

Psychometric evaluation of the Santa Clara Brief Compassion Scale in the Czech environment (SCBCS).

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Abstract

There is growing research on compassion in many fields of social science. However, there are no standardized instruments for measuring compassion in the Czech environment. Therefore, the aim of this study was to psychometrically evaluate the Santa Clara Brief Compassion Scale (SCBCS) in Czech Republic. Sample of 572 Czech respondents (mean age 28.9 years; 36.7 % men) participated in the study. Compassion, spirituality and religiosity, together with basic socio-demographic information, were measured. The non-parametric comparison of different sociodemographic groups showed a higher level of compassion among women, among respondents living in marriage, and among religious respondents. The Confirmatory Factor Analysis showed a good fit of a one-factor model with the data, with $\chi^2 (5)=58.9$; $p < .001$; TLI=0.98; CFI=0.99; SRMR=0.058. The scale has a good internal consistency with Cronbach's $\alpha=0.84$ and McDonald's $\omega =0.89$. The Czech version of the SCBCS is a reliable measure for assessing compassion.

Introduction

The Systematic development of compassion is associated with many positive effects in the area of life satisfaction and confidence (Mongrain et al., 2011). Various studies suggest compassion may be a protective factor against burnout syndrome (Klimecki et al., 2013, 2014), and may support emotion regulation (Engen & Singer, 2015). A higher degree of compassion is also associated with prosocial behaviour (FeldmanHall et al., 2015; Leiberg et al., 2011). An extensive study by Bach et al., (2017) mapping levels of compassion across the USA revealed that compassion positively correlated with the financial sum donated to charity and time dedicated to voluntary work, and negatively correlated with the number of criminal offences, robberies and assault.

Many approaches exist concerning the systematic development of compassion (see Gu et al., 2017). One of these approaches which is most often researched in regards to the development of compassion are certain types of meditation such as mindfulness meditation or loving-kindness (“metta bhavana”), which is used specifically for the development of compassion. For example, the study of Leiberg et al., (2011) showed that the cultivation of compassion through mindfulness meditation resulted in respondents being more generous towards others in an economic game. The effectiveness of mindfulness meditation has been supported by a number of neuroscientific studies (Klimecki et al., 2013, 2014).

Research in the field of compassion is complicated by the fact that the long history of the concept of compassion, plurality of the concept and sharp uprise of research in a number of scientific fields resulted in ambiguity in the definition of compassion (Mikoska & Novak, 2017). In general, compassion may be understood as an emotional state which is triggered when one is confronted by suffering of another. This emotional state is characterized by feelings of warmth, concern and interest in others as well as motivation or the need to help

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others with the aim of increasing the other person's well being (Leiberg et al., 2011; Preckel et al., 2018). Similar, but still distinct form compassion is empathy, which represents “ the sharing of another’s affect” (Kanske, 2018, p. 116).

In recent years, several new compassion assessment tools emerged: Sussex-Oxford Compassion Scales - SOCS - (Gu et al., 2020) or Compassionate Engagement and Action scales - CEAS - (Gilbert et al., 2017). Along with these new scales, there are several more established scales. Including The Compassion Scale (CS-M; Martins, Nicholas, Shaheen, Jones, & Norris, 2013) or The Compassionate Love Scale (SLS; Sprecher & Fehr 2005). However, the detailed comparative analysis of Strauss et al., (2016) revealed that these established measures have some psychometric shortcomings such as absence of convergent and discriminant validity or absence of test-retest reliability. The same study also identified measures, which do not have most of the weaknesses of older instruments. Among these measures is the Santa Clara Brief Compassion Scale - SCBCS - (Hwang et al., 2008), which is an abbreviated form of the Compassionate Love Scale developed by Sprecher and Fehr (2005).

Except for the USA, the SCBCS was validated in Italy (Di Fabio, 2017). As suggested above, this scale has good psychometric properties (Strauss et al., 2016) and its predictive validity was supported by association with female gender, willingness to help others or social engagement (Plante & Mejia, 2016). Reliability of the scale is high: Cronbach's $\alpha = 0.90$ (Hwang et al., 2008). With respect to the short administration time the scale might be recommended for use in large test batteries. Although the original scale of Sprecher a Fehr (2005) measured compassion towards strangers and close ones, the SCBCS was developed to measure compassion to people in general (Hwang et al., 2008). The SCBCS has a unidimensional structure and is used for research purposes in psychology of health and personality (Boswell, 2012; Fortney et al., 2013; Shapiro et al., 2012; Taylor et al., 2016),

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moral psychology (Shapiro et al., 2012) neuropsychology (Moore, Dev, et al., 2015) or in educational research (Callister & Plante, 2017).

In the Czech environment there is a complete absence of a published and validated instrument for assessing compassion. Although there is one validation study (Benda & Reichova, 2016) examining psychometric properties of a tool assessing compassion, this instrument does not measure compassion towards other people but only to oneself. Thus, to fill this research gap, we aimed to explore the psychometric properties of the SCBCS in terms of internal consistency, factor structure and convergent validity.

Methods

Study sample

The study design was approved by the ethical committee (10/2018) of Olomouc University Social Health Institute (OUSHI). Data was collected from 572 Czech respondents from September 2018 to January 2019 using the snowball method. Responses were acquired through social media by means of an online questionnaire. The majority of respondents were university students. Comprehensibility was assessed in accordance with WHO (2016) guidelines.

Measures

The SCBCS was translated from its original language (English) (to Czech) according to standards of the WHO (2016). Translations were created by two independent translators who were also psychologists. The translations were evaluated by an expert panel. Based on discussion the final version was constructed. Two additional psychologists with strong

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English language skills translated the Czech version back into English. The final version which was constructed after the comparison of translations and was assessed by comparison to the original version. The definitive version of the Czech translation was approved by the author of the scale. The SCBCS contains five items on a 7 point Likert scale which correspond to the intensity with which the respondent experiences compassion (from 1 – not at all true for me, to 7- very true for me). All items are formulated positively. High scores indicate a higher degree of compassion.

At the beginning of the questionnaire, we offered participants a definition of the term of compassion to avoid any ambiguity. Our definition is in concordance with the original version by Sprecher & Fehr (2005): compassion means that we perceive how others feel, it affects us, and we feel the need to help them. Simultaneously, when we feel compassion, we experience feelings of warmth and kindness.

Convergent validity of the SCBCS was tested using a modified 15- item version of the Daily Spiritual Experience Scale (DSES) developed by Underwood & Teresi (2002) validated for the Czech population by Malinakova et al., (2018). This scale measures the subjective connection with the transcendent on a scale from 1 (always) to 6 (never). For example: „*I find strength in my religion or spirituality,*“ or “*I experience a connection all life.*“ The Czech version of the scale proved to have excellent psychometric properties including high internal consistency (McDonald’s $\omega = .98$, Cronbach’s $\alpha = .96$). The Czech version of this scale can be treated as both one or two dimensional. In the first part of the validation study the respondents were asked socio-demographic questions.

Statistical analyses

The distribution of individual items of the scale was evaluated using histograms and their normality was verified by the Shapiro-Wilk test. Because the data did not meet the

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assumption of a normal distribution, nonparametric methods were used for all statistical analyses. The mutual correlation of the scale items was evaluated using the Spearman correlation coefficient. The dimensional structure of the scale was verified by confirmatory factor analysis (CFA), based on a matrix of polychoric correlations. CFA was performed using the lavaan package (Rosseel, 2012) in the R program (R Core Team, 2020), where the Diagonally Weighted Least Squares (DWLS) method is used as a method for estimating parameters from ordinal data. Several indices of fit to the data were assessed: the CFI and TLI values higher than 0.95 are considered satisfactory; the SRMR values below 0.05 are considered excellent, while values between 0.05 and 0.08 are considered acceptable. The value of RMSEA was not used to evaluate the fit of the model to the data, because the RMSEA value is strongly overestimated at low degrees of freedom (in our case $df = 5$) and leads to a false rejection of the model (Kenny et al., 2015). The internal consistency of the scale was assessed using the Cronbach's alpha and McDonald's omega coefficients. The differences of SCBCS score in sociodemographic groups were evaluated with non-parametric tests: gender differences with Wilcoxon rank-sum test, and all other comparisons with the Kruskal-Wallis test. Bonferroni correction was applied to p-values from multiple group comparisons. Correlations between the SCBCS and DSES scales were evaluated using the Spearman correlation coefficient. All analyses were performed using the IBM SPSS Statistics software, version 25, and R 3.5.0.

Results

Descriptive statistics and socio-demographic group comparison

Description of the study sample and results of mean SCBCS score comparisons across socio-demographic groups are reported in Table 1.

Table 1.

Results of the Wilcoxon and the Kruskal-Wallis test suggest significant differences in degree of compassion across different socio-demographic groups. Females have significantly higher compassion scores as compared to males ($p < ,001$, with effect size Cohen's $d = 0,44$ and $\eta^2 = 0,046$). Within age groups, there seems to be a trend of slight increase of mean compassion scores in participants over 40 years of age, except for the oldest group > 60 years. However, the differences between age groups are not statistically significant. During the comparison of the age groups, separately for males and females, results revealed that males aged between 30 and 39 had the lowest degree of compassion (mean SCBCS score in this group was 3,67, $SD = 1,40$). On the other hand, the highest compassion was reported by females aged between 40 and 60 (mean SCBCS score in these groups is 5,20 for age: 40–49 respectively 5,94 for age 50–59, $SD = 1,31$ respectively 0,76). Family status is associated with compassion in participants: people living in marriage have significantly higher mean SCBCS values as compared to those without relationship ($p = ,011$, $d = 0,33$, $\eta^2 = 0,026$). Finished education or economic status is not associated with compassion of subjects in our study. Religiosity is significantly associated with compassion: religious people reach significantly higher mean SCBCS values as compared to non-religious ($p \leq ,002$ during comparison of the groups of religious and non-religious, d reach values of 0,63 to 1,00, η^2 reach 0,09–0,20). The lowest degree of compassion has been reported by people considering themselves as convinced atheists.

Psychometric properties of the SCBCS questionnaire

Factor structure

In the Czech environment, correlations between individual SCBCS items are moderate to strong with correlation coefficients ranging from ,37 (items 1,4) to ,65 (items 1,2).

Correlations between all items are statistically significant ($p < ,001$). Spearman's rank correlation coefficients between individual SCBCS items are reported in Table 2.

Table 2.

Statistically significant result of the Bartlett's test of sphericity ($\chi^2(10) = 1189,0$, $p < ,001$) and value of the Kaiser-Meyer-Olkin criterion $> ,8$ ($KMO = ,81$) showed that our data met the basic assumptions for performing factor analysis (Cerny & Kaiser, 1977). Confirmatory Factor Analysis (CFA) was calculated on a polychoric correlation matrix. As a fitting algorithm for estimation of parameters from ordinal data, the Diagonally Weighted Least Squares (DWLS) method was used. The SCBCS was developed as a unidimensional scale (Hwang et al., 2008), thus, the one factor model was evaluated (see Figure 1). The results of the CFA are reported in Table 3. Factor loadings of all items are moderately-strong up to strong (with values of .63 - .82). Based on all criteria being measured, this model has a good fit with our data.

Figure 1.

Table 3.

Internal consistency

The scale displays high reliability with a Cronbach's alpha = 0,84 (95% CI 0,82–0,87) and McDonald's omega = 0,89. Alpha values slightly decreased after removing individual items. This analysis indicates the reliability of the SCBCS in the Czech environment is sufficiently high.

Convergent validity

Average scores from the SCBCS were compared to the spirituality of respondents which was measured by the DSES. The DSES may be considered unidimensional with one factor, or as a two-factor scale with an *Interpsychic* and *Intrapsychic* factor (Malinakova et al., 2018). Spearman's nonparametric correlation coefficients were used for the comparison. Average scores on the SCBCS correlated moderately with DSES average scores DSES, $r = ,354$, $p < ,001$. When separating the DSES into two subscales, the two subscales correlated moderately $r = ,307$, $p < ,001$ with the intrapsychic factor, and $r = ,431$, $p < ,001$ with the intrapsychic factor. Thus, the SCBCS correlates more strongly with the *Interpsychic* factor of the DSES.

Discussion

The aim of this study was to psychometrically evaluate the Santa Clara Brief Compassion Scale in the Czech environment. Analysis of socio demographic groups revealed that females reported higher compassion than males. Furthermore, it was found that married

individuals tend to be more compassionate than those who are not in a relationship. It was revealed that compassion is not influenced by age, education or economic activity. Religious individuals both in church and without church showed more compassion than non-religious individuals or convinced atheists. In addition, compassion positively correlated with spirituality. Reliability analysis showed relatively high internal consistency, and confirmatory factor analysis supported the original unidimensional scale structure.

Our findings regarding females being significantly more compassionate than males supports convergent validity of the Czech scale. This result is in line with findings from other studies (Callister & Plante, 2017; Hwang et al., 2008; Moore, Martin, et al., 2015; Plante & Mejia, 2016). From an evolutionary perspective, higher degrees of compassion in females might be caused by selection pressure favouring survival of infants of mothers who were more sensitive to the infant's needs (Decety & Svetlova, 2012).

We also found that married individuals score higher on the SCBCS than individuals not in a relationship. It is possible that compassion is cultivated through marriage. Alternatively, more compassionate individuals might be more inclined to enter into marriage. A number of previous studies did not find the association observed in our study (López et al., 2018; Martins et al., 2013). The main reason is that the studies divide family status into: married/living together in a single household and other (López et al., 2018), and does not include the category single/not in a relationship.

Our results did not show a significant relationship between degree of compassion and age of respondents. This finding is in line with the result of other studies which used the same measure of compassion (Moore, Martin, et al., 2015). One explanation for the absence of relationship in our analysis could be a relative homogeneity in age of our respondents. This could have also caused and the absence of relationship in the study by Martin Moore et al., (2015).

The absence of a relationship between compassion and education is in line with the findings of Martin Moore et al., (2015), which did not find this relationship. Nevertheless, these findings are in contrast with a number of studies showing that social class, which is closely related to education (Marioni et al., 2014), predicts a lower degree of compassion in individuals who are higher in the socioeconomic hierarchy (Callister & Plante, 2017; Piff & Moskowitz, 2018; Stellar et al., 2012). Contrasting results could be partially attributed to a large number of our respondents being students who will reach the peak of the socioeconomic ladder after completing their education. In general, we may say that the relationship between compassion and education is scarcely researched, thus making a comparison of results impossible.

Our findings that religious individuals tend to be more compassionate are in accordance with results from previous studies e.g. Callister & Plante (2017); Hwang et al., (2008). One explanation may be that individuals who were raised in a religious environment were subject to religious education, where the cultivation of compassion is integral (Callister & Plante, 2017). Our study revealed that compassion is associated with spirituality which corresponds with results of other studies (Callister & Plante, 2017; Saslow et al., 2013; Stellar et al., 2012). One explanation for spiritual individuals being more compassionate could lie in their natural tendency to be other oriented (Saslow et al., 2013). In other words a higher degree of compassion may predispose individuals to experience spirituality. Alternatively, it is possible that spirituality understood as harmony with oneself, other people, the world, and the awareness of being connected to a greater whole naturally strengthens compassion. The correlation between compassion and spirituality also supports convergent validity of our study.

In our study we found that item 4 had the lowest factor loadings and correlations with the raw score. A similar result can be found across studies testing the psychometric properties

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of the SCBCS. Studies indicate that across all items, number 4 had a weak (Di Fabio, 2017; Hwang et al., 2008) or weakest (Plante & Mejjia, 2016) correlation to the overall score. This trend may be explained by the nature of this item as it explicitly asks about the respondents willingness to help other people. Although helping others is closely related to compassion (Preckel et al., 2018), individuals can be compelled to help for reasons other than compassion.

In our study as well as in other studies (e.g. Plante & Mejjia, 2016), it was revealed that item 3 had the second lowest correlation with raw scores. Because item 3 also asks about the individual's willingness to help others without determining whether this act is out of compassion or not, the low correlation with the raw score can be explained in the same way as in item 4.

An alternative explanation for the low correlations with the raw score in items 3 & 4 in contrast to the generally higher correlations in the American (Hwang et al., 2008), and Italian (Di Fabio, 2017) sample could be explained by a high level of social desirability among religious individuals on whom the psychometric properties of the SCBCS were tested. Religiosity is related to a higher level of social desirability (Gervais & Norenzayan, 2012), as well as prosocial tendencies (Thielmann et al., 2016) measured by both items. This could have caused social desirability to increase the scores in the American and Italian studies and in turn increase the correlation with the overall score. The influence of social desirability on items 3 & 4 will thus likely be lower in the atheist environment of the Czech Republic in comparison to the Italian and American sample.

Confirmatory factor analysis of the Czech version of the SCBCS supported the unidimensional structure and in this aspect does not differ from the original version (Hwang et al., 2008) or the Italian version (Di Fabio, 2017). A multifactorial solution was not considered, as the original was created as unidimensional. It was also not considered, as in

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any multidimensional solution a factor with less than two items would have been created.

Modelling of a latent variable with only two items usually leads to insufficient representation of the construct and to decreased internal consistency (Eisinga et al., 2013).

One limitation of the study is that the effect of social desirability on participant responses cannot be ruled out. In conclusion, our study has shown that the Santa Clara Brief Compassion Scale is a short, reliable and useful tool for measuring compassion in the Czech environment.

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Declaration of interest statement

Authors do not have conflict of interests

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The Czech version of the Santa Clara Brief Compassion Scale:

V následující části se několikrát setkáte s pojmem "soucit". Je velmi důležité, abyste si níže pečlivě přečetli, co přesně si pod tímto pojmem máte představit (každý z nás totiž toto slovo chápe trochu jinak). Abyste v průběhu vyplňování nezapomněli, jak pojem "soucit" chápat, uvádíme jeho definici vícekrát. Na následující otázky odpovídejte upřímně a rychle.

Vůbec mě nevystihuje

Vysoce mě vystihuje

1. Když slyším, že se má někdo cizí špatně, velice s ním soucítím.
2. Mám sklon soucítit s druhými, i když je neznám.
3. Jedna z věcí, která dává mému životu nejvíc smysl, je pomáhat ostatním, když pomoc potřebují.
4. Raději bych dělal/a věci, které pomáhají cizím lidem, než věci, které pomáhají mně samotnému.
5. Když jsou cizí lidé v situacích, ve kterých potřebují pomoc, často vůči nim cítím starost a soucit.

Definice soucitu uvedená v dotazníku pro probandy: Když s někým soucítíme, znamená to, že vnímáme, jak se druhý cítí, dotýká se nás to a cítíme potřebu mu pomoci. Současně platí, že když s někým soucítíme, prožíváme vůči němu pocity vřelosti, srdečnosti či laskavosti.

Table 1

descriptive statistics of the study sample and results of nonparametric comparisons of mean SCBCS scores (Wilcoxon two-sample test and Kruskal-Wallis test). Presented p-values refer to the comparison of all groups while the values in brackets are the result of multiple group comparisons

	n (%)	mean SCBCS (SD)	median SCBCS (Q1; Q3)	group comparison
Gender				
1. male	210 (36,7)	4,15 (1,25)	4,40 (3,40; 5,00)	P < ,001
2. female	362 (63,3)	4,74 (1,11)	4,80 (4,00; 5,40)	
Age				
1. 15-19	66 (11,5)	4,60 (1,13)	4,60 (3,80; 5,40)	P = ,075
2. 20-29	430 (75,2)	4,48 (1,17)	4,60 (3,80; 5,40)	
3. 30-39	40 (7,0)	4,39 (1,34)	4,60 (3,40; 5,40)	
4. 40-49	18 (3,2)	5,20 (1,23)	5,20 (4,40; 6,20)	
5. 50-59	12 (2,1)	5,28 (1,05)	5,30 (4,50; 6,00)	
6. 60+	5 (0,9)	4,28 (1,69)	4,80 (4,40; 5,00)	
missing data	1 (0,2)	–	–	
Family status				
1. single	497 (86,9)	4,46 (1,19)	4,60 (3,60; 5,20)	P = ,001 (1-2*)
2. married	65 (11,4)	4,94 (1,10)	5,00 (4,40; 5,80)	
3. divorced	9 (1,6)	5,24 (0,97)	5,20 (4,80; 6,00)	
4. widow/widower	1 (0,2)	–	–	
Highest education achieved				
1. primary	45 (7,9)	4,28 (1,28)	4,60 (3,60; 5,20)	P = ,67
2. Secondary vocational school	26 (4,5)	4,72 (1,06)	4,80 (4,20; 5,60)	
3. Secondary school with graduation	261 (45,6)	4,54 (1,18)	4,60 (3,80; 5,40)	
4. higher vocational school	18 (3,1)	4,59 (1,11)	4,80 (4,20; 5,20)	
5. university (Bc., Mgr., Dr.)	222 (38,8)	4,53 (1,21)	4,80 (3,80; 5,40)	
Economic activity				
1. student	310 (54,2)	4,51 (1,19)	4,60 (3,60; 5,40)	P = ,61
2. employed	200 (35,0)	4,55 (1,14)	4,60 (3,80; 5,40)	
3. self-employed, self employed, /entrepreneur	37 (6,5)	4,63 (1,47)	5,00 (3,80; 5,80)	
4. unemployed v domácnosti	20 (3,5)	4,44 (1,11)	4,60 (3,70; 5,30)	
5. pensioner invalidity / starobní	5 (0,9)	3,72 (1,51)	4,40 (3,00; 4,80)	
Religiosity				
1. religious	126 (22,0)	4,88 (1,03)	5,00 (4,40; 5,60)	P < ,001 (1-3***, 1-4***, 2-3**, 2-4***)
2. religious outside church	129 (22,6)	4,78 (1,06)	5,00 (4,20; 5,60)	
3. non-religious	267 (46,7)	4,36 (1,18)	4,40 (3,60; 5,20)	
4. convinced atheist	50 (8,7)	3,79 (1,48)	4,10 (2,60; 4,80)	

Note. SD= standard deviation, Q1=lower quartile (25%), Q3=upper quartile (75%); ***p < .001, **p < .005, *p < .05.

Table 2

Spearman correlation coefficients between individual SCBCS items

	SCBCS 1	SCBCS 2	SCBCS 3	SCBCS 4	SCBCS 5
SCBCS 1	1,00				
SCBCS 2	,65	1,00			
SCBCS 3	,45	,38	1,00		
SCBCS 4	,37	,41	,50	1,00	
SCBCS 5	,57	,61	,52	,50	1,00

Note. All correlation coefficients are statistically significant ($p < ,001$)

Table 3*Item statistics and parameters of confirmatory factor analysis of the SCBCS one factor model*

SCBC items	Mean	SD	Item-total correlation without item	CFA factor loading	CFA item residual
1. Když slyším, že se má někdo cizí špatně, velice s ním soucítím.	4,60	1,50	,67	,80	,36
2. Mám sklon soucítit s druhými, i když je neznám.	4,40	1,60	,69	,82	,32
3. Jedna z věcí, která dává mému životu nejvíc smysl, je pomáhat ostatním, když pomoc potřebují.	4,90	1,50	,60	,67	,55
4. Raději bych dělal/a věci, které pomáhají cizím lidem, než věci, které pomáhají mně samotnému.	4,00	1,50	,57	,63	,60
5. Když jsou cizí lidé v situacích, ve kterých potřebují pomoc, často vůči nim cítím starost a soucit.	4,80	1,50	,74	,81	,34
parameters of the CFA	DWLS Chi-Square	P-value	CFI	TLI	SRMR
	58,9 (df 5)	< ,001	,99	,98	0,058

Figure 1

