

THE ITALIAN ADAPTATION OF THE COGNITIVE AND AFFECTIVE MINDFULNESS SCALE-REVISED

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The Cognitive and Affective Mindfulness Scale-Revised (CAMS-R; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007) consists of 12 items aiming to detect a broad conceptualization of mindfulness. This research intends to create an Italian adaptation of the CAMS-R, to explore its psychometric characteristics, and to investigate initial issues of validity. A questionnaire was administered to 459 respondents. As for the original version, the confirmatory factor analysis sustained a model with four first-order latent factors and one second-order latent factor. Furthermore, the CAMS-R Italian version showed an acceptable level of internal reliability. Concerning convergent and divergent validity, the CAMS-R Italian version was positively related to the Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003) and negatively to rumination. Finally, we showed that the scale is likely to be vulnerable to socially desirable responding, especially to self-deceptive enhancement. Implications and limits of the study are discussed.

Key words: Mindfulness; CAMS-R; MAAS; Convergent and divergent validity; Italian adaptation.

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The positive psychology approach has emphasized the importance of focusing, in the study of psychological dynamics, not only on diseases or maladaptive traits, but also on positive individual characteristics and human flourishing (Meyers, van Woerkom, & Bakker, 2013; Seligman & Csikszentmihalyi, 2000). Consistently with this perspective, the interest of scientists in the study of mindfulness — intended both as a psychological construct and as a form of clinical intervention — has progressively increased in the last years, involving medicine, neuroscience, social, and clinical psychology.

The term mindfulness, rooted in the Buddhist tradition, derives from the translation of the Pali word *sati*, which indicates the capacity of the mind, developed through meditation, to perceive a mental object in a deep and full way (Buddhadāsa, 1988; Gunaratana, 1993). Jon Kabat-Zinn introduced mindfulness in the Western science, defining it as the awareness that arises through paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally (e.g., Kabat-Zinn, 1994, 2003). Therefore, mindfulness consists in a self-regulation of attention on immediate experience, which enables individuals to increase recognition of mental events, and in an orientation to experience characterized by curiosity, acceptance, and openness (Bishop et al., 2004; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007). Based on these conceptualizations, mindfulness should include four correlated dimensions, as outlined by Feldman et al. (2007): (a) the ability to regulate attention (*Attention*); (b) the orientation to present experience

(*Present focus*); (c) awareness of experience (*Awareness*); and (d) the attitude of acceptance or nonjudgment toward experience (*Acceptance*).

The empirical investigation of mindfulness involves two main fields. On the one hand, a vast amount of studies showed the effectiveness of mindfulness-based interventions (for instance, the MBSR — Mindfulness-Based Stress Reduction program; Kabat-Zinn, 1990) in alleviating distress and enhancing wellbeing (Grossman, Niemann, Schmidt, & Walach, 2004; Keng, Smoski, & Robins, 2011). On the other hand, research has recently begun to show that dispositional mindfulness, that is the individual tendency to think, feel, and act in a mindful way, is positively correlated with various indexes of psychological wellbeing (Brown & Ryan, 2003; Keng et al., 2011).

Alongside the analysis of the benefits of mindfulness, both as a dispositional characteristic and as a basic component of specific interventions, researchers began to develop different measures of this construct (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Bergomi, Tschacher, & Kupper, 2013). As a result, several self-report questionnaires assessing mindfulness have been developed. In particular, the Cognitive and Affective Mindfulness Scale (CAMS; Kumar, 2005; Kumar, Feldman, & Hayes, 2008), consisting of 18 items, was proposed with the precise aim to capture the breadth of the mindfulness construct. Although the initial version of the scale showed concurrent validity, its internal consistency was rather low and not all of the proposed items seemed able to assess the main aspects of the construct. Addressing these limitations, a revised version of the scale was proposed: the Cognitive and Affective Mindfulness Scale-Revised (Feldman et al., 2007). This scale is a brief instrument, consisting of 12 items aimed to detect a broad conceptualization of mindfulness. All the items were designed to capture “attitudes and approaches toward internal experiences of emotions and thoughts” (Feldman et al., 2007, p. 179), without any reference to mindfulness or meditation practices, in order to be administrable to general populations.

When compiling the scale, respondents are presented with items such as “I can accept things I cannot change” and “I am able to accept the thoughts and feelings I have.” Concerning the factorial structure, the items were written following the hypothesis of a single second-order factor of mindfulness and four first-order factors, matching the four components of mindfulness previously mentioned: Attention, Present focus, Awareness, and Acceptance (Kabat-Zinn, 1990, 2003; Kang, Gruber, & Gray, 2013). The results of confirmatory factor analyses were consistent with this structure, showing the presence of one second-order factor and four first-order latent factors, each measured by three items (Feldman et al., 2007).

As highlighted by Feldman and coworkers (2007), however, there was no intention to create four subscales of sufficient length to use separate scores. Furthermore, the internal consistency of the total score showed to be acceptable or good in independent research groups (Baer et al., 2006), while the alpha coefficient of most of the subscales was not acceptable. This result is not surprising, since internal consistency is influenced also by the number of items (John & Benet-Martinez, 2000). For these reasons, the authors suggested to use a single total score of mindfulness.

Concerning aspects of validity, the CAMS-R showed to be correlated with other concurrent questionnaires of mindfulness: the Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003), and the Freiburg Mindfulness Inventory (FMI; Buchheld, Grossman, & Walach, 2002). Furthermore, the scale showed to be positively related to wellbeing, emotion regulation, and problem-solving approaches, and to be negatively associated with indicators of distress, such as depression and anxiety symptoms, rumination and distraction, thought suppression and worry (Feldman et al., 2007). Finally, although the CAMS-R was designed to assess dispositional mind-

fulness, it seems able to detect also the effectiveness of mindfulness-based interventions or training in mindfulness meditation (Greeson et al., 2011; Kumar et al., 2008).

The CAMS-R presents some advantages compared to other scales assessing dispositional mindfulness (Bergomi et al., 2013). First, although it converges in a single total score of mindfulness, it covers all the aspects of this construct: Attention, Present focus, Awareness, and Acceptance. Indeed, other questionnaires assessing mindfulness with a holistic score did not tap all mindfulness aspects (e.g., the MAAS by Brown and Ryan detects only attention and awareness dimensions). Moreover, as highlighted by Bergomi and coworkers, the CAMS-R is the only mindfulness self-report scale which detects the ability and willingness to be mindful, rather than one's own recognition of mindfulness during daily experiences. Finally, the CAMS-R is the briefest self-report scale assessing mindfulness. Based on these unique and specific features of the CAMS-R, compared to the other mindfulness scales, it seems useful to validate an Italian version of this instrument.

AIMS AND HYPOTHESES

The aims of the present study were to create an Italian adaptation of the CAMS-R, to explore its factorial structure, and to investigate its psychometric characteristics and initial aspects of validity. First, we translated the items into the Italian language, with the support of a native English-speaker social psychologist, who competently speaks Italian, in order to preserve as much as possible the strict meaning of the original items. The translated items are reported in Table 1.

TABLE 1
Items of the Italian adaptation of CAMS-R

<i>N</i>	Factor	Item
1.	Attention	È facile per me concentrarmi su ciò che sto facendo [It is easy for me to concentrate on what I am doing]
2.	Present focus	Sono preoccupato/a riguardo al futuro [I am preoccupied by the future] (R)
3.	Acceptance	Posso tollerare le emozioni dolorose [I can tolerate emotional pain]
4.	Acceptance	So accettare le cose che non posso cambiare [I can accept things I cannot change]
5.	Awareness	Generalmente so descrivere quello che sento in un dato momento in modo dettagliato [I can usually describe how I feel at the moment in considerable detail]
6.	Attention	Mi distraigo facilmente [I am easily distracted] (R)
7.	Present focus	Mi preoccupo del passato [I am preoccupied by the past](R)
8.	Awareness	È facile per me conoscere momento per momento i miei pensieri e le mie emozioni [It's easy for me to keep track of my thoughts and feelings]
9.	Awareness	Cerco di indagare i miei pensieri senza giudicarli [I try to notice my thoughts without judging them]
10.	Acceptance	Sono in grado di accettare i miei pensieri e i miei sentimenti [I am able to accept the thoughts and feelings I have]
11.	Present focus	Sono in grado di focalizzarmi sul momento presente [I am able to focus on the present moment]
12.	Attention	Sono in grado di concentrarmi su una cosa per un lungo periodo di tempo [I am able to pay close attention to one thing for a long period of time]

Note. R indicates the items which have to be recoded.

Then, we explored the factorial structure and the psychometric characteristics of the translated scale. The original version (Feldman et al., 2007) presented a single second-order factor of mindfulness and four first-order factors (Attention, Present focus, Awareness, and Acceptance), and an acceptable level of internal consistency. The Italian version was expected to replicate these proprieties.

We also analyzed aspects of convergent validity, investigating the relationships between the Italian version of the CAMS-R and the MAAS (Brown & Ryan, 2003), as these two scales assessing mindfulness are usually positively correlated. We also explored issues of divergent validity, investigating the relations between CAMS-R and rumination, which is a maladaptive attention to the self, related to increased psychological distress (Trapnell & Campbell, 1999). Rumination involves absorption in the past and anxieties about the future, impeding the awareness of the present moment, and showed to be negatively associated with several indicators of psychological wellbeing (Brown & Ryan, 2003). Consistently with these features, rumination is generally used as a strong indicator of divergent validity in the developing of questionnaires assessing mindfulness. In particular, the original version of the CAMS-R showed a solid negative relationship with rumination and we hypothesized to find the same result.

Finally, the relationship between the CAMS-R and social desirability has yet to be investigated, while other questionnaires assessing mindfulness showed to be related to this responding bias, such as the MAAS (Brown & Ryan, 2003) or the Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith, & Allen, 2004). For this reason, in the present research we explored the relationship between the Italian version of the CAMS-R, impression management, and self-deceptive enhancement (Paulhus, 1998).

METHOD

Participants

After giving their informed consent, a total of 459 Italian adults (152 males and 304 females; three respondents did not indicate their gender) were recruited. All the respondents, engaged by four young researchers in Northern Italy, were part of a convenience sample and filled out the questionnaire in the presence of the recruiter in a quiet place. Mean age was 32.82 years ($SD = 12.81$; range from 18 to 74). Participants reported different professional qualifications: 3.3% were manual workers or office workers; 27.02% were traders, employees in a public or private company, educators in primary schools or nurses; 13.94% were independent professionals, teachers in secondary schools, academics or physicians; 41.6% were students, and 3.5% were retired, unemployed or homemakers (10.64% of participants did not indicate their occupation).

Procedure and Materials

Participants individually filled out a questionnaire containing the scales of interests, all translated into Italian.

CAMS-R Italian Version. The CAMS-R Italian version was preceded by a synthesis translated into Italian of the introductory statement used in the original version: "People relate in dif-

ferent way to their thoughts and feelings. Please, for each statement below, rate how much these ways apply to you.” Then, respondents rated the 12 items of the scale on the same 4-point response scale used in the original version: 1 = *Rarely/Non at all*, 2 = *Sometimes*, 3 = *Often*, 4 = *Almost always*. Where appropriate, items were recoded, so that higher scores indicated higher levels of mindfulness.

Mindful Attention Awareness Scale (MAAS). As an alternative measure of mindfulness, we employed the MAAS (Brown & Ryan, 2003) in its Italian version (Veneziani & Voci, 2014). The MAAS Italian Version consists of 15 items, with a 7-point response scale from 1 (*almost never*) to 7 (*almost always*). All the items were coded so that higher scores indicated a higher level of mindfulness. A sample item is “I do jobs or tasks automatically, without being aware of what I’m doing.” Reliability of the scale was high ($\alpha = .90$).

Rumination. We employed 11 out of the 24 items of the Rumination and Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999) with the aim to detect the tendency to ruminate. Participants rated the items on a 7-point response scale from 1 (*strongly disagree*) to 7 (*strongly agree*). After appropriate recoding, higher scores indicated a higher level of rumination. A sample item is “I always seem to be rehashing in my mind recent things I’ve said or done.” The scale was reliable ($\alpha = .91$).

Balanced Inventory of Desirable Responding (BIDR). We used a short version of the BIDR 6 (Paulhus, 1998), proposed in Italian by Bobbio and Manganeli (2011), with the aim to assess two different components of social desirability: self-deceptive enhancement, which consists in a presentation of the self as involuntarily better than reality, and impression management, which is the voluntary effort to ameliorate the image of the self. Participants had to indicate their level of agreement with the 16 items, on a 7-point response scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Reverse items were recoded, so that higher scores indicated higher socially desirable responding (for self-deceptive enhancement, $\alpha = .76$; for impression management, $\alpha = .73$). Samples items are: “My first impressions of people usually turn out to be right” (self-deceptive enhancement) and “I have said something bad about a friend behind his/her back” (impression management; reverse coded). The questionnaire ended with the collection of personal information, such as age and gender.

RESULTS

Confirmatory Factor Analysis and Psychometric Characteristics

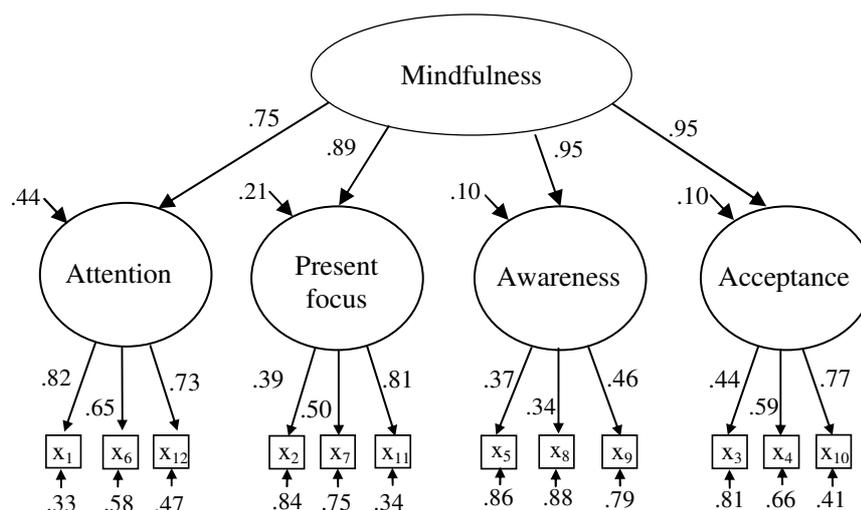
In order to test the factorial structure of the CAMS-R Italian Version, we performed a second-order confirmatory factor analysis using LISREL 8.8 (Jöreskog & Sörbom, 2001).

First, we tested basic statistical assumptions about normal distribution and multivariate normality of the 12 items. Absolute values of skewness ranged from 0.03 (item 4) to 1 (item 7), with a mean value of 0.69. For kurtosis, absolute values ranged from 0.07 (item 10) to 0.94 (item 7), with a mean value of 0.59. Furthermore, the Mardia’s test suggested a deviation from multivariate normality (multivariate skewness: $b_{1p} = 9.21$, $p < .001$; multivariate kurtosis: $b_{2p} = 185.91$, $p < .001$). The hypothesis of multivariate normality was therefore rejected. Although the multivariate normality is one of the basic assumptions for covariance structure analysis (Bollen, 1989),

relevant problems seem to arise when univariate skewness and kurtosis are respectively higher than 2.0 and 7.0 (Curran, West, & Finch, 1996). Notably, all of our values of skewness and kurtosis were below these threshold values. Furthermore, as suggested by Muthén and Kaplan (1985), normal theory estimators used in confirmatory factor analysis work in an acceptable way also with moderately skewed/kurtotic variables, and the maximum likelihood (ML) estimation procedure is robust even for non-normal data when sample size is equal to or higher than 200 (Boomsma & Hoogland, 2001).

Anyway, given the possible non-normality of our data, we adopted the robust maximum likelihood (RML) estimation procedure. Furthermore, we used several goodness-of-fit indexes (Bollen, 1989): the Satorra-Bentler scaled chi-square (Chou, Bentler, & Satorra, 1991; Satorra & Bentler, 1994), the root-mean-square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root mean residual (SRMR). Although it is usual to obtain significant values when the sample is large, a nonsignificant Satorra-Bentler scaled chi-square indicates a good fit; an acceptable fit is also suggested by a RMSEA between .05 and .08, a CFI higher than .90, and a SRMR lower than .08 (Browne & Cudeck, 1993; Hu & Bentler, 1999; Marsh & Hau, 1996).

As previously noted, the original version of the CAMS-R presents a second-order factor (mindfulness) and four first-order factors (Attention, Present focus, Awareness, and Acceptance). Consistently, we tested this model in our data. The chi-square was significant, SB $\chi^2(50) = 200.61$, $p \cong .00$, but the other indexes suggested an acceptable fit between the data and the model: RMSEA = .08; CFI = .94; SRMR = .076. All the items loaded significantly (at $p < .001$) on their respective factor, with λ_x coefficients ranging from .37 to .82 (Figure 1). As for the original version, the confirmatory factor analysis seems therefore to sustain a model with four first-order latent factors and one second-order latent factor. Concerning psychometric characteristics, as for the original version, also the CAMS-R Italian version showed an acceptable level of internal reliability, since Cronbach's alpha was .76.



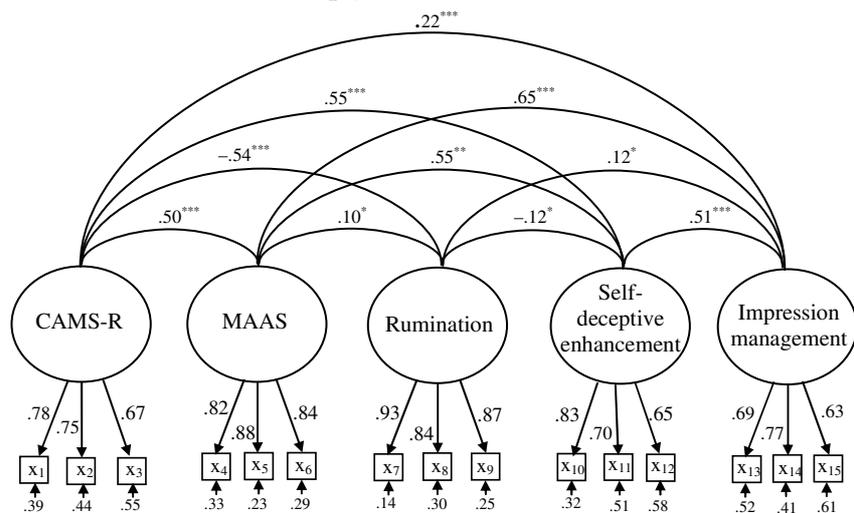
Note. All parameters are significant with $p < .001$.

FIGURE 1
 Standardized parameter estimates in a second-order confirmatory factor analysis of the CAMS-R Italian Version.

In order to investigate issues of divergent and convergent validity of the CAMS-R in its Italian version, we performed a further confirmatory factor analysis, which allowed us to detect associations between the five investigated variables: MAAS, CAMS-R, rumination, self-deceptive enhancement, and impression management. With the aim to smooth measurement error, maintaining an adequate ratio of cases to parameters, we applied the parceling technique, applying the “Item-to-Construct Balance” approach (Little, Cunningham, Shahar, & Widaman, 2002). Therefore, starting from the loadings computed through exploratory factor analyses, we created three parcels for each scale. In this confirmatory factor analysis, the sample was reduced to 407 participants, due to the unavailability of rumination data for 52 subjects.

The goodness-of-fit indexes sustained the model: $\chi^2(80) = 209.17$, $p \cong .00$; RMSEA = .06; CFI = .97; SRMR = .05. As reported in Figure 2, the CAMS-R was positively related to the MAAS ($\phi = .50$, $p < .001$) and negatively related to rumination ($\phi = -.54$, $p < .001$). Notably, these findings are comparable to those obtained by Feldman and colleagues (2007). Concerning the relationship between the CAMS-R and social desirability, the scale in its Italian version was positively related both to self-deceptive enhancement ($\phi = .55$, $p < .001$) and to impression management ($\phi = .22$, $p < .001$).

Based on the strong associations emerged between the CAMS-R and social desirability, we had to exclude the possibility that the relationship between the MAAS and the CAMS-R could be due to the fact that they share the same component of social desirability. We therefore performed a regression analysis with latent variables, using the same parcels adopted in the previous analysis. In this model, the predictors were the MAAS, self-deceptive enhancement, and impression management, while the CAMS-R was used as the criterion variable. This analysis allowed us to isolate the relationship between MAAS and CAMS-R, controlling for the effects of social desirability components. In this model, which presented an adequate fit, $\chi^2(48) = 121.79$, $p \cong .00$; RMSEA = .06; CFI = .98; SRMR = .04, the relationship between CAMS-R and MAAS emerged as significant, $\gamma = .44$, $p < .001$, also when controlling for self-deceptive enhancement, $\gamma = .47$, $p < .001$, and impression management, $\gamma = -.30$, $p = .001$. Therefore, the relationship between MAAS and CAMS-R was not simply due to their correlations with social desirability.



* $p < .05$. ** $p < .01$. *** $p < .001$.

FIGURE 2
Divergent and convergent validity: Confirmatory factor analysis. Standardized parameters.

DISCUSSION

This study aimed to explore the factorial structure and psychometric properties of the CAMS-R Italian version, to test preliminary aspects of convergent and divergent validity, and to examine its relations with social desirability. The results of a second-order confirmatory factor analysis suggest that the Italian version of the scale retained the same factorial structure as the original version, with one second-order latent factor of mindfulness and four first-order factors: Attention, Present focus, Awareness, and Acceptance. We also observed that the CAMS-R Italian version exhibited an acceptable internal reliability. Regarding convergent validity, the CAMS-R Italian version was positively related to another self-report measure of mindfulness, the MAAS (Brown & Ryan, 2003), while concerning the preliminary investigation of divergent validity, the CAMS-R showed to be negatively related to rumination, which has opposite characteristics to mindfulness. These findings exactly replicated those reported by Feldman and colleagues (2007).

Finally, for the relationship between the CAMS-R Italian version and social desirability, this study demonstrates that the scale is vulnerable to impression management strategies and, more strongly, to self-deceptive enhancement. This latter finding suggests that respondents may overestimate their ability to think, feel, and act in a mindful way in their daily experience.

The study presents some limitations that should be acknowledged. First, the sample was not representative of the Italian population and was not balanced for age and gender, as 57.3% of participants were younger than 30 years and 66.2% were women. Thus, as in the second-order confirmatory factor analysis the indexes suggested an acceptable fit between the data and the model, it would be recommended to perform this analysis in another sample, in order to check that these findings are not due to sample specificities.

Concerning convergent and divergent validity issues, a finding that could seem potentially problematic is that the negative relation between CAMS-R and rumination is similar in size to the positive association between CAMS-R and MAAS, despite the fact that only these two latter instruments should assess the same construct. However, the relationship between the Italian versions of CAMS-R and MAAS in our data is similar to the association detected with the original versions by Feldman and coworkers (2007). Furthermore, it has to be remembered that the MAAS was designed to assess mindfulness as a particular quality of attention to and awareness (Brown & Ryan, 2003), while the CAMS-R was developed to address also aspects of acceptance. These dissimilarities between the MAAS and the CAMS-R may explain why these two scales showed a moderate positive association. Finally, rumination is one of the most remarkable obstacles to attention, awareness, and present focus, and this could clear up the solid negative relationship between rumination and CAMS-R.

Future research should explore issues of convergent validity more deeply, by analyzing the relationship between the CAMS-R Italian version and other measures of mindfulness. Additionally, convergent validity may be confirmed also by testing the association between the CAMS-R Italian version and concurrent constructs, such as emotional intelligence and emotion regulation. Additional investigations are also needed concerning the relationship between the CAMS-R Italian version and divergent constructs other than rumination, such as distraction, thought suppression, and worries. Finally, it would be important to consider also criterion validity, testing whether the scale allows researchers to detect differences in mindfulness scores between participants with or without specific experiences in mindfulness-based programs, and predictive valid-

ity, analyzing, for instance, the relations between the CAMS-R Italian version and wellbeing indicators. In spite of these limitations, our preliminary findings are encouraging and suggest that the CAMS-R Italian version may be efficiently used to assess mindfulness among Italian speaking people.

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