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Factor Analysis of the Transpersonal Appreciation Scale as Studied in Adult Residents of the United States

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Abstract: Transpersonal appreciation is an emotion characterized by gratitude extending beyond an interpersonal relationship. It may be experienced with a known benefactor (e.g., a deity or person) or, more existentially, without a specific benefactor as the object of appreciation. Several tools to measure appreciation exist, though none efficiently assess transpersonal appreciation across heterogeneous groups (e.g., spiritual and secular). **Objective:** This research describes the development of a novel Transpersonal Appreciation Scale (TAS) for use in diverse groups. **Methods:** An exploratory factor analysis with 324 U.S. participants reduced an initial item pool of 36 items to 10, revealing a preliminary two-factor structure (General Appreciation and Spiritual Appreciation) which accounted for 71% of the total variance. A follow-up study with 317 U.S. participants used confirmatory factor analysis (CFA) to evaluate the proposed two-factor model and test measurement invariance across groups defined by current religious affiliation. **Results:** The CFA results demonstrated good fit (robust CFI = 0.983) and strong internal consistency for the General Appreciation (α = 0.860) and Spiritual Appreciation (α = 0.901) subscales. Convergent validity for subscale scores was supported by positive correlations between General scores and Adler and Fagley's Appreciation Scale and between Spiritual scores and the Gratitude to God Scale (r = 0.763), while discriminant validity evidence was supported by negative correlations with negative affect as measured by PANAS (General: r = -0.697; Spiritual: r = -0.535). **Conclusion:** These findings provide initial evidence that Transpersonal Appreciation Scale scores have equivalent internal structure and factor loadings across religious groups.

Keywords: Gratitude; Appreciation; Scale development; Measurement; Positive psychological assessment; Factor analysis

1. Introduction

Gratitude and appreciation are often used synonymously to describe the emotional state in which an individual feels thankful for a particular experience (Navarro & Tudge, 2020). However, there is much discussion in the existing literature about whether the two terms are interchangeable or distinct from one another (Hammer & Brenner, 2019; Manela, 2016; Navarro & Tudge, 2020). The commonality between the two terms centers on their

link to the general concept of thankfulness, which broadly involves being conscious of the benefits one has received and feeling a sense of happiness or positivity for receiving such benefits (Navarro & Tudge, 2020). The two constructs are also linked by their roots in the present moment (Hammer & Brenner, 2019). Unlike other terms used to describe a general sense of happiness, such as hope or optimism, gratitude and appreciation do not involve anticipation of the future. Both constructs are present- rather than future-focused. Both terms are also context-dependent, being considered attitudes, emotions, habits, personality traits, and responses in different situations (Sansone & Sansone, 2010).

2. Gratitude and Appreciation Definitions

Examining the existing literature on this topic, both gratitude and appreciation are defined in several ways, with the concepts often appearing entangled. Appreciation can be defined as "acknowledging the value and meaning of something—an event, a person, a behavior, an object—and feeling a positive emotional connection to it" (Adler & Fagley, 2005, p. 79). It is a term that can be used to describe a general experience of positive emotion that does not need to be linked to a particular source (Navarro & Tudge, 2020). Appreciation can also be considered a disposition as well as an emotion. For example, one might have a tendency to feel appreciation (Fagley, 2018).

By comparison, the definitions provided for gratitude throughout published literature are less congruent. Wood et al. (2010, p. 891) put forward a broad definition of gratitude as being "a life orientation toward noticing and appreciating the positive in the world." Similarly, Sansone and Sansone (2010, p. 18) defined gratitude as "the appreciation of what is valuable and meaningful to oneself." However, these more generalized statements do not identify the defining element of gratitude, its fundamentally interpersonal nature (Algoe et al., 2008; Fagley, 2018). Essentially, gratitude is differentiated from other positive feelings by its identification of and direction toward a known benefactor. It is defined by a person directing their positive response to a named agent they consider responsible for the positive emotional experience (Fagley, 2018).

The definition of gratitude can also be understood by examining its antonym, ingratitude (Navarro & Tudge, 2020). This is because gratitude, unlike appreciation, has historically been considered a virtue, and ingratitude has been viewed as morally wrong (Carr et al., 2015). Feeling and expressing gratitude is part of the human experience, a cornerstone of the social system within which all human beings operate. Without the interpersonal acknowledgment of benefactors, individuals risk violating moral norms and jeopardizing life-sustaining relationships (Navarro & Tudge, 2020). Indebtedness is another concept that plays a role in this system. Mathews and Green (2010) defined it as a feeling of thankfulness to another person that results in the urge to repay the benefactor. They argue that gratitude and indebtedness are inextricably linked as essential interpersonal responses to the receipt of any benefit.

3. Measures of Gratitude and Appreciation

Measures of gratitude and appreciation with variable design, scope, and purpose are presently available. These scales were developed over the last few decades for various purposes and populations, but all focus on elements of either gratitude or appreciation. Among the first to develop such a measure, McCullough et al. (2002) authored the Gratitude Questionnaire-Six (GQ-6), a brief six-item self-report measure to quantify agreement with six gratitude-related statements. A year later, Watkins et al. (2003) published the Gratitude, Resentment, and Appreciation Test (GRAT), from which a revised, short-form version (GRAT-RS) with a bifactor model was developed and widely employed. This measure sought to assess an individual's dispositional gratitude, or general tendency to express and experience gratitude. Hlava et al. (2014) authored the Transpersonal Gratitude Scale, in which an individual rates agreement with 16 statements regarding gratitude, some of which reference a higher power or known benefactor.

Continuing the study of gratitude with a specific population, Martini and Converso (2014) developed two measures, one designed to measure gratitude perceived by healthcare providers and the other to measure support provided by patient gratitude. The measures were intended to explore the positive aspects of the provider-patient relationship. Around this same time, Krause and Hayward also developed two scales

to explore the difference between general gratitude and gratitude to a known benefactor. The Gratitude Scale (Krause & Hayward, 2014) listed four simple statements regarding gratitude and required individuals to rate agreement. The Gratitude to God Scale developed by the same authors required agreement ratings for four statements regarding gratitude directly to "God" (Krause & Hayward, 2015).

A few other scales designed to measure levels of gratitude include the Multicomponent Gratitude Measure (Morgan et al., 2017) and the Existential Gratitude Scale (Jans-Beken & Wong, 2021). The Multicomponent Gratitude Measure measures four components of gratitude to include conceptions of the construct, grateful emotions, attitudinal experiences of gratitude, and behaviors connected to gratitude. The Existential Gratitude Scale, on the other hand, offers a scale that investigates gratitude experienced during difficult times. Validity evidence for scores from this scale was evaluated using the GRAT-RS, the Spiritual Well-Being Scale (Ellison, 1983; Paloutzian & Ellison, 1982), and the Trauma Screening Questionnaire (Brewin et al., 2002). Interestingly, Jans-Beken and Wong's work found support for their hypothesis that existential gratitude, not dispositional gratitude, was associated with spiritual well-being, suggesting that existential gratitude was a distinct construct from dispositional gratitude.

4. Why Gratitude and Appreciation Are Important

Experiencing both gratitude and appreciation is important for many reasons. First, both have been shown to offer notable health benefits, including greater quality of life, improved well-being, increased satisfaction with life, more self-esteem and positive affect, and healthier relationships (Hammer & Brenner, 2019; Wood et al., 2010). More specifically, both gratitude and appreciation have also been shown to have clinical relevance. Studies have shown that a greater sense of gratitude or appreciation can lead to reduced depressive and post-traumatic symptomatology, suicidal ideation, and suicide attempts (Disabato et al., 2016; Fredrickson et al., 2003; Wood et al., 2008). Finally, gratitude and appreciation are important because they can boost health for free, involving very little to no equipment or time (Kumar & Epley, 2018).

5. Transpersonal Gratitude or Appreciation

Gratitude not directed toward a human benefactor is distinct from interpersonal gratitude, which focuses on the significance of an experience or gift, the feeling of connectedness with another human being, and practical reciprocity (Artinian, 2019). Gratitude that occurs without a human benefactor is known as transpersonal gratitude, as it extends beyond an interpersonal relationship (Hlava et al., 2014). It stems from a gift or an experience that does not have an identifiable agent or human being that can be named as a benefactor, like the fact that the weather is good or that a garden is beautiful (Artinian, 2019). Transpersonal gratitude or appreciation can be experienced differently depending on the theistic or religious-themed beliefs of the individuals experiencing transpersonal gratitude.

6. Transpersonal Gratitude in Theistic and Non-Theistic Individuals

As discussed, gratitude is always directed toward a benefactor. However, for gifts and experiences that are intangible or ongoing—such as our own existence—it is not possible to attribute these directly to another human being (Lacewing, 2016). In these cases, for which benefactors are not limited to humans, higher beings can also be the recipients of thankfulness and reciprocation (Tsang & Martin, 2016). Higher beings that can be considered benefactors include God(s), cosmic forces, nature spirits, ancestors, and the universe, among others (Cohoe, 2022). While someone who considers themselves religious or spiritual can attribute gifts and experiences to a benefactor in the form of a higher power, a question remains throughout the existing literature on this topic. Simply stated, who is the benefactor of those same gifts and experiences when they are experienced by an individual who is not religious or spiritual (Lacewing, 2016)?

7. Gratitude in Theistic Groups

Gratitude is a highly prized virtue across all major religious groups and has long been considered one of the cornerstones of the connection between human beings and God(s) (Artinian, 2019; Peterson & Seligman, 2004). Some have even suggested that gratitude is a sacred or spiritual emotion (Emmons & Kneezel, 2005). Christians, Muslims, Jews, and Hindus are all encouraged to acknowledge the gifts they receive

and live in a state of active thankfulness (Krause, 2009). Given that gratitude is defined as a feeling of thankfulness to a particular individual or being, it is logical that theists practice gratitude often (Artinian, 2019). One study by Tsang et al. (2012) attempted to test the relationship between religion and gratitude by randomly assigning participants to be religiously primed before receiving a random positive outcome. All participants were then asked to donate money. The results of the study found that those who were religiously primed and were the beneficiaries of a random positive outcome gave more than those who were not.

Many religions and forms of spirituality place a high value on gratitude, and those who engage in theistic practices are regularly exposed to the concept through prayers and religious literature (Schnitker & Emmons, 2007). In fact, gratitude is a virtue highly prized in many of the world's major religions, appearing prominently in most Holy Scriptures (Artinian, 2019; Krause, 2009). The close connection between gratitude and theistic practice is shown by the consistent findings of a positive correlation between gratitude and religious commitment (Rosmarin et al., 2011). A 2014 study found gratitude is best predicted by a person's engagement in religious practices, followed by other forms of spirituality (Büssing et al., 2014). It has also been found that those who attend religious services more regularly are significantly more grateful than those who do not participate in religious services (Emmons & Kneezel, 2005; Krause, 2009).

Literature has also reported that theistic individuals experience more positive outcomes that can be directly attributed to gratitude. One recent study found that religious motivation moderated the relationship between gratitude and depression (Tulbure, 2015). Essentially those who are more religiously motivated experience less depression, an illustration of how gratitude and religiosity may protect against negative emotions. Another study examined how gratitude to God predicted well-being over time and found through cross-sectional analysis that those who were grateful to God scored significantly higher on well-being variables (Watkins et al., 2022). Another study found that religiously integrated Cognitive-Behavioral Therapy (CBT) was more effective than traditional CBT in increasing feelings of gratitude among participants with Major Depressive Disorder (Pearce et al., 2016).

Multiple studies have also found that gratitude to a higher being increases psychological benefits (Rosmarin et al., 2011; Szcześniak et al., 2019). Having faith in a higher power has been found to promote optimism and prevent hopelessness, both of which are protective factors against psychopathology (Rosmarin et al., 2010). Krause (2009) examined religious involvement, gratitude, and change in depressive symptoms over time, finding that a significant life stressor such as serious financial strain did not have a significant effect on depressive symptoms for those who are more grateful.

8. Limitations to the Literature Base on Theistic Gratitude

Clear limitations exist in the current body of literature on gratitude among theistic individuals. First, a majority of study participants who are representative of religious or spiritual persons in the published literature are Christian (Rosmarin et al., 2011). Moreover, those who are tied to a major religion are overrepresented in the literature in comparison to those who belong to smaller religious groups or those who align with a more unstructured spirituality. The samples involved in many of the published studies are further restrained by the fact that participants are often recruited from specific settings like universities or church groups which may not provide a diverse, representative sample.

9. Gratitude in Non-Theistic Groups

For those who identify as non-theistic, experiencing gratitude for things that are not produced by a worldly agent (e.g., a beautiful sunrise or a good night's sleep) is possible but more challenging to link to a known benefactor (Artinian, 2019; Hunt, 2021). Research has shown that those who do not believe in a higher power can feel gratitude after certain experiences not attributable to human agency (Lacewing, 2016; Roberts, 2014). Existential gratitude is a specific form of gratitude that can prove complex to apply to non-theists; being grateful for one's existence or for the existence of reality without a higher being to classify as the benefactor leaves it unclear as to who or what should be the object of gratitude (Cohoe, 2022).

However, studies have shown that those without a higher being to identify as the benefactor of such

gifts and experiences still experience gratitude, just in different ways. Cosmic gratitude is one example of an alternative conceptualization whereby non-theistic individuals consider the benefactor of such gifts and experiences as a general source of good (Cohoe, 2022). Studies have also explored the differences between theistic and non-theistic individuals in their experiences of gratitude. One recent qualitative study interviewed theistic, non-theistic but spiritual, and neither religious nor spiritual participants to determine how people link their transcendent narrative identity to their feelings of gratitude (King et al., 2022). While those who identified as theistic thanked God (as was relevant to their own religious alignment) for gifts and experience, those who were neither religious nor spiritual had a less typical benefactor-beneficiary relationship despite reporting that they felt grateful. They were unable to name or identify a benefactor for gifts and experiences not derived from another human. Instead, they expressed gratitude for the gift itself and were likely to "pay the goodness forward" (the reciprocal aspect of gratitude) despite not reciprocating to a benefactor.

While several types of gratitude and appreciation measures exist and have been discussed above, the current work's authors were interested in determining whether a scale measuring transpersonal appreciation, as defined in the next section, would be able to identify and discern differences in transpersonal appreciation among individuals who believed in an identifiable non-human benefactor (e.g., a deity figure) and those who did not. This effort is important to determine whether a scale adequately and equitably captures the level of transpersonal appreciation across groups, whether or not they are grounded in theistic or religious beliefs. So as not to be confused with the Transpersonal Gratitude Scale developed by Hlava and colleagues (2014), the new scale is called the "Transpersonal Appreciation Scale."

Study 1: Exploratory Factor Analysis

Method

This study aimed to develop a scale of transpersonal appreciation that could distinguish among several distinct aspects of transpersonal appreciation. The steps for psychometric validation of religious and spiritual measures suggested by Koenig and Al Zaben (2021) were largely followed, as described below.

Item Development

The construct definition of "transpersonal appreciation," as conceptualized by the research team, was "the appreciation of intrinsically worthwhile experiences or objects that transcend the self and are the source of subjective benefit." Members of the research team generated a list of items that captured not only gratitude or appreciation for tangible items or gratitude directed toward other individuals, but also items that would identify a transpersonal type of appreciation (e.g., appreciation, gratitude for God, or nature). The research team then reviewed several existing gratitude and appreciation scales and vetted items that appeared relevant for inclusion in the new scale's item pool. Thus, construct identification was *a priori* and both deductive and inductive. **Table 1** lists existing measures from which pool items were selected.

Table 1. *Measures of Gratitude and Appreciation Reviewed*

Measure	Description	Reference
Gratitude Questionnaire-Six (GQ-6)	A self-report measure that uses a seven-point scale to quantify agreement (from 'strongly disagree' to 'strongly agree') for six statements related to gratitude.	McCullough et al., 2002
Gratitude, Resentment, Appreciation Test short form (GRAT- RS)	A self-report measure that uses a nine-point scale to quantify agreement (from 'I strongly disagree' to 'I strongly agree with the statement') for 16 statements related to gratitude.	Watkins et al., 2003
Gratitude to God	A self-report measure using a 4-point Likert scale to discern agreement (from 'strongly disagree' to 'strongly agree') with four statements on deity-focused gratitude.	Krause and Hayward, 2015
Transpersonal Gratitude Scale	A self-report measure using a 6-point Likert scale to determine agreement (from 'strongly disagree' to 'strongly agree') with 16 statements regarding gratitude.	Hlava et al., 2014
Existential Gratitude Scale	A self-report measure using a 7-point Likert scale to indicate agreement (from 'completely disagree' to 'completely agree') with 13 statements regarding gratitude during difficult times.	Jans-Beken & Wong, 2021

After a review of the initial item pool, the research team refined the pool to 36 items. At this stage of scale development, Adler and Fagley's conceptualization of appreciation was considered. This appreciation framework consists of eight appreciation aspects (see Fagley, 2018, p. 60, Table 1): Have, Awe, Ritual, Present Moment, Self/social Comparison, Gratitude, Loss/adversity, and Interpersonal. The framework was used to further conceptualize transpersonal appreciation based on existing seminal literature, as each of the 36 pool items was then associated with one of Adler and Fagley's eight facets of appreciation.

Subsequently, we determined that, considering the format of included items selected from existing scales, retaining a 5-point Likert response design for the scale items would be appropriate for the new scale. The scale included the following response options for each item/statement: strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, and strongly disagree. Some scale items were assessed in terms of frequency, not rate of agreement; for those frequency-related items, a 5-point Likert scale was also used.

We then recruited a panel of seven experts to review the scale items under consideration. The panel members rated all items (from 0 to 1) for content validity (i.e., relevance) and clarity related to the construct. Items with mean ratings lower than 0.70 were excluded from further consideration. Focus groups with the target population were not conducted as an additional step in determining content validity.

Pretesting of potential scale items with the target population was not conducted.

Study Participants

Based upon a review of EFA best practices and the number of scale items included in the analysis, the research team determined that a sample size of at least 250 would be sufficient to conduct an EFA. The study was approved by the university's Institutional Review Board, and informed consent was provided by participants. Recruitment efforts were made by offering the study to individuals on various social media platforms, including (among others) Reddit, Facebook, and Meetup. The study survey screened participants for effortful participation; 324 of the responses submitted were determined to be valid and were included in the analyses. **Table 2** provides descriptive statistics outlining the sample's demographic characteristics. Note that "Religion Origin" refers to the religion in which an individual was raised or brought up, and "Religion Current" describes an individual's self-endorsed current practice of a religion or faith.

Table 2. *Participant Demographics*

Statistic	Category	Count	Percentage
Gender	Man	205	63.27
	Woman	101	31.17
	Other	1	0.31
	NA	17	5.25
Ethnicity	Hispanic/Latino	76	23.46
	Not Hispanic/Latino	228	70.37
	NA	20	6.17
Race	American Indian / Alaska Native	3	0.93
	Asian	12	3.70
	Asian American	9	2.78
	Black / African American	78	24.07
	Multiracial	3	0.93
	Other	1	0.31
	White / Caucasian	201	62.04
	NA	17	5.25
Education	High School	33	10.19
	Associate's degree / Some college	63	19.44
	Bachelor's degree	134	41.36

Continuation Table:

Statistic	Category	Count	Percentage
	Graduate degree	76	23.46
	NA	18	5.56
Relationship	Divorced	10	3.09
Status	In a relationship	15	4.63
	Married / Domestic partner / Cohabitating	217	66.98
	Single	61	18.83
	Widowed	4	1.23
	NA	17	5.25
Religion Origin	No	99	30.56
	Yes	204	62.96
	NA	21	6.48
Religion Current	No	146	45.06
	Yes	155	47.84
	NA	23	7.10
Religion Frequency	Several times a week	22	6.79
	Once a week	37	11.42
	2-3 times a month	26	8.02
	Once a month	19	5.86
	Several times in a year	22	6.79
	Once or twice a year	19	5.86
	Less than once a year	9	2.78
	NA	170	52.47

Preliminary Statistical Analysis

To explore the underlying structure of the dataset, we conducted data analysis using the R programming language (Version 4.4; R Core Team, 2024) in RStudio (Posit Software, 2024). We prepared the data for analysis (e.g., recoding, reshaping, and removing responses where all data were missing) using functions from the tidyverse package (Version 2.0.0; Wickham et al., 2019). Following this initial data processing, we assessed missing values in our data. Results of Little's test of data missing completely at random (MCAR) as implemented in the naniar package (Version 1.1.0; Tierney & Cook, 2023) indicated that the data were consistent with MCAR ($\chi^2(884) = 665$, $p = 1.00$, patterns = 33). Accordingly, to maximize the amount of data available for analysis while adhering to this assumption, we used the mice package (Version 3.17.0; van Buuren & Groothuis-Oudshoorn, 2011) to conduct multiple imputation (MI) using predictive mean matching for cases that had up to 15% (four items) of their responses to the items of interest missing. While MI often performs well in large samples with levels of missingness higher than 15% (see Olinsky et al., 2003), we determined that a more conservative cutoff value was appropriate to minimize the possibility of introducing bias into the dataset. From an initial sample size of 324 participants, 18 cases were removed due to more than 15% missingness on the TAS item pool, and 33 values were imputed across 25 respondents, resulting in a dataset with 306 participants.

Descriptive statistics were computed using the dplyr package (Version 1.1.4; Wickham et al., 2023) and psych package (Version 2.4.12; Revelle, 2024) to examine item-level distributions and central tendencies. This included calculating means, standard deviations, skewness, and kurtosis for each item to assess their distributions. A Shapiro–Wilk test for normality was also conducted for each item. The results indicated that nearly all items showed significant deviations from univariate normality, highlighting substantial non-normality at the item level and informing our use of polychoric correlations and robust estimators in subsequent factor analyses. Appendix A presents the descriptive statistics for each item.

The suitability of the data set for factor analysis was assessed using the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The KMO value of 0.96 indicated excellent sampling adequacy, suggesting that the items were interrelated sufficiently for factor analysis. Additionally, Bartlett's test of sphericity was significant ($\chi^2(630) = 14{,}759$, $p < .001$), further confirming the suitability of the data for identifying underlying structures.

We next computed a polychoric correlation matrix to assess the inter-item relationships of the initial 36-item Transpersonal Appreciation Scale (TAS) item pool. This method is well suited for ordinal data, such as Likert-scale responses, and yields a more accurate representation of underlying relationships between items than traditional Pearson correlations (Holgado-Tello et al., 2010). Most correlations (602 out of 630) were considered "good" (i.e., between 0.35 and 0.80), indicating strong interrelationships among the items. These findings support the coherence and factorability of the initial 36-item pool and suggest good alignment between items and their intended constructs. Based on these positive results, subsequent factor analyses were conducted to identify underlying factor structures.

Exploratory Factor Analysis

An EFA was conducted to identify the underlying factor structure of the new Transpersonal Appreciation item pool. To determine the number of factors to extract, we employed parallel analysis, which compares the eigenvalues of the observed data to those obtained from random data, and the results suggested a two-factor solution. The Very Simple Structure (VSS) criterion also identified two factors as optimal, balancing the maximization of explained variance with the simplicity of the solution. Additional fit indices further supported the two-factor model: Velicer's minimum average partial (MAP) reached a minimum of 0.01 with two factors, and the Bayesian information criterion (BIC) was lowest for the two-factor solution (-2,728).

We used principal axis factoring (PAF) to extract the underlying factor structure. PAF is well suited for ordinal data and is robust to departures from normality, and the oblimin rotation allows factors to correlate, which more accurately reflects the interrelated nature of the constructs under investigation. Factor loadings of 0.40 or higher were considered salient, and lower loadings were suppressed to enhance clarity. Overall model fit was evaluated using the Tucker–Lewis index (TLI) of factoring reliability, the root-mean-square error of approximation (RMSEA), and the root-mean-square-residual (RMSR). Internal consistency of the resulting factors was assessed using Cronbach's alpha, McDonald's omega, and Guttman's lambda 6 reliability coefficients.

Results

The EFA revealed a clear two-factor structure, accounting for 71% of the total variance in the Transpersonal Appreciation item pool (see Appendix B for full factor loadings and communalities). Factor 1 (PA1), labeled "General Appreciation," encompassed items reflecting gratitude for natural and life experiences (loadings: 0.50 to 0.99), while Factor 2 (PA2), labeled "Spiritual Appreciation," comprised items relating to gratitude for spiritual and transpersonal experiences (loadings: 0.43 to 0.95). The high communalities (0.65 to 0.99 for General Appreciation; 0.67 to 0.95 for Spiritual Appreciation) and low uniqueness values across both factors indicated that they effectively capture the variance in their respective items. Additionally, the low item complexity values highlight the clarity of the factor structure, with most items loading primarily onto a single factor. Furthermore, a moderate correlation of 0.69 between the two factors suggested that while they are distinct constructs they share some underlying association, as is often seen with related psychological constructs. Despite strong factor loadings, the fit indices yielded mixed results. The Tucker-Lewis Index (TLI = 0.792) and the Root Mean Square Error of Approximation (RMSEA = 0.124, 90% CI: 0.120, 0.128) did not meet the conventional thresholds suggested by Hu and Bentler (1998, 1999) of having a TLI of at least 0.95 and an RMSEA of 0.06 or lower. Although in contrast, the Root Mean Square Residual (RMSR = 0.03), was well below their threshold of 0.08. A reason for the mixed results may be because these conventional cutoff values were derived under the assumption of continuous, normally distributed data, recent research (e.g., McNeish, 2023) has argued that interpreting results according to these thresholds may be misleading when analyzing ordinal data (such as our Likert-type responses) using methods like polychoric correlations. Thus, while the TLI and RMSEA values fell short of these traditional standards, other assessments of model

fit provide converging validity evidence that supports our overall finding of a two-factor solution.

The low RMSR value indicates strong model reproduction. This finding is further supported by exceptional internal consistency across both factors with Cronbach's alpha and Guttman's Lambda 6 all exceeding 0.90 across both the General Appreciation and Spiritual Appreciation subscales (see **Table 3**). This high degree of internal consistency, coupled with strong signal-to-noise ratios, high factor loadings, and communalities, provides strong evidence for both the reliability and distinctiveness of the two factors and for using Transpersonal Appreciation Scale scores as indicators of these constructs.

Table 3. *Internal Consistency Measures*

Scale	Raw Alpha	Std. Alpha	Alpha SE	Average r	Median r	G6	Signal to Noise	Factor Mean	Factor SD
General Appreciation	0.973	0.973	0.002	0.570	0.575	0.978	35.8	4.46	0.647
Spiritual Appreciation	0.943	0.943	0.005	0.649	0.641	0.945	16.7	4.23	0.905

Overall, while some fit indices deviate from traditional thresholds, this is methodologically expected given the ordinal data and polychoric correlations used. The RMSR of 0.03 provides strong evidence of good model reproduction, and the exceptional internal consistency metrics (all > 0.90) strongly support the reliability and distinction of a two-factor structure for the Transpersonal Appreciation Scale. After a careful review of the content overlap of items that loaded on each of the two factors, to increase parsimony and decrease scale length while maintaining content coverage, 10 items—5 items for each factor—were selected as the items comprising the newly constructed Transpersonal Appreciation Scale (see Appendix C).

Study 2: Confirmatory Factor Analysis

Method

To further validate the two-factor structure and assess its suitability across diverse populations, we next conducted a confirmatory factor analysis (CFA) study using a new sample of 317 participants. After removing three cases that exceeded our threshold of missing 5% or more of key scale responses, the final analytical sample included 314 participants. **Table 4** provides descriptive statistics describing the sample's demographic characteristics. Religion Origin names the religion in which an individual was brought up, and Religion Current represents an individual's self-endorsed current faith.

Table 4. *Participant Demographics*

Statistic	Category	Count	Percentage
Gender	Man	205	65.29
	Woman	106	33.76
	In some other way	1	0.32
	Prefer not to answer	1	0.32
	NA	1	0.32
Ethnicity	Hispanic/Latino	27	8.60
	Not Hispanic/Latino	286	91.08
	NA	1	0.32
Race	American Indian / Alaska Native	3	0.96
	Asian	8	2.55
	Asian American	11	3.50
	Black / African American	66	21.02
	Multiracial	4	1.27
	Native Hawaiian / Other Pacific Islander	5	1.59
	White / Caucasian	216	68.79
	NA	1	0.32

Continuation Table:

Statistic	Category	Count	Percentage
Education	High School	1	0.32
	Associate's degree / Some College	57	18.15
	Bachelor's degree	178	56.69
	Graduate degree (MA, MS, MD, PhD)	77	24.52
	NA	1	0.32
Relationship Status	Married /Domestic Partner /Cohabitating	282	89.81
	Single	29	9.24
	In a Relationship	1	0.32
	NA	2	0.64
Raised Religiously	No	63	20.06
	Yes	249	79.30
	NA	2	0.64
Religion Origin	Catholic	106	33.76
	Muslim	48	15.29
	Evangelical Christian	36	11.46
	Spiritual but not religious	26	8.28
	Jewish	12	3.82
	Buddhist	6	1.91
	Atheist	4	1.27
	Hindu	3	0.96
	Agnostic	2	0.64
	Protestant	2	0.64
	Both Buddhist and Hindu	1	0.32
	Mormon	1	0.32
	Orthodox (Greek or Russian)	1	0.32
	Nothing in particular	1	0.32
	NA	65	20.70
Religion Current	Yes	226	71.97
	No	87	27.71
	NA	1	0.32
Religion Current	Catholic	88	28.03
	Muslim	50	15.92
	Evangelical Christian	35	11.15
	Jewish	14	4.46
	Buddhist	13	4.14
	Spiritual but not religious	7	2.23
	Hindu	6	1.91
	Protestant	4	1.27
	Orthodox (Greek or Russian)	2	0.64
	Mormon	2	0.64
	Agnostic	2	0.64
	Atheist	1	0.32
	Agnostic/Humanist/Unitarian Universalist	1	0.32
	Something else	1	0.32
	NA	88	28.03

Continuation Table:

Statistic	Category	Count	Percentage
Religion Frequency	Several times a week	69	21.97
	Once a week	58	18.47
	2-3 times a month	40	12.74
	Once a month	18	5.73
	Several times a year	27	8.60
	Once or twice a year	13	4.14
	Less than once a year	1	0.32
	NA	88	28.03

Statistical Analysis

Like the EFA methodology, analyses were conducted using version 4.4 of the R programming language (Version 4.4; R Core Team, 2024) within the RStudio environment (Posit Software, 2024). Data preparation procedures—including recoding variables, reshaping the dataset, and excluding cases with entirely missing responses—were carried out using functions from the tidyverse package (Version 2.0.0; Wickham et al., 2019), with particular reliance on the *dplyr* package (Version 1.1.4; Wickham et al., 2023).

After preparation, missing values were assessed using Little's MCAR test from the naniar package (Version 1.1.0; Tierney & Cook, 2023) revealing that the data were not missing completely at random ($\chi^2(337) = 482$, $p < .001$, patterns = 8). Because the data were not MCAR, we opted for a conservative approach in handling missing data for this confirmatory phase. Multiple imputation using predictive mean matching (mice package Version 3.17.0; van Buuren & Groothuis-Oudshoorn, 2011) was applied for cases with up to 5% (three items) missing responses. This more stringent threshold was chosen to minimize potential bias in imputed responses, and after removing three responses due to excessive missingness the imputation of 14 values across eight respondents yielded a dataset with 314 total responses available for data analysis.

Next, descriptive statistics were computed for each item to assess item-level distributions and central tendencies (see **Table 5**). This included running Shapiro-Wilk tests on each item to examine the data distributions' normality; all had p-values of less than 0.001, indicating that all items were univariate non-normal. These results informed our choice to use methods and settings robust to violations of normality in subsequent analyses. To evaluate each scale's internal consistency, we utilized Cronbach's alpha and Guttman's Lambda 6, among other metrics. The General Appreciation scale exhibited high internal consistency with a Cronbach's alpha of 0.860, indicating that the items cohesively measure the underlying construct. Similarly, the Spiritual Appreciation scale showed a robust internal consistency with an alpha of 0.901.

Additionally, correlation analyses revealed meaningful relationships between the Transpersonal Appreciation Scale and related constructs, providing strong evidence of convergent and discriminant validity. General Appreciation demonstrated a robust correlation with a combination of the "Have", "Awe," and "Gratitude" subscales of Adler & Fagley's Appreciation Scale ($r = 0.754$), indicating substantial overlap with the pertinent subscales of this existing measure of appreciation. Spiritual Appreciation showed a moderate but significant relationship with the combination of the three Adler & Fagley subscales ($r = 0.616$) and exhibited a strong association with the Gratitude to God scale ($r = 0.763$), confirming its conceptual alignment with spiritually oriented gratitude. The correlation between General and Spiritual Appreciation ($r = 0.677$) supports the theoretical framework that these represent related but distinct dimensions of appreciative experience. Both subscales displayed strong negative correlations with negative affect as measured by PANAS (General: $r = -0.697$; Spiritual: $r = -0.535$), providing evidence of discriminant validity. These correlational patterns support the conclusion that the Transpersonal Appreciation Scale captures meaningful psychological constructs that relate appropriately to established measures, with General Appreciation reflecting broader appreciative tendencies

and Spiritual Appreciation tapping into appreciation specifically in the context of spiritual experience.

Confirmatory Factor Analysis

To assess the presence of the proposed factor structure as identified in the EFA study and to assess if this factor structure is invariant across groups in our sample, we conducted a confirmatory factor analysis using the lavaan package (Version 0.6-19; Rosseel, 2012). Of particular interest to our research question is if the factor structure holds for both religious and non-religious groups. Accordingly, participants who identified as religious but did not specify being atheists, agnostics, or "spiritual but not religious" were classified as "religious" (n = 224). Participants who identified as atheists, agnostics, "spiritual but not religious," or explicitly non-religious were classified as "non-religious" (n = 90), and three participants who did not indicate their status were excluded from our analysis. These comparison groups were chosen to first create large enough groupings to perform invariance testing, and to remain pertinent to our research question on how the scale performs across groups with varying levels of religiosity, rather than explicitly spirituality per se, hence the combining of "spiritual but not religious" respondents who identified as atheist and agnostic.

With the groups defined, we next identified the CFA model. Our CFA model specifies two latent factors: General Appreciation, measured by five items: G1-5, and Spiritual Appreciation, again measured by five items: KB1-5. We also allowed the latent constructs to covary in the model as they capture similar but distinct constructs. We tested three models in total. First, a configural model that assumes the same factor structure across groups without any constraints. Second, a metric invariance model that constrained factor loadings to be equal across groups to test if the constructs have the same meaning. And third, a scalar invariance model which constrained both factor loadings and intercepts to be equal across groups to test if participants with the same level of the underlying construct have the same expected score on the observed variables. Hence the combining of "spiritual but not religious" respondents with those who identified as atheist and agnostic.

Results

We conducted a CFA to validate the Transpersonal Appreciation Scale's proposed factor structure and assess measurement invariance across religious and non-religious groups. Our initial analysis involved a configural invariance model, establishing a baseline by testing whether the same factor structure fits both groups without constraints. This model demonstrated good fit (robust CFI = 0.983, robust TLI = 0.978, robust RMSEA = 0.052), indicating that the two-factor structure is appropriate for both religious and non-religious groups. Next, we assessed the metric invariance model; this model constrains factor loadings to be equal across groups to test if the relationship between items and constructs is consistent. The robust chi-square difference test between the configural and metric models was non-significant ($\Delta\chi^2(8) = 10.75$, $p = 0.216$), supporting metric invariance and indicating that the items relate to the underlying constructs in the same way for both religious and non-religious individuals. Lastly, we tested scalar invariance, which further constrained intercepts to be equal across groups and found the robust chi-square difference test between the metric and scalar models approached significance ($\Delta\chi^2(8) = 15.17$, $p = 0.056$), suggesting that scalar invariance is marginally supported. This means that group comparisons of latent means are tentatively justified but should be interpreted with some caution.

Assessment of the factor loadings provided insights into how items related to their respective constructs across groups. For General Appreciation items, all showed substantially higher loadings in the religious group (differences ranging from 0.06 to 0.18), suggesting these items resonate more strongly with religious individuals. In contrast, Spiritual Appreciation items showed a mixed pattern, with some items loading higher in the religious group (KB1, KB4) while others unexpectedly loaded higher in the non-religious group (KB2, KB3, KB5). This counterintuitive finding likely stems from our group definition, as the "non-religious" group included participants who identified as "spiritual but not religious." These individuals may respond positively to spiritual items while rejecting organized religion, creating stronger within-group relationships for certain spiritual appreciation items. This highlights the complex relationship between religious identity, spirituality, and appreciation, suggesting that spirituality operates differently than general appreciation across these populations.

Table 5. *Item-level Distributions, Central Tendencies, and Normality Testing of CFA Scale Items*

Subscale	Item	N	Mean	Median	SD	Min	Max	Skewness	Kurtosis	Shapiro-Wilk (p)
General Appreciation	G1	314	4.54	5.00	0.78	1.00	5.00	-1.87	3.30	< .001
	G2	314	4.55	5.00	0.79	1.00	5.00	-1.92	3.31	< .001
	G3	314	4.57	5.00	0.74	1.00	5.00	-2.03	4.58	< .001
	G4	314	4.55	5.00	0.76	1.00	5.00	-2.04	4.75	< .001
	G5	314	4.62	5.00	0.73	1.00	5.00	-2.47	7.07	< .001
Spiritual Appreciation	KB1	314	4.46	5.00	0.89	1.00	5.00	-2.09	4.55	< .001
	KB2	314	4.47	5.00	0.90	1.00	5.00	-1.96	3.70	< .001
	KB3	314	4.46	5.00	0.91	1.00	5.00	-2.04	4.18	< .001
	KB4	314	4.49	5.00	0.88	1.00	5.00	-2.19	5.02	< .001
	KB5	314	4.52	5.00	0.87	1.00	5.00	-2.08	4.20	< .001

Table 6. *Internal Consistency Measures of CFA Scale Items*

Scale	Raw Alpha	Std Alpha	G6	Average r	Signal to Noise	Alpha SE	Scale Mean	Scale SD	Median r
General Appreciation	0.860	0.861	0.835	0.552	6.17	0.012	4.57	0.608	0.563
Spiritual Appreciation	0.901	0.900	0.886	0.644	9.05	0.009	4.48	0.753	0.632

Table 7. *Model Fit Indices for Configural, Metric, and Scalar Invariance Models*

Model	χ^2 (df)	Robust CFI	Robust TLI	Robust RMSEA	SRMR	$\Delta\chi^2$ (df)	p-value
Configural	79.671 (68)	0.983	0.978	0.052	0.045	–	–
Metric	90.382 (76)	0.979	0.976	0.055	0.069	10.75 (8)	0.216
Scalar	102.086 (84)	0.976	0.974	0.057	0.071	15.17 (8)	0.056

Note: *χ^2 values reported are robust chi-square statistics adjusted for non-normality (MLR estimator). The $\Delta\chi^2$ values represent scaled difference tests calculated using the Satorra-Bentler method (Satorra & Bentler, 2001) due to non-normal data, and not simple differences between the robust chi-squares.*

Table 8. *Standardized Factor Loadings for General and Spiritual Appreciation (Scalar Model)*

Variable	Question	Non-Religious	Religious
G1	I appreciate the help I have received.	0.755	0.813
G2	I feel grateful for being alive.	0.668	0.774
G3	I am grateful for the peacefulness of nature.	0.655	0.805
G4	Being in nature gives me a sense of gratitude.	0.670	0.730
G5	I am thankful for my health.	0.601	0.778
KB1	I value a harmonious relationship with a divine being.	0.839	0.855
KB2	I am grateful to a divine being for everything in my life.	0.851	0.803
KB3	I feel gratitude for God as I understand God.	0.797	0.739
KB4	I thank God for the good things I have in my life.	0.812	0.844
KB5	I am grateful for the presence of a force greater than myself.	0.763	0.704

The analyses revealed numerical differences in factor loadings between religious and non-religious groups. Factor loadings ranged from 0.601 to 0.851 for non-religious participants and 0.704 to 0.855 for religious participants. However, these differences did not translate to statistically significant differences in our formal measurement invariance testing ($\Delta\chi^2(8) = 10.75$, $p = 0.216$ for metric invariance; $\Delta\chi^2(8) = 15.17$, $p = 0.056$ for scalar invariance). This apparent discrepancy is common in measurement invariance testing, as the robust chi-square difference test evaluates the overall pattern of factor loadings across all items simultaneously, rather than examining individual loading differences in isolation. Importantly,

it should be noted that these descriptive differences in individual loadings were small enough that the global metric invariance test still supported treating the factor loadings as equivalent across religious and non-religious groups. Our results demonstrate that while observable differences exist, they fall well below the critical threshold needed to reject measurement equivalence. This pattern of results, where small numerical differences in individual loadings coexist with overall measurement equivalence, indicates that the fundamental meaning and structure of our constructs remain consistent across religious and non-religious groups, even though specific items may show minor variations in their relationship strength with the underlying factors.

These findings provide strong evidence that the measurement model for scores from the Transpersonal Appreciation Scale is equivalent in factor structure and loadings across both religious and non-religious populations, with only marginal support for the equality of item intercepts, and that both scales maintain internal consistency (General Appreciation $\alpha = 0.860$; Spiritual Appreciation $\alpha = 0.901$). The scale's demonstrated measurement invariance, coupled with strong factor correlations in both religious ($r = 0.780$) and non-religious ($r = 0.702$) groups, suggests that TAS scores be validly used to assess and compare levels of both general and spiritual appreciation across diverse belief systems. The robust psychometric properties, including strong factor loadings across all items and good model fit indices, establish the Transpersonal Appreciation Scale as a reliable instrument for obtaining scores that can be validly interpreted as indicators of appreciation in both religious and non-religious contexts, making it a valuable tool for researchers investigating transpersonal appreciation.

10. Discussion

As has been previously discussed, scholarly work surrounding gratitude and appreciation demonstrates an unresolved debate regarding a universally accepted definition of these constructs (Hammer & Brenner, 2019; Manela, 2016; Navarro & Tudge, 2020). Concerns also persist about whether existing measurement instruments are able to adequately capture expressions of gratitude for both theistic (religious or belief-based) and non-theistic groups. Appreciation that is not directed toward a human benefactor, referred to as transpersonal gratitude or appreciation, goes beyond interpersonal dynamics and does not have a specific agent or named benefactor (Hlava et al., 2014; Artinian, 2019). Given that transpersonal appreciation may present differently depending on an individual's spiritual orientation, the studies conducted by the authors were designed to determine whether the newly developed TAS could effectively detect these variations in appreciation between individuals who appreciate a benefactor (e.g., a deity) and those who do not.

To achieve this aim, the research team developed the TAS as a short and novel instrument designed to capture distinct elements of appreciation beyond present traditional frameworks. The construct of transpersonal appreciation was defined as the recognition and valuing of inherently meaningful experiences or entities that transcend the self and provide a sense of subjective enrichment. The dataset collected for an EFA was deemed highly suitable, and the EFA revealed a two-factor solution which explained 71% of the total variance in responses. The resulting General Appreciation items reflected gratitude for life, health, relationships and the natural world whereas Spiritual Appreciation items reflected appreciation directed toward a divine being or some transcendent force. Although some global fit indices (e.g., TLI, RMSEA) did not meet traditional cutoff criteria, this was anticipated given the highly skewed nature of the ordinal data collected and the use of polychoric correlations. Despite this, the very low RMSR and excellent reliability estimates provide strong evidence that the two-factor solution was the most appropriate given the data. After further review of content overlap and coverage, the resulting 10 items (five per factor) were selected to form a parsimonious version of the TAS while still maintaining key elements of the broader construct.

Following the EFA and selection of key items, the CFA study, conducted using new data collected from a different sample population, provided further support for this two-factor structure and expanded on the key findings of the initial EFA study. First, the two-factor model demonstrated good overall fit using robust estimation methods appropriate for the type of data collected by the study (robust CFI = 0.983, robust TLI = 0.978, robust RMSEA = 0.052) and internal

consistency remained high for both subscales (General Appreciation α = 0.860; Spiritual Appreciation α = 0.901). Furthermore, correlations with related measures provide supporting evidence of convergent and discriminant validity. Together, these findings provide evidence that scores from the TAS subscales represent distinct, reliable, and meaningful dimensions of appreciative experience that align well with previously established measures of related constructs, while adding a specific focus on transpersonal appreciation.

Second, the CFA directly addressed the central question which motivated initial scale development: whether the TAS measures General and Spiritual Appreciation equivalently in both religious and non-religious U.S. adults. Configural invariance testing demonstrated that the same two-factor structure worked for both religious and non-religious groups, further indicating that the basic categorization of items into General and Spiritual Appreciation is appropriate even across different belief systems. Metric invariance was also supported: constraining factor loadings to be equal did not significantly worsen model fit ($\Delta\chi^2(8) \approx 10.75$, $p = .216$), and changes in robust fit indices were minimal. As a result, it is appropriate to compare associations (e.g., correlations or regression slopes) between TAS subscales and other variables across these groups and suggests that the items relate to the underlying constructs in a similar way for religious and non-religious participants. It is important to note again that these invariance analyses were conducted across groups defined by current religious affiliation rather than a direct measure of spirituality. As a result, our findings speak to the equivalence of TAS scores by current religious status, while recognizing that spiritual orientation may vary within each group (e.g., among individuals who are "spiritual but not religious").

Scalar invariance results were more nuanced. When item intercepts were constrained to be equal, the robust chi-square test approached but did not clearly pass conventional significance thresholds ($\Delta\chi^2(8) \approx 15.17$, $p = .056$), and changes in robust CFI and RMSEA were minimal. This pattern provides marginal support for scalar invariance, or the idea that although the underlying constructs are measured in an equivalent way, there may be small differences in the "starting point" of certain items across groups. For example, religious individuals might, on average, endorse more of the spiritually worded items from a higher baseline level than non-religious individuals with comparable levels of the latent trait, simply because such language more directly reflects their experience and worldview. As a result, group comparisons of latent means are tentatively justified given the results of our CFA but should be interpreted with caution as observed differences may partly reflect subtle differences in item interpretation as well as genuine differences in appreciation.

Additional CFA findings further illustrate how General and Spiritual Appreciation may be organized differently across belief systems. The covariance between General and Spiritual Appreciation was stronger in the non-religious group than in the religious group, suggesting that for non-religious individuals, appreciation for life, health, relationships, and nature is closely integrated with an individual's endorsement of spiritual or transpersonal appreciation. Religious respondents, in contrast, appeared to distinguish more clearly between general and explicitly spiritual forms of appreciation, which may reflect nuances in the way that many faith traditions differentiate sacred from secular domains. Patterns of factor loadings also showed small but interpretable group difference: explicitly spiritual items tended to resonate slightly more among religious participants, while several spiritual items also loaded strongly among participants we categorized as non-religious, which we theorize is likely a reflection of the presence of individuals within that group who are "spiritual but not religious". Overall, these patterns highlight that while the TAS operates similarly across groups, the lived meanings of appreciation between groups may still reflect underlying differences in religious and spiritual orientation.

Looking at the results of the EFA and CFA together, there is strong evidence to support that the TAS captures two related yet distinct facets of transpersonal appreciation, General and Spiritual, and that these facets can be measured with strong reliability and a largely equivalent structure across religious and non-religious adults in the United States. The length of the TAS (ten items), its high levels of internal consistency, as well as evidence for configural and metric invariance support its use in both research and applied settings, including studies seeking to compare appreciation-related processes across belief systems. However, the

marginal support for scalar invariance highlights the importance of caution in interpreting group differences in average levels of General and Spiritual Appreciation.

11. Limitations and Directions for Future Research

There are several notable limitations with these two studies. First, both studies relied on data collected online from non-probabilistic samples of U.S. adults. Although the samples were demographically diverse, they are not truly representative of the demographic makeup of the U.S. more broadly. For instance, in our samples, Christians and individuals raised in religious households are likely overrepresented. Thus, the factor structure and invariance findings may not fully generalize to populations with different religious compositions, to non-Western or non-U. S. cultural contexts, or to individuals participating in smaller religious traditions or less structured forms of spirituality. Thus, future research using the TAS would benefit from using probability-based or targeted sampling strategies to further validate the use of TAS scale scores in additional cultural contexts.

Second, all data were self-reported, collected at a single time point, and showed significant deviations from normality. Many items, particularly those assessing appreciation, displayed strong ceiling effects, with most participants endorsing response options at the upper end of the scale. While this pattern is consistent with the idea that appreciation is generally valued and frequently experienced and thus is a construct that naturally gravitates towards the upper end of measurement scales, it also raises the possibility of social desirability or positivity bias. Because responses were so heavily concentrated in the top categories, factor loadings and intercepts in both the EFA and CFA largely reflect subtle differences among individuals already high in appreciation, and some global fit indices (especially RMSEA and TLI) should be interpreted with caution in this context, as even with the use of polychoric correlations and robust MLR estimation, there is not a statistical way to fully correct for this source of measurement error. Additionally, we did not obtain test-retest data, so the temporal stability of TAS scores remains unknown. Future research should examine test-retest reliability and, when possible, incorporate multiple methods (e.g., qualitative data) to further differentiate individuals' experiences with transpersonal appreciation, especially among individuals with high baseline appreciation scores.

Third, several aspects of the measurement and modeling process warrant cautious interpretation. In the EFA, some global fit indices (e.g., TLI, RMSEA) did not meet conventional benchmark values, even though RMSR was excellent and reliability indices were very high. As discussed previously, the reasons for this are likely due to the fact that the conventional thresholds were derived primarily from continuous, normally distributed data, and may not translate directly to models estimated from polychoric correlations for highly skewed ordinal items. Additionally, in the CFA, we used robust maximum likelihood estimation and treated the Likert-type indicators as approximately continuous. This is consistent with common CFA practices but is not fully equivalent to modeling the data as if they are fully categorical items. Alternative modeling approaches, such as item response theory-based models, could provide additional insight into whether item-level functioning and model fit perform similarly under different assumptions.

Fourth, although we followed recommended procedures for testing measurement invariance, the evidence for scalar invariance was only marginal at best. Our strategy of collapsing heterogenous "non-religious" subgroups (e.g., atheists, agnostics, and individuals who are spiritual but not religious) while done out of necessity to maintain adequate statistical power, likely obscured important differences within that group. In particular, spiritually oriented but non-religious individuals may endorse spiritually worded items at higher levels, whereas strongly non-religious/ non-spiritual individuals may endorse them at much lower levels. Collapsing these subgroups together may have both attenuated true between-group differences and increased within-group heterogeneity, contributing to the borderline scalar invariance findings. We also did not examine invariance across other important categories such as gender, age, or cultural background. Additional work is needed to explore item-level invariance and to refine demographic grouping strategies that more precisely reflect meaningful differences in religious and spiritual identity.

Finally, the conceptualization and item pool for transpersonal appreciation were strongly informed by

Adler and Fagley's broad framework of appreciation and by existing Western measures of gratitude and spirituality. While this approach helped ensure continuity with prior work and assisted in the content validation process, it may also have constrained the kinds of experiences and these are the types of experiences that probably have not been sampled/included. Including additional voices and perspectives from a broader range of cultural and spiritual backgrounds in future item development and supporting qualitative work could potentially deepen and diversify the construct of transpersonal appreciation.

However, despite these limitations, the present studies indicate several promising directions for future research. Replication and extension of the TAS in cross-cultural and cross-religious context is a clear next step. This includes further work that includes translation and validation studies that examine whether additional factors or culturally specific expressions of transpersonal appreciation are needed to ensure that the scores produced by the TAS are valid for use in a wide variety of cultural contexts. More advanced psychometric work, such as using item response theory or other models, could be used to examine how well each item functions across different levels of the latent trait and to improve measurement precision. Lastly, more fine-grained measurement invariance testing across more specific belief groups (e.g., atheists, agnostics, "spiritual but not religious", and different religious traditions) would clarify where the scale performs equivalently and where partial invariance or revised items may be needed.

Future research should also examine how General and Spiritual Appreciation relate to important psychological and behavioral outcomes. The use of the TAS in longitudinal and intervention studies could explore whether scale scores predict changes in well-being, self-esteem, coping, relationship quality, or resilience, and whether these patterns differ by religious or spiritual orientation. Finally, given its brevity and readability, the TAS may be useful in clinical and community settings. For example, as part of interventions that seek to enhance gratitude, spiritual coping, or meaning making. Research in such applied contexts could help clarify whether transpersonal appreciation, and particularly the promotion of its development, contributes to improved emotional adjustment and functioning over time.

12. Conclusion

The present studies provide evidence that the newly developed Transpersonal Appreciation Scale is a brief, 10-item instrument that yields reliable scores reflecting two related, yet still distinct, dimensions of appreciation: General Appreciation and Spiritual Appreciation, and that there is sufficient validity evidence supporting the interpretation of these scores as indicators of transpersonal appreciation across religious and non-religious U.S. adults. The TAS displayed a clear two-factor structure with strong internal consistency in both exploratory and confirmatory factor analysis, as well as having moderately strong relationships with existing measures of appreciation and gratitude, and strong support for configural and metric invariance, with marginal support for scalar invariance across religious and non-religious groups.

Considered in total, these findings suggest that the TAS can be used to examine how individuals with differing religious and spiritual orientations experience appreciation for life, others, and transcendent realities. This presents the exciting opportunity for future research to further link such perspectives and experiences with broader patterns of personality, adjustment and well-being. As future research refines and extends this work across diverse contexts and populations, the TAS may emerge as a concise, practical, psychometrically sound tool for obtaining scores that capture an important, but often undermeasured, aspect of human emotional life: the capacity to appreciate that which lies beyond oneself.

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Appendix A

Descriptive Statistics of EFA Items

Question	Mean	SD	Median	Trimmed	MAD	Min	Max	Range	Skew	Kurtosis	SE
Seeing a sunrise gives me a feeling of satisfaction.	4.37	0.933	5	4.55	0.00	1	5	4	-1.56	2.019	0.053
I am grateful for the peacefulness of nature.	4.46	0.853	5	4.63	0.00	1	5	4	-1.59	1.853	0.049
I am in awe of the natural beauty of the world.	4.48	0.765	5	4.63	0.00	1	5	4	-1.59	2.688	0.044
I experience moments of wonder about the beauty that surrounds me.	4.44	0.841	5	4.61	0.00	1	5	4	-1.57	2.113	0.048
Being in nature gives me a sense of gratitude.	4.45	0.833	5	4.61	0.00	2	5	3	-1.41	1.055	0.048
When I perceive the beauty of life I experience great inner peace.	4.44	0.833	5	4.61	0.00	1	5	4	-1.69	2.874	0.048
I appreciate a higher power.	4.13	1.095	4	4.34	1.48	1	5	4	-1.28	0.949	0.063
I feel gratitude for God as I understand God.	4.20	1.192	5	4.45	0.00	1	5	4	-1.46	1.064	0.068
I appreciate the help I have received.	4.54	0.760	5	4.70	0.00	1	5	4	-1.70	2.565	0.043
It comforts me to communicate my needs to a universal presence.	4.13	1.110	4	4.33	1.48	1	5	4	-1.33	1.110	0.063
It comforts me to rely on the power of an omnipotent being.	4.15	1.078	4	4.35	1.48	1	5	4	-1.33	1.100	0.062
I am grateful for the presence of a force greater than myself.	4.32	1.034	5	4.53	0.00	1	5	4	-1.60	1.910	0.059
I thank God for the good things I have in my life.	4.26	1.170	5	4.51	0.00	1	5	4	-1.51	1.150	0.067
I am grateful to a divine being for everything in my life.	4.28	1.101	5	4.51	0.00	1	5	4	-1.56	1.635	0.063
Although I'm basically in control of my life, I can't help but think about all those who have supported me and helped me along the way.	4.52	0.794	5	4.70	0.00	1	5	4	-1.98	4.462	0.045
I feel deeply appreciative for the things others have done for me in my life.	4.53	0.777	5	4.70	0.00	1	5	4	-1.74	2.669	0.044
I am thankful for my health.	4.56	0.825	5	4.76	0.00	1	5	4	-2.08	4.097	0.047
I value a harmonious relationship with a divine being.	4.23	1.134	5	4.47	0.00	1	5	4	-1.48	1.277	0.065
I feel that my life is a gift for which I am appreciative.	4.42	0.861	5	4.58	0.00	2	5	3	-1.36	0.910	0.049
I appreciate the achievements of science.	4.45	0.919	5	4.65	0.00	1	5	4	-1.79	2.615	0.053
The genius of brilliant ideas leaves me awestruck.	4.12	1.024	4	4.28	1.48	1	5	4	-1.24	1.201	0.059
I am thankful for the opportunities I have had in my life.	4.50	0.799	5	4.67	0.00	1	5	4	-1.65	2.251	0.046
I am grateful for each day.	4.41	0.912	5	4.58	0.00	1	5	4	-1.53	1.688	0.052
I am thankful for what I have achieved and how far I have come.	4.42	0.877	5	4.60	0.00	1	5	4	-1.68	2.643	0.050
I am grateful for the good that comes my way.	4.47	0.838	5	4.64	0.00	2	5	3	-1.52	1.416	0.048
I am grateful for the beautiful experiences I have had.	4.54	0.764	5	4.70	0.00	2	5	3	-1.64	1.992	0.044
I am moved by little things in life, such as a beautiful song.	4.42	0.877	5	4.59	0.00	1	5	4	-1.57	2.039	0.050

Continuation Table:

Question	Mean	SD	Median	Trimmed	MAD	Min	Max	Range	Skew	Kurtosis	SE
I am thankful for the experiences life has to offer.	4.46	0.849	5	4.63	0.00	1	5	4	-1.67	2.526	0.049
I am thankful for the miracle of life.	4.38	0.948	5	4.57	0.00	1	5	4	-1.51	1.476	0.054
I feel grateful for being alive.	4.47	0.826	5	4.64	0.00	1	5	4	-1.55	1.767	0.047
I am grateful to exist.	4.47	0.891	5	4.66	0.00	1	5	4	-1.78	2.738	0.051
I am grateful for the love I receive from my friends.	4.48	0.806	5	4.64	0.00	1	5	4	-1.66	2.650	0.046
I appreciate feeling a sense of community and being part of something greater than myself.	4.39	0.900	5	4.57	0.00	1	5	4	-1.45	1.373	0.051
I appreciate the kindness of others.	4.48	0.858	5	4.67	0.00	1	5	4	-1.78	2.688	0.049
I have appreciation for being part of something greater than myself.	4.41	0.875	5	4.57	0.00	1	5	4	-1.55	2.062	0.050
When I appreciate the talent of musicians, athletes, or scientists I feel very alive, full of energy.	4.48	0.777	5	4.64	0.00	1	5	4	-1.68	3.034	0.044

Appendix B

Factor Loadings and Communalities of the Two-Factor Transpersonal Appreciation Scale

	Factor Loadings		Statistics		
Question	PA1	PA2	Communality	Uniqueness	Complexity
I appreciate the achievements of science.	0.99	NA	0.74	0.26	1.08
I am grateful for the beautiful experiences I have had.	0.93	NA	0.76	0.24	1.02
I appreciate the help I have received.	0.93	NA	0.75	0.25	1.02
I am grateful for the peacefulness of nature.	0.91	NA	0.75	0.25	1.01
Being in nature gives me a sense of gratitude.	0.90	NA	0.80	0.20	1.00
I am grateful for the love I receive from my friends.	0.88	NA	0.70	0.30	1.01
I am grateful for the good that comes my way.	0.88	NA	0.75	0.25	1.00
I am thankful for my health.	0.87	NA	0.74	0.26	1.00
I am in awe of the natural beauty of the world.	0.87	NA	0.75	0.25	1.00
I feel grateful for being alive.	0.87	NA	0.73	0.27	1.00
I appreciate the kindness of others.	0.86	NA	0.71	0.29	1.00
I am thankful for the opportunities I have had in my life.	0.85	NA	0.72	0.28	1.00
I feel deeply appreciative for the things others have done for me in my life.	0.82	NA	0.67	0.33	1.00
When I perceive the beauty of life I experience great inner peace.	0.80	NA	0.72	0.28	1.02
I am thankful for what I have achieved and how far I have come.	0.78	NA	0.69	0.31	1.02
I am thankful for the experiences life has to offer.	0.78	NA	0.70	0.30	1.02
I am grateful to exist.	0.77	NA	0.77	0.23	1.07
Seeing a sunrise gives me a feeling of satisfaction.	0.77	NA	0.77	0.23	1.07
I experience moments of wonder about the beauty that surrounds me.	0.75	NA	0.65	0.35	1.02
I am grateful for each day.	0.71	NA	0.71	0.29	1.12
I am moved by little things in life, such as a beautiful song.	0.71	NA	0.69	0.31	1.11
I feel that my life is a gift for which I am appreciative.	0.69	NA	0.72	0.28	1.17
I appreciate feeling a sense of community and being part of something greater than myself.	0.68	NA	0.75	0.25	1.26

Continuation Table:

	Factor Loadings		Statistics		
Question	PA1	PA2	Communality	Uniqueness	Complexity
When I appreciate the talent of musicians, athletes, or scientists I feel very alive, full of energy.	0.66	NA	0.57	0.43	1.07
I am thankful for the miracle of life.	0.62	NA	0.73	0.27	1.45
Although I'm basically in control of my life, I can't help but think about all those who have supported me and helped me along the way.	0.56	NA	0.59	0.41	1.40
I have appreciation for being part of something greater than myself.	0.50	0.43	0.73	0.27	1.95
The genius of brilliant ideas leaves me awestruck.	NA	NA	0.22	0.78	1.12
It comforts me to rely on the power of an omnipotent being.	NA	0.95	0.77	0.23	1.03
I appreciate a higher power.	NA	0.89	0.67	0.33	1.03
It comforts me to communicate my needs to a universal presence.	NA	0.84	0.65	0.35	1.01
I value a harmonious relationship with a divine being.	NA	0.76	0.81	0.19	1.11
I thank God for the good things I have in my life.	NA	0.74	0.85	0.15	1.21
I am grateful to a divine being for everything in my life.	NA	0.73	0.78	0.22	1.16
I am grateful for the presence of a force greater than myself.	NA	0.73	0.77	0.23	1.15
I feel gratitude for God as I understand God.	NA	0.71	0.79	0.21	1.20

Appendix C

Items of the Transpersonal Appreciation Scale by Factor

Factor	Item
General	I appreciate the help I have received.
General	I feel grateful for being alive.
General	I am grateful for the peacefulness of nature.
General	Being in nature gives me a sense of gratitude.
General	I am thankful for my health.
Spiritual	I value a harmonious relationship with a divine being.
Spiritual	I am grateful to a divine being for everything in my life.
Spiritual	I feel gratitude for God as I understand God.
Spiritual	I thank God for the good things I have in my life.
Spiritual	I am grateful for the presence of a force greater than myself.