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PSYCHOMETRIC ANALYSIS OF THE SLOVAK VERSION OF THE COMPASSIONATE ENGAGEMENT AND ACTION SCALES

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Abstract

The goal of this study was to validate the Slovak version of a recently developed instrument, The Compassionate Engagement and Action Scales (CEAS; Gilbert et al., 2017), by testing its reliability and factor structure and validity by concurrently measuring the Self-compassion Scale (SCS; Neff, 2003). The CEAS comprises three scales: Self-Compassion, Compassion to Others, and Compassion from Others. *The convenience sample consisted of 638 people, aged 18 to 69 years (M=23.20, SD=6.56). Cronbach's alphas for the total score of the three scales were between 0.65 and 0.90. Reliability indices (Omega Total, Omega Hierarchical, and Explained common variance index) indicated that Compassion to Others (ω_h=0.81; ECV=0.76) and Compassion from Others (ω_h=0.89; ECV=0.80), but not* Self-Compassion *(ω_h=0.57; ECV=0.40), had a very strong single general factor. We fitted the three CEAS scales with the four models. For all three scales, the bifactor ESEM displayed the best fit. To sum up, the findings of our research show that the Slovak versions of the Compassionate Engagement and Action Scales could be used for measuring the two kinds of compassion, but excluding the Self-compassion scale.*

Keywords: compassion to others; compassion from others; self-compassion; psychometric analysis; factor analysis

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Introduction

Since its development in 2003, the Self-Compassion Scale (Neff, 2003) has been the most frequently used scale to measure self-compassion in research and clinical settings as it is the only scale measuring self-compassion. However, many researchers (*e.g.*, López et al., 2015) pointed out that the scale does not measure one construct of self-compassion, but two different ones, a positive one and a negative one: Self-compassion and Self-coldness (*e.g.*, Brenner, Heath, Vogel, & Credé, 2017). It was also recommended that the scale's total score should not be used (*e.g.*, Muris & Petrocchi, 2016). As a result, there was a need for a new scale measuring the construct self-compassion.

Development of the CEAS and characteristics of its scales and subscales

The compassionate engagement and action scales (CEAS; Gilbert et al., 2017) is a new self-report instrument based on a new evolutionary theory of compassion (Gilbert, 2005). The advantage of this instrument is that it simultaneously measures three main directions of compassion: compassion to others, compassion from others, and self-compassion. Having these three parts of compassion in one scale makes it possible to examine the interactions between them as well as other psychological processes. Gilbert (2014) views compassion in terms of "a sensitivity to the presence of suffering in self and others with a commitment to try to alleviate and prevent such suffering". Compassion to others includes the ability to read signals of suffering, being tolerant of our own unpleasant feelings related to suffering, being able to make connections with people who are suffering, and being motivated as well as prepared to alleviate the suffering of others or even prevent it (Gilbert et al., 2017). Receiving compassion is related to perception of compassion from others: whether we perceive others to be caring and compassionate towards us and whether we are capable of being open to receiving compassion. Self-compassion competency is supportive behaviour oriented at oneself.

Each scale covers two basic components of compassion - the engagement subscale (ability to be sensitive and to be open during suffering, 8 items) and the compassionate action subscale (commitment to be active when perceiving distress and unpleasant situations, 5 items). Each scale consists of 10 questions answered on a 10-point Likert scale. Gilbert et al. (2017) added some reversed items which should be excluded before the analysis (actions subscale question 3 and engagement subscale questions 3 and 7).

The original version of the CEAS was in English and, in the original publication (Gilbert et al., 2017), there was also a Portuguese version. The CEAS was then translated into Dutch, in a study by Kleissen (2016). So far as we know there are no other translations.

Psychometric properties of the CEAS - reliability and validity

In the original CEAS study, Gilbert et al. (2017) reported the following Cronbach's alpha scores: Compassion to others - engagement (α=.90), Compassion to others - actions (α=.94), Compassion from others - engagement (α=.89), Compassion from others - actions (α=.91), Compassion for self - engagement (α=.77, .72), and Compassion for self - actions (α=.90). In a study by Lindsey (2017), Cronbach's alpha was .91 for the overall scale, .90 for the Compassion to others subscale, .94 for Compassion from others, and .89 for Self-compassion.

In the original study by Gilbert et al. (2017), test-retest reliability was analysed in a subgroup (n=36) after a one-month interval using the correlation coefficient. They reported a positive relationship between the two administrations for the self-compassion scale (r=.75), receiving compassion (r=.59), and compassion to others (r=.72). Test-retest reliability was also investigated by Lindsey (2017) in a subgroup of participants (n=42) after a three-week interval, and a significant relationship (p<.001) was found for the overall scale (r=.81). Kleissen (2016) reported good internal reliability for self-compassion (.83), compassion to others (.87), and receiving compassion (.90).

Convergent validity was examined in the original study (Gilbert et al., 2017) with the resulting findings. There was a strong relationship between the Compassion to Others scale of the CEAS and the Compassionate Love Scale (Sprecher & Fehr, 2005) (r=.70, p<.001) and the Friendship Compassionate and the Self-Image Goals Scale (Crocker & Canevello, 2008) (r=.47, p<.001). A weak correlation was found with the positive items of the Self-compassion Scale (SCS; Neff, 2003) (r=.25, p<.001) and an even weaker correlation with the Reassured Self of The Forms of Self-criticizing/Attacking and Self-reassuring Scale (FSCRS; Gilbert et al., 2004) (r=.19, p<.001). A weak relationship was reported between the Compassion from Others scale of the CEAS and the positive items of the SCS (r=.34, p<.001), Reassured Self of the FSCRS (r=.30, p<.001) and the Compassionate Love Scale (r=.27, p<.001) and Friendship Compassionate and Self-Image Goals Scale (r=.20, p<.001). In addition, a strong relationship was found between the Self-compassion Scale of the CEAS and the positive items of the SCS (r=.60, p<.001) and Reassured Self of the FSCRS (r=.49, p<.001). The correlations with the Compassionate Love Scale (r=.33, p<.001) and Friendship Compassionate and Self-Image Goals Scale (r=.24, p<.001) were weaker.

Lindsey (2017) also correlated the CAES with validated compassion scales to examine convergent validity. The CEAS Self-compassion scale had a positive correlation with the SCS (r=.53, p<.01) and with the Santa Clara Brief Compassion Scale (SCBCS; Hwang et al., 2008) (r=.13, p<.05). The next scale, Compassion to Others of the CEAS correlated with the SCS (r=.12, p<.05) and with the SCBCS (r=.55, p<.01). The last one, the Compassion from Others scale of the CEAS correlated with the SCS (r=.26, p<.01) and with the SCBCS (r=.20, p<.01).

Kleissen (2016) reported a moderate correlation between the SCS and Self-compassion of the CEAS (r=.39, p<.0001) and a weaker relationship between the SCS and Compassion from Others (r=.20, p<.002), but Compassion to Others did not correlate significantly with the SCS (r=.10, p=.08). The relationship between the subscales - Actions and Engagement of each scale - was strong (r=.67, .77, .83 p<.01). Other intercorrelations were weak or moderate (ranging from .20 to .44, p<.01) (Gilbert et al., 2017). Lindsey (2017) confirmed the correlations between each of the scales as well. There was a positive correlation between Self-compassion and Compassion to Others (r=.43). A weak relationship (Gilbert et al., 2017) was found between Self-compassion and

Compassion from Others (r=.32) and between Compassion to Others and Compassion from Others (r=.28).

Factor structure of CEAS

The psychometric properties of the CEAS were examined in the original study by Gilbert et al. (2017) and by Lindsey (2017). Lindsey (2017) tested the psychometric properties of the CEAS on a general British population because the CEAS was originally developed and used in British student populations (Gilbert et al., 2017).

For all three scales, Gilbert et al. (2017) performed an exploratory factor analysis (EFA) on the British university student data and a confirmatory factor analysis (CFA) on the data from the US and Portuguese populations. The EFA verified the Engagement subscale of the Compassion to Others scale using a one-factor solution which explained 67% of the variance. The Action subscale of the Compassion to Others scale was fitted with a one-factor solution too, which explained 84% of the variance. For the Actions and Engagement subscales of the Compassion from Others scale, a one-factor solution was fitted (explaining 79% of the variance for actions and 64% for engagement). The EFA produced a one-factor solution for self-compassion scale-actions explaining 77% and a two-factor solution for self-compassion scale-engagement (66% of variance).

The confirmatory factor analysis was claimed to be a good and admissible model fit for all the scales: Compassion to Others in the US sample ($\chi 2$ /df=3.89; CFI=.96; TLI=.95; RMSEA=.096; SRMR=.036) and in the Portuguese sample (χ^2/df=6.76; CFI=.95; TLI=.94; RMSEA=.087; SRMR=.038), Compassion from Others in the US sample ($\chi 2$/df=3.92; CFI=.96; TLI=.95; RMSEA=.098; SRMR=.033) and in the Portuguese sample (χ^2/df=5.09; CFI=.98; TLI=.97; RMSEA=.073; SRMR=.026), Compassion for self in the US sample ($\chi 2$/df=3.66; CFI=.94; TLI=.91; RMSEA=.092; SRMR=.049) and in the Portuguese sample (χ^2/df=6.28; CFI=.95; TLI=.93; RMSEA=.083; SRMR=.050). The CEAS scales can be applied as one-factor scales with a total score or they can be used with subscales for each scale separately.

Lindsey (2017) used principal component analysis (PCA) and confirmed that a three-factor model (56.3% of variance) had better fit than two- or five-factor models. The three factors were the three scales: self-compassion, compassion to others, and compassion from others. The confirmatory factor

analysis (CFA) also showed good model fit ($\chi 2$/df=2.9, IFI=.90, CFI=.90, GFI=.81, RMSEA=.08, SRMR=.06).

Kleissen (2016) used confirmatory factor analyses and showed good model fit for one scale only - Compassion from Others (CFI=.942, GFI=.913, RMSEA=.096). Compassion to Others (CFI=.908, GFI=.879, RMSEA=.117) and Self-compassion (CFI=.849, GFI=.868, RMSEA=.130) did not fit the models.

Research using CEAS

So far the CEAS has been used in research relating to body appreciation (Marta-Simões & Ferreira, 2019), body compassion, and disordered eating (de Carvalho Barreto et al., 2018) and binge eating disorder (Duarte et al., 2017). In the original study by Gilbert et al. (2017), the CEAS scale was used to examine the link between self-compassion and self-criticism, anxiety, depression, and stress.

Aim of study

The aim of this study was to examine the psychometric properties of the Slovak version of The Compassionate Engagement and Action Scales (CEAS; Gilbert et al., 2017) and to compare the factor structure obtained with the original factor structure (Gilbert et al., 2017). We also tested the reliability and validity of the scale as well as the subscales.

Methods

Participants

The Slovak sample consisted of N=638 respondents; 131 were males (20.5 %) and 507 were females (79.5 %). Mean age was 23.20 (SD=6.56). Data were obtained by convenience sampling using questionnaires distributed in digital form via social networks. Data were collected in accordance with the ethical standards of the institutional and/or national research committee and in accordance with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Measurement instruments

The Compassionate Engagement and Action Scales (CEAS; Gilbert et al., 2017) consist of three scales, Self-Compassion, Compassion to Others, and Compassion from Others. Each scale contains two subscales: Engagement (8 items) and Action (5 items). It was translated using back translation from English to Slovak.

The Self-Compassion Scale (SCS; Neff, 2003) measures six aspects of self-compassion in situations of perceived difficulties. The scale contains 26 items rated on a five-point Likert-type Scale of Frequency (1=almost never; 5=almost always). The Self-Kindness subscale (SK) represents the ability to take care of oneself and be warm towards oneself when encountering failure. Common Humanity (CH) reflects the personal understanding that suffering is part of the shared human experience. Mindfulness (MI) is a non-judgmental state of mind in which individuals observe their thoughts and feelings as they are, without over-identifying or trying to suppress or deny them. The scale measures the degree to which individuals display self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification. The Over-identification (OI), Isolation (IS), and Self-judgment (SJ) subscales are therefore scored negatively. According to the Slovak psychometric and factor analysis of the SCS (Halamová, Kanovský, & Pacúchová, 2017), the scale compounds of the two separate factors of Self-compassionate responding and Self-uncompassionate Responding represent positive and negative items separately.

Data analysis

All the statistical analyses were conducted in Mplus, version 7.4 (Muthén & Muthén, 1998-2010). In the original study, an exploratory factor analysis (EFA) was performed on the British sample. The authors performed six separate EFA analyses in order to find a one-dimensional solution for each subscale. They presented the indices to examine model fit in the confirmatory factor analyses: Normed Chi-Square (χ^2/df), with 2 to 5 indicating good fit; Comparative Fit Index (CFI) and Tucker-Lewis index (CFI), with values above .90 suggesting good fit; Root Mean Square Error of Approximation (RMSEA), with .05 to .08 indicating reasonable error and acceptable fit; and Standardized Root Mean Square Residual (SRMR), with values less than .08 indicating good fit" (Gilbert

et al., 2015, p. 10), following Kline (2005) and Tabachnick and Fidell (2013). The indices of fit of their six models are reproduced in Table 1.

Table 1. Indices of fit for six confirmatory factor analysis models from Gilbert et al. (2015).

The US sample					
	CFI	TLI	Normed χ^2 (χ^2/df)	RMSEA (90% CI)	SRMR
Compassion to others	.96	.95	3.89	.096 (.084-.108)*	.036
Compassion from others	.96	.95	3.92	.098 (.086-.110)*	.033
Compassion for self	.94	.91	3.66	.092 (.081-.104)*	.049
The Portuguese sample					
	CFI	TLI	Normed χ^2 (χ^2/df)	RMSEA	SRMR
Compassion to others	.95	.94	6.76	.087 (.078-.096)*	.038
Compassion from others	.98	.97	5.09	.073 (.065-.081)*	.026
Compassion for self	.95	.93	6.28	.083 (.075.-092)*	.050

Notes: CFI – Comparative Fit Index, TLI – Tucker-Lewis Index, χ^2 – chi-square, df – degrees of freedom, RMSEA – Root Mean Square Error of Approximation, CI – Confidence Interval, SRMR – Standardized Root Mean Square Residuals, * – not reported in the original article, calculated post-hoc.

Gilbert et al. (2017) declared that all their six models had acceptable, good, or very good fit - all the RMSEA values in the US sample and two of the three RMSEA values in the Portuguese sample were above the cut-off value of .080 (they did not report 90% confidence intervals for the RMSEA values, but these are easily calculated because they had reported the models with their parameters and sample sizes: we can see in Table 1 that all the upper boundaries of the RMSEA values - and even all the lower boundaries of the RMSEA values in the US sample - are above .080), and all the Normed Chi-Square (χ^2/df) values in the Portuguese sample are above the cut-off value of 5. The fit of these models is therefore mediocre at best.

There is another indication that these models were misspecified. Gilbert et al. (2017) failed to realize that their hierarchical models with a single second-order factor and only two first-order factors as indicators would lead to identification problems: "To identify a hierarchical CFA model, there must be at least three first-order factors. Otherwise, the direct effects of the second-order factor on the first-order factors or the disturbance variances may be underidentified" (Kline, 2015, p. 319). They even report the symptoms of under-identification: one of the standardized loadings of the first-order factor on the second-order factor is higher than 1 in all the models, indicating that the

disturbance variances are negative (Heywood cases). Of course, we cannot rule out the possibility that mediocre fit and under-identification problems have other causes than misspecification: for example multivariate outliers or sampling fluctuations (Kolenikov & Bollen, 2012).

The mediocre fit may have another quite different source: the restrictive assumption of confirmatory factor analysis (CFA), which forces cross-loadings between items and non-target factors to be constrained to zero (Marsh et al., 2014). While classical alternatives such as Exploratory Factor Analysis (EFA) have limitations when compared with CFA, the newly developed ESEM (Exploratory Structural Equation Modelling) framework has incorporated EFA within a structural equation modelling (SEM) framework (Asparouhov & Muthén, 2009). Moreover, target rotation makes it possible to specify ESEM models with cross-loadings in a purely confirmatory manner, forcing cross-loadings to be as close to zero as possible (Asparouhov & Muthén, 2009).

Another source of the problem could be the assessment of the general constructs. We agree that the higher-order factor models used by Gilbert et al. (2017) are the typical approach for capturing this source of construct-relevant multidimensionality. However, it relies on a restrictive implicit assumption – a proportionality constraint - which means that the ratio of the variance attributed to the higher-order factor versus that uniquely attributed to the first-order factor is constant for all items associated with a single first-order factor (Morin, Arens, & Marsh, 2016; Reise, 2012). Furthermore, in such models, the higher-order factors do not explain additional variance besides that already explained by the first-order factors. On the other hand, bifactor models (Reise, 2012, *see* Figure 1 below) allow for the estimation of over-arching constructs without relying on this restrictive implicit assumption and for the separate assessment of variance uniquely attributable to specific and global factors. In the bifactor approach, the covariance among a set of items can be explained by a set of orthogonal factors including one Global (G) factor and several orthogonal Specific (S) factors. As each item is used to simultaneously define the G-factor and one S-factor, the covariance is divided into a G-factor underlying all items, and S-factors corresponding to the covariance not explained by the G-factor. As such, the G-factor estimated as part of a bifactor model provides a direct way to test for the presence of a global overarching construct underlying responses to all items, while also acknowledging that important distinctions exist at the subscale level. Some useful statistical indices have been proposed (Rodriguez, Reise, &

Haviland, 2016): hierarchical Omega ω_h (the degree to which composite scale scores are interpretable as a measure of a single common factor), and ECV (explained common variance: the ratio of variance explained by the general factor divided by the variance explained by the general plus the specific factors). Note that ECV is the measure of essential unidimensionality (high ECV values mean that the construct is essentially unidimensional despite some multidimensionality - specific factors contribute a minimal amount of the explained variance), but it tells us nothing about the strength of the general factor: a single weak factor could be unidimensional but the raw scores could reflect a lot of errors. Therefore, it is necessary to obtain a scale where both measures have high values (at least 0.70), if relying on raw scores.

Morin, Arens, and Marsh (2016) and Morin, Arens, Tran et al. (2016) recommend a systematic comparison of CFA, ESEM, bifactor-CFA, and bifactor-ESEM models to clearly identify both sources of multidimensionality. Bifactor-ESEM is able to provide a single easily interpretable estimate of compassion (the G-factor), while at the same time acknowledging the specificity at the subscale level (the S-factors) and controlling for the cross-loadings likely to be present.

Results

Cronbach's alphas for the total score of the three scales - Self-Compassion, Compassion to Others, and Compassion from Others - were between 0.7 and 0.89, between 0.65 and 0.90 for the subscales of Engagement and from 0.82 to 0.90 for the Action subscales. However, the two subscales of Engagement for Self-compassion were below the recommended values. Sensitivity to Suffering was 0.51, and Engagement with Suffering was 0.35. *See* Table 2.

Reliability indices (Omega Total, Omega Hierarchical, and Explained Common Variance Index) indicated that Compassion to Others (ω_h=0.81; ECV=0.76) and Compassion from Others (ω_h = 0.89; ECV = 0.80), but not Self-Compassion (ω_h=0.57; ECV=0.40), had a very strong single general factor. Therefore, we can reliably use the unit-weighted total score for Compassion to Others and Compassion from Others, but not for Self-Compassion.

Considering all the previously mentioned facts, we did not attempt to reproduce the higher-order CFA models from Gilbert et al. (2015), but attempted

to fit three sets of models, where each set contained the following scales: Compassion to Others, Compassion from Others, Compassion for Self, with four fitted models: a) the two-factor CFA model; b) the ESEM two-factor model; c) the bifactor CFA model; and d) the bifactor ESEM model. *See F*igure 1. For all scales the bifactor ESEM displayed the best fit. *See* Table 3 and 4.

Convergent validity analysis produced the following results. The Self-compassion of the CEAS had a strong positive correlation with the Self-Compassionate Responding of the SCS (0.51, $p<0.001$) and a negative correlation with the Self-Uncompassionate Responding of the SCS (-0.23, $p<0.001$). *See* Table 5.

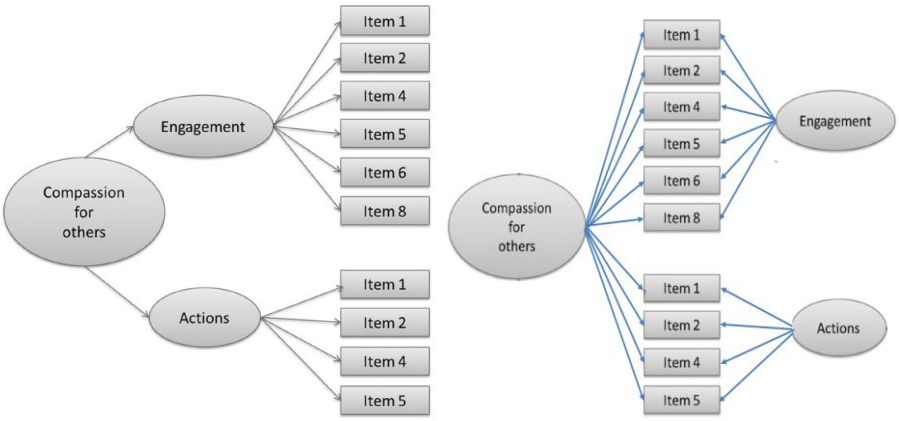

Figure 1. Second-order hierarchical model (left) and bifactor model (right)

Table 2. Reliability measures

	Cronbach's α (Gilbert et al., 2017)	Cronbach's α (Slovak sample)
Compassion for Self (Engagement)	0.77 / 0.72	0.51 / 0.35 (0.90)*
Compassion for Self (Action)	0.90	0.82
Compassion to Others (Engagement)	0.90	0.65
Compassion to Others (Action)	0.94	0.84
Compassion from Others (Engagement)	0.89	0.78
Compassion from Others (Action)	0.91	0.90

Notes: * – Cronbach's alpha for the overall subscale.

Table 3. Indices of fit of all fitted models

All fitted models					
Two-factor CFA models					
	χ^2(df)	CFI	TLI	RMSEA (90% CI)	SRMR
Compassion to others	217.2 (34)	.88	.84	.092 (.080-.104)	.072
Compassion from others	245.7 (34)	.91	.88	.099 (.087-.111)	.057
Compassion for self	286.6 (34)	.79	.72	.108 (.097-.120)	.091
Two-factor ESEM models					
	χ^2(df)	CFI	TLI	RMSEA (90% CI)	SRMR
Compassion to others	157.9 (26)	.91	.85	.089 (.076-.103)	.036
Compassion from others	186.1 (26)	.93	.88	.098 (.085-.112)	.040
Compassion for self	158.7 (26)	.89	.81	.089 (.076-.103)	.054
Bifactor CFA models					
	χ^2(df)	CFI	TLI	RMSEA (90% CI)	SRMR
Compassion to others	NC	-	-	-	-
Compassion from others	125.1 (25)	.96	.92	.079 (.066-.093)	.031
Compassion for self	144.4 (25)	.90	.82	.087 (.073.-100)	.052
Bifactor ESEM models					
	χ^2(df)	CFI	TLI	RMSEA (90% CI)	SRMR
Compassion to others	29.7 (18)	.99	.98	.032 (.007-.052)	.020
Compassion from others	75.8 (18)	.96	.90	.062 (.071-.079)	.027
Compassion for self	73.6 (18)	.95	.93	.070 (.061.-077)	.024

Notes: CFI – Comparative Fit Index. TLI – Tucker-Lewis Index. χ^2 – chi-square. df – degrees of freedom. RMSEA – Root Mean Square Error of Approximation. CI – Confidence Interval. SRMR – Standardized Root Mean Square Residuals. * – not reported in the original article, calculated post-hoc.

Table 4. Reliability indices and ECV for ESEM bifactor models

ESEM models	ω_t	ω_h	ECV
Compassion for Self	0.80	0.57	0.40
Compassion to Others	0.89	0.81	0.76
Compassion from Others	0.92	0.89	0.80

Table 5. Correlation between CEAS and SCS scales

	Self-compassionate responding/ Self-compassion	Self-uncompassionate responding/ Self-coldness
Compassion for Self	0.51*** (0.60***)	-0.23*** (-0.23***)
Compassion to Others	0.04 ns (0.25***)	0.22*** (-0.12***)
Compassion from Others	0.25*** (0.34***)	-0.14** (-0.10***)

Note: ** p < 0.01. *** p < 0.001. ns = nonsignificant. Correlation coefficients in brackets are from Gilbert et al. (2017).

Discussion

The goal of this study was to translate The Compassionate Engagement and Action Scales (CEAS; Gilbert et al., 2017) into Slovak and test its psychometric properties and factor structure. The reason for translating the scale was to enable use of an alternative Slovak language scale of compassion, and especially self-compassion, in both research and clinical settings. Currently there is only one separate scale measuring self-compassion, the SCS (Neff, 2003).

In the Slovak version, the internal consistency of the scales (0.35-0.90), as measured by Cronbach's alpha, was considerably lower than that obtained in the original study (0.72-0.94) by Gilbert et al. (2004). Excluding the partial subscale of Engagement of Compassion for Self (0.35 and 0.51), all the other internal consistency coefficients were at least acceptable, if not good. However, the internal consistency of overall Engagement of Compassion for Self was quite high (0.90).

As for the convergent validity of the CEAS, the Self-compassion of the CEAS correlated positively with the Self-compassion of the SCS and negatively with the Self-coldness (Self-compassionate responding) of the SCS, as we expected. Similarly, a significant positive relationship was found between the Compassion from Others of the CEAS and the Self-compassion of the SCS, and a significant negative relationship was found with the Self-coldness of the SCS. This means that the more people receive compassion from others, the more self-compassionate and less self-cold they are. Generally, we found similar relationships between our investigation of the CEAS and SCS and that of Gilbert et al. (2017), except in relation to Compassion to Others. In the Slovak sample, Compassion to Others does not correlate with Self-Compassion, but correlates with Self-coldness, meaning that the more compassion a person has for others, the less compassionate they are towards themselves and the harsher they are on themselves.

The results of the factor analysis are hard to compare with previous studies (Gilbert et al., 2017; Kleissenm 2016; Lindsey, 2017) because the earlier research utilized different factor analysis methods. Overall, Compassion to Others and Compassion from Others seemed to display a similar factor analysis, even though different methods were used in the studies. The Compassion for Self scale needs further development if it is to become a reliable instrument with a stable factor structure.

The Slovak sample was relatively large, but it was not representative of the general Slovak population. This could cause low external validity and is therefore a limitation, and makes it impossible to generalize the results to the whole Slovak population. Further research on the CEAS is needed. In future research, it would be useful to test the CEAS in a clinical setting. In addition, we recommend creating norms using a large representative Slovak population.

Conclusion

The Compassionate Engagement and Action Scales are reliable and valid instruments for measuring three different kinds of compassion in both the original English language version and the Slovak translation. The conclusion is that the Slovak version of the Compassion to Others and Compassion from Others scales are unidimensional and have a strong single general factor: their composite raw scores reliably reflect a single strong factor explaining a sufficient amount of variance. However, the Slovak version of the Compassion for Self is unsatisfactory in this respect: it is neither unidimensional nor does it contain a single strong factor – therefore its composite raw score cannot be reliably used. To sum up, the findings of our research show that the Slovak versions of The Compassionate Engagement and Action Scales could be used for measuring the two kinds of compassion, excluding the Self-compassion scale.

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Author contributions

Júlia Halamová designed research project. Júlia Halamová collected data. Martin Kanovský performed the statistical analysis. Júlia Halamová, Monika Pacúchová, and Martin Kanovský wrote the first draft of the article. All authors Júlia Halamová, Monika Pacúchová, and Martin Kanovský interpreted the results, revised the manuscript and read and approved the final manuscript.

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