In this study, we used normed chi-square (χ^2), comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA). For a good model fit, χ^2 should be

nonsignificant, the normed χ^2 should be as low as possible (<2) and an acceptable χ^2 ranges between 2 and 3 (Schermelele-Engel, Moosbrugger et al., 2003). The CFI ranges from zero to one, and higher values indicate a better fit. An acceptable fit of CFI is 0.90 or higher and TLI values above 0.90 are regarded as acceptable. In the literature, RMSEA values of 0.08 or lower are described as an adequate fit, values between 0.08 and 0.10 as a mediocre fit, and values over 0.10 are not acceptable. The Akaike information criterion (AIC) and the expected cross validation index (ECVI) were used to compare the competing models, where the model with the smallest AIC and ECVI has the better fit. Mahalanobis distance scores were used to identify multivariate outliers (Jackson, Gillaspay Jr et al., 2009), and 35 outliers were found and removed from the dataset. Since the data suggested multivariate kurtosis, ML estimation was not regarded as an appropriate estimator of model fit (Byrne, 2016). Therefore, Bollen-Stine bootstrapping procedure with 1000 resamples was used to address the issue of non-normality and to test the models fit. This statistical procedure uses normal theory ML estimation, albeit with nonparametric bootstrapping with no assumption of normality.

SPSS version 24 was used for all the analyses except for the CFA analyses, which were conducted in IBM SPSS AMOS version 24.

Results

The mean age of the total sample was 76.55 years (SD = 9.21) and the women were older than the men, $p < 0.01$

Table 5. Pattern and structure matrix for PCA with oblimin rotation of two-factor solution for SCS-SF.

Item	Pattern coefficients		Structure coefficients		Communalities
	Component 1	Component 2	Component 1	Component 2	
12. I'm intolerant and impatient towards those aspects of my personality I don't like.	.703		.702		.493
8. When I fail at something that's important to me, I tend to feel alone in my failure.	.703		.698		.488
11. I'm disapproving and judgemental about my own flaws and inadequacies.	.698		.692		.480
1. When I fail at something important to me I become consumed by feelings of inadequacy.	.633		.642		.415
9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.	.622		.641		.431
4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.	.581		.605		.398
5. I try to see my failings as part of the human condition.		.667		.661	.437
3. When something painful happens I try to take a balanced view of the situation.		.648		.653	.445
2. I try to be understanding and patient towards those aspects of my personality I don't like.		.617		.631	.408
7. When something upsets me I try to keep my emotions in balance.		.506		.519	.278
10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.	– .408	.447		.408	.318
6. When I'm going through a very hard time, I give myself the caring and tenderness I need.		.400		.392	.170

Note: N = 594; Major loadings for each item are bolded. Only coefficients above 0.3 are shown.

Table 6. Goodness-of-fit indicators for SCS-SF models

Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA	RMSEA Lower	RMSEA Upper	AIC	ECVI
Single factor	374.454***	54	6.93	.688	.619	.103	.094	.114	422.454	.763
Two factors	273.231***	53	5.16	0.821	0.777	0.079	0.069	0.090	287.231	0.518
Six factors	81.546***	39	2.09	0.875	0.789	0.044	0.031	0.058	159.546	0.288

Note: N = 594;

***p < 0.001

Two-factor correlated and six-factor correlated models

(Table 1). The mean total of self-compassion was 41.64 (SD = 5.31), with women reporting lower self-compassion than men, $p < 0.001$. The difference in self-compassion between women and men was small but close to moderate, with an effect size of 0.38 (Cohen's d). Gender differences were found in all subscales but SK and all items but the CH item 'I try to see my failings as part of the human condition' and the SJ item 'I'm disapproving and judgemental about my own flaws and inadequacies'. Overall, women rated higher than men on the CH, SJ, OI, and I subscales. Men, however, scored higher on MI.

Table 2 presents information about the Cronbach's alpha for the different subscale scores and for the total scale. Cronbach's alpha of SCS-SF was 0.68 for the total sample. Further analyses were conducted to investigate whether internal consistency differed by age cohort. A higher internal consistency of SCS-SF was found in the group of 66-year-old participants ($\alpha = 0.76$). Cronbach's alpha was also calculated to investigate reliability within each subscale of the six-factor model. The only subscale showing acceptable internal consistency for both the total sample and the 66-year-olds ($\alpha = 0.72$ and $\alpha = 0.75$ respectively) was SJ. The subscales SK and CH had the lowest internal consistency (SK: total sample $\alpha = 0.15$ and 66-year-olds $\alpha = 0.27$; CH: total sample $\alpha = 0.35$ and 66-year-olds $\alpha = 0.19$). Cronbach's alpha for the first component of the two-factor model was $\alpha = .76$ consisting of the negatively formulated items SJ, I, and OI. The second component, consisting of the positively formulated items relating to SK, CH, and MI had $\alpha = .53$.

First bivariate intercorrelations between total SCS-SF and the 12 items were performed, see Table 3. All items were significantly associated with SCS-SF total score, however question 10 had a low correlation.

Bivariate intercorrelations were then conducted between total SCS-SF and the six subscale scores, gender, and age (shown in Table 4). All subscale scores were significantly correlated with total SCS-SF scores. Total SCS-SF score was not related to age, but higher age was associated with lower SJ and higher CH. Higher total SCS-SF scores were associated with being a man, but the subscales SJ, I, MI, and OI were negatively related to being a man.

Before PCA was performed, the data was assessed for its suitability for factor analysis. Inspection of the correlation matrix revealed few variables of ≥ 0.3 , indicating that clusters of data would be hard to find. However, Bartlett's test of sphericity reached statistical significance, with $< .000$ indicating correlations between items sufficiently large for PCA. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy verified the adequacy of the sample for the analysis, $KMO = 0.77$, exceeding the recommended value of 0.6. An initial analysis was run to obtain eigenvalues for each component in the data. Four components had eigenvalues over Kaiser's criterion of 1, and in combination they explained 57.14% of the variance. The scree plot indicated inflexions that would justify retaining both components 2 and 3. A parallel analysis was conducted using Monte Carlo PCA for parallel analysis (Watkins, 2000), which showed a two-component solution to be most appropriate, since only two components had eigenvalues exceeding the corresponding criterion values for a randomly generated data

matrix of the same size (12 variables \times 590 subjects). The two-component solution explained 39.65% of the variance, with factor 1, the negative component, contributing 24.98% and component 2, the positive, contributing 14.67%. In Table 5 factor loadings are shown after oblimin rotation.

We performed a single, first-order general self-compassion factor as conducted in the original study by Raes et al. (2011), a two-factor model (e.g., López et al., 2015), and six second-order factors corresponding to the six subscales (Raes et al., 2011). The CFA analysis revealed that none of the models had an acceptable fit, see Table 6. The Bollen-Stine bootstrapping procedure confirmed that the specified models had a poor fit.

Discussion

The study was aimed to test the internal consistency and validity of the Swedish version of the SCS-SF in a randomly selected sample of older adults in Sweden. Overall, the results suggest psychometric problems using SCS-SF in this sample. Only in the youngest old group (66 years) was internal consistency $>.70$. The six subscale scores of the six-factor model in the total sample and in the youngest group did not have acceptable internal consistency, except on the subscale of self-judgement. Only the negative component of the two-factor model showed good internal consistency, both in the total sample and in the youngest old group. CFA analyses indicated that the factor structure of the SCS-SF did not meet the criteria for an acceptable model fit in any of the tested models. Men had higher levels of self-compassion than women, but self-compassion did not differ by age in this sample. It is important to note that the gender differences found are hampered by the poor psychometric properties of the tool.

This study is the first, as far as we know, to perform an examination of the reliability of the SCS-SF in a randomly selected sample of older adults. The SCS-LF has been described to have good psychometric properties in college students; however, there are few studies that have examined the scale's reliability in the general population and in randomly selected samples. Furthermore, no studies have been found that investigated the psychometric properties of SCS-SF in older adults. In the PCA only the two-factor model had acceptable fit, in line with the results by Phillips and Ferguson (2013) and López et al. (2015). A two-factor model comprising a compassionate or uncompassionate way of relating to oneself may be more appropriate to use in older adults. In the CFA however, the two-factor model did not show an acceptable fit. Neff argues that different results in validation studies of the SCS may be due to method effects or issues related to translation or cultural factors (Neff, Whittaker, & Karl, 2017). According to Neff (2016), a bi-factor model as proposed by Reise, Moore, and Haviland (2010), would fit the conceptualization of self-compassion best. In Neff's (2016) study, a bi-factor analysis indicated that general self-compassion explained about 90% of the variance of SCS scores (Neff, 2016). It is beyond the scope of this article to examine this subject.

The six-factor solution proposed by Raes et al. did not have an acceptable fit in this study as shown by CFA, inconsistent with results of its use in samples of younger

adults (Raes et al., 2011). Further studies are needed to investigate whether the SCS structure differs between older and younger adults.

The SCS is widely used in self-compassion research, despite limited support for the scale's validity. However, the psychometric problems described in this study seem to indicate that the questions included in the SCS-SF are too abstract for the oldest old. Further studies are needed to investigate whether a more psychometrically robust measure of self-compassion is needed in older adults.

Notwithstanding this psychometric ambiguity, the older adults in this sample ($N = 594$, age 66–102, $M = 41.64$, $SD = 5.31$) had higher self-compassion than the younger English sample described above ($N = 185$, age 18–64, $M = 36$, $SD = 7.33$). This, along with findings that higher age is associated with higher CH and lower self-judgement could mean that self-compassion continues to increase with age, consistent with previous conjectures (Homan, 2016). The cognitive interviews with people in this older cohort support this argument, as some of the older adults mentioned spontaneously that they were more accepting of themselves and their inadequacies than they had been when they were younger. This may indicate that higher levels of self-compassion are in line with Erikson's stage of ego integrity, comprising acceptance of past experiences (Erikson, 1968) and increased broadmindedness, tolerance, and wisdom.

The finding of men having higher self-compassion than women on the total scale and some of the subscale scores is in line with earlier studies of gender differences in self-compassion (Yarnell et al., 2015). However, our results show quite a complex pattern: women, for example, rated SK as highly as men did, but tended to score lower on MI than men, meaning they might be more emotional in difficult situations. Further studies are needed to investigate these differences between men and women.

Reliability was low on all six subscale scores, as found in the original study of Raes et al. (2011), who also found lower internal consistency for the subscale scores. The construct validity of the SCS-SF measure in older adults of $\alpha = .68$ indicates that the items included are not as coherent as desirable. However, a short scale including only few items lowers the Cronbach values, and therefore the longer version of the scale may be more appropriate for investigating the psychometric properties of the SCS in future investigations.

Strengths and limitations

To our knowledge, this is the first study to investigate self-compassion in a randomly selected sample of adults aged 66 to 102 years with a fairly even gender distribution. Such methodological criteria have not been met in earlier studies in non-randomly selected populations.

Some limitations of the study are worth considering. The SCS-SF is one of a series of instruments that older adults complete in the SNAC-B. The SCS-SF questions may be more abstract and need more individual reflection than other questions included in the larger questionnaire, and fatigue may be one reason for inconsistencies in the results. It was shown during the cognitive interviews that the oldest old had no difficulties understanding the meaning of the questions, although some asked if they could

have a concrete example of a situation and had difficulty answering broad abstract questions. This may be worth considering when using the instrument in a sample of older adults. Some of the participants in the cognitive interview also might not have recognized the reversed items. This suggests that it may be more appropriate to avoid reversed items in scales for the oldest old, who may be more apt to misunderstand them. Another reason for inconsistencies may be the use of double negatives or the inclusion of two dimensions of personality in the same question (for example item 12: I am intolerant and impatient...) which might be too complex for oldest old to answer.

Conclusions

Our findings indicate psychometric problems using SCS-SF in the oldest old. Good internal consistency was found only in the 66-year-old group. There is a need to investigate whether adjustments are necessary to optimize and improve the fit of the scale for the oldest old cohorts. Gender differences in self-compassion in older adults seem small and should not be overemphasized. Although self-compassion appears to be higher in older ages than younger, the findings of this study suggest that self-compassion is not likely to increase substantially after 66 years of age.

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