Measuring a Stable State of Wakefulness: The Development and Validation of the Inventory of Secular/Spiritual Wakefulness (WAKE)

Abstract

Wakefulness is an expansive, self-transcendent, stable state of being in which a person's vision and relationship to the world are transformed. While this stable state of being can be cultivated through different spiritual traditions, it can also be generated outside of spiritual contexts. This paper describes the construction of an inventory that operationalizes the state of wakefulness in secular contexts. The inventory was created using the results of existing qualitative research studies on awakening from which a number of characteristics were identified. Statements reflecting each characteristic were developed and subsequently assessed by expert judges to evaluate the content validity. Two pilot studies were carried out to test the statements prior to the full validation of the measure. Exploratory factor analyses were then conducted on the data of n=278 English-speaking participants (test sample) to examine the factor structure of the inventory. Results revealed an interpretable 19-item, one-factor solution with good internal reliability which was considered the final version of the inventory (WAKE-19). Statistically significant differences in total scores between the test sample and a matched group of awakened participants (n=24) further supported the construct validity. The translation of this questionnaire into German was best represented with a unidimensional structure after the deletion of three items. This German WAKE-16 version is reliable and showed a pattern of correlations supporting a good convergent and discriminant validity (n=366). Our study complements evidence suggesting the existence of wakefulness as a particular state of being—distinct from the usual or ordinary state of adult waking consciousness—while providing an economic, valid, and reliable instrument that can be used in future research.

Keywords: Inventory, Awakening, Wakefulness, Consciousness, Transpersonal Psychology, Spirituality, Enlightenment, Nondual Realization

Introduction

Many of the world's spiritual traditions describe an expansive state of being in which the individual's awareness becomes more intense and refined, so that one gains a clearer or deeper awareness of reality and seems to transcend the delusory and dysfunctional elements of a more ordinary and seemingly limited state of being (James, 1985: Spencer, 1962; Happold, 1986; Schuon, 1984). Research has suggested that this expansive state can occur outside the context of spiritual traditions, particularly in the aftermath of intense psychological turmoil (Miller & C'de Baca, 2001; Martin, 2020; Taylor, 2012, 2021).

We term this expansive state "wakefulness," defining it as an expansive, self-transcendent, stable state of being in which a person's vision and relationship to the world are transformed. Wakefulness is a stable, ongoing state which the process of "awakening" (as in "spiritual awakening") leads toward. This shift into wakefulness – through a gradual or sudden awakening - brings a sense of well-being, clarity and connection, with a more intense awareness of the phenomenal world. One important notion is that there are degrees of wakefulness. That is, there is no clear dividing line between wakefulness and a so-called ordinary state of being. Rather, on a continuum, some individuals may be more wakeful than others: for example, with a stronger sense of connection and inner security, a more intense perception of the phenomenal world, a stronger sense of transpersonal purpose, and so on (Taylor, 2017b).

In this paper, we aim to develop and validate a comprehensive inventory measuring the degree of wakefulness in both secular and spiritual contexts.

Essentialism and wakefulness beyond spiritual contexts

Most traditions distinguish temporary and ongoing experiences of such an expansive mode. For example, in the Indian Yoga and Vedanta traditions, both nirvikalpa and savikapal samadhi are considered temporary expansive or "awakened" states of oneness, usually occurring during meditation. However, in this tradition it is also possible to attain a permanent state of sahaja samadhi, where the individual retains his or her oneness with Brahman as they live their day to day life. As Ramana Maharshi (1963) put it, "Remaining permanently in the primal state [of samadhi] without effort is sahaja" (p. 89). In Sufism, there is a similar distinction between fana and baqa. Whereas fana is the temporary experience of "passing away," baqa is a permanent state of "abiding in God" (Azeemi, 2005). Similar concepts of kensho and satori exist within Zen Buddhism. Although these terms are sometimes used interchangeably, kensho usually refers to a more shallow and temporary experience of awakening, while satori refers to a deeper and more long-lasting state (Suzuki, 1956). In Christian mysticism, temporary mystical experiences are distinguished from an ongoing state of deification, or theosis. The underlying recognition of these traditions is that it is possible to gradually transform a limited, everyday state of being into a more expansive, more authentic, higher-functioning state, which takes one beyond apparent delusion and closer to reality. Higher-functioning refers, in this framework, to one's capacity to function well in the world in areas such as interpersonal relationships (which become more authentic and intimate), sense of meaning, autonomy, cognition, appreciation and freedom from anxiety and discord.

The inventory whose development is presented here attempts to measure this expansive, permanent, ongoing state of being beyond the context of spiritual traditions. This study assumes the "essentialist" position that mystics and adepts of various traditions are exploring similar ranges of psychological experience, but likely interpreting and describing them in different ways due to their different cultural references and metaphysical frameworks (Rose, 2016; Taylor, 2016; Marshall, 2019). James (1902/1985) likened mystical experiences to "windows through which the mind looks out upon a more extensive and inclusive world. The difference

of the views seen from the different mystical windows need not prevent us from entertaining this supposition" (James, 1902/1985, p. 428).

The current scholarly discourse regarding the validity of essentialism or perennialism includes the perspective that similarities between cross-traditional mystical or spiritual experiences have been over-emphasized, and may be due to other factors, such as cultural contact or human beings' shared neurology and physiology (Hartelius, 2017). Nevertheless, there is ample evidence for essentialism, and strong arguments against contextualist or neurobiological explanations of spiritual experiences (e.g. Studstill, 2005; Rose, 2016; Taylor, 2016, 2017a). This evidence is too detailed to discuss at length here, but it is worth mentioning the many studies using Hood's Mysticism Scale (1975), which have shown that mystical experiences feature the same core characteristics across different traditions (e.g., Chen et al., 2011a; Chen et al., 2011b). These experiences include a sense of unity, a sense of the aliveness of phenomena, feelings of revelation and joy, a sense of the sacredness of what one perceives.

Significantly, Streib and Hood (2013) found that these core characteristics were also present in the mystical experiences of individuals not attached to any particular religion or tradition. This observation suggests that such spiritual or mystical experiences may be understood as a part of a fundamental range of human experiences that occur with or without a religious or spiritual context. As such, it is of great importance to investigate them from a psychological perspective, outside the framework of spiritual traditions.

Previous Research on Wakefulness

Temporary expansive experiences have been qualitatively analyzed in popular literature (e.g., Johnson, 1959; Laski, 1961; Hardy, 1979) and in psychological studies (e.g., Maslow, 1970; Hoffman, 1992; Wade, 2004; Taylor, 2012; Taylor & Egato-Szabo, 2017). Quantitative research on these experiences has also been conducted, most notably, through the use of Hood's (1975) Mysticism Scale, which was designed to measure temporary mystical experiences. These studies have highlighted that it is not uncommon for individuals to temporarily experience expansive and ecstatic states with characteristics of heightened perceptual awareness, a sense of connection or oneness, intense feelings of love and compassion and a sense of presence or timelessness. More importantly, these qualities are present both when the experiences occur in a secular context and within the context of spiritual traditions (Streib & Hood, 2013; Taylor, 2017a).

Studies on the ongoing experience of wakefulness are less numerous. An early example was Bucke's (1901/2019) qualitative study of 36 historical and contemporary cases of "cosmic consciousness," including the Buddha, Moses, Jesus Christ, Dante, Shakespeare, Walt Whitman, and several anonymous contemporaries. The characteristics that Bucke (1901/2019) identifies of cosmic consciousness – such as subjective light, joyfulness, intellectual illumination (a revelation of the meaning, purpose and alive-ness of the universe), suddenness, a sense of immortality, a loss of fear of death, and an absence of concept of sin – overlap with those of wakefulness to a large degree.

A significant study of permanent expansive states of being was undertaken by Miller and C'de Baca (2001), who interviewed more than 50 individuals reporting a sudden psychological transformation which they termed "quantum change." They described this as "a vivid, surprising, benevolent and enduring personal transformation" (Miller & C'de Baca, 2001, p.4) which usually occurs suddenly and dramatically. Identifying two types of quantum changes, Miller and C'de Baca (2001) found that the mystical type of quantum change had characteristics very similar to those of traditional (temporary) mystical experiences: ineffability, a noetic quality, a sense of unity, transcendence and awe, and of distinction from ordinary reality. However, for Miller and C'de Baca's participants these characteristics were permanently

established. Other reported permanent changes were a release from fear and depression, deeper relationships, a greater interest in spirituality and a "lifting of ingrained behavior" (Miller & C'de Baca, 2001, p. 39). Furthermore, changes in priorities were stated, with their most important priorities being spirituality, personal peace, family, honesty, growth, humility, and faithfulness.

Recently, Martin (2019, 2020) has studied the experience of awakened individuals, whom he has termed "finders" (as opposed to seekers). The experience of finders was distinct from ordinary experience in five main areas, including sense-of-self, cognition, emotion, perception, and memory. One aspect of their experience as a shift from for purposes of discussion is as a change from an individuated to a "non-localized" sense of self. There was also a sense of unity, and a significant reduction (or even absence) of thoughts, with increased intensity of perception and orientation in the present (Martin, 2020).

In Costeines' (2009) research, the term "nondual consciousness" was used in equivalent to wakefulness or "enlightenment." 16 spiritual teachers of non-dual mysticism were interviewed, in an attempt to gather thematic description of nondual consciousness. Costeines identified a number of stable traits of the state, including nondual ontology, disidentification from mental constructs, timeless awareness, mental lucidity, nondual action, beatific peace, spontaneous joy, absence of neurotic suffering, and unitive relationships.

Another context where wakefulness appears to occur frequently is following near-death experiences, which are characterized by a continuation of consciousness during a period of a physiological and neurological inactivity in relation to a medical emergency (Greyson, 2021). Research has repeatedly found that many of those who have near-death experiences undergo a permanent transformation into a more expansive state of being, including characteristics such as intensified perception, an increased sense of connection to nature, an increased capacity for love and compassion, reduced interest in material wealth and personal success, a heightened sense of meaning, a new spiritual outlook, a reduced fear of death, and so on (Fenwick & Fenwick, 1995; Sabom, 1998; Sartori, 2014).

Related existing questionnaires

There are various validated scales measuring some aspects of what we define as wakefulness, although arguably none which measure the construct as a whole in an all-encompassing way, and in a way that can be applied equally in both to secular and spiritual contexts. For example, some questionnaires measure mindfulness as a permanent facet of personality, i.e., "the awareness that emerges through paying attention in the present moment, and nonjudgmentally to the unfolding of the experience moment by moment" (Kabat-Zinn, 2003). Among these questionnaires the Mindful Attention Awareness Scale (MAAS; Brown and Ryan, 2003) and the Freiburg Mindfulness Inventory (FMI; Walach et al., 2006) are the most widely used scales. As will be seen below, the wakefulness characteristics of "increased present-ness" and "reduced identification with thoughts and mental constructs" are related to mindfulness.

Another aspect of wakefulness has been assessed using a questionnaire measuring awe, namely the GrAw-7 which is an extended version of the 3-item Gratitude/Awe subscale of the Spiritual Practices scale (SpREUK-P; Büssing et al. 2005; Büssing et al. 2018). This version is intended to assess dispositional gratitude/awe as a personality trait, specifically feelings of gratitude, reverence/awe, and experiencing the beauty in life. These feelings relate to the wakefulness characteristic of "intensified perception," with an enhanced sense of beauty and appreciation.

Further questionnaires exist measuring self-transcendence as a permanent, individual characteristic. One example is Friedman's Self Expansiveness Level Form (SELF; Friedman, 1983), a 15-item test measuring how "the self-concept can expand from a narrow individualistic identification to wider social, ecological, temporal, and biological identifications to very expansive transpersonal identifications" (Pappas & Friedman, 2007, p. 323). Another more recent example of a self-transcendence trait questionnaire is the Non-dual Awareness Dimensional Assessment-Trait (NADA-T; Hanley et al., 2018). This questionnaire explicitly measures two specific modes of awareness, namely form and formless awareness and annihilational self-transcendence. In this study, nondual awareness (NDA) is defined as "a state of consciousness that rests in the background of all conscious experiencing – a background field of awareness that is unified, immutable, and empty of mental content, yet retains a quality of cognizant bliss" (Hanley et al., 2018). However, as with all the above questionnaires, the NADA-T represent different aspects of wakefulness rather than the construct as a whole. It relates to the wakefulness characteristics of "Reduced Identification with Thoughts and Mental Constructs" and "Sense of Connection and Wholeness" (which includes loss of separateness). As will be seen below, there are many other aspects of wakefulness beyond a nondual orientation.

Maslow (1970) used the concept of self-actualization with a similar meaning as what is described here as wakefulness. He described self-actualized individuals as possessing 17 essential traits, such as autonomy, self-acceptance, a greater than normal need for peace and solitude, continued freshness of appreciation, a sense of duty or mission beyond their own personal ambitions, and frequent peak experiences. Kaufman (2018) found in an analysis that 7 of the characteristics were redundant, or did not correlate with others. Based on the remaining ten of Maslow's 17 original characteristics of self-actualizing people, Kaufman developed a 30-item Characteristics of Self-Actualization Scale (CSAS). There is some overlap between the CSAS and the WAKE, reflecting the overlap between the construct of self-actualization and wakefulness. At the same time, there are significant differences. In our view, the construct of self-actualization is an incomplete psychologization of spiritual wakefulness which misses some of its essential aspects, such as sense of connection or oneness, increased presentness, reduced identification with thoughts and mental constructs, reduced/disappearance of fear of death. The omission of such traits as increased presentness and a sense of connection (to other human beings and the world in general) is striking, as they are strong themes of every spiritual tradition (Taylor. 2017). This perhaps reflects the lack of rigor with which Maslow established the concept of self-actualization, which was not based on empirical research but on biographical reports of historical figures such as Albert Einstein and Henry David Thoreau. In addition, perhaps the list of characteristics reflects Maslow's overall lack of deep familiarity with spiritual traditions.

We therefore believe that to date no study has attempted to gather an all-encompassing range of the characteristics of wakefulness in a single scale. The purpose of the present study was to develop a comprehensive and economic inventory that operationalizes the state of wakefulness in secular contexts. To do so, in a first step, we identified characteristics of wakefulness in two existing qualitative research studies on awakening (Kilrea, 2013; Taylor, 2013). We transferred these characteristics into statements which were evaluated by experts, pilot-tested and revised. In a second step, factor analyses yielded an interpretable 19-item one-factor solution with excellent reliability (internal consistency). Subsequently, in the second study, we present a validation of the questionnaire translated to German where we also tested convergent and discriminant validity.

Study 1: Development, Piloting, and Validation of the English questionnaire

Materials and Methods

Phase 1: Development and Piloting of the Inventory of Secular/Spiritual Wakefulness (WAKE)

Development of the Questionnaire

The Item Pool

The original source material used to develop the questionnaire was based on previous qualitative research by Kilrea (2013) and Taylor (2013). Kilrea's (2013) study was a deep heuristic study of four established spiritual teachers, examining the questions "What does it feel like to be awake?" "How is everyday life the same or different than before awakening?" and "What is spiritual enlightenment?" In this study, spiritual enlightenment was operationally defined as "an ongoing transcendent experiencing characterized by an uncommon way of being in, and perceiving the world" (p. 26). Taylor's (2013) study was a phenomenological investigation into the psychological transformation interpreted as spiritual awakening, examining its possible causes, characteristics and after-effects. In this study, 25 participants were interviewed, all of whom reported a shift into a new expansive, higher-functioning state, with a new sense of identity, which they believed was permanent, or at least ongoing. These studies, conducted independently and without awareness of the existence of the other, had similar aims: to reveal the nature of wakefulness and ascertain the characteristics of the so-called awakened state. The findings of these studies were compared and merged in the creation of this inventory. The commonalities of both studies were highlighted, and a set of initial characteristics of wakefulness and related items emerged. Following revision (see Face and Content Validity section), 24 characteristics of wakefulness and 79 items were represented in the inventory to be piloted (Appendix A). These characteristics could broadly be identified as perceptual, affective, conceptual/cognitive and behavioral. These characteristics could also be identified in other studies on spiritual wakefulness (Costeines, 2009).

Face and Content Validity

In order to evaluate the face and content validity, expert judges were enlisted to review the identified characteristics and the item questions associated with each one. Four independent expert researchers in the field of spiritual awakening were contacted by email and were provided the table of specifications. They were asked to comment on the overall appropriateness of each of the characteristics and then to evaluate whether each question adequately represented each of the characteristics it was intended to address. The four independent expert judges were Peter Fenwick, neuroscientist and researcher on NDEs; David Lukoff, emeritus professor of psychology at Sofia University (Palo Alto, CA, USA); Ovidiu Brazdau, research methodologist and creator of the Consciousness Quotient Inventory (CQ-i) (Brazdau et al., 2021); and Michael Costeines, author of a PhD study on "non-dual consciousness" (Costeines, 2009). The expert judges were also invited to comment on the relevance and wording of each item. The judges entered their responses into a table and returned it to the researchers who then analyzed the responses. There was broad agreement on the appropriateness of the characteristics represented by the scale, suggesting content validity. Suggestions from judges centered on appropriateness and wording of questions, some of which were modified. The final pilot questions are listed in Appendix 1, together with the associated 24 characteristics.

Pilot Testing

Procedure

The 79 questions were piloted using a 5-points Likert scale with a response format from 1 (strongly disagree) to 5 (strongly agree). After analyzing the first pilot study, a significant number of items were dropped or modified. A second pilot study was conducted on 33 remaining items (Appendix 2). Leeds Beckett University provided ethical approval for these two pilot studies and participants provided informed consent.

Participants

For the first pilot study a total of 96 respondents [60 females (62.5%) 34 males (35.4%) and 2 unspecified (2.1%). Ages ranged from 18 to 74 years old. Participants were recruited via social media and the Leeds Beckett University website. For the second pilot study, 54 respondents (29 females (52.7%), 24 males (43.63%) and 1 unspecified (1.8%) via the same means above. Ages ranged from 25 to 7 years.

Statistical Analyses

The item analysis of the data collected in the first and second pilot testing involved an examination of the interrelatedness of the test items. The Cronbach's alpha index as an indicator of internal consistency gives an indication of the extent to which the items relate with each other (Tavakol & Dennick, 2011). Cronbach's alpha values lie between 0 and 1, with values between 0.70-0.95 evaluated as appropriate (DeVellis, 2016). However, if alpha is too high it may indicate redundancy of some items; a maximum value of Cronbach's α = 0.90 has been proposed (Streiner, 2003; Tavakol & Dennick, 2011). Furthermore, item-total correlation was used to identify unproductive items so that each could be either revised or eliminated.

Results of the Pilot Testing

Concerning the first pilot study, Cronbach's alpha was α = 0.96, suggesting the presence of redundant items. Items in each category were reviewed and redundant items were removed, ensuring that the content characteristics were adequately covered by the remaining questions. By computing the correlation of each item with the total score of the test, items with low correlations ($r < .20$) were deleted. In total, 46 items were deleted. Another finding was that three characteristics appeared to be invalid and were removed. This resulted in a new list of 21 characteristics, represented by the 33 remaining items. These items were re-piloted in a second pilot study (see Appendix 2).

An appropriate Cronbach's alpha of α = .78 was observed for this 33-item version. Six additional items were removed after further item analysis due to ineffective wording. Four other items were removed because they were found to correlate with age, resulting in a 23-item inventory to be further statistically validated in EFAs (Table 1). Three of the 21 characteristics of wakefulness were found to be no longer represented by the items in this 23-item inventory. (These were "Wellbeing and positive affective states", "Relishing of inactivity", and "Reduced interest in materialism.").

Table 1. Characteristics of Wakefulness and corresponding items of the 23-item inventory derived from the pilot studies.

Characteristic (followed by items)
Sense of Connection and Wholeness
Item 4. I experience a deep sense of union with life itself. *Item 16.* I sense that seemingly separate things (like household object, trees, and people) are part of the same all-pervading consciousness.

Intensified Perception

Item 5. I feel a sense of awe at the "is-ness" of the world around me.
Item 21. The world around me is intensely vivid and alive.
Item 12. I feel intense aliveness in all of my senses.

Increased Presentness

Item 8. I feel deeply present.

Reduced Identification with Thoughts and Mental Constructs

Item 2. I sense and know deeply that I am not my thoughts.
Item 13. I notice my emotions as they arise without getting immersed in them.

Reduced/Disappearance of Fear of Death

Item 14. (Reversed Item) Death frightens me

Changed Attitude to Body

Item 6. How I look does not have any bearing on my self-worth, or sense of identity.

Reduced Cognitive Activity

Item 7. I experience regular periods of mental quietness, when my mind is free of thoughts.

Decreased Sense of Group Identity

Item 17. I feel equally connected and compassionate towards all human beings, regardless of their culture or country, and no matter how closely related they are to me.
Item 11. I don't feel the need to belong to a group, community, or society, or conform to its convention.

Increased Altruism, Compassion, and Empathy

Item 9. I am incapable of causing intentional harm to anyone or anything.

Enhanced Relationships

Item 10. (Reversed Item) I find it difficult to establish deep and authentic relationships.

Heightening of Pleasure and Enjoyment

Item 1. I derive profound pleasure doing day-to-day tasks and ordinary experiences.

Transpersonal Sense of Purpose

Item 18. There is a larger purpose or mission which is expressing itself through me.

Reduced Judgmental Attitude

Item 19. (Reversed Item) I judge other people’s behavior in my mind.

Intuitive Decision Making

Item 20. When making decisions, I trust my feelings and intuition to take me in the right direction.

Increased Inner Security

Item 15. My sense of self-worth isn’t affected by success or failure.

Attitude of Acceptance/Letting Go/Surrender

Item 3. When life brings unexpected changes, it is fairly easy for me to accept and move on.

Timelessness

Item 22. I often have a sense of timelessness.

Authenticity

Item 23. (Reversed Item) I feel pressured to act in certain ways to gain acceptance.

Note. Items 9, 10, 11, and 14 have been deleted in the further validation process leading to the final English WAKE-19. Items 2, 19, and 22 have been additionally deleted in the validated German WAKE-16.

Phase 2: Validation leading to the final English WAKE-19

Procedure

To evaluate the dimensionality, we first conducted an exploratory factorial analysis (EFA) on the preliminary version of the Inventory of Secular/Spiritual Wakefulness with 23 items. After the EFA indicated the deletion of four items, we examined the factorial structure again, confirming this final 19-item version of the inventory (WAKE-19). Finally, we tested the known-group validity (Hattie & Cooksey, 1984; DeVellis, 2003) to determine the degree to which the WAKE-19 can discriminate between groups known to differ on the construct being measured, i.e., wakefulness.

Participants

Participants (test sample) were recruited through newspaper articles, university staff websites and *Psychology Today* readers, and were primarily Caucasian from North America and the UK. A total of 291 respondents took part in the study, of which a total of 13 participants (4.5%) were excluded: 1) nine fell outside the range of 18 to 64 years of age, 2) one participant was missing demographic data, and 3) three individuals had a suspicious response pattern with extremely high or low mean scores and barely any variance. The final sample consisted of n=278 participants (193 females (69.4%), 79 males (28.4%), 1 diverse (0.4%), and 5 unspecified (1.8%)). Ages ranged from 21 to 64 years old (range 21 to 24: 45 (16.2%); range 25 to 34: 91 (32.7%); 35-44: 60 (21.6%); 45-54: 40 (14.4%); 55-64: 40 (14.4%); 2 unspecified (0.7%)).

The sample recruited to assess the known-group validity consisted of 30 individuals who were deemed to exhibit characteristics of wakefulness, who were identified through their published teachings. These participants were invited by email to complete the survey. Among them, six were removed from the sample as they fell outside the range of 18 to 64 years of age and therefore could not be matched with participants from the test sample. The final awakened group consisted of n=24 participants (15 females (62.5%), 7 males (29.2%), and 1 unspecified (4.2%)), aged from 25 to 64 years old (range 25 to 34: 2 (8.3%); 35-44: 6 (25%); 45-54: 9 (37.5%); 55-64: 6 (25%); 1 unspecified (4.2%)).

All participants completed the 23-item version of the Inventory of Secular/Spiritual Wakefulness derived from the pilot tests, using a 5-points Likert scales (1 = strongly disagree to 5 = strongly agree). A total score can be calculated as the sum of the item scores. Before summing, the scores of items 10, 14, 19, and 23 have to be reversed (strongly disagree scores as 5, and strongly agree = 1). St. Paul University, Ottawa provided ethical approval and participants provided informed consent.

Statistical Analyses

The factorial structure of the WAKE was examined using an Exploratory Factor Analysis (EFA). The Unweighted Least Squares (ULS) procedure was used as extraction method following the recommendations for ordinal variables, such as Likert-type ratings (Forero et al., 2009; Lee et al., 2012). ULS does not assume a multivariate normal distribution. The EFA was performed on the polychoric correlation matrix which is advised for ordinal and potentially skewed data (Forero et al., 2009; Holgado–Tello et al., 2010; Lee et al., 2012; Watkins, 2018). Sampling adequacy was tested prior to EFA using the Kaiser-Meyer-Olkin (KMO) procedure (Hutcheson & Sofronious, 1999), with values ≥ 0.5 considered as acceptable (Kaiser, 1974). The Bartlett's test of sphericity (Zwick & Velicer, 1986) was conducted to check for adequate correlations between items, the test should be significant. We ran a parallel analysis (PA; Horn, 1965; O'Connor, 2000) to determine the number of factors to be retained. In this procedure, the eigenvalues from the raw data are compared to 5,000 simulated random datasets similar to the raw data concerning the number of variables and the sample size. Meaningful factors are those expressing more variance in the real data than in the random dataset (Hayton et al., 2004). We retained only those meaningful factors with at least an eigenvalue > 1 (Kaiser, 1960). This served as an additional lower bound criterion since the solely use of the eigenvalue > 1 criterion typically leads to an overextraction of factors (Field, 2009; Franklin et al., 1995; Hayton et al., 2004; Zwick & Velicer, 1986). When more than one factor was retained, the EFA was conducted using an oblique rotation (direct oblimin) with Kaiser normalization. This rotation method does not require uncorrelated factors (Preacher & MacCallum, 2003). When both an item's factor loading was $\lambda < 0.40$ and communality was $h^2 < 0.30$, the respective item was removed (Leech et al., 2012). Again, internal consistency was evaluated using Cronbach's alpha (cf. phase 1). Cronbach's alpha typically underestimates internal consistencies (McNeish, 2018). Therefore, alternative measures of reliability will be additionally reported, namely omega total (ωtotal), Revelle's ωtotal, and the greatest lower bound (GLB).

To examine the construct validity using the known-group method (Hattie & Cooksey, 1984; DeVellis, 2003) a one-way between-subjects analysis of the covariance (ANCOVA) was conducted. The ANCOVA compared the total scores on the WAKE-19 between the groups of awakened vs. matched comparison participants while controlling for prior mental health diagnosis and prior or current participation in spiritual or religious groups. The logic behind this procedure is that a valid inventory should discriminate between groups who are known to be different on the measured construct. The comparison sample (n=24) matched by age group (18-24 / 25-34 / 35-44 / 45-54 / 55-64 years old) and gender was randomly drawn from the test sample (n=278). Statistical analyses were performed with IBM SPSS 21 and R 4.1.1 (https://www.r-project.org).

Study 1: Results of the validation of the English questionnaire

Exploratory Factor Analysis (EFA) of the initial English 23-item version

The KMO and the Bartlett test were appropriate: KMO = 0.87; Bartlett test, X^2 = 1947.69, df = 253, $p < .001$. The PA suggested four factors to be retained but barely only two of these factors had eigenvalues > 1 (Appendix 3). There were five items with low factor loadings on both factors and eight items with low communalities with this two-factor solution ($\alpha_1 = .84$; $\alpha_2 = .77$). More importantly, the two factors were highly correlated with $r = .57$, and one item had high loadings on both factors. Regarding the content and respective item-factor allocations this solution was not well interpretable. As noted, the second factor barely had an eigenvalue > 1 and the eigenvalue > 1 criterion typically leads to an overextraction of factors (e.g., Zwick & Velicer, 1986). A unidimensional solution instead indicated the deletion of four items (9, 10, 11, and 14) for having both low communalities of $h^2 < 0.30$ and low factor loadings of $\lambda < 0.40$, resulting in a 19-items solution (WAKE-19).

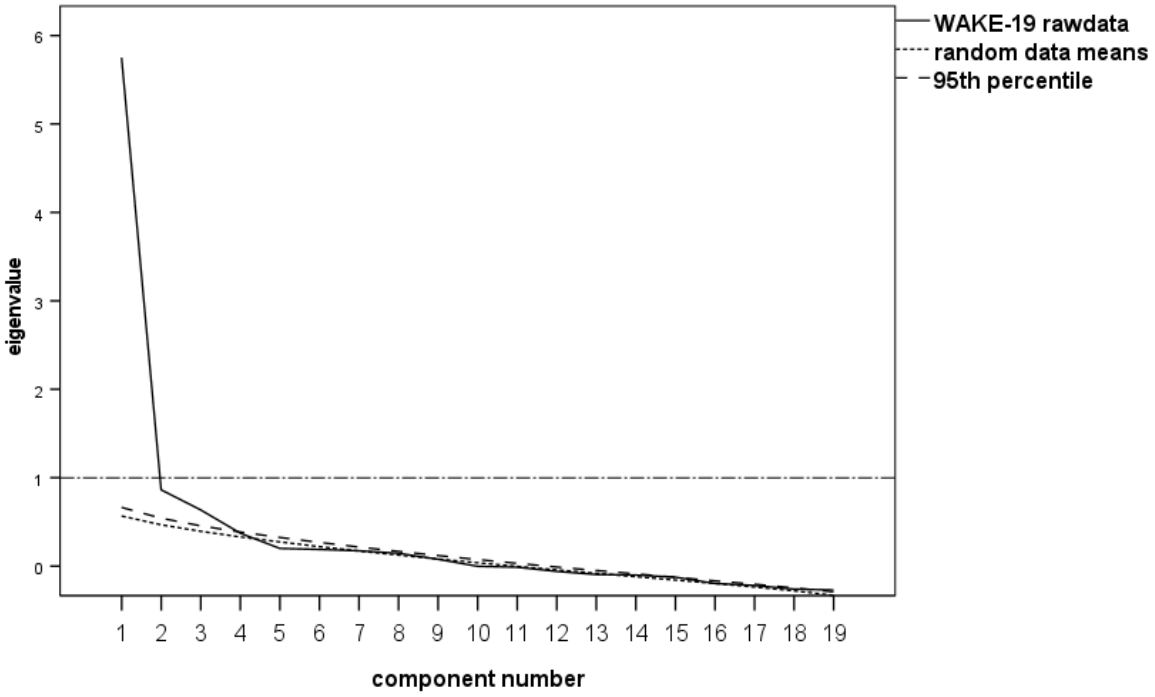

Figure 1. The Scree plot for the exploratory factor analysis (EFA) computed on the WAKE-19 (*n*=278, test sample). The curves depict the mean eigenvalues for the real data set (continuous line), the random data means (dotted) and upper 95th percentile sets obtained by permutations of the raw data using Castellan's algorithm (dashed).

Exploratory Factor Analysis (EFA) of the final WAKE-19

The KMO and the Bartlett test were appropriate again; KMO = 0.89; Bartlett test, X^2 = 1673.32, df = 171, $p < .001$. While the PA recommended the extraction of three factors, only one of these had an eigenvalue > 1 (Figure 1). This single factor solution showed low communalities of $h^2 < 0.30$ for eight items, but all items had factor loadings of $\lambda \geq 0.40$ (Table 2). The internal consistency of the unidimensional scale was excellent, Cronbach's α = 0.89 (ω_{total} = 0.89, 95%CI [0.87, 0.90]; Revelle's ω_{total} = 0.92; GLB = 0.93). The sample statistics of the English WAKE-19 total score show a mean = 62.85 (*SD*=11.65, median = 63.00, range: 29-86; Figure 2 shows the distribution is fairly normal).

Table 2. Matrix of factor loadings for the EFA of the WAKE-19 items (*n*=278, test sample).

WAKE-19 items	**communality h^2**	**factor loading λ**
1. I derive profound pleasure even from engaging in ordinary activities.	0.38	0.62
2. I sense and know deeply that I am not my thoughts.	0.32	0.56
3. When life brings unexpected changes, it is fairly easy for me to accept and move on.	0.20	0.45
4. I experience a deep sense of union with life itself.	0.68	0.82
5. I feel a sense of awe at the "is-ness" of the world around me.	0.37	0.61
6. How I look does not have any bearing on my self-worth, or sense of identity.	0.25	0.50
7. I experience regular periods of mental quietness, when my mind is free of thoughts.	0.36	0.60

8. I feel deeply present.	0.52	0.72
9. I feel intense aliveness in all of my senses.	0.47	0.68
10. I notice my emotions as they arise without getting immersed in them.	0.26	0.51
11. My sense of self-worth isn't affected by success or failure.	0.38	0.62
12. I sense that seemingly separate things (like household object, trees, and people) are part of the same all-pervading.	0.26	0.51
13. I feel equally connected and compassionate towards all human beings, regardless of their culture or country, and no matter how closely related they are to me.	0.24	0.49
14. There is a larger purpose or mission which is expressing itself through me.	0.37	0.61
15. I judge other people's behavior in my mind.	0.20	0.45
16. When making decisions I trust my feelings and intuition to take me in the right direction.	0.25	0.50
17. The world around me is intensely vivid and alive.	0.39	0.62
18. I often have a sense of timelessness.	0.31	0.56
19. I feel pressured to act in certain ways to gain acceptance.	0.23	0.47
Explained variance		**34%**
Eigenvalue		**6.42**
Cronbach's alpha		**0.89**

Note. Scores on items 15 and 19 have to be reversed before computing the total WAKE-19 score.

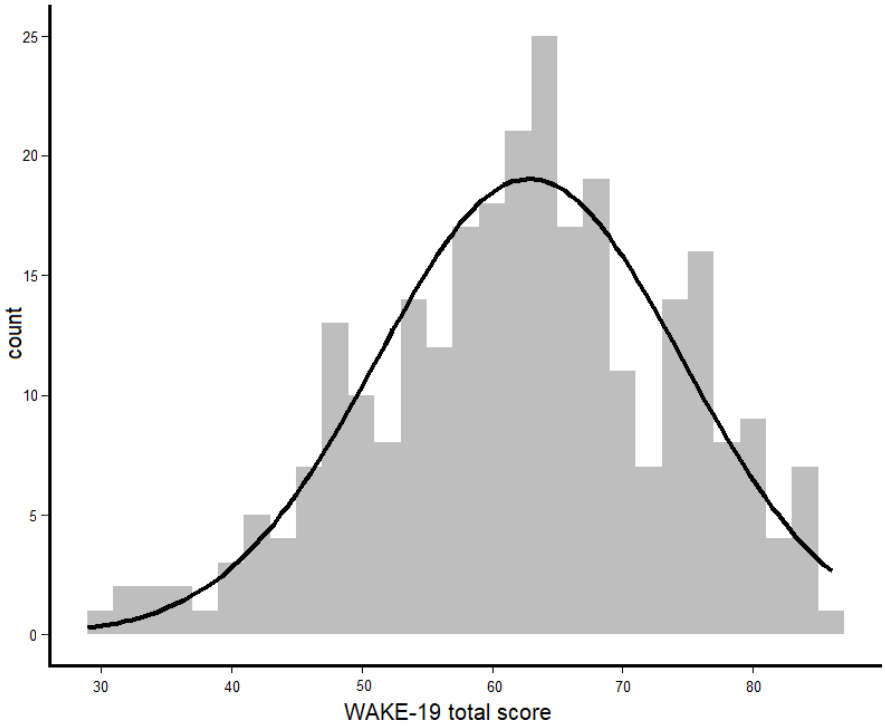

Figure 2. Histogram showing the distribution of WAKE-19 total scores for the English test sample (*n*=278).

Analysis of Covariance (ANCOVA)

There were significant differences in total scores of the WAKE-19 between awakened vs. the matched group ($F(1, 43) = 28.06$, $p < .001$, $\eta^2 = 0.394$, Cohen's $f = 0.78$), controlling for prior mental health diagnosis and prior or current participation in spiritual or religious groups. Scores on the WAKE-19 were considerably higher in the awakened group (*n*=24, M = 76.54,

SD = 7.69) than in the matched comparison sample (*n*=24, *M* = 64, *SD* = 10.18). For a comparison of the awakened group with the whole test sample, see Figure 3.

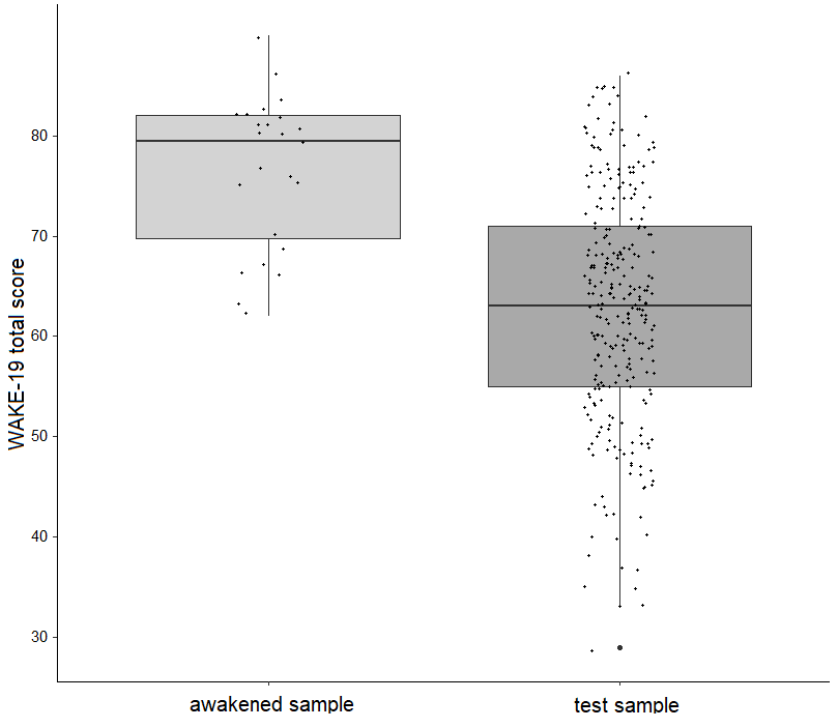

Figure 3. Boxplots of the awakened group (*n*=24) and the whole English test sample (*n*=278).

Study 2: Development and Validation of the German questionnaire

In the second study, we translated and validated the questionnaire in German. To do so, first, a German version was created by conducting a back-and-forth translation method on the English original questionnaire derived from study 1. Next, the factor structure was validated using an EFA analogous to the English validation procedure, and the internal consistency was analyzed. In a last step, convergent and discriminant validity of the German version were tested by analyzing correlations with other established measures that were either expected to be closely associated (e.g. with mindfulness; FMI) or not (e.g., we expected a strong negative correlation with neuroticism; BFI-10).

Materials and Methods

Procedure

For the creation of a German version of the questionnaire, the items were back-and-forth translated. First, German native speakers independently translated the items into German. Next, they reviewed the two slightly different versions and agreed on a final version. This first German translation was subsequently translated back into English by two native English speakers who were unfamiliar with the original version of the questionnaire. After comparing this back-translated English version with the English original, a revised final German version was created.

The study was conducted on an online survey platform (UniPark EFS Survey, Tristan XI GmbH, 2021). First, the participants provided demographic data on age, sex (1=male, 2=female, 3=diverse), knowledge of German (1=beginner, 2=good basic knowledge,

3=advanced, 4=fluent), and education level (1=no school-leaving certificate; 2=Hauptschule (secondary school from grade 5 to 9); 3=Realschule (secondary school from grade 5 to 10); 4=Abitur (university-entrance diploma); 5=university degree). Next, the wakefulness questionnaire was presented in random order with other German questionnaires (for the assessment of convergent and discriminant validity, see below). The local Ethics Committee of the Institute for Frontier Areas of Psychology and Mental Health approved the study (IGPP_2020_06).

Participants

A total of 427 participants were recruited via flyers and via a professional recruitment agency. This agency sought to recruit participants as representative for the German adult population as possible. We excluded participants 1) who did not complete the study; 2) who completed all questionnaires in less than 600s, making conscious and reflected answering unlikely which was also indicated by bad data quality; 3) whose time to complete could not be tracked because they interrupted the study; and 4) who had nearly no distribution in the scores on the WAKE items (upper bound: mean variance +2.5 SD; lower bound: mean variance –1.5 SD). These exclusions left us with a sample size of *n*=366 participants (209 females (57.1%), 155 males (42.3%), 2 diverse (0.5%)). See Table 3 for additional demographic data of the sample.

Table 3. Descriptive statistics of the German sample (*n*=366).

	age	**sex**	**German knowledge**	**education level**
mean (SD)	46.88 (17.21)	1.58 (0.51)	3.97 (0.18)	3.91 (0.98)
range	17-82	1-3	2-4	1-5

Statistical Analyses

For the German questionnaire, an EFA was conducted analogously to the English version to determine the factor structure and final German version. Next, the convergent and discriminant validity of this German wakefulness questionnaire were evaluated by calculating Pearson correlations of the total WAKE score with the following established measures:

1) Freiburg Mindfulness Inventory (FMI; Walach et al., 2006), 14-item short form.
2) Need Inventory of Sensation-Seeking (NISS; Roth & Hammelstein, 2012): The NISS contains 17 items, divided into two subscales: need for stimulation, and avoidance of rest.
3) Big-5 personality traits, short version (BFI-10; Rammsted & John, 2007): Two items for each of the Big Five personality dimensions: agreeableness, conscientiousness, extraversion, neuroticism, and openness.
4) Temporal Metacognition Scale (TMCS; Stolarski & Witowska, 2017; for the German version: Witowska et al., 2020): 26 items measure metacognition as a regulatory ability in the context of temporal perspectives on three subscales: Metacognitive Temporal Control; Cognitive Reconstruction of the Past; Goal-oriented Metatemporal Interconnectedness.
5) Scales for Experiencing Emotions (SEE; Behr & Becker, 2012): With a total of 42 items, seven subscales of the SEE measure the following features of emotional experience: accepting one's own emotions; experiencing overwhelming emotions; experiencing lack of emotions; bodily symbolization of emotions; imaginative symbolization of emotions; experiencing regulation of emotions; experiencing self-control.

The significance levels of the correlations were corrected for multiple testing using a method controlling for the false-discovery rate (Benjamini & Hochberg, 1995).

Study 2: Results of the validation of the German questionnaire

Exploratory Factor Analysis (EFA) leading to the German WAKE-16 version

The KMO and the Bartlett test were appropriate again: KMO = 0.88; Bartlett test, X^2 = 1890.91, df = 171, $p < .001$. While the PA on the 19-item version translated to German recommended the extraction of four factors, only two of them had eigenvalues > 1 (appendix 4). Eight items had bad communalities of $h^2 < .30$, four items had loadings below $\lambda = 0.40$ on both factors. The factors were moderately to highly intercorrelated by $r = .40$. The two factors were also not well distinguishable with regards to the content of the respectively allocated items. However, the eigenvalue > 1 criterion typically leads to an overextraction of factors (e.g., Zwick & Velicer, 1986) and a unidimensional structure is more theoretically solid. With one factor instead (as in the English version), items 2, 15, and 18 were the only items to have both communalities of $h^2 < .30$ and factor loadings $\lambda < 0.40$.

Deleting items 2, 15, and 18 led to a German WAKE-16 version (KMO=0.89; Bartlett test, X^2 = 1737.63, df = 120, $p < .001$). The PA on this German WAKE-16 recommended extraction of three factors (see Figure 4), barely two of them having an eigenvalue of > 1. Two factors had low communalities < .30 and two had factor loadings < .40. The factors were moderately to highly correlated ($r = .44$) and only one of them had adequate internal consistency ($\alpha_1 = .83$; $\alpha_2 = .68$). This solution was again difficult to justify theoretically. With one factor instead, eight items had $h^2 < .30$ but the factor loadings were appropriate for all items ($\lambda \geq .40$), with an excellent Cronbach's $\alpha = .86$ ($\omega_{total} = 0.86$, 95%CI [0.83, 0.88]; Revelle's $\omega_{total} = 0.90$; GLB = 0.91). The German WAKE-16 is best represented with a unidimensional structure (see Table 4).

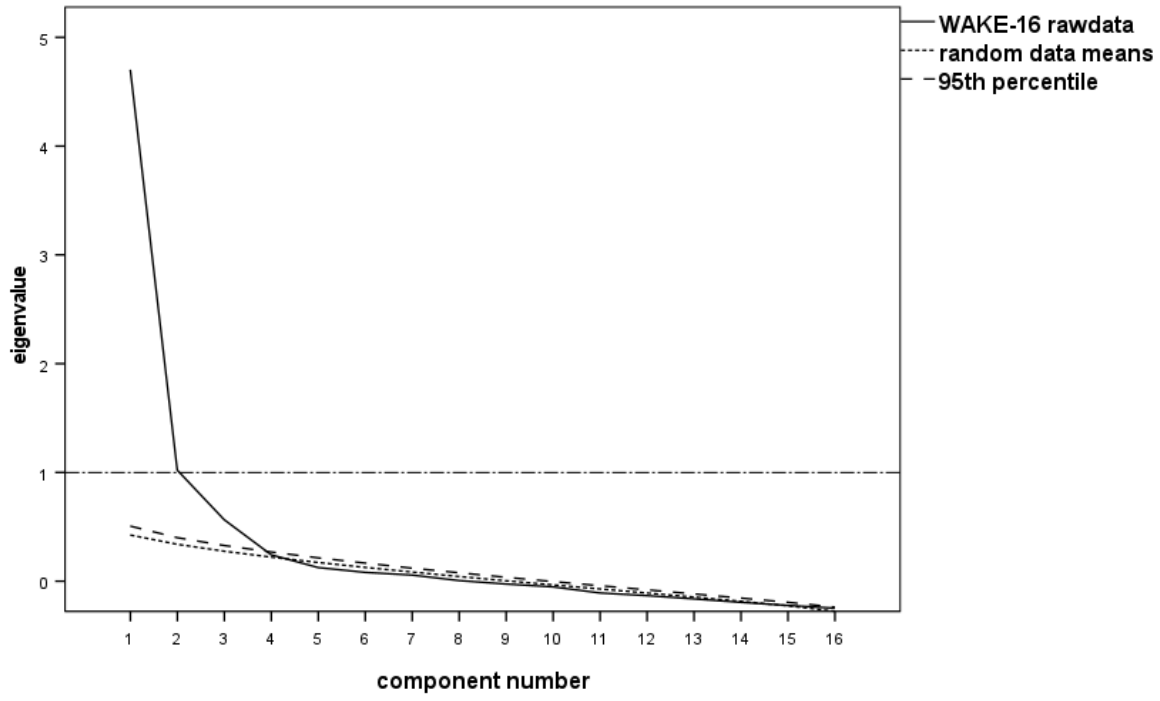

Figure 4. The Scree plot for the exploratory factor analysis (EFA) computed on the German WAKE-16 items (n=366), after deletion of items 2, 15, and 18. The curves depict the mean eigenvalues for the real data set (continuous line), the random data means (dotted) and upper 95th percentile sets obtained by permutations of the raw data using Castellan's algorithm (dashed).

Table 4. Matrix of factor loadings for the EFA of the German WAKE-16 items (*n*=366), after omission of former items 2, 15, and 18.

WAKE-16 items	**communality h^2**	**factor loading λ**
01. Ich empfinde selbst bei gewöhnlichen Tätigkeiten tiefe Freude.	.35	.59
03. Wenn das Leben unerwartete Veränderungen mit sich bringt, ist es für mich ziemlich einfach, das zu akzeptieren und weiterzumachen.	.23	.48
04. Ich erlebe ein tiefes Gefühl der Einheit mit dem Leben selbst.	.63	.80
05. Ich empfinde Ehrfurcht vor dem schieren Sein der Welt.	.21	.46
06. Wie ich aussehe, hat keine Bedeutung für meinen Selbstwert oder mein Identitätsgefühl.	.17	.42
07. Ich erlebe regelmäßig Phasen mentaler Ruhe, in denen mein Geist frei von Gedanken ist.	.30	.55
08. Ich fühle mich zutiefst anwesend.	.42	.65
09. Ich spüre intensive Lebendigkeit in all meinen Sinnen.	.58	.76
10. Ich nehme meine Emotionen wahr, wenn sie aufkommen, ohne in sie einzutauchen.	.35	.59
11. Mein Selbstwertgefühl wird nicht durch Erfolg oder Misserfolg beeinflusst.	.26	.51
12. Ich spüre, dass scheinbar getrennte Dinge (wie Haushaltsgegenstände, Bäume und Menschen) Teil desselben alles durchdringenden Bewusstseins sind.	.25	.50
13. Ich fühle mich allen Menschen gegenüber gleichermaßen verbunden und mitfühlend, ungeachtet ihrer Kultur oder ihrem Herkunftsland und unabhängig davon, wie eng sie zu mir in Beziehung stehen.	.26	.51
14. Es gibt einen höheren Sinn oder Auftrag, der sich durch mich ausdrückt.	.22	.47
16. Wenn ich Entscheidungen treffe, vertraue ich auf meine Gefühle und meine Intuition, mich in die richtige Richtung zu führen.	.31	.55
17. Die Welt um mich herum ist intensiv lebhaft und lebendig.	.41	.64
19. Ich fühle mich unter Druck gesetzt, auf bestimmte Weise zu handeln, um akzeptiert zu werden.	.26	.51
Explained variance		**33%**
Eigenvalue		**5.21**
Cronbach's alpha		**α = .86**

Note. The score on the last item has to be reversed before computing the total WAKE-16 score.

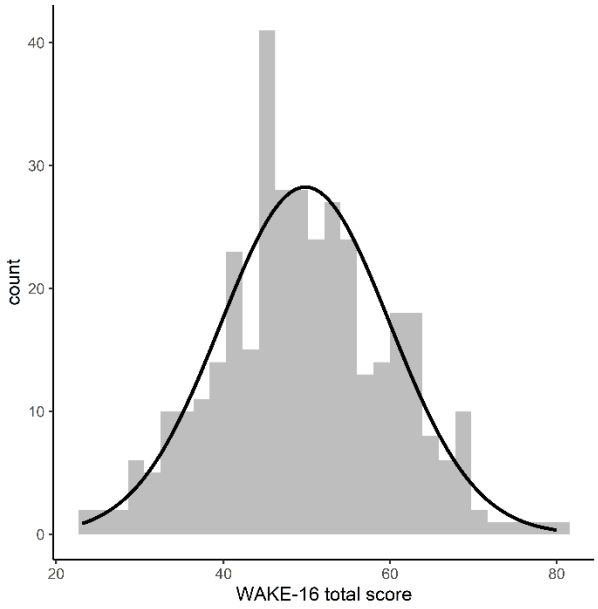

Figure 5. Histogram showing the distribution of WAKE-16 total scores for the German sample (*n*=366).

Convergent and Discriminant Validity of the German WAKE-16

The sample statistics of the total score show a mean = 49.81 (*SD*=10.16, median = 49.50, range: 23-80). Figure 5 shows that the distribution of the total scores is fairly normal. The Pearson correlations with established questionnaires can be seen in Table 5. Among others, there are highly positive correlations with the FMI (*r* = .658), TMCS subscale of metacognitive control (*r* = .524) and the SEE acceptance subscale (*r* = .539). Conversely, negative correlations are among others observed with the Big-Five neuroticism subscale (*r* = -.494) and the SEE overwhelming emotions subscale (*r* = -.394).

Table 5. Pearson correlations of the German WAKE-16 with other established measures (*n*=366).

	FMI	**NISS**	**NISS – need for stimulation**	**NISS – avoidance of rest**	**BFI agreeableness**	**BFI conscientiousness**	**BFI extraversion**	**BFI neuroticism**	**BFI openness**	**TMCS metacognitive control**	**TMCS reconstruction of past**	**TMCS Interconnectedness**	**SEE imagination**	**SEE emotion regulation**	**SEE overwhelming emotions**	**SEE bodily experience**	**SEE self-control**	**SEE acceptance**	**SEE lack of emotions**
German WAKE-16	.658**	.144**	.201**	-.048	.308**	.321**	.252**	-.494**	.266**	.524**	.179**	.379**	.175**	.421**	-.394**	.184**	.275**	.539**	-.348**

Note. Considering the inflation of alpha errors for multiple correlations, the significance levels were corrected with the method controlling the false-discovery rate (FDR) proposed by Benjamini & Hochberg (1995).

Discussion

In this paper, we aimed to develop and validate a comprehensive measure for the stable state of wakefulness that can also be applied for secular (non-spiritual) contexts. As stated in the introduction, we believe that no existing measure fully performs this role, since previous questionnaires cover aspects of wakefulness rather than the construct as a whole. We identified characteristics of wakefulness in existing studies and converted them into statements. These initial statements were evaluated and revised by experts and subsequently pilot-tested twice. After further removing and revising items, an initial 23-item version was subjected to statistical validation which recommended omission of four items. The final unidimensional English WAKE-19 questionnaire was shown to be a valid and reliable scale. The known-group method indicated good construct validity by indicating a significant difference between matched samples of awakened persons and the general test sample, with very large effect size (Cohen, 1988). This finding indicates that the developed scale discriminates well between groups that are known to theoretically differ (Hattie & Cooksey, 1984).

In a second study, we translated this version into German and validated a unidimensional structure with 16-items to fit the data best. The German WAKE-16 was shown to be reliable and had a pattern of substantive correlations with other established questionnaires, which further supports the validity of the scale. As expected, we observed strong positive correlations with an inventory of mindfulness (FMI), which represents one important aspect of wakefulness. For example, non-judgmental acceptance and mindful presence are important elements of mindfulness and, amongst others, reflected in the WAKE characteristics of "Increased Presentness" and "Attitude of Acceptance" (see also highly positive correlation with the SEE acceptance subscale). There was also a particularly high negative correlation with neuroticism, as expected. Neuroticism is linked to several psychopathologies and is characterized by emotional "negativity" and instability, opposing to the concept of wakefulness (McCrae & Costa, 1987). The same reasoning accounts for the negative correlation with the experience of overwhelming emotions (SEE) and positive relationships to controlling one's emotional impulses (SEE self-control) as well as to emotion regulation (SEE).

Temporal metacognition was also associated with wakefulness. Temporal metacognition is defined as the ability to consciously self-regulate time horizons by employing metacognitive skills, knowledge, and experience (Stolarski & Witowska, 2017). The correlation between the TCMS and the Wake-16 (which is itself correlated with the FMI) could be interpreted as indicating that greater mindfulness in the context of wakefulness is essentially a form of *timefulness*[1]. Timefulness in this sense refers to the ability to control and inhibit maladaptive temporal orientations, which helps one to engage adequately in a given situation (subscale of Metacognitive Temporal Control). This includes the ability to maintain a sense of "open past", enabling one to reinterpret and reconstruct past events on the basis of present experiences (subscale Cognitive Reconstruction of the Past), and the ability to cognitively connect time horizons, allowing one to effectively make deliberate decisions (subscale Goal-oriented Metatemporal Interconnectedness). This would suggest that an awakened individual may be mindful of the operation of different time orientations of past, present, and future.

Moderately positive correlations around $r = .30$ indicate that individuals scoring higher on the WAKE-16 (more wakeful) are also more conscientious and agreeable. This may be expected, in relation to the wakefulness characteristic of "Increased Altruism, Compassion, and Empathy" – qualities which predispose individuals to be concerned with the wellbeing of others and to maintain positive relationships. Openness was also found to be positively associated with wakefulness; it relates to wakefulness characteristics such as "Attitude of Acceptance/Letting Go/Surrender" and "Reduced Judgmental Attitude."

[1] Ruth Ogden has mentioned this term in the context of meta-awareness of time. We gratefully borrow it here.

A small correlation was found between wakefulness and extraversion. To our surprise, we found that wakefulness was positively associated, although weakly, with a need for sensation-seeking and stimulation. Perhaps the wakefulness characteristics of "Presentness" and "Reduced Cognitive Activity" may to some extent account for this finding, since they may bring a greater sense of living "in the world," in the midst of one's perceptual experience and awareness Avoidance of rest was not correlated to wakefulness, which perhaps reflects the orientation towards being (rather than doing) and the relishing of inactivity which is associated with wakefulness (Taylor, 2017b).

The results further indicated that wakefulness is negatively associated with a lack of emotions. This can be accounted for in terms of the wakeful person's experience of being deeply present and consciously perceiving the moment, together with increased feelings of pleasure, enjoyment, and empathy, as well as feeling intense aliveness in all of the senses. This is also reflected in the link to the SEE subscale of bodily experience of emotions. Additionally, there was a weak to moderate association of wakefulness with imaginative abilities (SEE). It is not entirely clear why this association occurs, but perhaps there is a link to the reduced cognitive activity of wakefulness. It may be that reducing the associational mental chatter allows access to deeper creative and imaginative potentials, as indicated by research showing a correlation between meditation and enhanced creativity (Colzato et al., 2017).

In summary, for most of the established measures, the German WAKE-16 showed a pattern of correlations that would have been expected regarding the concept of wakefulness and its characteristics. These correlations reflect the wide-ranging nature of the construct of wakefulness, and of the WAKE inventory itself.

Limitations

In the validation process, some items were deleted, as they did not fit statistically with the rest of the questionnaire. As a consequence, nine (English WAKE-19), respectively eleven (German WAKE-16), of the 24 characteristics that appeared to be important features of wakefulness in previous qualitative research (Taylor, 2013; Kilrea, 2013) are not directly captured in the final inventories. However, this may be at least partly because there is a significant degree of overlap between some characteristics, so that omitted characteristics were still represented by others. For example, the omitted characteristic of "Enhanced sense of freedom" may be represented by the present characteristics of "Increased presentness" and "Reduced identification with thoughts and mental constructs." Likewise, the omitted characteristics of "Enhanced wellbeing and positive affective states" may be at least particularly represented by present characteristics such as "Sense of Connection and Wholeness," "Heightening of Pleasure and Enjoyment" and "Attitude of Acceptance." Further research could help clarify the extent to which the essence of the omitted characteristics is represented by other characteristics.

Another possible limitation is that, although the participants of the studies were not simply convenience samples or recruited exclusively from university students, they are not entirely representative for the adult population. While in the English samples only sex and age were assessed, they included a considerable age range and a large proportion of female participants. The German sample was fairly representative for adults in Germany, but also included slightly more females and rather highly educated participants.

Conclusion

This study has presented a comprehensive measure to assess a stable state of wakefulness in secular contexts, both in English and German language. As a major strength of our study, we would like to emphasize our thorough and extensive procedure for developing and validating this questionnaire. In addition to the elaboration of characteristics of wakefulness from existing

studies, we consulted experts on the matter, conducted two pilot tests, recruited a multitude of participants for the main validation studies, and tested a large number of statistical quality criteria, on which the new questionnaire performed very well. Significantly, we were able to demonstrate the content validity, construct validity and reliability of these new questionnaires using data from large samples. The validation resulted in the final unidimensional English and German questionnaires.

The inventories measure wakefulness effectively, distinguishing well between the awakened and general population groups. The results suggest that wakefulness as a particular state of being exists in a continuum, is not limited to spiritual contexts, and is worthy of further psychological study. This questionnaire can now be used for the scientific study of wakefulness. For example, research could be conducted with specific age groups, to determine if there is a relationship between wakefulness and increasing age. Are religious-oriented people or those who follow specific spiritual practices and paths more likely to experience wakefulness than secular sections of the population? Is wakefulness related to gender, economic prosperity, or levels of education? Does meditation promote wakefulness? The present valid and reliable English and German questionnaires can help to address such questions in the research on wakefulness.

References

Azeemi, K. (2005) Muraqaba: *The Art and Science of Sufi Meditation.* Houston: Plato.

Behr, M. & Becker, M. (2012). Scales for experiencing emotions: Awareness, appraisal and regulation of one's own emotions. *Hellenic Journal of Psychology, 9,* 278-303.

Benjamini, Y. & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B (Statistical Methodology), 57*, 289–300.

Brazdau, O., Ahuja, S., Opariuc, C. D., Jones, V., Sharma, S., Monsanto, C., Andrews, S. & Fiveson, K. (2021). An exploratory analysis of collective patterns of conscious experience using a self-report questionnaire. *Frontiers in Psychology*, *12* (634677).

Bucke, R. M. (2019). *Cosmic Consciousness: A Study in the Evolution of the Human Mind* [HTML version]. Retrieved from http://www.sacred-texts.com/eso/cc/ (Original work published 1901)

Chen, Z., Qi, W., Hood, R. W., & Watson, P. J. (2011a). Common core thesis and qualitative and quantitative analysis of mysticism in Chinese Buddhist monks and nuns. *Journal for the Scientific Study of Religion, 50*(4), 654-670. https://doi.org/10.1111/j.1468-5906.2011.01606.x

Chen, Z., Hood Jr, R. W., Yang, L., & Watson, P. J.(2011b). Mystical experience among Tibetan Buddhists: The common core thesis revisited. *Journal for the Scientific Study of Religion, 50*(2), 328-338. https://doi.org/10.1111/j.1468-5906.2011.01570.x

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. Lawrence Erlbaum Associates: Hillsdale, NJ.

Colzato, L.S., Szapora, A., Lippelt, D. *et al.* Prior meditation practice modulates performance and strategy use in convergent- and divergent-thinking problems. *Mindfulness* **8,** 10–16 (2017). https://doi.org/10.1007/s12671-014-0352-9

Costeines, M. (2009). What enlightenment means: A qualitative study of nondual consciousness as experienced by teachers of nondual mysticism. (Doctoral dissertation). Sofia University, Palo Alto, CA, USA. ProQuest Dissertations Publishing, 2009: 3356468. Available via: https://www.proquest.com/docview/305094599/CB897ACFF8E64619PQ/1?

DeVellis, R.F. (2016). *Scale Development: Theory and Applications*. Thousand Oaks, CA: Sage.
Fenwick, P. & Fenwick. E. (1995). *The Truth in the Light*. London: Hodder Headline.
Field, A. (2009). *Discovering Statistics Using SPSS: Introducing Statistical Method* (3rd ed.). Thousand Oaks, CA: Sage
Publications. Forero, C.G., Maydeu-Olivares, A., & Gallardo-Pujol, D. (2009) Factor analysis with ordinal indicators: A Monte Carlo study comparing DWLS and ULS estimation. *Structural Equation Modeling,* 16(4), 625-641. https://doi.org/10.1080/10705510903203573
Franklin, S.B., Gibson, D.J., Robertson, P.A., Pohlmann, J.T., & Fralish, J.S. (1995). Parallel Analysis: A method for determining significant principal components. *Journal of Vegetation Science, 6*, 99–106.
Friedman, H. L. (1983). The self-expansive level form: A conceptualization and measurement of a transpersonal construct. *The Journal of Transpersonal Psychology, 15*(1), 37.
Greyson, B. (2021). *After*. New York: St. Martin's Press.
Happold, F. C. (1986) *Mysticism.* London, UK: Pelican.
Hartelius, G. (2017). Zombie perennialism: An intelligent design for psychology? A further response to Taylor's soft perennialism. *International Journal of Transpersonal Studies, 36*(2), 93–110.
Hattie, J., & Cooksey, R.W. (1984). procedures for assessing the validities of tests using the "known-groups" method. *Applied Psychological Measurement, 8*(3), 295-305. https://doi.org/10.1177/014662168400800306
Hayton, J.C., Allen, D.G., & Scarpello, V. (2004). factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods, 7*, 191–205.
Hoffman, E. (1992). *Visions of Innocence*. Boston, MA: Shambhala.
Holgado–Tello, F. P., Chacón–Moscoso, S., Barbero–García, I., & Vila–Abad, E. (2010). Polychoric versus Pearson correlations in exploratory and confirmatory factor analysis of ordinal variables. *Quality & Quantity*, *44*(1), 153-166. https://doi.org/10.1007/s11135-008-9190-y
Horn, J.L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*, 179–185.
Hutcheson, G. D. & Sofroniou, N. (1999). *The multivariate social scientist: An introduction to generalized linear models*. Thousand Oaks, CA: Sage.
James, W. (1902/1985). *The Varieties of Religious Experience*. London: Penguin.
Johnson, R. C. (1959). *Watcher on the Hills.* New York, NY: Harper.
Kaiser, H. (1974). An index of factorial simplicity. *Psychometrika, 39*, 31-36.
Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 20*, 141-151. https://doi.org/10.1177/001316446002000116
Kaufman, S. (2018). Self-actualizing people in the 21st century: Integration with contemporary theory and research on personality and well-being. *The Journal of Humanistic Psychology*. Advance online publication. https://doi.org/10.1177/0022167818809187
Kilrea, K. (2013). The everyday, lived, physical, and sensory experience of spiritual enlightenment (Doctoral dissertation). Sofia University, Palo Alto, CA, USA. ProQuest Dissertations Publishing, 2013: 3589672. Available via: https://www.proquest.com/docview/1430475147?pq-origsite=gscholar&fromopenview=true
Laski, M. (1961). *Ecstasy*. London, UK: The Cresset Press.

Lee, C.-T., Zhang, G., & Edwards, M. C. (2012). Ordinary Least Squares Estimation of Parameters in Exploratory Factor Analysis with Ordinal Data. *Multivariate Behavioral Research, 47*(2), 314-339. https://doi.org/10.1080/00273171.2012.658340

Leech, N. L., Barrett, K. C., & Morgan, G. A. (2012). Exploratory Factor Analysis and Principal Components Analysis. In N. L Leech, K. C. Barrett, & G. A. Morgan (Eds.), *IBM SPSS for Intermediate Statistics*. Routledge: New York, NY, USA, 2012; pp. 68–83. ISBN 978-0203821848.

Martin, J. (2019). *The Finders*. Jackson, WY: Integration Press.

Martin, J. (2020) Clusters of Individuals Experiences form a Continuum of Persistent NonSymbolic Experiences in Adults. *Consciousness, 8* (8), Available at: https://digitalcommons.ciis.edu/conscjournal/vol8/iss8/1

Marshall, P. (2019). *The Shape of the Soul: What Mystical Experiences Tell us about Ourselves and Reality.* Lanham, MD: Rowman & Littlefield.

Maslow, A. (1970). *Motivation and Personality* (2nd ed.). New York, NY: Harper and Row.

McCrae, R. R. & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52*(1), 81-90. https://doi.org/10.1037/0022-3514.52.1.81

McNeish, D. (2018). Thanks coefficient alpha, we'll take it from here. *Psychological Methods, 23*, 412–433. http://dx.doi.org/10.1037/met0000144

Miller, W., & C'de Baca, J. (2001). Quantum Change: When Epiphanies and Sudden Insights Transform Ordinary Lives. New York, NY: Guilford Publications.

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.

Pappas, J. & Friedman, H. L. (2007). Towards a conceptual clarification of the terms religious, spiritual, and transpersonal as psychological constructs. In A. Baydala, J. Pappas, & W. Smythe (Eds.), *Cultural Healing and Belief Systems* (pp. 22–54). Calgary, Canada: Temeron Books.

Preacher, K. J. & MacCallum, R. C. (2003). Repairing Tom Swift's electric factor analysis machine. *Understanding Statistics: Statistical Issues in Psychology, Education, and the Social Sciences, 2*, 13–43. https://doi.org/10.1207/S15328031US0201_02

Ramana Maharshi (1963). *Talks with Ramana Maharshi*. Tiruvannmalai: T.N. Venkataraman.

Rammstedt, B. & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of Research in Personality*, 41, 203-212.

Rose, K. (2016). *Yoga, Meditation, and Mysticism: Contemplative Universals and Meditative Landmarks.* London, UK: Bloomsbury.

Roth, M. & Hammelstein, P. (2012). The Need Inventory of Sensation Seeking (NISS). *European Journal of Psychological Assessment, 28*(1), 11-18. https://doi.org/10.1027/1015-5759/a000085

Sabom, M. (1998). *Light and Death: One Doctor's Fascinating Account of Near-death Experiences.* Grand Rapids, MI: Zondervan.

Sartori, P. (2014). *The Wisdom of Near-death Experiences*. London: Watkins.

Schuon F. (1984). *The Transcendent Unity of Religions.* Wheaton, IL: Quest Books.

Spencer, S. (1963). *Mysticism in World Religion*. London, UK: Pelican Books.

Stolarski, M., & Witowska, J. (2017). Balancing own time perspective from aerial view: Metacognitive processes in temporal framing. In: A. Kostić, & D. Chadee (Eds.). *Time Perspective. Theory and Practice* (pp. 117–141). UK: Palgrave Macmillan UK.

Streib, H., & Hood, R. (2013). Modeling the religious field: Religion, spirituality, mysticism and related world views. *Implicit Religion, 16*(3), 137–155. https://doi.org/10.1558/imre.v16i2.133

Streiner, D.L. (2003). Starting at the beginning: An introduction to coefficient alpha and internal consistency. *Journal of Personality Assessment, 80*(1), 99-103. https://doi.org/10.1207/S15327752JPA8001_18

Studstill, R. (2005). *The Unity of Mystical Traditions: The Transformations of Consciousness in Tibetan and German mysticism*. Leiden, Netherlands: Brill.

Suzuki, D.T. (1956) *Zen Buddhism*. New York: Doubleday.

Tavakol, M. & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education,* 53–55.

Taylor, S. (2012). Spontaneous awakening experiences: Exploring the phenomenon beyond religion and spirituality. *The Journal of Transpersonal Psychology, 44*(1), 73–91.

Taylor, S. (2013). A phenomenological investigation into the psychological transformation interpreted as spiritual awakening: Possible causes, characteristics and after-effects. (Unpublished doctoral dissertation). Liverpool John Moores University, UK. Available via: http://researchonline.ljmu.ac.uk/id/eprint/6196/

Taylor, S. (2016). From philosophy to phenomenology: The argument for a "soft" perennialism. *International Journal of Transpersonal Studies, 35*(2), 17-41

Taylor, S. (2017a). The return of perennial perspectives? Why transpersonal psychology should remain open to essentialism. *International Journal of Transpersonal Studies, 36*(2), 75-92.

Taylor, S. (2017b). *The Leap: The Psychology of Spiritual Awakening*. Novato, CA: New World Library. ISBN 978-1608684472

Taylor, S., & Egato-Szabo, K. (2017). Exploring awakening experiences: A study of awakening experiences in terms of their triggers, characteristics, duration and aftereffects. *The Journal of Transpersonal Psychology, 49*(1), 45–65.

Taylor, S. (2021). Transformation through loss and grief: A study of personal transformation following bereavement. *The Humanistic Psychologist, 49*(3), 381–399. https://doi.org/10.1037/hum0000172

Tivian XI GmbH. *UniPark Enterprise Feedback Suite Survey*; Tivian XI GmbH: Cologne, Germany; Available online: https://www.unipark.com/en/ (accessed on 17 November 2021).

Wade, J. (2004). *Transcendent Sex: When Lovemaking Opens the Veil*. New York, NY: Paraview Pocket Books.

Walach, H., Buchheld, N., Buttenmüller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness—the Freiburg Mindfulness Inventory (FMI). *Personality and Individual Differences, 40*(8), 1543-1555. https://doi.org/10.1016/j.paid.2005.11.025

Watkins, M. W. (2018). exploratory factor analysis: A *Guide to Best Practice*. *Journal of Black Psychology, 44*(3), 219–246. https://doi.org/10.1177/0095798418771807

Witowska, J., Schmidt, S., & Wittmann, M. (2020). What happens while waiting? How self-regulation affects boredom and subjective time during a real waiting situation. Acta Psychologica, 205, 103061.

Wolman, R. (1997). Spirituality: What does it mean to you? *New Age Journal, September/October,* 78-81.

Zwick, W.R. & Velicer, W.F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin, 99,* 432–442.

Appendix 1

Pilot 1 items with associated characteristics

Wellbeing/Positive Affective States (serenity, joy, appreciation, freedom from worry and anxiety)

I feel a deep appreciation for ordinary aspects of life (e.g. eating, walking, relationships, and breathing), many times each day.
I often experience a sense of pervasive joy or happiness for no particular reason.
I have an ongoing sense of inner contentment and ease.
I have an ongoing sense of inner stillness and peace.
I accept and value myself exactly as I am.
(R) I often feel anxious or worried.

Sense of Connection and Wholeness (Expanded identity, loss of separateness, loss of labels and concepts that were once identified with)

I experience a deep sense of union with life itself.
All things seem to be part of a greater underlying reality.
I sense that seemingly separate things (i.e., nature, living beings, and inanimate objects) are deeply interconnected.
I feel deeply connected to nature.
(R) I feel I am separate from others and the world.
I feel deeply connected to the people I encounter.
It feels false to define myself in terms of labels, such as gender, ethnicity, religion, or nationality.
Who I am includes and expands beyond my mind and body.

Intensified Perception (enhanced sense of beauty; heightening of pleasure)

I am often amazed by the incredible beauty of the world around me.
I frequently experience a feeling of awe in response to ordinary things or events.
The world around me is intensely vivid and alive.
I experience a heightened sensitivity both emotionally and physically.
I find deep pleasure in ordinary experiences like eating, tasting, smelling and walking.

Increased present-ness

I feel deeply present.
I am *intensely* aware of my moment-to-moment experience.
I live very much in the present.
The past and future do not disturb my present experience.

Relishing of Inactivity (enjoyment of inactivity, absence of pressure to 'do')

I often have no sense of needing to do anything; I am often content to just be.
I feel uncomfortable if my mind isn't occupied by thoughts, activities or other distractions.
I really enjoy doing nothing.
(R) When I have free time, I feel like I should be doing something.

Reduced Identification with thoughts and mental constructs (increased awareness of thoughts; dis-identification from mental constructs)

I sense and know deeply that I am not my thoughts.

I am very aware of the thought chatter in my mind.
I regularly watch thoughts go by without being affected by them.
I notice my emotions as they arise without getting immersed in them.

Reduced/Disappearance of fear of death/ A sense that the death of the body is not the end of consciousness or life.

(R) Death frightens me.
There is a feeling that my existence will continue in some form after death.
I have a sense that what I am cannot ever die.

Changed attitude to body (no longer as worried about appearance; trust in the body / sense of connectedness or rootedness in the body

(R) I find it difficult to accept my body as it is.
I feel comfortable and at home in my body.
How I look does not have any bearing on my self-worth, self-esteem, or sense of identity.
I have become much more aware and trusting of my body's signals.
I make healthy, moderate lifestyle choices (i.e. food, drink, exercise, habits).

Awakening as a difficult process (psychological disturbance, confusion, physical difficulties) - awakening as a process of integration/ongoing development

I have experienced a shift in consciousness which seemed to cause psychological disturbances, confusion, and/or physical effects.
My shift in consciousness has involved a process of adjustment and integration.

Awakening as an ongoing process rather than a completed, final, ultimate state

I feel that I have reached the end of the spiritual journey

Reduced Cognitive Activity (Quiet mind - mental lucidity)

I regularly experience a calm clarity and spaciousness of mind.
I experience regular periods of mental quietness, when my mind isn't focused on anything and is free of thoughts.

Decreased sense of group identity/need for belonging

(R) I identity myself strongly with my nationality, ethnic group or religion
I feel equally connected and compassionate towards all human beings, regardless of their culture or country, and no matter how closely related they are to me.
I don't feel the need to belong to a group, community, or society, and conform to its conventions.

Increased altruism, compassion, and empathy

I feel a strong impulse to contribute to the development of the human race and/or the evolution of consciousness.
I often feel the impulse to perform acts of kindness.
I am incapable of causing intentional harm to anyone or anything.
I have the ability to connect deeply with other people and feel what they are experiencing strongly.

Enhanced relationships

(R) I find it difficult to establish deep and authentic relationships.
I accept the people around me exactly as they are.

Enhanced pleasure and enjoyment (enhanced sexual intimacy)

Since my shift in consciousness, my experience of sex is more deeply intimate.
I experience heightened sensory pleasure and enjoyment.
I feel natural, unselfconscious, and uninhibited in sex.

Reduced interest in materialism (lack of personal ambition, desire for success)

(R) My possessions (car, house, or other goods) help me to feel good about myself.
It is not important to me whether I become a successful or prominent person.

A 'transpersonal' sense of purpose, a sense of mission beyond the personal (Costeines: non-dual action)

(R) The main aim of my life is to fulfil my personal ambitions and desires (i.e. for success, achievement, love, acceptance, etc…).
I have a sense that there is a harmony in life: that everything is okay, even when there are problems.
There is a larger purpose or mission which is expressing itself through me.
(R) I sometimes do things out of a sense of guilt or duty, or because I feel pressured by others.

Reduced judgement of others

(R) I often judge other people's behavior in my mind.

Intuitive decision-making

I tend to make decision based on feelings or deep inner knowing, rather than making them with my mind and thoughts alone.
(R) I am often worried or afraid of making the wrong decisions.

Increased inner security -less dependent on achievements and success for self-worth

(R) I often compare myself to others
My sense of self-worth isn't affected by success or failure
I don't feel the need to accomplish and achieve things to prove my value as a person.
I feel secure inside myself, no matter what other people think of me

Attitude of Acceptance/Letting Go/Surrender

When life brings unexpected changes, it is fairly easy for me to accept and move on.
(R) I feel the need to control as much of my life as possible.
I accept what life brings me.

Timelessness/Slowed Down sense of time (Costeines - timeless awareness).

I often feel that time is an illusion.
I often have a sense of timelessness.
I have a slowed down sense of time compared to other people.

Authenticity (honesty, in touch with self)

I rarely feel pressured to act in a certain way to gain acceptance.
In social situations, I often feel that I don't behave authentically or express my true self.

Heightened or Increased Energy (increased activity/highly engaged present activity)

I am very productive when inspired to act.
Since my shift in consciousness, I have felt more energetic and alive.

Note: R notes item scored in reverse

Appendix 2

Pilot 2 items with associated characteristics

Wellbeing/Positive Affective States (serenity, joy, appreciation, freedom from worry and anxiety)

I have an ongoing sense of inner contentment and ease.

Sense of Connection and Wholeness (expanded identity, loss of separateness, loss of labels and concepts that were once identified with)

I experience a deep sense of union with life itself.
I sense that seemingly separate things (like household object, trees, and people) are part of the same all-pervading consciousness.
(R) I feel I am separate from others and the world.
(R) It feels natural to define myself in terms of labels like gender, ethnicity, religion, or nationality

Intensified Perception (enhanced sense of beauty)

I feel a sense of awe at the "is-ness" of the world around me.
The world around me is intensely vivid and alive.

Increased present-ness

I feel deeply present.
The past and future do not disturb my present experience.

Relishing of Inactivity (enjoyment of inactivity, absence of pressure to 'do')

I have no sense of needing to do anything; I am content to just be.
(R) When I have free time, I feel like I should be doing something.

Reduced Identification with thoughts and mental constructs (increased awareness of thoughts; dis-identification from mental constructs)

I sense and know deeply that I am not my thoughts.
I notice my emotions as they arise without getting immersed in them.

Reduced/Disappearance of fear of death/ A sense that the death of the body is not the end of consciousness or life.

(R) Death frightens me.

Changed attitude to body (no longer as worried about appearance; trust in the body / sense of connectedness or rootedness in the body

How I look does not have any bearing on my self-worth, or sense of identity.

Reduced Cognitive Activity (Quiet mind - mental lucidity)

I experience regular periods of mental quietness, when my mind is free of thoughts.

Decreased sense of group identity/need for belonging

I feel equally connected and compassionate towards all human beings, regardless of their culture or country, and no matter how closely related they are to me.

I don't feel the need to belong to a group, community, or society, or conform to its conventions.

Increased altruism, compassion, and empathy

I am incapable of causing intentional harm to anyone or anything.

Enhanced relationships

(R) I find it difficult to establish deep and authentic relationships.

Heightening of pleasure and enjoyment/ Heightened sensory experience / Enhanced enjoyment of ordinary experience / Experience of Intense Aliveness in body & senses

I feel intense aliveness in all of my senses.

I derive profound pleasure even from engaging in ordinary activities.

I feel intensely alive in my sensual experiences.

When lovemaking, I experience profound union (in mind, body, and spirit) with my sexual partner.

Reduced interest in materialism (lack of personal ambition, desire for success)

(R) Becoming a successful or prominent person is important to me.

A 'transpersonal' sense of purpose, a sense of mission beyond the personal

There is a larger purpose or mission which is expressing itself through me.

(R) I sometimes do things out of a sense of guilt or duty, or because I feel pressured by others.

Reduced judgement of others

(R) I judge other people's behavior in my mind.

Intuitive decision-making

When making decisions I trust my feelings and intuition to take me in the right direction

Increased inner security -less dependent on achievements and success for self-worth

My sense of self-worth isn't affected by success or failure.

Attitude of Acceptance/Letting Go/Surrender

When life brings unexpected changes, it is fairly easy for me to accept and move on.

Timelessness/Slowed Down sense of time (Costeines - timeless awareness).

I often have a sense of timelessness.

Authenticity (honesty, in touch with self)

(R) I feel pressured to act in certain ways to gain acceptance.

Note: R notes item scored in reverse

Appendix 3

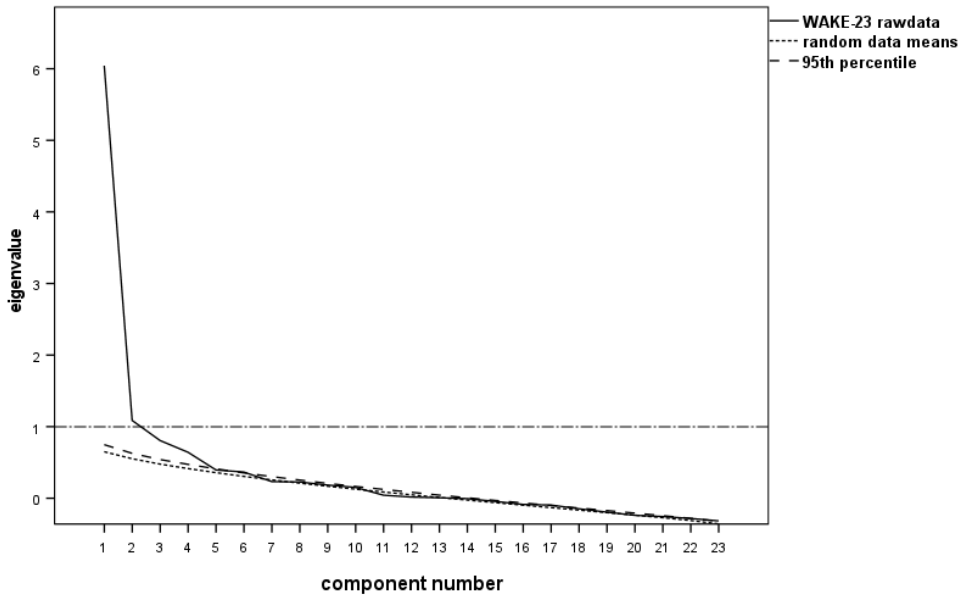

Figure 1. The Scree plot for the exploratory factor analysis (EFA) computed on the initial version of the WAKE with 23 items (*n*=278, test sample). The curves depict the mean eigenvalues for the real data set (continuous line), the random data means (dotted), and upper 95th percentile sets obtained by permutations of the raw data using Castellan's algorithm (dashed).

Appendix 4

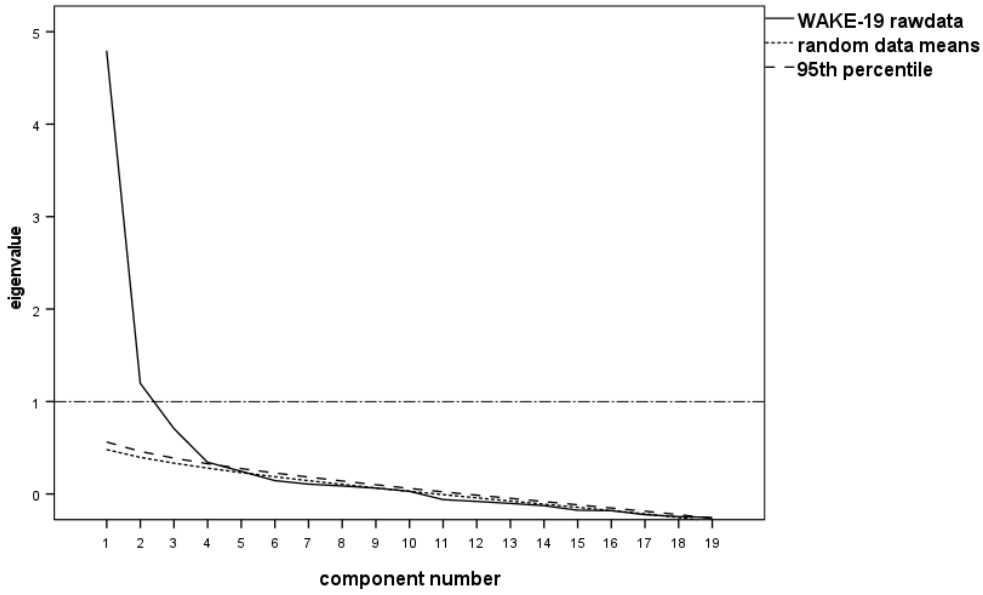

Figure 2. The Scree plot for the exploratory factor analysis (EFA) computed on the German WAKE-19 items (*n*=366). The curves depict the mean eigenvalues for the real data set (continuous line), the random data means (dotted), and upper 95th percentile sets obtained by permutations of the raw data using Castellan's algorithm (dashed).