



# Comprehensive Inventory of Mindfulness Experiences (CHIME)

Zeno Kupper, Wolfgang Tschacher, and Claudia Risha Bergomi

## Contents

Introduction .....	3
Theoretical Foundations .....	3
Scale Development and Initial Validation .....	4
Item Generation .....	4
Exploratory and Confirmatory Factor Analyses .....	8
Item Analysis and Factor Structure .....	9
Reliability and Validity Analyses .....	11
Subsequent Evidence of Psychometric Properties .....	13
CHIME Versions in Other Languages .....	14
Assessing Mindfulness by Experience Sampling (CHIME-ESM) .....	15
Strengths and Limitations of CHIME .....	17
Conclusion .....	19
Appendix 1 Comprehensive Inventory of Mindfulness Experiences (CHIME) German Version .....	20
Auswertung .....	21
Appendix 2 Comprehensive Inventory of Mindfulness Experiences (CHIME) English Version .....	22
Scoring Instructions .....	23
Appendix 3 The Comprehensive Inventory of Mindfulness Experiences: Short Version (CHIME-S and CHIME-XS) .....	24
Scoring Instructions .....	25
References .....	25

---

Z. Kupper (✉) · W. Tschacher  
University Hospital of Psychiatry and Psychotherapy, University of Bern, Bern, Switzerland  
e-mail: [zeno.kupper@upd.unibe.ch](mailto:zeno.kupper@upd.unibe.ch); [wolfgang.tschacher@upd.unibe.ch](mailto:wolfgang.tschacher@upd.unibe.ch)

C. R. Bergomi  
Lugano, Switzerland  
e-mail: [claudiab@protonmail.ch](mailto:claudiab@protonmail.ch)

---

**Abstract**

The Comprehensive Inventory of Mindfulness Experiences (CHIME) is a 37-item self-report questionnaire covering eight aspects of trait mindfulness identified in prior research: (1) awareness of internal experiences, (2) awareness of external experiences, (3) acting with awareness, (4) accepting, nonjudgmental attitude, (5) nonreactive decentering, (6) openness to experience, (7) awareness of thoughts' relativity, and (8) insightful understanding. The CHIME was developed with the goal of assessing these aspects of mindfulness in a single questionnaire. Furthermore, criteria for the formulation of items based on problems with earlier instruments for assessing mindfulness were introduced, with the aim of improving the reliability and validity of the questionnaire. Compared to items from previously developed questionnaires, the wording of items was modified; to make it more concrete and specific, related to everyday experiences, and reducing ambiguity. All eight subscales included positively worded statements. Furthermore, items' formulations avoided specific terms and word usage typical for mindfulness-based interventions or meditation traditions to allow their use in the general population. The CHIME was originally developed in German and recently validated in English. The factor structure, reliability, and validity of the CHIME were established in a community sample ( $n = 298$ ) and a sample of MBSR group participants ( $n = 161$ ). Factor-analytical procedures supported an eight-factor structure. The structure was tested in a further confirmatory sample ( $n = 202$ ). The questionnaire and its subscales exhibited good internal consistency and retest-reliability. Analysis of measurement invariance of the single items over groups differing in age, gender, meditation experience, and symptom load pointed to the absence of systematic differences in the items' semantic understanding. Parameters reflecting construct validity, criterion validity, and incremental validity as well as change sensitivity were all at least satisfactory. This work, as well as subsequent studies have demonstrated adequate psychometric properties for CHIME's original German-language version as well as for its various translated versions. This work, as well as subsequent studies have demonstrated adequate psychometric properties in its original German as well as in Dutch, English, and other language versions. Further developments have included improving the original scales' measurement properties using Rasch analysis, the development of shortened versions, as well as a version for experience sampling. The CHIME is a self-report measure with favorable psychometric properties covering a variety of aspects of mindfulness relevant for mindfulness theory, research and interventions.

---

**Keywords**

Mindfulness · Trait mindfulness · Self-report · Questionnaire · CHIME

---

## Introduction

Mindfulness is a specific form of holding one's attention to the present moment. It is characterized by a consciously adopted attitude of being nonjudgmental, open, curious, nonattached, and nonidentified with one's own thoughts, emotions, or other inner experiences (Kabat-Zinn, 1994; Bishop et al., 2004; Lau et al., 2006). In recent decades, numerous mindfulness-based intervention methods such as Mindfulness Based Stress Reduction (MBSR; Kabat-Zinn, 1990) and Mindfulness Based Cognitive Therapy (MBCT; Segal et al., 2002) have been developed. Evidence for the effectiveness of these and many other mindfulness-based interventions has been reported for various clinical and non-clinical applications in multiple fields (Zhang et al., 2024). Increasingly, mindfulness research has considered the mechanisms by which mindfulness positively affects well-being and mental health. For this purpose, comprehensive, reliable and valid assessment instruments for mindfulness are needed. This chapter describes the development and validation of the Comprehensive Inventory of Mindfulness Experiences (CHIME) as well as further developments. The CHIME is a 37-item self-report questionnaire (see Appendix 1, Appendix 2) covering eight aspects of trait mindfulness identified in prior research.

---

## Theoretical Foundations

The term "trait mindfulness" refers to a trait-like (though not unchangeable) disposition to be mindful, which should be distinguished from mindfulness as a current state, or mindfulness as a practice. At the time of the initial construction of the CHIME, at least eight questionnaires had been developed and validated to assess trait mindfulness in adults. These were the Freiburg Mindfulness Inventory (FMI; Walach et al., 2004), the Kentucky Inventory of Mindfulness Skills (KIMS; Baer et al., 2004), Five Facet Mindfulness Questionnaire (FFMQ, Baer et al., 2006), the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R, Feldman et al., 2007), the Philadelphia Mindfulness Scale (PHLMS, Cardaciotto et al., 2008), the Mindful Awareness Attention Scale (MAAS, Brown & Ryan, 2003), the Southampton Mindfulness Questionnaire (SMQ, Chadwick et al., 2008), and the Toronto Mindfulness Scale (TMS, Lau et al., 2006). The conceptualizations underlying mindfulness instruments differ sometimes considerably (Bergomi et al., 2013a; Christopher et al., 2009). One striking difference concerned which aspects or components of mindfulness are considered, thus concerning the content validity of an instrument: does it fully capture the content of the mindfulness construct in its core aspects. In previous work, nine semantically distinguishable aspects of mindfulness were identified: (1) attention to present-moment experiences, (2) nonjudgmental acceptance, (3) nonreactivity to experience, (4) decentering/nonidentification with experiences, (5) openness to experiences, (6) relativity of thoughts and beliefs, (7) insightful understanding, (8) labeling/describing of experiences, and (9) acting with awareness. These aspects were addressed by the eight mentioned validated questionnaires for trait mindfulness (Bergomi et al., 2013a). The subscales included

in the eight questionnaires, as well as the theoretical constructs underlying scale construction (if mentioned in the respective validation articles), were considered and semantically summarized. None of the eight questionnaires covered all nine aspects (Bergomi et al., 2013b).

Numerous studies pointed to a potential underlying problem for the validity of mindfulness questionnaires originating from divergent interpretations of items by groups with different meditation practices (Belzer et al., 2013; Van Dam et al., 2009), different ages (Baer et al., 2007), different cultural backgrounds (Christopher et al., 2009), or different expressions of psychopathological traits (Leigh et al., 2005). Such findings were mainly attributed to differences in interpretation of items rather than to actual differences in mindfulness among these groups (Christopher et al., 2009; Grossman, 2008). Indeed, in a qualitative study, Belzer and colleagues (2013) found that individuals without meditation experience systematically misunderstood 5 items of the short version (14 items) of the FFA. In particular, the word “experience” was interpreted differently. The term “experience” in this context refers to accumulated life history (such as past events and memories), rather than immediate phenomenological experiences (such as current sensations, thoughts, or emotions).

The development of the CHIME was based on these theoretical considerations and implications of previous empirical results. From this research two major goals for the scale development were derived. First, to develop a questionnaire for the self-assessment of trait mindfulness, which would allow measuring, with one instrument, all aspects of mindfulness featured in the previous operationalizations. And second, aiming at improving the reliability and validity of the questionnaire, criteria for the formulation of items were introduced to consider the problems of earlier instruments. Moreover, the questionnaire should be suitable for the assessment of mindfulness in the general population. As the new questionnaire aimed at a comprehensive assessment of mindfulness the name “Comprehensive Inventory of Mindfulness Experiences” (CHIME) was chosen. The following paragraphs provide a description of development and validation of the CHIME. Further details can be found in the original reports by Bergomi et al. (2013a, b, 2014).

---

## Scale Development and Initial Validation

### Item Generation

Nine aspects of mindfulness were identified from eight validated questionnaires (Bergomi et al., 2013a, b, 2014). The aspect “describing” (the ability to put experiences into words), found in two closely related questionnaires (KIMS and FFMQ), was excluded for both theoretical and empirical reasons: theoretically, the ability to verbalize experiences is not considered essential to mindfulness in its traditional Buddhist understanding, and empirically, studies have shown weak correlations between the describing facet and other mindfulness components, suggesting it may be a distinct construct rather than a core element of mindfulness (Bergomi et al., 2013a, b). For the remaining eight aspects, items were formulated based on different

sources: existing scales, research on mindfulness and its assessment, as well as the associated problems discussed in these sources. Specific criteria were established to guide the item development process (Bergomi et al., 2013a, b, 2014): items were included, modified, or newly created based on (1) their theoretical alignment with Buddhist and contemporary mindfulness conceptualizations, (2) their comprehensibility for individuals without meditation experience, (3) their applicability to daily life situations rather than formal meditation practice, and (4) their ability to capture trait rather than state mindfulness. Existing items were modified if they partially met these criteria but needed adjustment, while new items were created to address aspects insufficiently covered by existing measures.

Due to the findings of heterogeneous item interpretation by different groups, attention was paid to unambiguous wording of the items throughout the construction of the CHIME. Items were formulated specifically in relation to everyday situations, and expressions that would be misleading without meditation experience or a background in Buddhist psychology and practice were avoided. Items that already met the set criteria were adopted unchanged or translated from the instruments. Both positively and negatively worded items were included, even for aspects of mindfulness that were captured exclusively by negatively worded items in previous questionnaires (e.g., *acting with awareness* in MAAS, KIMS, and FFMQ). This balanced approach was implemented because using only negatively worded items (e.g., “I do tasks automatically without being aware of what I’m doing”) can introduce method bias and may not fully capture the positive manifestation of mindfulness aspects. Including both positive formulations (e.g., “I am fully aware of what I am doing as I do it”) and negative ones provides a more comprehensive assessment and helps reduce potential response biases that can occur when items are worded in only one direction. Several authors have questioned whether mindfulness could be satisfactorily captured by reversing items, which then express the lack of awareness (Chiesa, 2012; Grossman, 2011).

For items assessing the *awareness* of experiences, formulations that emphasize effort were avoided because mindful awareness is characterized as a natural, effortless noticing rather than a deliberate, straining attempt to maintain attention. This approach aligns with traditional Buddhist understanding of mindfulness as a state of receptive awareness that arises spontaneously rather than through forceful concentration, and helps distinguish mindful awareness from other forms of directed attention that require conscious effort. The awareness subscales from the two questionnaires KIMS and FFMQ (e.g., KIMS 13: “When I take a shower or a bath, I *stay alert* to the sensations of water on my body.”) yielded unexpected results in several studies, in particular positive associations with symptom distress, thought suppression, and dissociation (Bergomi et al., 2013b). In Table 1, items from the CHIME are semantically contrasted with similar items from other mindfulness questionnaires. In the third column, we indicated which goals were to be achieved by modifying the item. These goals apply to the original language versions (English or German) of the instruments. They may seem less obvious when translated versions of the items are considered as in the present table. This applies to the

**Table 1** CHIME items and semantically similar items from other mindfulness scales

CHIME item	Similar items from previously developed scales	Modification
1. When my mood changes, I notice it right away	KIMS 30: I intentionally stay aware of my feelings PHLMS 17: Whenever my emotions change, I am conscious of them immediately	CON KIMS 30: NOE
2. During both ups and downs of life, I am kind to myself	FMI 5: I am able to appreciate myself KIMS 24: I tend to make judgments about how worthwhile or worthless my experiences are	FMI 5: EDE, CON KIMS (allg.): POS
4. It is clear to me that my evaluation of situations and people can easily change	FMI 14. I am aware how brief and fleeting my experience is	MIS, CON
5. When I am sitting or lying down, I notice the sensations in my body	KIMS 9/FFMQ 1: When I'm walking, I deliberately notice the sensations of my body moving	NOE
6. I am able to smile when I notice myself seeing things as more complicated than they actually are	FMI 30. I am able to smile when I notice how I sometimes make life difficult	CON
8. When I have distressing thoughts or images, I am able to feel calm soon afterward	FMI 28. I experience moments of inner peace and ease, even when things get hectic and stressful SMQ 4/FFMQ 24: (Usually) when I have distressing thoughts or images, I feel calm soon after	FMI 28: CON, MIS SMQ 4: ID
10. I break or spill things because I am not paying attention or I am thinking of something else	MAAS 2: I break or spill things because of carelessness, not paying attention, or thinking of something else	ID
11. I see my mistakes and difficulties without judging myself	FMI 17. I see my mistakes and difficulties without judging them	ID
12. It is easy for me to stay focused on what I am doing	FMI 21. I feel connected to my experience in the here-and-now MAAS3/FFMQ 18: I find it difficult to stay focused on what's happening in the PRESENT	FMI 21: MIS, CON MAAS/ FFMQ (all): POS
14. When I talk to other people, I notice what feelings I am experiencing	KIMS 30: I intentionally stay aware of my feelings	NOE, CON, EDE
17. In everyday life, I get distracted by many memories, images, or daydreams	FMI 13. I let my thoughts run away with me	MIS, EDE, CON
19. I try to stay busy to avoid specific thoughts or feelings from coming to mind	PHLMS 6: I try to stay busy to keep thoughts or feelings from coming to mind	ID

(continued)

**Table 1** (continued)

CHIME item	Similar items from previously developed scales	Modification
21. I pay attention to sensations, such as the wind in my hair or sunshine on my face	KIMS 21/FFMQ 15: I pay attention to sensations, such as the wind in my hair or sun on my face	ID
23. In everyday life, I realize my thoughts are not always facts	FMI 2. I know that I am not identical to my thoughts	MIS, EDE, CON
31. In everyday life, I am aware that my view on things is not always based on facts	FMI 14. I am aware how brief and fleeting my experience is	MIS, EDE, CON
33. When I am in pain, I try to avoid the sensations as much as possible	FMI 27. I avoid unpleasant feelings	CON
34. I am aware of how I am feeling at any given time	FMI 1. I am open to the experience of the present moment KIMS 30: I intentionally stay aware of my feelings	FMI 1: MIS, EDE, CON KIMS 30: NOE
35. I am aware that even my strongly held opinions may change over time	FMI 14. I am aware how brief and fleeting my experience is	MIS, EDE, CON
37. I am aware that even my strongly held opinions may change over time	FMI 16. I see how I create my own suffering	MIS, CON

Notes: Goals of modifications: *CON* concretization (e.g., examples added), *EDE* reference to everyday experience added, *POS* positive formulation, *NOE* elimination of the effort component, *MIS* elimination of terms potentially misleading to non-meditators, *ID* (largely) identical

CHIME and the FMI, which were both developed originally in German. Translated FMI-Items are given according to Buchheld et al. (2001) and Walach et al. (2006).

All items were rated on a 6-point Likert scale from 1 = *almost never* to 6 = *almost always* and relate to the past 2 weeks. This is consistent with the conceptualization of mindfulness as a (quasi-)disposition that can change over time (Walach et al., 2004). The comprehensibility of the formulated items was tested by repeated feedback from individuals without meditation experience. Based on their feedback, items were reformulated or excluded. This resulted in a preliminary version of the CHIME questionnaire with 85 items (Bergomi et al., 2014).

The validation study included three samples (Bergomi et al., 2014). The 85-item test version of the CHIME was distributed to two samples, a general population sample ( $n = 298$ ) and a sample of participants in MBSR courses ( $n = 161$ ). For the general population sample ( $n = 298$ ) the average age was 35.22 years ( $SD = 12.23$ ), 61% were female. The average age of the MBSR sample was 46.49 years ( $SD = 10.90$ ), and 73% of the participants were women. In both samples, data were collected at two time points, with the second survey taking place 7–9 weeks after the first. For the purpose of confirmatory factor analysis (CFA), the final version of the CHIME was tested in a third sample ( $n = 202$ ), including new participants from the general population and MBSR groups. The average age in this group was 42.21 years ( $SD = 14.51$ ), 58% were female.

In addition to the CHIME, the following questionnaires in German language were used for validation purposes: (1) the FFMQ (Michalak et al., 2016), (2) the Brief

Symptom Inventory (BSI; Franke, 2000), (3) Bern Wellness Questionnaire (“Berner Fragebogen zur Erfassung des Wohlbefindens,” BFW; Grob et al., 1991) and (4) the Alcohol Use Disorder Identification Test of the WHO (AUDIT; Babor et al., 2001). The quantity and frequency of cigarette and cannabis use in the past 30 days were also recorded.

## Exploratory and Confirmatory Factor Analyses

To ensure content fit of the items and to balance the number of items per aspect, items were excluded due to redundancy (e.g., strong item intercorrelations) or lack of homogeneity prior to the factor analytic procedure. Exploratory factor analysis was conducted using principal axis analyses (PAF) with oblique factor rotation (oblimin) in the general population sample. The number of scale factors was determined using Velicer’s Minimum Average Partial Test (MAP, O’Connor, 2000). Only items with a minimum factor loading of 0.40 (sample matrix) were retained. Items that loaded higher than 0.30 on another factor or for which the absolute values of the two highest loadings differed by less than 0.20 were excluded (Bergomi et al., 2014).

The obtained factor structure was tested using CFA. Models were assessed using the following cutoffs for fit indices as indicators of good fit: RMSEA  $\leq$  0.08, SRMR  $\leq$  0.10, and CFI  $\leq$  0.90 (Brown, 2006; Marsh et al., 2004; Schermelleh-Engel et al., 2003). Measurement invariance of items was tested by differential item functioning (DIF) analyses for age, gender, and meditation experience. The DIF analyses were performed using the Multiple Indicator Multiple Causes model following the procedure described by Muthén and Muthén (2008). In this procedure, direct effects of covariates on items are set to zero and stepwise direct paths to the items with the largest modification index (MI > 15) were added until the MI indicated no further substantial direct effects. This model was then tested by confirmatory factor analysis (CFA) in the MBSR-sample. Based on the CFA results, another PAF was applied and the model adjusted. Scale sizes were harmonized by item exclusion and the final model was tested in both samples (Bergomi et al., 2014).

Further, the assumed hierarchical factor structure of the CHIME was checked by confirmatory model testing. The focus of this analysis was no longer the assessment of the individual items. For this reason, the latent factors were calculated from two parcels each for the model comparisons. The assignment of items to parcels was randomized (Little et al., 2002). The models with parcels were assessed with more restrictive cutoffs for fit indices: RMSEA  $\leq$  0.05 and  $\leq$  0.08, respectively, SRMR  $\leq$  0.05 and  $\leq$  0.10, respectively, and CFI  $\geq$  0.97 and  $\geq$  0.95 for a good and acceptable fit, respectively (Schermelleh-Engel et al., 2003). A minimum sample size of three participants per CHIME item was aimed at. In assessing the adequacy of the sample size, however, the use of predefined rules of thumb was largely avoided. Such rules of thumb are considered inappropriate because the minimum  $n$  for a stable factor solution is not invariant across studies (Fabrigar et al., 1999; McCallum et al., 1999). In particular, the communalities of the items and the determination of the factors should be taken into account when assessing the adequacy of sample sizes

(Fabrigar et al., 1999; McCallum et al., 1999). In the analyses that followed, attention was always paid to sufficient communalities and factor determination. Mean communalities ranged from 0.44 to 0.51 ( $SD = 0.11-0.16$ ). Factor determination was good to sufficient: the ratio of the number of items to factors ranged from 5 to 11.3 and no factor contained less than 4 items. Accordingly, a stable factor structure could be expected with the sample sizes used in the CFA (McCallum et al., 1999).

## Item Analysis and Factor Structure

Seventeen items were excluded based on three key statistical criteria: (1) low item difficulty (meaning the items were too easy for most participants to endorse, resulting in responses clustered at one end of the scale), (2) high redundancy (meaning items were too similar to other questions and therefore provided little additional information), or (3) lack of homogeneity (meaning items didn't correlate well with other items measuring the same aspect of mindfulness, suggesting they might be measuring something different). These criteria help ensure that each question in the final questionnaire provides unique and meaningful information about mindfulness. The MAP test indicated a six-factor structure. A PAF was computed, and a six-factor structure was imposed. The extracted factors explained 48% of the total variance. Forty-five items met the set criteria in terms of factor loadings. The six factors were labeled *accepting*, *nonjudgmental*, *compassionate attitude* (*Accepting*, eigenvalue  $\lambda_1 = 18.2$ ); *awareness* ( $\lambda_2 = 5.1$ ); *acting with awareness*, *presence* (*Acting with awareness*,  $\lambda_3 = 3.2$ ); non-reactive, decentered orientation (*Decentering*,  $\lambda_4 = 2.6$ ); open, non-avoidant attitude (*Openness*,  $\lambda_5 = 2.1$ ); and Awareness of the relativity of thoughts and beliefs (*relativity*,  $\lambda_6 = 1.7$ ). The confirmatory testing of the six-factor structure yielded marginally inadequate fit indices ( $\chi^2(930) = 1824.68$ ,  $p < 0.001$ , CFI = 0.84, RMSEA = 0.06, SRMR = 0.06).

Considering the maintenance of a minimum number of four items per factor, and in accordance with the strength of the modification indices, 8 items were excluded step by step due to redundancy or cross loadings. At the end of this procedure 36 items remained and the fit indices were satisfactory ( $\chi^2(579) = 1000.10$ ,  $p < 0.001$ , CFI = 0.90, RMSEA = 0.05, SRMR = 0.06).

The examination of possible systematic biases for individual items, the response behavior of persons with different meditation experience, age, and gender was considered by means of DIF analyses. Only 1 item showed a lack of measurement invariance with respect to gender ("I also notice minor changes in the clothing or expression of other people.") and was therefore excluded. The modification indices showed no further significant direct effects of the predictors gender, age, and meditation experience. The six-factor model with 35 items was tested by CFA in the MBSR sample. The model fit was marginally inadequate ( $\chi^2(545) = 939.77$ ,  $p < 0.001$ , CFI = 0.85, RMSEA = 0.07, SRMR = 0.07). The lack of fit was mainly characterized by strong correlations between items loading on the aspect awareness.

The results were based on the results of the oblique PAF with the 11 awareness items in the MBSR sample. An oblique PAF was conducted with the 11 awareness items in the MBSR sample. The MAP test indicated a two-factorial structure. A two-factorial PAF yielded the factors *Awareness toward external experiences (Outer awareness)* and *Awareness toward internal experiences (Inner awareness)*. All items met the criteria regarding factor loadings. To harmonize the scale sizes, 3 items were excluded. In the general population sample, the resulting seven-factor structure with 32 items showed good fit indices in the correlation model ( $\chi^2(443) = 694.39$ ,  $p < 0.001$ , CFI = 0.93, RMSEA = 0.04, SRMR = 0.05), and likewise in the MBSR sample ( $\chi^2(443) = 634.39$ ,  $p < 0.001$ , CFI = 0.92, RMSEA = 0.05, SRMR = 0.06).

The item analysis revealed good psychometric properties across the 37 CHIME items. Item means ranged from 3.20 to 4.77 (on a 6-point scale), with standard deviations between 0.91 and 1.33, indicating appropriate item difficulties and variability. Item-total correlations (discriminatory power) were satisfactory, ranging from 0.31 to 0.62. Factor loadings were robust, with items loading strongly ( $>0.40$ ) on their respective factors: Accepting (items loading 0.54–0.77), Awareness (0.48–0.73), Acting with Awareness (0.43–0.58), Decentering (0.46–0.64), Openness (0.44–0.57), Relativity (0.51–0.80), Inner Awareness (0.51–0.83), and Outer Awareness (0.56–0.96). The pattern of loadings supported the eight-factor structure with minimal cross-loadings.

The exploratory factor analysis (EFA) of 68 items revealed a factor structure that encompassed almost all proposed aspects of mindfulness, with one notable exception: items measuring insightful understanding did not initially form a distinct factor. However, because insightful understanding is considered crucial for mindful attitude (Walach et al., 2004), excluding it would compromise the questionnaire's content validity. Given that these items showed strong interconnections with other mindfulness factors, we retained five items related to insight as an additional factor. This resulted in a final eight-factor structure comprising 37 items (Appendix 1).

Confirmatory factor analysis (CFA) validated this eight-factor structure in both the general population sample ( $\chi^2(601) = 978.14$ ,  $p < 0.001$ , CFI = 0.91, RMSEA = 0.05, SRMR = 0.06) and the MBSR sample ( $\chi^2(601) = 903.54$ ,  $p < 0.001$ , CFI = 0.89, RMSEA = 0.06, SRMR = 0.07), with satisfactory fit indices in both cases. Additionally, differential item functioning (DIF) analyses of the 37 items in the general population sample showed no evidence of measurement invariance.

The CHIME demonstrated strong psychometric properties across both the community ( $n = 298$ ) and confirmatory ( $n = 202$ ) samples. In the community sample, subscale means ranged from 3.80 to 4.61, with standard deviations between 0.70 and 1.00. Internal consistency was robust with Cronbach's alpha values ranging from 0.70 to 0.90, and test-retest reliability coefficients were strong (0.70 to 0.89) across all subscales. The scales showed good discriminant validity, with each subscale maintaining substantial unique variance ( $\alpha$  minus  $\text{corr}R^2$  ranging from 0.30 to 0.63) despite moderate intercorrelations. In the confirmatory sample, similar patterns emerged with means ranging from 3.53 to 4.61, and Cronbach's alpha values from

0.65 to 0.93, supporting the stability of the scale structure. The regression coefficients ( $r_A$ ) on the overall mindfulness factor were significant for all subscales (0.54 to 0.95), indicating a coherent hierarchical structure.

The relations between the eight CHIME scales were moderate to strong, with coefficients ranging from 0.18 to 0.72. Inner Awareness showed strongest correlations with Awareness (0.72) and Decentering (0.52), while Outer Awareness demonstrated moderate correlations with most other subscales (0.18 to 0.42). The confirmatory factor analyses tested different model structures across three samples.

Model comparisons were computed between two hierarchical models. In one model, the two factors *Awareness* and *Outer awareness* loaded on the superordinate factor *Awareness*, which in turn loaded with the remaining six factors on the superordinate factor Mindfulness (7 + 2 factor model). In the second model, all eight factors loaded on a superordinate factor (8-factor model). In both the normal and MBSR samples, the 7 + 2 factor model showed satisfactory fit indices and was significantly superior to the 8-factor model, with better fit indices in both community (CFI = 0.98, RMSEA = 0.02–0.05, SRMR = 0.04) and MBSR samples (CFI = 0.96, RMSEA = 0.05–0.08, SRMR = 0.06).

The same pattern emerged when the models were computed with the individual items as indicators. The models were examined in the confirmatory sample ( $n = 202$ ), while both hierarchical models showed suboptimal fit initially (RMSEA = 0.07–0.11), the 7 + 2 correlation model demonstrated satisfactory fit (CFI = 0.97, RMSEA = 0.04–0.08, SRMR = 0.04), supporting the final structure of the instrument. The modification indices indicated significant correlations between the scales, and the modification indices significant correlations between the subscales. Accordingly, a 7 + 2 correlation model was calculated, in which the seven main subscales correlate with each other. This showed a satisfactory fit. Despite the superiority of the correlation model, all subscales in the hierarchical model showed a good fit and a significant regression path on the superordinate mindfulness factor. Scale scores in this sample were satisfactory to good. Theoretical considerations (Bishop et al., 2004) and empirical findings with the FFA (Kohls et al., 2009) and the PHLMS (Cardaciotto et al., 2008) suggest a two-factor structure of mindfulness with the superordinate factors *Attention* and *Mindful attitude*. Accordingly, a two-factor model with the two superordinate factors attention (*Awareness* and *Acting with awareness*) and mindfulness was developed. However, the model proved not to fit in the present samples; the covariance matrix was not positive definite (Bergomi et al., 2014).

## Reliability and Validity Analyses

Scale consistency (Cronbach's  $\alpha$ ) and test-retest reliability (Pearson correlations) were determined (Bergomi et al., 2014). To test the semantic distinctiveness a regression analysis was calculated for each subscale using the remaining subscales as predictors. By subtracting the respective corrected  $R^2$  from Cronbach's alpha, the systematic variance of each subscale was determined, which is independent of the

other subscales (Baer et al., 2006). To test construct validity, the correlations between CHIME and the other survey instruments were examined. Pearson correlations and partial correlations were calculated for variables whose distribution allowed the use of parametric procedures. Correlations with AUDIT, cannabis use, and tobacco use were calculated excluding participants who reported no use ( $n = 278$ ,  $n = 76$ , and  $n = 101$ , respectively). Criterion validity was determined by comparing the three groups of the general population with different meditation experience. Comparisons were calculated using ANOVA and post-hoc pairwise comparisons with Scheffe's correction ( $p < 0.05$ ). For the determination of change sensitivity, paired-samples  $t$ -tests for pre-post comparisons were performed in the MBSR sample and effect sizes were calculated (Cohen's  $d$ ). The influence of item polarity was examined using comparisons of means (ANOVA and  $t$ -tests), Pearson correlations, and correlational comparisons in the subgroups with different meditation experience. The significance of the correlation differences was determined by Fisher's  $Z$  transformation.

The test-retest correlations for the total scale and the individual subscales were  $\geq 0.70$ , indicating acceptable reliability of the CHIME. Cronbach's  $\alpha$  was  $< 0.70$  only for the *Acting with awareness* subscale in the confirmatory sample, indicating greater heterogeneity of items from this scale. The own variance of the individual subscales ( $\alpha$  minus  $\text{corr}R^2$ ) ranged from 0.30 to 0.51. Thus, despite the high number of predictors (six to seven) and the considerable semantic overlap, each subscale showed a substantial amount of variance of its own.

Regarding construct validity, all correlations showed the predicted direction. The incremental validity of the CHIME was examined by means of partial correlations under control of the variable FFMQ total score. Numerous correlations were also found when controlling for the influence of the FFMQ scores, albeit reduced, significant correlations, especially for the subscale *Accepting*. Specifically, the CHIME demonstrated strong convergent validity with the FFMQ, showing substantial correlations between corresponding subscales (0.46 to 0.84) and total scores (0.85). Relationships with well-being measures were significant, with the BFW total score showing positive correlations (0.17 to 0.40) and symptom measures (BSI) showing expected negative correlations ( $-0.05$  to  $-0.50$ ). When controlling for FFMQ total score (partial correlations), the CHIME maintained significant unique relationships with well-being and symptom measures, particularly for the *Accepting* subscale. Notably, some subscales showed different patterns after controlling for FFMQ: *Inner and Outer awareness* demonstrated positive partial correlations with symptom measures (0.13 to 0.32), while *Acting with Awareness* and *Accepting* maintained negative correlations ( $-0.16$  to  $-0.26$ ), suggesting distinct contributions beyond general mindfulness. Substance use measures showed weak to moderate correlations, with alcohol use demonstrating small negative correlations ( $-0.08$  to  $-0.19$ ) across subscales.

As expected, analysis of meditation experience groups (no meditation practice,  $n = 177$ ; past practice,  $n = 39$ ; current practice,  $n = 82$ ) revealed significant differences across all CHIME subscales. Current meditators consistently scored higher than non-meditators, with the largest differences observed in *Openness*

( $F = 21.44, p < 0.001$ ), Decentering ( $F = 15.88, p < 0.001$ ), and Insight ( $F = 13.13, p < 0.001$ ). Mean scores for current meditators (ranging from 4.27 to 4.91) were significantly higher than non-meditators (ranging from 3.59 to 4.49) across all subscales. Notably, current meditators also scored significantly higher than past meditators on Decentering, Openness, and total mindfulness (all  $p < 0.05$ ), suggesting that ongoing practice, rather than past experience alone, is associated with higher mindfulness scores.

Nine of the 37 CHIME items were negatively worded. In the general population sample, the mean score of the positively worded items ( $M = 4.33, SD = 0.57$ ) was significantly higher compared to the negatively worded items ( $M = 3.86, SD = 0.74, t(297) = 12.63, p < 0.001$ ). This mean difference tended to differ only among subgroups with different meditation experience  $M_{\text{without}} = 0.54, SD_{\text{without}} = 0.71, M_{\text{past}} = 0.52, SD_{\text{past}} = 0.62, M_{\text{present}} = 0.33, SD_{\text{present}} = 0.48; F = 2.90, p = 0.06$ ). For individuals with current meditation experience, the correlation between positively and negatively worded items ( $r = 0.72, p < 0.001$ ) was significantly greater than for individuals without meditation experience ( $r = 0.34, p < 0.001, Z = 4.08, p < 0.01$ ). In terms of change sensitivity, as expected, all mindfulness scales showed significantly higher scores at the end of the intervention. Effect sizes were moderate to strong. The largest changes were seen in the overall scale and the *Accepting* and *Decentering* subscales.

---

## Subsequent Evidence of Psychometric Properties

The psychometric properties of the CHIME were further investigated using Rasch analysis in a study by Medvedev et al. (2019) with 443 German-speaking participants. This rigorous psychometric analysis provided strong support for the internal structural validity and reliability of the CHIME. Seven of the eight subscales demonstrated excellent fit to the unidimensional Rasch model without requiring modifications. For the full scale and the insightful understanding subscale, adequate model fit was achieved with minor modifications that involved combining locally dependent items into testlets. The analysis revealed no significant differential item functioning across gender, age, and meditation experience groups, suggesting the CHIME items function consistently across different populations.

A key contribution of this analysis was the development of ordinal-to-interval conversion algorithms for both the total scale and individual subscales of the German CHIME. These conversion tables allow researchers to transform the original ordinal scores into more precise interval-level measurements, making the instrument better suited for parametric statistical analyses and potentially more sensitive to measuring change in mindfulness interventions. The reliability of the transformed scores was good (PSI = 0.82 for total scale), though two subscales (acting with awareness and insightful understanding) showed somewhat lower reliability indices. While ceiling effects were noted for experienced meditators on the awareness of internal experiences subscale, the overall item coverage was excellent for both

meditating and non-meditating populations, supporting the CHIME's utility across different levels of meditation experience.

---

## CHIME Versions in Other Languages

The original CHIME was developed for the German language. The 37-item CHIME German version is included here ([Appendix 1](#)) and available online including administration and scoring instructions ([https://www.embodiment.ch/research/CHIME\\_Achtsamkeitsfragebogen.pdf](https://www.embodiment.ch/research/CHIME_Achtsamkeitsfragebogen.pdf)).

The English language CHIME version was constructed using Rasch methodology with the sample of 620 participants from the general population in the USA (Wilkinson et al., 2023). The initial Rasch analysis revealed good internal reliability but showed poor model fit, local dependency between items, and evidence against unidimensionality. To achieve an acceptable model fit while preserving the instrument's content, the researchers used a super-item approach rather than removing items. The CHIME items were combined into five super-items, resulting in excellent model fit ( $\chi^2(45) = 31.99, p = 0.93$ ), confirmed unidimensionality, and high reliability (PSI = 0.92). The scale demonstrated invariance across personal factors like meditation experience, gender and age, indicating it functions consistently across different populations. The study developed ordinal-to-interval conversion algorithms that allow transformation of raw CHIME scores into more precise interval-level measurements. The external validity of the English CHIME was established through expected correlations with other mindfulness measures and indicators of psychological functioning. While the English version required a different super-item structure (five super-items) compared to the German original (eight super-items), both versions demonstrated robust psychometric properties supporting the CHIME as a valid and reliable measure of mindfulness that can be used across languages (Medvedev et al., 2019; Wilkinson et al., 2023). Notably, the English CHIME maintained its excellent measurement properties without needing to remove any items, though the different super-item structure suggests potential linguistic or cultural differences in how mindfulness is conceptualized between German and English-speaking populations that warrant further investigation.

The 37-item English CHIME version is included here ([Appendix 2](#)) and available online including administration and scoring instructions (<https://embodiment.ch/research/CHIME-english.pdf>).

Most recently, Karl et al. (2024) developed two shortened versions of the English CHIME using an innovative ant colony optimization methodology—a 24-item version (CHIME-S) and a 16-item version (CHIME-XS), which are included in [Appendix 3](#) together with administration and scoring instructions. Using data from three samples (New Zealand  $n = 512$ , US sample 1  $n = 605$ , US sample 2  $n = 210$ ), the researchers employed ant colony optimization combined with confirmatory factor analysis to identify the most psychometrically robust items while maintaining the eight-factor structure. This methodology, inspired by ant foraging behavior, uses simulated agents to search for optimal model solutions, providing a more objective

and data-driven approach to item selection compared to traditional methods. Both shortened versions demonstrated good model fit, internal consistency, and expected correlations with other mindfulness measures and psychological functioning scales. The CHIME-S and CHIME-XS preserved the comprehensive theoretical nature of the original CHIME while reducing participant burden. The validation analyses showed that both versions maintained measurement invariance across personal factors like meditation experience, gender and age, indicating they function consistently across different populations. Through this novel optimization technique, the researchers successfully created reliable shortened versions that make the CHIME's comprehensive assessment of mindfulness more accessible for large-scale studies where participant burden is a concern.

The CHIME was also validated in other languages. The Dutch CHIME-NL and its short form are available online (Cladder-Micus et al., 2019; downloadable from <https://risha.ch/research/>). A French adaptation of the CHIME was validated (Shankland et al., 2013). A Turkish version for adolescents was developed and validated (Kırca & Ekşi, 2018). A Portuguese adaptation specifically for children has been validated (Magalhães & Limpo, 2022), and most recently, a Chinese version was validated in a college student population (Zhang et al., 2024). The availability of these validated translations enables cross-cultural research on mindfulness using the CHIME's comprehensive framework, though further psychometric evaluation and cultural adaptations may be needed in some cases.

## **Assessing Mindfulness by Experience Sampling (CHIME-ESM)**

The CHIME-37 addresses mindfulness as a trait-like or slowly-changing property. In recent decades, a line of research strategies has gained momentum, in which the faster dynamics are observed longitudinally and repeatedly within the same person and in daily life: the experience sampling method (ESM) or ambulatory assessment (Trull & Ebner-Priemer, 2014; Wenzel et al., 2020). Focusing on this different time-scale has some advantages especially in mindfulness research, as mindfulness is defined as a process of directing attention to the present moment and to the immediate experience (Bishop et al., 2004). This state-like operationalization suggests a methodology that can depict the time-scale of the “here-and-now” ranging from seconds to a few minutes. Points of measurement may then be placed frequently within each participant of a study, creating a hierarchical dataset. Within-participant variance, in other words individual time-series, can thus complement the between-participants variance that characterizes more conventional cross-sectional designs.

The ESM approach demands that measurement instruments and technology be adapted. CHIME items that address the frequency of certain experiences during 2 weeks previous to measurement must be rephrased to cover the momentary experience. Measurement instruments must also change: paper-and-pencil questionnaires that take many minutes to fill out are replaced by devices such as mobile phones or pads that can display a (much smaller) battery of items in everyday

environments. The potential of ESM is therefore an increase of ecological validity and an attenuation of retrospective bias because the items are reported not after the fact but very close to the situation where the experience occurred.

In a recent study (Tschacher & Lienhard, 2021), mindfulness was studied in everyday life of a sample of 56 meditators to explore the relationship of mindfulness with affect and with perceived stress. To measure mindfulness in the field, the 6-item CHIME-ESM was developed for this purpose. For six scales (or facets) of the trait CHIME, a single item was selected that possessed a high factor loading (Bergomi et al., 2014), was considered applicable to a range of different situations and environments, and met the requirement of a state item. The CHIME scales relativity (understanding the relativity of thoughts and emotions), and “Insight” (insightful understanding into the working of the mind) were excluded because of their trait character. Additionally, the Likert scale of the items was changed from the frequency formulation of the original CHIME (1, *almost never*, to 6, *almost always*) to an intensity formulation (1, *not at all*, to 6, *very strongly*). Participants were asked to perform ratings on their mobile phone six times per day (with random intervals of about 2 hr between prompts) for a period of 10 consecutive days. Items were to be rated considering the 10-min period just elapsed before participants received the prompt from the device. CHIME-ESM items and related CHIME-37 scales are given in Table 2.

In the study of Tschacher and Lienhard (2021), participants provided altogether 2033 assessments of the 6 items. A factor analysis with varimax rotation of this dataset suggested a two-factor structure with factors F1-Awareness (consisting of items (1), (2) and (3) of Table 2) and F2-Acceptance (reversed items (4) to (6)). Among the results of the ESM study was that these mindfulness ESM factors were linked with affect and stress, which had additionally been rated by participants together with the CHIME-ESM. Positive affect was positively associated with both F1-Awareness and F2-Acceptance, negative affect was linked negatively with F2-Acceptance, and stress was also linked negatively with both mindfulness factors.

**Table 2** Items of the CHIME-ESM with corresponding trait-CHIME scale

CHIME-ESM item	CHIME scale
I not at all I minimally I a little I clearly I strongly I very strongly I	
(1) I clearly noticed changes in my body, such as quicker or slower breathing	<i>Inner awareness</i>
(2) I noticed sounds in my environment, such as birds chirping or cars passing	<i>Outer awareness</i>
(3) I was able to observe my thoughts and feelings without getting tangled up in them	<i>Decentering</i>
(4) I tried to avoid unpleasant emotions and thoughts	<i>Openness</i>
(5) I judged myself as good or bad	<i>Accepting</i>
(6) I got distracted by memories, images, or reverie	<i>Acting with awareness</i>

Note: Original German items translated into English following Johnson et al. (2017). Items (4) to (6) have reversed scoring

Such findings were consistent with findings that mindfulness in therapists is related to their resilience and hardiness in the face of stressors (Pereira et al., 2017).

The study results are preliminary and restricted to the German language, and the CHIME-ESM awaits psychometric validation. This study suggested however that mindfulness instruments can and should be further developed to also fit the requirements of studying mindfulness “in the wild,” that is in everyday environments and at short time-scales. Extending mindfulness research by ambulatory assessment methodology will generate complex hierarchical datasets with within—and between—participants information, which may open up the field to time-series analyses with the potential to compute lagged associations as a proxy for causal relationships.

---

## Strengths and Limitations of CHIME

While developing the CHIME, Bergomi et al. (2014) considered all identifiable aspects of mindfulness included in eight previously validated mindfulness scales, the analyses yielded eight subscales: (1) *Awareness of internal experiences*, (2) *Awareness of outer experiences*, (3) *Acting with awareness*, (4) *Accepting nonjudgmental attitude*, (5) *Nonreactive decentering*, (6) *Openness to experience*, (7) *Relativity of thoughts*, and (8) *Insightful understanding*. It should be noted that the first two subscales can be combined into a superordinate factor *Awareness*. With a total of 37 items, the CHIME allows researchers and practitioners for an economical assessment of these aspects, which previously could only be achieved by using multiple, and partially redundant, mindfulness questionnaires. The subscales of the CHIME have demonstrated satisfactory internal consistency despite their brevity. In addition, they showed good retest reliability over a period of 7–9 weeks. The independence of each subscale was supported by the results: Each subscale showed a substantial amount of variance that was not explained by the other subscales.

The results on the measurement invariance of the individual items indicated that CHIME items were perceived relatively uniformly by persons from different socio-demographic groups and with and without meditation experience (Krägeloh et al., 2018). This supported the assumption that a valid assessment of mindfulness is possible based on carefully formulated items. The construct validity of the CHIME was supported by the substantial correlations with the FFMQ (Bergomi et al., 2014). The strongest correlations were found between semantically related subscales. Three CHIME subscales, *Openness*, *Relativity*, and *Insight*, are not included in the FFMQ (Baer et al., 2006; Bergomi et al., 2014). The former correlated most strongly with the FFMQ subscale *Nonjudgmental attitude*, the other two with *Nonreactivity*. All correlations with measures of mental health showed the expected direction. Of the CHIME subscales, acceptance showed the strongest correlations with increased well-being and decreased symptom distress. The differences in the correlation patterns of the *Inner awareness* and *Outer awareness* subscales indicate that the distinction in the orientation of attention made here for the first time in a mindfulness questionnaire is quite useful and allows for a more nuanced exploration of the construct. Associations were mostly weak to moderate, supporting the conceptual

distinction of the CHIME from measures of mental health. Previous findings indicated a positive association between the FFA and alcohol and tobacco use (Leigh et al., 2005) and between the FFMQ and KIMS awareness subscales and measures of psychological distress (Baer et al., 2006; Thompson & Waltz, 2010). In contrast, no CHIME subscales were found to have such unexpected associations. Overall, the results on measurement invariance and construct validity support the semantic clarity of CHIME items in the general population.

The correlations between the CHIME subscales were positive and moderate for the most part. The incremental validity results support the assumption that the CHIME has incremental value over and above the FFMQ. Interestingly, holding the influence of the FFMQ constant, there were some sign changes in the correlations between *Awareness* and *Outer awareness* with well-being and symptom burden. These results suggest a potentially dysfunctional role of attention when unaccompanied by the skills of nonjudgment and nonreactivity, thus underscoring the importance of comprehensively capturing mindfulness.

Regarding criterion validity, as expected, higher scores were shown on each subscale as well as on the total scale for individuals with current meditation practice. All subscales showed good sensitivity to change in the pre-post comparison in the MBSR sample. These results indicate that the subscales capture aspects closely related to the practice of meditation and thus to mindfulness. Similar to the studies by Van Dam et al. (2009) and Höfling et al. (2011), significant effects of item polarity (negative and positive wording of items) were found. Moreover, the findings indicate that such polarity effects may be especially prominent in individuals without meditation experience. The use of both item polarities may be essential for capturing mindfulness can therefore represent an advantage of the CHIME.

The results supported the stability of the determined factor solution. Although the hierarchical model was found to be inferior to the correlational model in the confirmatory sample, the individual CHIME subscales were confirmed (Bergomi et al., 2014). Moreover, each subscale was significantly and strongly associated with the parent mindfulness factor. A two-factor model with the superordinate factors *Attention* and *Mindful attitude* did not find a fit in the present data. Indeed, mapping the two factors of awareness and mindfulness into a superordinate factor of attention seems inappropriate in the initial validation sample because of the weak correlations between these factors.

The most comprehensive mindfulness questionnaire to date that includes five subscales is the FFMQ (Baer et al., 2006). However, the FFMQ lacks key aspects of mindfulness such as the ability to decenter (TMS; Lau et al., 2006), insightful understanding (FFA; Walach et al., 2004), and a non-avoidant attitude (PHLMS; Cardaciotto et al., 2008; Hayes & Feldman, 2004). Decentering is used to characterize the ability to view one's own thoughts and feelings with a certain distance and non-identification (Lau et al., 2006; Sauer & Baer, 2010). These aspects had emerged as parts of a higher-level mindfulness construct by Bergomi et al. (2014). Accordingly, Sauer and Baer (2010) point out that the definitions of mindfulness and decentering are very similar. Carmody et al. (2009) found very high correlations between mindfulness and decentering ( $r = 0.74\text{--}0.81$ ) and could not find evidence

for temporal sequencing in the improvement of mindfulness and decentering during an MBSR intervention. A non-avoidant (ready to confront pleasant and unpleasant experiences) attitude can be seen as a prerequisite for the development of mindfulness: The individual willingness to get and stay in touch with one's own experiences is necessary for the orientation of attention in the present moment (Hayes & Feldman, 2004). The centrality of this aspect within mindfulness was supported by the findings in the preliminary study of CHIME (Bergomi et al., 2013a, b). Ultimately, the development of insight or Vipassana in Pali language is the fundamental goal of mindfulness practice (Bishop et al., 2004). According to Buddhist psychology, attentiveness and an insightful, accepting attitude are mutually supportive and closely related (Gunaratana, 2001; Walach et al., 2004).

The initial validation of the CHIME by Bergomi et al. (2014) identified several areas for future research and development. While subsequent studies have addressed many of these through Rasch analysis (Medvedev et al., 2019) and cross-cultural validations, some limitations warrant consideration. First, while the CHIME comprehensively covers eight aspects of mindfulness, the dynamic nature of mindfulness research means new theoretical developments might suggest additional relevant dimensions. Second, though the CHIME has been validated in multiple languages and populations, further investigation of measurement invariance across diverse cultural contexts and clinical populations would strengthen its utility. Third, while the ESM version shows promise for ecological momentary assessment, additional validation of the CHIME-ESM is needed. Finally, although the hierarchical factor structure has been consistently supported, the relationship between state and trait mindfulness as measured by different CHIME versions merits further investigation. These areas represent opportunities for continued refinement rather than limitations of the instrument itself, given its demonstrated robust psychometric properties across multiple studies and populations.

---

## Conclusion

The CHIME represents a significant advancement in mindfulness assessment, offering a comprehensive measurement tool that captures eight distinct aspects of mindfulness within a single instrument. Its robust psychometric properties have been consistently demonstrated across multiple validations, languages, and methodologies, including classical test theory and Rasch analysis. The instrument's strength lies in its careful item development, which ensures accessibility to both meditators and non-meditators, while maintaining theoretical depth. The availability of multiple validated versions—including the original 37-item scale, shortened versions (CHIME-S and CHIME-XS), and the experience sampling version (CHIME-ESM)—provides researchers and clinicians with flexible options for different assessment contexts. The CHIME's hierarchical structure has proven stable across diverse populations, supporting its utility in both research and clinical applications. Furthermore, its demonstrated sensitivity to meditation experience and intervention effects, coupled with strong construct validity, makes it particularly valuable for mindfulness

research and the evaluation of mindfulness-based interventions. The ongoing international validation efforts and methodological refinements continue to strengthen the CHIME's position as a leading instrument in mindfulness assessment.

**Competing Interest Declaration** The author(s) has no competing interests to declare that are relevant to the content of this manuscript.

## Appendix 1 Comprehensive Inventory of Mindfulness Experiences (CHIME) German Version

**Instruktionen:** Dieser Fragebogen umfasst Aussagen, die sich auf verschiedene Aspekte der Achtsamkeit im Alltag beziehen. Bitte antworten Sie spontan, ohne lange darüber nachzudenken. Es gibt keine "richtigen" oder "falschen" und keine "uten" oder "schlechten" Antworten. Ihre persönliche Erfahrung ist uns wichtig. Bitte beantworten Sie jede Frage. Bitte beziehen Sie die Aussagen auf die letzten zwei Wochen.

Antwortskala: 1 = fast nie 2 = selten 3 = eher selten 4 = eher häufig 5 = häufig 6 = fast immer.

Tabelle 1 Items des Comprehensive Inventory of Mindfulness Experiences (CHIME)

Nr.	Item
1	Wenn sich meine Stimmung verändert, nehme ich das sofort wahr
2	Im Auf und Ab des Lebens bin ich mir gegenüber warmherzig
3	Ich bemerke im Alltag, wenn eine bestimmte Situation erst durch meine negative Einstellung ihr gegenüber schwieriger wird
4	Es ist mir klar, dass sich meine Bewertungen von Situationen oder Personen leicht verändern können
5	Beim Sitzen oder Liegen nehme ich meine Körperempfindungen wahr
6	Ich muss darüber schmunzeln, wenn ich sehe, wie ich mir manchmal die Dinge als viel komplizierter vorstelle, als sie eigentlich sind
7	Ich gehe hart mit mir selber um, wenn ich Fehler mache
8	Wenn ich belastende Gedanken oder Vorstellungen habe, fühle ich mich relativ schnell danach wieder ruhig
9	Ich nehme Farben und Formen in der Natur deutlich und bewusst wahr
10	Ich zerbreche oder verschütte Dinge aus Unachtsamkeit oder weil ich an anderes denke
11	Ich sehe meine Fehler und Schwierigkeiten, ohne mich zu verurteilen
12	Es fällt mir leicht, mich darauf zu konzentrieren, was ich tue
13	Wenn ich belastende Gedanken oder Vorstellungen habe, kann ich sie einfach bemerken, ohne gleich auf sie zu reagieren
14	Wenn ich mit anderen Personen spreche, nehme ich wahr, welche Gefühle ich dabei erlebe
15	Wenn ich es mir selber unnötig schwer gemacht habe, kann ich das mit einer Spur Humor wahrnehmen
16	In schwierigen Situationen kann ich einen Moment innehalten, ohne sofort zu reagieren
17	Im Alltag werde ich durch viele Erinnerungen, Bilder oder Träumereien abgelenkt

(continued)

18	Wenn ich Auto oder Zug fahre, bin ich mir meiner Umgebung, z.B. der Landschaft, bewusst
19	Ich versuche beschäftigt zu bleiben, damit mir bestimmte Gedanken und Gefühle nicht bewusst werden
20	Wenn ich in Gedanken und Gefühlen gefangen bin, dauert es nicht lange, bis ich das merke und mich wieder davon distanzieren kann
21	Ich achte auf Empfindungen wie zum Beispiel Wind in meinem Haar oder Sonnenschein auf meinem Gesicht
22	Ich versuche mich abzulenken, wenn ich unangenehme Gefühle erlebe
23	Im Alltag ist mir bewusst, dass viele Gedanken Interpretationen sind, die nicht unbedingt der Realität entsprechen
24	Ich kann darüber schmunzeln, wenn ich sehe, wie ich aus einer kleinen Schwierigkeit ein Problem gemacht habe
25	Ich kann meine Gedanken und Gefühle beobachten, ohne mich in ihnen zu verstricken
26	Beim Lesen muss ich Abschnitte wiederholt lesen, weil ich an etwas anderes gedacht habe
27	Ich nehme Geräusche in meiner Umgebung, wie z.B. zwitschernde Vögel oder vorbeifahrende Autos, bewusst wahr
28	Ich nehme meine Gefühle und Gedanken wahr und kann sie gleichzeitig mit etwas Distanz betrachten
29	Ich nehme Veränderungen in meinem Körper deutlich wahr, z.B. schnelleres oder langsames Atmen
30	Ich mag es nicht, wenn ich ärgerlich oder ängstlich bin und versuche, solche Gefühle beiseite zu schieben
31	Mir ist im Alltag bewusst, dass meine Sicht der Dinge subjektiv ist und den Tatsachen nicht entsprechen muss
32	Auch wenn ich einen grossen Fehler gemacht habe, gehe ich mit mir auf eine verständnisvolle Art um
33	Wenn ich Schmerzen habe, versuche ich diese Wahrnehmung möglichst zu vermeiden
34	Es ist mir im Alltag bewusst, wie ich mich gerade fühle
35	Es ist mir im Alltag bewusst, dass sich eigene Meinungen, die ich zur Zeit sehr ernst nehme, deutlich verändern können
36	Ich nehme mir meine Fehler und Schwächen übel
37	Wenn ich mir unnötig das Leben schwer mache, wird mir das bald danach klar

## Auswertung

Negativ gepolte Items (müssen umgepolt werden): 7, 10, 17, 19, 22, 26, 30, 33, 36.

Berechnung der Subskalenwerte (Mittelwert der je angegebenen Items):

1. Gewährsein gegenüber inneren Erfahrungen: 1, 5, 14, 29, 34
2. Gewährsein gegenüber äusseren Erfahrungen: 9, 18, 21, 27
3. Bewusstes Handeln, Gegenwärtigkeit: 10, 12, 17, 26
4. Annehmende, nicht-urteilende, mitfühlende Haltung: 2, 7, 11, 32, 36
5. Nicht-reaktive, dezentrierte Orientierung: 8, 13, 16, 20, 25, 28
6. Offene, nichtvermeidende Haltung: 19, 22, 30, 33

7. Relativierung: 4, 23, 31, 35  
 8. Einsichtsvolles Verstehen: 3, 6, 15, 24, 37

Gesamtwert CHIME: Mittelwert der Subskalenwerte.

**Zitierweise:** Bergomi, C., Tschacher, W., & Kupper, Z. (2014). Konstruktion und erste Validierung eines Fragebogens zur umfassenden Erfassung von Achtsamkeit: Das Comprehensive Inventory of Mindfulness Experiences. *Diagnostica*, 60, 111–125. <https://doi.org/10.1026/0012-1924/a000109>

## Appendix 2 Comprehensive Inventory of Mindfulness Experiences (CHIME) English Version

**Administration Instructions:** This questionnaire consists of statements that are related to different aspects of mindfulness in daily life. Please respond spontaneously, there are no “correct” or “false”, no “good” or “bad” responses. In assessing the statements please consider your experiences of the previous 2 weeks.

**Response Scale:** 1 = almost never 2 = seldom 3 = rather seldom 4 = rather often 5 = often 6 = almost always.

Table 1 The Comprehensive Inventory of Mindfulness Experiences (CHIME) items

No.	Item
1	When my mood changes, I notice it right away
2	During both ups and downs of life, I am kind to myself
3	In everyday life I notice when my negative attitudes toward a situation make things worse
4	It is clear to me that my evaluation of situations and people can easily change
5	When I am sitting or lying down, I notice the sensations in my body
6	I am able to smile when I notice myself seeing things as more complicated than they actually are
7	I am hard on myself when I make a mistake
8	When I have distressing thoughts or images, I am able to feel calm soon afterward
9	I notice the details in nature, such as colors, shapes, and textures
10	I break or spill things because I am not paying attention or I am thinking of something else
11	I see my mistakes and difficulties without judging myself
12	It is easy for me to stay focused on what I am doing
13	When I have distressing thoughts or images, I am able to notice them without having to react
14	When I talk to other people, I notice what feelings I am experiencing
15	When I have been needlessly hard on myself, I can see it with some humor
16	In difficult or triggering situations, I can pause for a moment without reacting immediately
17	In everyday life, I get distracted by many memories, images, or daydreams
18	When I ride in a car, bus, or train, I am aware of the surroundings, such as the landscape
19	I try to stay busy to avoid specific thoughts or feelings from coming to mind
20	When caught in thoughts and emotions, I am able to “step back” and quickly notice the thought or image without being taken over by it

(continued)

21	I pay attention to sensations, such as the wind in my hair or sunshine on my face
22	I try to distract myself when I feel unpleasant emotions
23	In everyday life, I realize my thoughts are not always facts
24	I am able to smile to myself when I notice I have made a big deal out of a small problem
25	I am able to notice my thoughts and feelings without getting tangled up in them
26	When I read, I have to reread paragraphs because I was thinking of something else
27	I notice sounds in my environment, such as birds chirping or cars passing
28	I notice my thoughts and feelings and can also “step back” and observe them from a distance
29	I clearly notice changes in my body, such as quicker or slower breathing
30	I do not like it when I am angry or fearful, and try to get rid of these feelings
31	In everyday life, I am aware that my view on things is not always based on facts
32	Even when I make a big mistake, I treat myself with kindness and understanding
33	When I am in pain, I try to avoid the sensations as much as possible
34	I am aware of how I am feeling at any given time
35	I am aware that even my strongly held opinions may change over time
36	I resent my own mistakes and weaknesses
37	I am able to notice when I needlessly make life more difficult for myself

## Scoring Instructions

Reverse score items: 7, 10, 17, 19, 22, 26, 30, 33, 36.

Calculate means for each subscale:

1. Awareness of Internal Experiences: Items 1, 5, 14, 29, 34
2. Awareness of External Experiences: Items 9, 18, 21, 27
3. Acting with Awareness: Items 10, 12, 17, 26
4. Accepting Non-judgmental Attitude: Items 2, 7, 11, 32, 36
5. Nonreactive Decentering: Items 8, 13, 16, 20, 25, 28
6. Openness to Experience: Items 19, 22, 30, 33
7. Awareness of Thoughts’ Relativity: Items 4, 23, 31, 35
8. Insightful Understanding: Items 3, 6, 15, 24, 37

CHIME total score: Calculate mean of all subscale scores.

**Citation:** Wilkinson, S., Ribeiro, L., Krägeloh, C. U., Bergomi, C., Parsons, M., Siegling, A., Tschacher, W., Kupper, Z., & Medvedev, O. N. (2023). Validation of the Comprehensive Inventory of Mindfulness Experiences (CHIME) in English using Rasch methodology. *Mindfulness*, *14*(5), 1204–1218. <https://doi.org/10.1007/s12671-023-02099-3>

### Appendix 3 The Comprehensive Inventory of Mindfulness Experiences: Short Version (CHIME-S and CHIME-XS)

**Administration Instructions:** This questionnaire includes statements about various aspects of mindfulness in daily life. Please respond spontaneously without thinking too long about your answers. There are no “right” or “wrong” and no “good” or “bad” answers. Your personal experience is what matters.

Please rate how each statement applied to you over the last 2 weeks: 1 = almost never 2 = seldom 3 = rather seldom 4 = rather often 5 = often 6 = almost always.

Table 1 CHIME-S and CHIME-XS items

No.	Item	Version
1	When my mood changes, I notice it right away	S, XS
2	When I talk to other people, I notice what feelings I am experiencing	S, XS
3	I am usually aware of how I am feeling at any given time	S
4	I notice details in nature, such as colors, shapes, and textures	S, XS
5	I pay attention to sensations, such as the wind in my hair or sunshine on my face	S, XS
6	I notice sounds in my environment, such as birds chirping or cars passing	S
7	It is easy for me to stay focused on what I am doing	S, XS
8	In everyday life, I get distracted by many memories, images, or daydreams. (R)	S, XS
9	When I read, I have to reread paragraphs because I was thinking of something else. (R)	S
10	In the ups and downs of life, I am kind to myself	S, XS
11	I see my mistakes and difficulties without judging myself	S, XS
12	Even when I make a big mistake, I treat myself with kindness and understanding	S
13	When caught in thoughts and emotions, I am able to “step back” and quickly notice the thought without being taken over by it	S, XS
14	I am able to notice my thoughts and feelings without getting tangled up in them	S, XS
15	I notice my thoughts and feelings and can also “step back” and observe them from a distance	S
16	I try to distract myself when I feel unpleasant emotions. (R)	S, XS
17	I do not like it when I am angry or fearful and try to get rid of these feelings. (R)	S, XS
18	When I am in pain, I try to avoid this sensation as much as possible. (R)	S
19	In everyday life, I realize my thoughts are not always facts	S, XS
20	In everyday life, I am aware that my view on things is not always based on facts	S, XS
21	I am aware that even my strongly held opinions may change over time	S
22	I am able to smile when I notice myself seeing things as more complicated than they actually are	S, XS
23	When I have needlessly given myself a hard time, I can see it with humor	S, XS
24	I am able to smile to myself when I notice I have made a big deal out of a small problem	S

Note: (R) indicates reverse-scored items. *S* CHIME-S (24-item version), *XS* CHIME-XS (16-item version)

## Scoring Instructions

1. Reverse-score indicated items (R)
2. Calculate means for each subscale:
  - CHIME-S: Mean of 3 items per subscale
  - CHIME-XS: Mean of 2 items per subscale
3. Total score: Calculate mean of all subscale scores

**Citation:** Karl, J. A., Ribeiro, L., Bergomi, C., Fischer, R., Dunne, S., & Medvedev, O. N. (2024). Making it short: Shortening the Comprehensive Inventory of Mindfulness Experiences using ant colony optimization. *Mindfulness, 15*(2), 421–434. <https://doi.org/10.1007/s12671-024-02302-z>

---

## References

- Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). *AUDIT: The Alcohol Use Disorders Identification Test. Guidelines for use in primary care*. WHO.
- Baer, R. A., Smith, G., & Allen, K. B. (2004). Assessment of mindfulness by self-report: The Kentucky Inventory of Mindfulness Skills. *Assessment, 11*, 191–206.
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27–45.
- Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., et al. (2007). Construct validity of the Five Facet Mindfulness Questionnaire in meditating and nonmeditating samples. *Assessment, 15*, 329–342.
- Belzer, F., Schmidt, S., Lucius-Höhne, G., Schneider, J. F., Orellana Rios, C. L., & Sauer, S. (2013). Challenging the construct validity of mindfulness assessment. A cognitive interviewing study of the Freiburg Mindfulness Inventory. *Mindfulness, 4*(1), 33–44.
- Bergomi, C., Tschacher, W., & Kupper, Z. (2013a). Measuring mindfulness: First steps towards the development of a comprehensive mindfulness scale. *Mindfulness, 4*(1), 18–32.
- Bergomi, C., Tschacher, W., & Kupper, Z. (2013b). The assessment of mindfulness with self-report measures: Existing scales and open issues. *Mindfulness, 4*(3), 191–202.
- Bergomi, C., Tschacher, W., & Kupper, Z. (2014). Konstruktion und erste Validierung eines Fragebogens zur umfassenden Erfassung von Achtsamkeit: Das Comprehensive Inventory of Mindfulness Experiences [Construction and first validation of the Comprehensive Inventory of Mindfulness Experiences]. *Diagnostica, 60*(3), 111–125.
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., Segal, Z. V., Abbey, S., Speca, M., Velting, D., & Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice, 11*, 230–241.
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. Guilford.
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological wellbeing. *Journal of Personality and Social Psychology, 84*, 822–848.
- Buchheld, N., Grossman, P., & Walach, H. (2001). Measuring mindfulness in insight meditation (vipassana) and meditation-based psychotherapy: The development of the Freiburg Mindfulness Inventory (FMI). *Journal for Meditation and Meditation Research, 1*, 11–34.
- Cardaciotto, L., Herbert, J. D., Forman, E. M., Moitra, E., & Farrow, V. (2008). The assessment of present-moment awareness and acceptance: The Philadelphia Mindfulness Scale. *Assessment, 15*, 204–223.

- Carmody, J., Baer, R. A., Lykins, E. L. B., & Olendzki, N. (2009). An empirical study of the mechanisms of mindfulness in a mindfulness-based stress reduction program. *Journal of Clinical Psychology, 65*, 613–626.
- Chadwick, P., Hember, M., Symes, J., Peters, E., Kuipers, E., & Dagnan, D. (2008). Responding mindfully to unpleasant thoughts and images: Reliability and validity of the Southampton Mindfulness Questionnaire (SMQ). *British Journal of Clinical Psychology, 47*, 451–455.
- Chiesa, A. (2012). The difficulty of defining mindfulness: Current thought and critical issues. *Mindfulness*. Advance online publication.
- Christopher, M. S., Charoensuk, S., Gilbert, B. D., Neary, T. J., & Pearce, K. L. (2009). Mindfulness in Thailand and the United States: A case of apples versus oranges? *Journal of Clinical Psychology, 65*, 590–612.
- Cladder-Micus, M. B., Verweij, H., van Ravesteijn, H., Van der Gucht, K., Raes, F., & Speckens, A. E. (2019). Validation of the Dutch Comprehensive Inventory of Mindfulness Experiences (CHIME) and development of a short form (CHIME-SF). *Mindfulness, 10*(9), 1893–1904.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*, 272–299.
- Feldman, G. C., Hayes, A. M., Kumar, S. M., Greeson, J. G., & Laurenceau, J. P. (2007). Mindfulness and emotion regulation: The development and initial validation of the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R). *Journal of Psychopathology and Behavioral Assessment, 29*, 177–190.
- Franke, G. H. (2000). *Brief Symptom Inventory (BSI)*. Beltz.
- Grob, A., Lütthi, R., Kaiser, F. G., Flammer, A., Mackinnon, A., & Wearing, A. J. (1991). Berner Fragebogen zum Wohlbefinden Jugendlicher (BFW). *Diagnostica, 37*, 66–75.
- Grossman, P. (2008). On measuring mindfulness in psychosomatic and psychological research. *Journal of Psychosomatic Research, 64*, 405–408.
- Grossman, P. (2011). Defining mindfulness by “how poorly I think I pay attention during everyday awareness” and other intractable problems for psychology’s (re)invention of mindfulness. *Psychological Assessment, 23*, 1034–1040.
- Gunaratana, B. H. (2001). *Eight mindful steps to happiness – Walking the path of the buddha*. Wisdom Publications.
- Hayes, A. M., & Feldman, G. (2004). Clarifying the construct of mindfulness in the context of emotion regulation and the process of change in therapy. *Clinical Psychology: Science and Practice, 11*, 255–262.
- Höfling, V., Moosbrugger, H., Schermelleh-Engel, K., & Heidenreich, T. (2011). Mindfulness or mindlessness? A modified version of the Mindful Attention and Awareness Scale (MAAS). *European Journal of Psychological Assessment, 27*, 59–64.
- Johnson, C., Burke, C., Brinkman, S., & Wade, T. (2017). Development and validation of a multifactor mindfulness scale in youth: The Comprehensive Inventory of Mindfulness Experiences–Adolescents (CHIME-A). *Psychological Assessment, 29*(3), 264–281.
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Dell Publishing.
- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. Hyperion.
- Karl, J. A., Ribeiro, L., Bergomi, C., Fischer, R., Dunne, S., & Medvedev, O. N. (2024). Making it short: Shortening the Comprehensive Inventory of Mindfulness Experiences using ant colony optimization. *Mindfulness, 15*(2), 421–434.
- Kırca, B., & Ekşi, H. (2018). Turkish adaptation of the comprehensive inventory of mindfulness experiences-adolescents: A reliability and validity study. In *SHS Web of Conferences* (Vol. 48, p. 01038). EDP Sciences.
- Kohls, N., Sauer, S., & Walach, H. (2009). Facets of mindfulness—results of an online study investigating the Freiburg Mindfulness Inventory. *Personality and Individual Differences, 46*, 224–230.

- Krägeloh, C. U., Bergomi, C., Siegert, R. J., & Medvedev, O. N. (2018). Response shift after a mindfulness-based intervention: measurement invariance testing of the Comprehensive Inventory of Mindfulness Experiences. *Mindfulness, 9*(1), 212–220.
- Lau, M., Bishop, S. R., Segal, Z. V., Buis, T., Anderson, N. D., Carlson, L., et al. (2006). The Toronto mindfulness scale: Development and validation. *Journal of Clinical Psychology, 62*, 1445–1467.
- Leigh, J., Bowen, S., & Marlatt, G. A. (2005). Spirituality, mindfulness and substance abuse. *Addict Behavior, 30*, 1335–1341.
- Little, T. D., Cunningham, W. A., & Shahar, G. (2002). To parcel or not to parcel: Exploring the questions, weighing the merits. *Structural Equation Modeling, 9*, 151–173.
- Magalhães, S., & Limpo, T. (2022). Validation of the Comprehensive Inventory of Mindfulness Experiences (CHIME) in Portuguese children. *Mindfulness, 13*, 1692–1705.
- Marsh, H. W., Hau, K.-T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and danger in overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling, 11*, 320–341.
- McCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods, 4*, 84–99.
- Medvedev, O. N., Bergomi, C., Röthlin, P., & Krägeloh, C. U. (2019). Assessing the psychometric properties of the Comprehensive Inventory of Mindfulness Experiences (CHIME) using Rasch analysis. *European Journal of Psychological Assessment, 35*(5), 650–657.
- Michalak, J., Zarbock, G., Drews, M., Otto, D., Mertens, D., Ströhle, G., Schwinger, M., Dahme, B., & Heidenreich, T. (2016). Erfassung von Achtsamkeit mit der deutschen Version des Five Facet Mindfulness Questionnaires (FFMQ-D). *Zeitschrift für Gesundheitspsychologie, 24*(1), 1–12.
- Muthén, L., & Muthén, B. (2008). *Exploratory factor analysis, confirmatory factor analysis, and structural equation modeling for continuous outcomes*. UCLA: Academic Technology Services, Statistical Consulting Group. Retrieved May 14, 2012 from [http://www.ats.ucla.edu/stat/seminars/mu-then\\_08/](http://www.ats.ucla.edu/stat/seminars/mu-then_08/)
- O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments & Computers, 32*, 396–402.
- Pereira, J.-A., Barkham, M., Kellett, S., & Saxon, D. (2017). The role of practitioner resilience and mindfulness in effective practice: A practice-based feasibility study. *Administration and Policy in Mental Health and Mental Health Services Research, 44*(5), 691–704.
- Sauer, S., & Baer, R. A. (2010). Mindfulness and decentering as mechanisms of change in mindfulness- and acceptance- based interventions. In R. A. Baer (Ed.), *Assessing mindfulness and acceptance processes in clients: Illuminating the theory and practice of change* (pp. 25–50). New Harbinger Publications.
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online, 8*, 23–76.
- Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression. A new approach to preventing relapse*. Guilford Press.
- Shankland, R., Strub, L., Cuny, C., Steiler, D., Vallet, F., Mondillon, L., & Bergomi, C. (2013). French validation of the Comprehensive Inventory of Mindfulness Experiences (CHIME). In *1st International Conference on Mindfulness*. Sapienza University of Rome.
- Thompson, B. L., & Waltz, J. (2010). Mindfulness and experiential avoidance as predictors of posttraumatic stress disorder avoidance symptom severity. *Journal of Anxiety Disorders, 24*, 409–415.
- Trull, T., & Ebner-Priemer, U. W. (2014). The role of ambulatory assessment in psychological science. *Current Directions in Psychological Science, 23*(6), 466–470.
- Tschacher, W., & Lienhard, N. (2021). Mindfulness is linked with affectivity in daily life: An experience-sampling study with meditators. *Mindfulness, 12*, 1459–1472.

- Van Dam, N., Earleywine, M., & Danoff-Burg, S. (2009). Differential item function across meditators and non-meditators on the Five Facet Mindfulness Questionnaire. *Personality and Individual Differences, 47*, 516–521.
- Walach, H., Buchheld, N., Buttenmüller, V., Kleinknecht, N., Grossmann, P., & Schmidt, S. (2004). Empirische Erfassung der Achtsamkeit – Die Konstruktion des Freiburger Fragebogen zur Achtsamkeit (FFA) und weitere Validierungsstudien. In T. Heidenreich & J. Michalak (Eds.), *Achtsamkeit und Akzeptanz in der Psychotherapie* (pp. 729–772). dgvt-Verlag.
- Walach, H., Buchheld, N., Buttenmüller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness—the Freiburg Mindfulness Inventory (FMI). *Personality and Individual Differences, 40*, 1543–1555.
- Wenzel, M., Rowland, Z., & Kubiak, T. (2020). How mindfulness shapes the situational use of emotion regulation strategies in daily life. *Cognition and Emotion, 34*, 1408.
- Wilkinson, S., Ribeiro, L., Krägeloh, C. U., Bergomi, C., Parsons, M., Siegling, A., Tschacher, W., Kupper, Z., & Medvedev, O. N. (2023). Validation of the Comprehensive Inventory of Mindfulness Experiences (CHIME) in English using Rasch methodology. *Mindfulness, 14*(5), 1204–1218.
- Zhang, D., Shen, J., & Ma, H. (2024). Exploring the applicability of a multifactor mindfulness scale in the Chinese college context. *Frontiers in Psychology, 15*, 1415692.