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The Impermanence Awareness and Acceptance Scale

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Abstract

Objectives This research offers an operationalization of the construct impermanence, a scale to measure it, and an exploration of its relationship to mental health. The 13-item Impermanence Awareness and Acceptance Scale (IMAAS) was created to measure two factors: (1) impermanence awareness, the cognizance that all phenomena are transient, and (2) impermanence acceptance, an attitude of openness towards the transient nature of all phenomena.

Methods Exploratory factor analysis (Study 1), confirmatory factor analysis (Study 2), and convergent and discriminant validity analyses (Study 3) were conducted. Participants were recruited through Amazon Mechanical Turk. The common latent factor method was used to identify potential common factors and response biases. Configural and metric invariance test was used to validate the factor structure.

Results Confirmatory factor analysis showed a good model fit of a 2-factor structure for the IMAAS into impermanence awareness and acceptance (GFI = 0.95, CFI = 0.97; TLI = 0.96; NFI = 0.94; RMSEA = 0.05, SRMR = 0.43). The IMAAS showed good convergent validity with similar constructs such as death acceptance and good discriminant validity with related but different constructs such as mindfulness. Impermanence awareness and acceptance were positively correlated to psychological well-being.

Conclusions The IMAAS is proposed as a valid tool to assess changes in impermanence awareness and acceptance. More studies are needed to validate the IMAAS across diverse cross-cultural samples and to explore its relationship to well-being.

Keywords Impermanence awareness · Impermanence acceptance · Buddhist psychology · Death acceptance · Mindfulness · Well-being

Within the Buddhist tradition, impermanence refers to a core teaching that all phenomena are transient and subject to change and dissolution (Halifax, 2008; Nhat Hanh, 1999; Ostaseski, 2017). This includes psychological phenomena, such as thoughts and emotions (e.g., an emotion arises and dissipates), as well as animate and inanimate material phenomena, such as rocks or animals (e.g., a human being's age

and eventually die). Each natural process forms and dissolves, like waves arising and breaking on the shore.

Impermanence constitutes one of the three core teachings on the nature of existence outlined within Buddhism (Coleman & Thupten, 2006). These landmarks are referred to as (1) *Anicca* (impermanence in Pali), awareness that all things change; (2) *Dukkha* (suffering in Pali), awareness that living involves inevitable suffering; and (3) *Anattaa* (no self in Pali), awareness that there is no permanent individual self-separated from others. The cultivation of impermanence following this ancient tradition involves two components: awareness and acceptance. Impermanence awareness is considered the cognitive component and refers to the awareness that all phenomena are transient and are subject to dissolution. It includes being aware of the changing nature of all phenomena, including thoughts, objects, loved ones, and oneself. Impermanence acceptance is considered the emotional component and refers to an attitude of openness and receptivity towards the transient nature of all phenomena. It involves a sense of ease and calmness in the face of the impermanent

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nature of phenomena. This quality of mind calls for embracing change as a natural part of life.

Cultivating impermanence according to Buddhist psychology offers several psychological benefits. First, anticipating and integrating the reality that everything in life changes may allow us to respond with less shock and denial when things change. As *The Tibetan Book of the Dead* (Coleman & Thupten, 2006) underscored, the cultivation of impermanence helps us to die and live more peacefully in harmony with nature. We come to realize and accept that we, like everything else in the universe, come into existence and then pass away. The common humanity and universality associated with impermanence may help us to normalize and accept life changes with greater ease, as well as to diminish the disorientation and denial that can arise in the face of trauma and loss (Shonin et al., 2014).

Second, cultivating impermanence may increase emotional regulation and relief when difficult changes or emotions arise. This proposal is in line with research that have shown that contextualizing a negative life event within a broader time frame (i.e., impermanence focus) helped to buffer its emotional impact (Bruehlman-Senecal & Ayduk, 2015). As the saying goes, adopting a "this too shall pass" attitude can carry a sense of relief when difficult experiences or emotions arise. Although impermanence may elicit sadness or fear when the phenomena that changes is positively valenced, it can also inspire relief when impermanence signals an end to difficult experiences such as a prolonged illness. As Ostaseski (2017) noted, without impermanence, dictatorships, pain, and boring dinners would last forever. Additionally, impermanence may herald joy when positive changes occur, such as getting a dream job or falling in love.

Finally, cultivating impermanence may enhance gratitude for positive aspects of one's life that may one day be gone. Being aware and accepting that every moment, every person, and every experience is fleeting may prompt individuals to savor and appreciate life and relationships more fully. As Buddhist scholarship has highlighted (Thurman, 1998), like a shooting star burning across the horizon, a human life is a precious, rare, and impermanent opportunity worthy of appreciation.

Importantly, impermanence awareness may require acceptance in order to positively impact well-being. As past mindfulness research has shown, increasing awareness of certain experiences without acceptance may lead to heightened anxiety (Lindsay & Creswell, 2019; Sahdra et al., 2016). It is also possible that practicing impermanence awareness and acceptance may result in both negative (e.g., sadness, anxiety) and positive experiences (e.g., gratitude, appreciation). This is consistent with death research that has shown that death anxiety and death acceptance can co-occur (Sawyer et al., 2019; Wong & Tomer, 2011), and scholarship on resilience and posttraumatic growth (PTG; Calhoun & Tedeschi, 2014), that

have found that survivors of life-threatening experiences (e.g., war, rape, car accidents, natural disasters) frequently report both positive and negative outcomes. For instance, Janoff-Bulman (2004) has found that survivors of trauma often report higher levels of anxiety than the general population but also may endorse greater life appreciation and confidence in one's ability to persevere in the face of hardship.

Within the Buddhist tradition, the concept that growth can coexists with fear is perhaps best illustrated in the story of Gautama Buddha's enlightenment (Thurman, 1998). The Buddha's path to ultimate realization was fraught with challenges. After encountering impermanence in the form of an elderly person, a sick person, and a corpse, Gautama Buddha left a life of luxury to explore the nature of suffering and change. He nearly died of starvation while undergoing extreme ascetic practices. Ultimately, it was only through meditation on the nature of reality, including impermanence, with acceptance and despite fear that allowed him to fully transcend personal suffering. In conclusion, the Buddhist tradition posits that embracing what we fear (e.g., suffering and impermanence) allows us to grow.

Research on related but distinct constructs to impermanence, such as posttraumatic growth (Calhoun & Tedeschi, 2014), death acceptance (Wong et al., 1994), mindfulness (Kabat-Zinn, 1990), tolerance for uncertainty (Hillen et al., 2017), and tolerance for ambiguity (Furnham & Marks, 2013), has also shown support for the idea that accepting that which we fear offers psychological benefits. Posttraumatic growth (Calhoun & Tedeschi, 2014) refers to the positive impact that even profound losses or changes can have on individual lives. Calhoun and Tedeschi (2014) found that most survivors of life-threatening experiences reported benefits in three life categories: perception of the self (e.g., increased self-reliance), interpersonal relationships (e.g., closer connections and increased compassion), and philosophy of life (e.g., reorganized priorities, appreciation of life, and spiritual development). As Janoff-Bulman (2004) proposed, survivors' subsequent appreciation for life and relationships may be due in part to their increased awareness of the transitory and fragile nature of existence. Of note, positive outcomes in the setting of PTG and resilience have been replicated across cultures and religions and not exclusively within Buddhist communities that teach the value of impermanence (Taku et al., 2020).

While impermanence awareness and acceptance may help facilitate PTG, impermanence as a construct goes beyond the bounds of posttraumatic growth. Specifically, where PTG captures a particular outcome of traumatic events, impermanence awareness and acceptance deal with an orientation towards any changing phenomena, not exclusively trauma. Additionally, impermanence awareness and acceptance do not assume growth or one outcome associated with their cultivation but rather refer exclusively to the orientation itself.

Another related construct to impermanence is death acceptance, broadly defined as "being psychologically prepared for the inevitable final exit" (Wong et al., 1994, p.3). The benefits of cultivating death acceptance for the general population (Wong & Tomer, 2011) and for certain clinical populations (Philipp et al., 2019) are well established. In the development of the Death Attitude Profile (DAP), Wong et al. (1994) identified three domains of death acceptance: neutral acceptance of death, approach death acceptance, and escape death acceptance. Impermanence awareness and acceptance are most closely related to neutral acceptance of death, which Wong et al. (1994) described as the perspective that death is an integral part of life. Approach death acceptance involves beliefs in a happy afterlife and escape death acceptance involves viewing death as liberation from life's miseries. Both of these death orientations incorporate afterlife beliefs that are not present in neutral death acceptance or impermanence awareness/acceptance. Compared to neutral death acceptance, impermanence involves a more encompassing awareness and acceptance of the many phenomena that change, grow, and die (the so-called small deaths, such as losing muscle tone as we age or going through a breakup). Impermanence applies more broadly to how individuals adapt and embrace change in all its forms.

Mindfulness, commonly defined as a nonjudgmental awareness and acceptance of the present moment (Kabat-Zinn, 1990), is another construct related to impermanence. The benefits of mindfulness on well-being are well documented (Chiesa et al., 2011; Morton et al., 2020). We posit that mindfulness has a reciprocal relationship with impermanence. First, mindfulness may promote awareness and acceptance of impermanence because it allows individuals to notice changes without resisting them. For instance, by paying attention to the breath, we can notice the constant movement and exchange of air as we inhale and exhale. This is consistent with recent scholarship that demonstrated that the recognition of impermanence is a key outcome of mindfulness practice, especially in older populations (Xu, 2018) and that high trait mindfulness reduces defensive responses when reminded of death or impermanence (Niemiec et al., 2010). Second, consistent with PTG research, cultivating impermanence may motivate greater mindfulness by motivating individuals to pay greater attention to the present moment and savor it fully.

Although related, mindfulness and impermanence are unique in their temporal scope. Where mindfulness incorporates an awareness and acceptance of a given moment or experience, impermanence calls for an appreciation of the changing nature of experiences.

While mindfulness and impermanence share an accepting or nonjudgmental orientation, impermanence incorporates greater temporal breadth. Impermanence not only requires individuals to be aware and accept what is happening now but also to acknowledge and accept inevitable change.

Neuroimaging studies have further differentiated mindfulness from other mental states demonstrating that neural activity during in the moment breath-focused meditation is distinct from thinking about the future or the past (Brewer et al., 2011; Ricard et al., 2014).

Finally, impermanence shares features with constructs such as tolerance for uncertainty and ambiguity, orientations that have been shown to be positively related to psychological well-being (Hancock & Mattick, 2020). Tolerance of uncertainty was defined as the ability to accept stimuli that are not easily defined or are unknowable (Hillen et al., 2017; Strout et al., 2018). Tolerance of ambiguity was described as the degree to which an individual engages with or does not avoid ambiguous stimuli (Furnham & Marks, 2013). Like impermanence awareness and acceptance, both tolerance for ambiguity and uncertainty ask for acceptance or engagement with phenomena that are not stable or readily knowable. Impermanence awareness and acceptance not only require individuals to tolerate uncertainty but also to expect and embrace change that cannot be fully anticipated.

This research provides an operationalization of the construct impermanence and proposes a scale to measure it: the Impermanence Awareness and Acceptance Scale (IMAAS). Three studies were included to develop the items of the IMAAS, conduct exploratory factor analysis (Study 1), confirmatory factor analysis (Study 2), and convergent and discriminant validity analyses (Study 3).

Study 1

The aim of this study was to develop the initial pool of items of the IMAAS, conduct content validity analysis, and conduct exploratory factor analysis to assess the proposed two factor model of impermanence, measuring impermanence awareness (an attitude of openness and receptivity towards the transient nature of all phenomena) and impermanence acceptance (an attitude of openness and receptivity towards the transient nature of all phenomena).

Method

Participants

A total of 208 participants from the USA were recruited through Amazon Mechanical Turk: 55.8% female, 38.5 mean age (SD=13.8), and 55.1% with bachelor's degrees. Participants filled out the measures online in exchange for Amazon credits.

Procedure

Scale items were generated based on several background sources, such as palliative care physicians, end-of-life practitioners, personal experiences of impermanence, as well as published Buddhist and existential writings on this topic. An initial pool of 60 items assessing impermanence awareness and acceptance was created. The desired length of the final scale was approximately 10 items. Our aim was to develop a brief scale to measure impermanence and to explore psychological outcomes associated with contemplative impermanence-based interventions. Furthermore, we noted that brief scales can be especially useful in repeated measure designs, reducing participant disengagement and burden. Therefore, we strove to create a short scale with adequate psychometric properties.

Statements were written clearly and concisely with an emphasis on common language to avoid unnecessarily long and confusing items. Multiple negatives and double-barreled statements containing more than one idea were avoided. Items were written to provide adequate coverage of the concepts while being sufficiently worded in diverse ways (DeVellis, 2003). Following recommendations from Schriesheim and Eisenbach (1995), direct and reversed items were included in similar proportions to control for agreement response bias. Finally, items were created to reflect impermanence awareness and acceptance of life in general (e.g., "The idea that nothing in life lasts forever frightens me"), in relationships (e.g., "I am aware that everybody I love will die someday"), and in reference to oneself (e.g., "Imagining my body going through old age scares me").

Item reduction was done in an iterative fashion across several stages. In order to establish content validity for potential IMAAS items, experts were asked to review all 60 items to provide support for content validity. The panel of experts consisted of 7 palliative care physicians or psychologists, 3 researchers, and 4 practitioners/trainers familiar with research and practices drawn from contemplative traditions. During conversations of approximately 1 hour with each expert, we discussed our operationalization of impermanence and reviewed items with experts asking them to (1) indicate if the items were clear and concise; (2) indicate if the items fit with the construct of impermanence acceptance and awareness; and (3) point out any general comments about the items and the scale. Utilizing feedback from these experts, some of the items were rewritten and other items were dropped. Items were excluded if three or more experts thought that an item did not fit the overall construct.

A total of 45 items assessing impermanence awareness and acceptance were retained. These items were presented to participants of this study instructing them to indicate the degree of agreement with the experiences described in each item using a 7-point Likert scale, rating from 1 (strongly disagree) to 7 (strongly agree). Items were introduced by the following instruction: "Below is a collection of statements about your experience towards changes and ends. Using the 1–7 scale below, please indicate your level of agreement with each statement. Please answer according to what really reflects your experience rather than what you think your experience should be." This last phrase was included to help control for social desirability. Next, exploratory factor analysis (EFA) was conducted. We hypothesized that EFA on the 45 retained items will provide support for a two-factor model of impermanence, assessing impermanence awareness and acceptance.

Data Analyses

An exploratory factor analysis was carried out to provide a factor structure, using SPSS 25 for all analyses (see technical details in the Supplementary Materials). First, a data screening was performed to detect missing values, outliers, normality, and linearity assumptions. Second, adequacy assumptions were tested following the three criteria: (1) Kaiser-Meyer-Olkin measure of sampling adequacy (KMO); (2) Bartlett's test of Sphericity; and (3) residuals. Third, factor extraction and rotation method were selected. Because the item pool was small and normally distributed, the Maximum-Likelihood (ML) estimation was used as the factor extraction method to maximize differences between factors (Cudeck, 2000). Furthermore, impermanence awareness and impermanence acceptance theoretical factors were assumed to be related, and accordingly, an oblique factor rotation (i.e., Promax) was used. Fourth, a combination of four criteria was used for retention of factors: the scree plot, parallel analysis, percentage of variance explained, and the number of items in each factor. Fifth, a combination of three criteria were used for retention of items: an item loading threshold (i.e., items loaded above 0.40 for EFA and above 0.50 for confirmatory factor analysis (CFA), cross-loading items (i.e., cross-loadings not larger than 0.2), and communalities. Finally, reliability was tested for each factor and for the total score using Cronbach's alpha (> 0.70), and inter-item reliability was tested using split-half method with Spearman-Brown coefficient.

Results

Factor analysis was warranted. KMO measure of sampling adequacy was 0.79, Bartlett's test of Sphericity was significant ($\chi^2_{(990)}$=3842.87; p<0.05), and there was a 7% non-redundant residuals. Scree plot showed two factors prior to the elbow where the slope of the curve was leveled. Parallel analysis found five factors with real-data eigenvalues (i.e., 1.82) greater than the randomly generated eigenvalues from the simulated matrix (i.e., 1.74), which explained 44.53 % of the variance. However, when item retention criteria was applied (i.e., items loaded above 0.40, cross-loading items, and

communalities), the factorial solutions between three and six factors did not hold, leaving each factor with less than 3 items. These unreliable extraneous factors were therefore dropped.

Only the two-factor solution satisfied all a priori criteria. For this two-factor solution, KMO = 0.85, Bartlett's test of Sphericity was significant ($\chi^2_{(231)}$=1779.17; p<0.05), and the model explained 38.04% of variance. Of the two factors derived from this EFA, the average factor loading was 0.60. The factors were distinct, as demonstrated by the lack of cross-loading items and a low correlation between the two factors (r=0.17). Furthermore, factors had adequate intra-factor loadings (greater than 0.40). There was a good internal consistency for each factor (α_{awa}=0.83; α_{accep}=0.88) and for the total score (α =0.85). The split-half method using Spearman-Brown coefficient also showed a good inter-item reliability (S-B$_{awa}$=0.85; S-B$_{accep}$=0.85).

Additionally, the two-factor solution was consistent with our theoretical model, in which original items 1 to 23 were designed to evaluate an impermanence awareness and items from 24 to 45 were designed to evaluate impermanence acceptance. This two-factor exploratory solution with 22 items (see Supplementary Table 1) was used in subsequent confirmatory factor analysis.

Discussion

An initial pool of 60 items was generated to assess impermanence awareness and acceptance. After conducting content validity analyses, 45 items were retained and presented to participants to indicate the level of agreement with each item. As hypothesized, exploratory factor analysis provided support for a two-factor model of impermanence assessing impermanence awareness and acceptance. Although both direct and indirect items were created equivalently for the two factors, only indirect or reversed scored statements were kept in the impermanence acceptance factor after EFA. One possible explanation for this outcome is that it may be easier to notice when one is resisting or fearing impermanence (e.g., not accepting one's body aging) than when one is accepting impermanence. Similar reverse scored items have been represented in scales measuring the acceptance component of mindfulness (e.g., the Kentucky Inventory of Mindfulness Skills; Baer et al., 2004, and the Mindful Attention and Awareness Scale; Brown & Ryan, 2003), where only indirect items were kept in acceptance factors. It is also possible that nonacceptance and acceptance may not be opposite ends of the same construct but may be two distinct constructs operating at the same time, i.e., some aspects of an experience may be accepted while others are simultaneously rejected. Future research could elucidate the relationships between the absence of nonacceptance and the full acceptance of impermanence.

Study 2

The aim of this study was to conduct confirmatory factor analysis to confirm the two-factor structure using the 22 items extracted in the EFA. We hypothesized that the CFA will provide support for our original two-factor theoretical model (i.e., impermanence awareness and impermanence acceptance).

Method

Participants

A group of 334 individuals from the USA participated through Amazon Mechanical Turk: 48.5% female, 37.37 mean age (SD=11.58), and 88.3% with bachelor's degrees. Participants filled out the measures online in exchange for Amazon credit. No identical participant IDs were found across Amazon Mechanical Truk study samples, confirming that each study participant was unique (Bai, 2018; Chmielewski & Kucker, 2020).

Procedure

Participants were presented with the 22 retained items and asked to indicate their level of agreement with each statement by using a 7-point Likert scale, rating from 1 (strongly disagree) to 7 (strongly agree).

Data Analyses

A CFA was carried out to confirm the two-factor structure using the 22 items extracted in the EFA. AMOS 24 was used for all CFA analyses, employing some complementary plugins (Gaskin, 2016; Gaskin & Lim, 2016). Multivariate normality assumptions were not fulfilled (i.e., kurtosis and critical ration > 5; Bentler, 2005), so we ran ML bootstrapping technique to rectify the multivariate normality issues (Byrne, 2010). Furthermore, ML estimation is robust when the normality assumption is not met (Kline, 2005).

CFA was conducted following five stages (see technical details in the Supplementary Materials). First, the two-factor model fit was tested following recommendations from Hu and Bentler (1999). Second, three indices were followed to improve the model fit: (1) deleted items loading below 0.50; (2) used the modification indices to covary high error terms within the same factor and with a theoretical explanation of the covariation; and (3) deleted items with high standardized residual covariances (± 2.5). Third, we numerically estimated the construct validity and the reliability for the two-factor impermanence model (Hair et al., 2010). Fourth, common method bias (CMB) was used in order to control possible

response biases in the data (i.e., majority of the variance can be explained by a single factor) (Archimi et al., 2018). The common latent factor (CLF) method was used to capture the common variance among all observed variables in the two-factor impermanence model. A latent factor was added to the model, connecting this factor to all items. Following Archimi et al. (2018) recommendations, a zero-constrained test was conducted to determine whether the response bias was different from zero. Finally, configural and metric invariance tests were used in order to validate that the two-factor structure and loadings were found to be equivalent across different subgroups (i.e., gender and age). The data were partitioned along gender (i.e., male and female) and age (discretizing the age by the median).

Results

The CFA two-factor model fit indices are presented in Table 1. The fit indices of the 22 items "base model" indicated that the correspondence between the two-factor model and the sample covariance matrix was not adequate. In order to reduce the discrepancies between the proposed and the estimated model, items loading below 0.50 were removed from the "alternative model": items 4, 11, 15, and 22 from factor 1 and item 45 from factor 2. This alternative model significantly improved the model fit ($\Delta\chi^2_{(90)}$= 359.97, p <0.05); however, it was still not sufficient according to quality criteria. Finally, item load, modification indices, and standardized residual covariances (SCR) were used to improve the model fit. Error

terms between items 1–2 (both referred to the impermanence of life in general), items 18–19 (both referred to impermanence over the course of time), and items 25–37 (both referred to the fear produced by impermanence) were covaried. Furthermore, we delated items 6, 7, and 8 because it reduced their loading below 0.50 and item 33 because it showed a high SCR. This "final model" significantly improved the model fit ($\Delta\chi^2_{(57)}$= 466.17, p <0.05). In addition, this final two-factor model showed a good model fit (see Table 1) with values above the recommended thresholds in the different fit metrics. The remaining 13 items of the scale were significantly related to the two latent factors (see Table 2).

The final 13 items two-factor impermanence model was used to estimate the reliability of the scale (see Table 3). Convergent validity was good for "awareness" and "acceptance" factors, evidenced by an average variance extracted (AVE) greater than 0.40 and 0.50, respectively (Malhotra & Dash, 2011). Discriminant validity was also satisfactory, showing maximum shared variance (MSV) values less than AVE values (i.e., 0.017). Furthermore, the square root of AVE is greater than inter-construct correlation (0.62 and 0.75 > 0.13). COMPOSITE reliability (CR) and maximum reliability (MaxR) were greater than 0.70 and greater than AVE values, showing good reliability. This impermanence two-factor final model showed a good internal consistency for each factor (α_{awa}=0.81; α_{accep}=0.90) and for the total score (α =0.84). Split-half method using Spearman-Brown (S-B) coefficient also showed a good inter-item reliability for this final scale (S-B $_{awa}$=0.88; S-B $_{accep}$=0.93).

Table 1 Model fit indices for the impermanence two-factor models

CFA—model fit indices		Base model	Alternative	Final model
Absolute model fit measures	Chi-square (χ^2)	950.95	590.98	124.80
	χ^2/df	4.57	5.01	2.05
	Goodness of fit index (GFI)	0.78	0.82	0.95
	Root mean square error of approximation (RMSEA)	0.10	0.11	0.05
	p of close fit (PCLOSE)	0.00	0.00	0.23
	Standardized root mean square residual (SRMR)	0.094	0.078	0.0433
Incremental model fit measures	Confirmatory fit index (CFI)	0.77	0.82	0.97
	Adjusted goodness of fit index (AGFI)	0.74	0.77	0.92
	Tucker Lewis index (TLI)	0.74	0.79	0.96
	Normed fit index (NFI)	0.73	0.79	0.94
Comparative model fit measures (parsimony)	Parsimonious normed fit index (PNFI)	0.65	0.68	0.74
	Parsimonious goodness of fit index (PGFI)	0.65	0.64	0.63
	Akaike information criterion (AIC)	1040.95	660.98	184.80
	Bayes information criterion (BIC)	1212.45	794.37	299.14

Table 2 Mean (M), standard deviations (SD), factor loadings (FL_Aw and FL_Ac), communalities (Com), and item-total correlation (I-T) for the final two-factor model derived from the CFA

Scale item	M	SD	FL_Ac	FL_Aw	Com	I-T
IMAAS_1—I am aware of the impermanence of all things.	5.63	1.12	−0.05	**0.65**	0.42	0.56
IMAAS_2—I am aware of the brevity of life.	5.70	1.02	−0.06	**0.65**	0.41	0.55
IMAAS_5—Everything in life can change at any time.	6.07	1.08	−0.03	**0.79**	0.61	0.68
IMAAS_12—I am aware that everybody I love will die one day.	5.90	1.30	0.08	**0.55**	0.32	0.49
IMAAS_18—I am aware that my life won't be the same in the future.	5.59	1.18	0.00	**0.61**	0.37	0.56
IMAAS_19—I know that aspects of myself will change with time.	5.50	1.19	0.06	**0.62**	0.40	0.57
IMAAS_25—The idea that nothing in life lasts forever frightens me.	4.05	1.95	**0.77**	−0.03	0.59	0.73
IMAAS_30—Thinking that my relationship with loved ones will change worries me.	4.07	1.75	**0.71**	−0.02	0.51	0.67
IMAAS_31—Noticing how my loved ones are growing old frightens me.	4.42	1.81	**0.79**	0.07	0.64	0.76
IMAAS_37—The idea that I will die one day terrifies me.	4.08	2.01	**0.78**	−0.09	0.59	0.72
IMAAS_39—When I notice that my body can´t do the things it used to do, I feel depressed.	4.21	1.68	**0.78**	0.01	0.61	0.73
IMAAS_40—Imagining my body going through old age scares me.	4.43	1.79	**0.82**	0.06	0.69	0.77
IMAAS_41—When my role in a group changes, I feel anxious.	4.13	1.58	**0.64**	0.01	0.41	0.60

In order to identify potential common factors explaining the majority of the variance, common latent factor (CLF) method was used to compare the unconstrained with the fully constrained model (i.e., zero constrained). The chi-square test showed no significant differences between unconstrained and constrained models ($\chi^2_{(13)}$= 21.9, p> 0.05), indicating that there was no significant shared variance. Accordingly, we did not retain the common latent factor. Finally, configural and metric invariance tests were used to validate that the two-factor structure and loadings were equivalent across different groups (i.e., gender and age). Configural invariance test showed an adequate fit when comparing the two-factor final model across gender (i.e., male vs female) and age (i.e., young vs older) with standardized root mean square residual (SRMR) values lower than 0.08 (i.e., SRMR $_{gender}$= 0.06 and SRMR $_{age}$= 0.05). A metric invariance test was also

performed by constraining the two models (i.e., gender and age) to be equal and calculating a chi-square difference between constrained and unconstrained models. The chi-square test showed no significant differences between unconstrained and constrained models in gender ($\chi^2_{(11)}$= 10.3, p> 0.05) or age ($\chi^2_{(11)}$= 11.2, p> 0.05), indicating that the models were invariant between groups, both configurally and metrically.

Discussion

Confirmatory factor analysis showed a good model fit of a 2-factor structure for the IMAAS into impermanence awareness and acceptance. The final IMAAS is composed of 13 items (see Table 2). The impermanence awareness subscale includes items 1 to 6 that reflect changes and ends related to life in general (e.g., "Everything in life can change at any time"), relationships (e.g., "I am aware that everybody I love will die one day"), and oneself (e.g., "I know that aspects of myself will change with time"). The impermanence acceptance subscale includes items 7 to 13 and reflect orientation towards changes in life (e.g., "The idea that nothing in life lasts forever frightens me"), relationships (e.g., "Noticing how my loved ones are growing old frightens me"), and oneself (e.g., "When I notice that I can´t do with my body the things I used to do, I feel depressed"). A total IMAAS score is obtained calculating the average of both factors when correcting for the reverse scoring of the impermanence acceptance subscale.

Table 3 Construct validity (i.e., convergent and discriminant validity) and reliability for the final impermanence two-factor model

	AVE	MSV	CR	MaxR	Awareness	Acceptance
I. Awareness	0.40	0.02	0.79	0.84	0.62	--
I. Acceptance	0.57	0.02	0.90	0.91	0.13*	0.75

*p < 0.05

Average variance extracted (AVE), maximum shared variance (MSV), composite reliability (CR), and maximum reliability (MaxR)

Study 3

The aim of the third study was to assess the convergent and discriminant validity of impermanence. Impermanence awareness and acceptance were expected to correlate moderately and positively with death acceptance and mindfulness, showing that they were related but different constructs. Furthermore, impermanence awareness and acceptance were expected to correlate positively with psychological well-being, so that IMAAS would predict well-being even after controlling for mindfulness, age, and death acceptance in a regression model. Impermanence acceptance was expected to be a stronger predictor of well-being than death acceptance given that impermanence acceptance involves a more holistic acceptance of all life changes and not exclusively death.

Method

Participants

A group of 334 individuals from the USA participated through Amazon Mechanical Turk: 48.5% female, 37.37 mean age (SD=11.58), and 88.3% with bachelor's degrees.

Procedure

Participants filled out measures online in exchange for Amazon credit.

Measures

Death Attitude Profile-Revised (DAP-R; Wong et al., 1994) was used to assess death acceptance. In order to keep the study short, and given that only the neutral death acceptance subscale was theoretically related to the IMAAS, only neutral acceptance of death (NAD) subscale was used in the study. NAD is composed of 5 items measuring the "view of death as a reality that is neither to be feared nor welcomed" (Wong et al., 1994; pp. 15). Responses were made on a 7-point scale, from 1 (strongly disagree) to 7 (strongly agree). Higher scores indicated higher acceptance of death. The mean acceptance of death score for this study was 5.34 ($SD = 1.04$) and showed acceptable internal consistency ($\alpha = 0.71$).

The short version of the Kentucky Inventory of Mindfulness Skills (KIMS; Hofling et al., 2011) was included to assess mindfulness. The KIMS-short form is a 20-item scale that measures four mindfulness skills: (1) observing internal and external stimuli; (2) describing phenomena nonjudgmentally; (3) acting with awareness and undivided attention; and (4) accepting experiences without judging them. Responses are made on a 5-point scale, from 1 (never or rarely true) to 5 (very often or always true). Higher scores indicate higher

mindfulness. KIMS total score was 3.36 ($SD = 0.78$) and showed a good internal consistency (α =0.88). All KIMS subscales showed good internal consistency ranging from 0.70 to 0.95.

The Psychological Well-Being Scale (PWBS; Ryff, 1989) was included to measure well-being. PWBS measures six dimensions: (1) autonomy; (2) environmental mastery; (3) personal growth; (4) positive relationships; (5) purpose in life; and (6) self-acceptance. Participants indicated how much they agree with the statements on a 6-point scale, from 1 (strongly disagree) to 6 (strongly agree). All subscales showed good internal consistency between 0.75 and 0.95. The total score for the PWBS was 4.16 ($SD = 0.64$) and $\alpha = 0.91$.

Data analyses

Correlations and regression analyses were conducted to establish the convergent and discriminant validity of the IMAAS with related constructs such as death acceptance, mindfulness, and self-compassion. Zero-order Pearson correlations between all study variables are presented in Table 4. Additionally, the relationship between the IMAAS and psychological well-being was explored. Hierarchical regression analyses were conducted to test whether impermanence acceptance and awareness were significant predictors of psychological well-being after controlling for age, death acceptance, and mindfulness. Age and death acceptance were entered in step 1, mindfulness in step 2, and impermanence awareness and impermanence acceptance in step 3.

Results

There was a positive correlation between age and impermanence awareness ($r = 0.22$, p <0.01) and age with impermanence acceptance ($r = 0.16$, p <0.01). Female participants reported significantly higher impermanence awareness ($M = 5.93$, $SD = 0.67$) than male participants ($M = 5.53$, $SD = 0.90$) ($t_{(331)} = 4.57$, p <0.01, $d = 0.50$). However, no significant differences were found between female ($M = 4.41$, SD =1.48) and male ($M = 3.99$, $SD = 1.35$) participants in impermanence acceptance ($t_{(331)} = 2.68$, $p = 0.06$, $d = 0.30$). Furthermore, no significant differences between different educational levels were found in impermanence awareness ($F_{(5, 322)} = 0.74$; $p > 0.05$) or impermanence acceptance ($F_{(5, 322)} = 1.65$; $p > 0.05$).

Impermanence awareness and acceptance showed a positive and low correlation ($r = 0.11$, p <0.05) to one another, supporting the division of impermanence into awareness and acceptance into discrete constructs. Neutral death acceptance correlated moderately and positively with impermanence awareness ($r = 0.46$, p<0.001) and impermanence acceptance ($r = 0.25$, p <0.001), indicating that death acceptance and impermanence are constructs that may share similar

Table 4 Zero-order correlations between all study variables

	IAW	IAC	DA	MIN	PWB
Impermanence AWareness (IAW)	1.00	0.11*	0.46**	0.16*	0.31**
Impermanence ACceptance (IAC)		1.00	0.25**	0.42**	0.45**
Death acceptance (DA)			1.00	0.30**	0.34**
Mindfulness (MIN)				1.00	0.59**
Psychological well-being (PWB)					1.00

Note. *p <0.05, ** p <0.01

definitional or theoretical grounds. However, these correlations were not high enough to suggest that these measures are tapping the same latent construct. Mindfulness correlated positively with impermanence awareness ($r = 0.16$, p <0.01) and impermanence acceptance ($r = 0.42$, p <0.001). Furthermore, psychological well-being was moderately correlated with impermanence awareness ($r = 0.31$, p <0.001) and impermanence acceptance ($r = 0.45$, p <. 001). Analysis also showed that psychological well-being was highly correlated with mindfulness ($r = 0.52$, p <0.001). These results provide some initial support for the relative orthogonality of IMAAS to related measures. Regarding regression analyses, only mindfulness, impermanence awareness, and impermanence acceptance were significant predictors of well-being. The final model accounted for 47% of the variance in well-being ($F_{(5, 302)} = 54.37$, p<0.001). Standardized betas for each predictor were mindfulness ($\beta = 0.41$); impermanence awareness ($\beta = 0.26$); and impermanence acceptance ($\beta = 0.28$).

Discussion

The IMAAS showed good convergent validity with similar constructs such as death acceptance and good discriminant validity with related but different constructs such as mindfulness. Importantly, both impermanence awareness and acceptance are significant predictors of psychological well-being even after controlling for age, death acceptance, and mindfulness. These results suggest that impermanence awareness and acceptance are relevant predictors of well-being beyond death acceptance. There was a positive correlation between age and impermanence awareness and acceptance. Older participants, perhaps due to their greater experiences of death, aging, and illness, may have reached a higher awareness and acceptance of impermanence. This is consistent with the previous research showing that older adults are more accepting of death (Wong et al., 1994).

General Discussion

Together with mindfulness and compassion, the cultivation of impermanence awareness and acceptance is a fundamental aim within Buddhist psychology (Chödrön, 2001; Coleman & Thupten, 2006; Halifax, 2008; Nhat Hanh, 1999; Ostaseski, 2017). In contrast to the prolific research and interventions focused on mindfulness (Chiesa et al., 2011; Morton et al., 2020), loving-kindness, and compassion (Goetz et al., 2010; Hofmann et al., 2011; Neff & Germen, 2013), there are no evidence-based interventions focused on the cultivation of impermanence (Shonin et al., 2014).

The 13-item Impermanence Awareness and Acceptance Scale (IMAAS) was created to measure changes in an individual's state levels of impermanence awareness (cognizance that all phenomena are transient) and impermanence acceptance (attitude of openness towards the transient nature of all phenomena). Exploratory factor analysis (Study 1) and confirmatory factor analysis (Study 2) showed an acceptable model fit of a 2-factor structure of the IMAAS into impermanence awareness and acceptance.

Convergent and discriminant validity analyses (Study 3) showed that the IMAAS has good reliability, good convergent validity with similar constructs such as death acceptance, and good discriminant validity with related but different constructs such as mindfulness. Results showed that both impermanence awareness and acceptance were positively and moderately related to neutral death acceptance (Wong et al., 1994). This result indicates that death acceptance and impermanence share similar theoretical grounds (e.g., both concepts involve meeting change with openness) but remain discrete constructs in their breadth of focus. Compared to death acceptance, impermanence applies more broadly to how individuals embrace changes in all its manifestation and not just in the final physical death.

Counterintuitively, death acceptance was more correlated with impermanence awareness than with impermanence acceptance. One possible explanation is that half of the items of the neutral death acceptance subscale of the DAP (Wong et al., 1994) focused on cognitive aspects of death acceptance, such as death beliefs (e.g., "Death should be viewed as a natural, undeniable, and unavoidable event", and "Death is simply a part of the process of life"), which may be more consistent with impermanence awareness than acceptance of impermanence. Future research including all subscales of the DAP-R and other death anxiety measures (e.g., Collett-Lester Fear of Death Scale) may further

elucidate the relationship between death acceptance and impermanence awareness/acceptance.

Impermanence awareness/acceptance are theoretically and empirically related to mindfulness. Results of Study 3 showed that mindfulness correlated positively with both impermanence awareness and acceptance. We posit that mindfulness and impermanence may function synergistically. Mindfulness may promote impermanence by encouraging nonjudgmental attention to one's present changing experience. Impermanence awareness and acceptance may increase mindfulness by motivating individuals to pay closer, nonjudgmental attention to a fleeting and transient moment. Future studies can further explore the relationship between impermanence and mindfulness by exploring outcomes of mindfulness- and impermanence-based interventions.

Consistent with previous research demonstrating greater death acceptance (Sawyer et al., 2019) and greater mindfulness (Shook et al., 2019) among elderly samples, we found a positive correlation between age and impermanence awareness and acceptance. Older participants, perhaps due to their accumulative exposure to impermanence throughout their lives (e.g., deaths, aging, illnesses), may have reached greater levels of impermanence awareness and acceptance through lived experience. Future research could explore whether elderly samples and populations who regularly practice impermanence may have high stable levels of impermanence. The IMAAS was created to assess changes in state impermanence awareness/acceptance. Proposing the construct of impermanence as a permanent trait would not be consistent with the Buddhist framework on which our definition of impermanence was based that assumes that everything changes, including our attitude towards impermanence itself. Despite maintaining that impermanence is best understood as a state construct, accumulative exposure to impermanence as we age or as we regularly do impermanence practices may lead to high and stable levels of impermanence awareness/acceptance. This is consistent with mindfulness research that have shown that practicing meditation overtime increases both state and trait mindfulness (Bravo et al., 2018; Kiken et al., 2015).

Gender differences were also found in Study 3. Women reported higher levels of impermanence awareness but not greater acceptance than men. Goldenberg and Roberts (2004) suggest that some women may have greater awareness of impermanence through their experience of embodied changes throughout the female lifespan (e.g., menarche and menopause) and due to greater societal pressure to maintain youthfulness. Future scholarship could explore the sociocultural and biological factors that contribute to possible gender differences in impermanence awareness and acceptance.

Importantly, results of Study 3 demonstrated that impermanence awareness and acceptance were significant predictors of well-being, even after controlling for death acceptance, age, and mindfulness in our sample. We propose several

explanations for this relationship. Cultivating impermanence may allow individuals to respond with less denial when difficult challenges arise. It may increase emotion regulation when bad things happen, offering a "this too shall pass" attitude. It may allow for relief in acknowledging that bad things do end. Finally, impermanence may allow for greater joy when good things arise and prompt mindfulness and gratitude when appreciating the inherent transience of those experiences. Future studies could explore the unique role impermanence may play in psychological well-being.

We initially considered that impermanence awareness may require impermanence acceptance to positively impact well-being, as awareness of change without acceptance could increase anxiety (Lindsay & Creswell, 2019; Sahdra et al., 2016). However, results of Study 3 showed that both impermanence awareness and acceptance independently positively impacted psychological well-being. It is possible that being aware of the changing nature of things (even if one cannot fully embrace those changes) may help individuals to anticipate and adapt more skillfully. Additional scholarship should explore the effects of impermanence awareness and acceptance independently and in concert on well-being.

One of the aims behind the development of the IMAAS was to create a tool for measuring outcomes of impermanence-based interventions. Some existing programs include Joan Halifax's *Being With Dying*, Frank Ostaseski's *Metta Institute* training, and Silvia Fernández Campos's *Acompañamiento Contemplativo en la Muerte* (Contemplative care for the dying). Some impermanence practices included in these trainings involve noticing changes and ends ("small deaths") in nature (e.g., leaves growing old and falling from a tree, clouds shifting into raindrops), in oneself, and in loved ones. Specific impermanence meditations and relational exercises are included. Of note, in these contemplative trainings, impermanence practices are applied together with mindfulness and compassion practices. Future research on impermanence-based interventions may clarify how impermanence fosters well-being apart from mindfulness and compassion.

Limitations and Future Research Directions

This is an initial empirical exploration of the construct of impermanence and its relationship to death acceptance, mindfulness, and well-being. More research is needed to explore the association of this construct with other related concepts (e.g., posttraumatic growth, tolerance for ambiguity and uncertainty) as well as its relationship with well-being. Future validity studies would also benefit from the use of acceptance scales or subscales for comparison.

Future scholarship could be informed by limitations of this present study. Subsequent research in this area may benefit from more strict criteria for item and factor

retention in order to further refine impermanence operationalization. These studies should also employ methods specifically designed for ordinal data, such as the weighted least squares (WLSMV; Li, 2016) in big samples. Although no significant shared variance across the items of the scale was detected, item valence may be responsible for the two-factor solution (i.e., only the indirect statements were kept in the impermanence acceptance factor) (Zeng et al., 2020). Thus, future studies might overcome this limitation by incorporating different procedural and statistical techniques to control the valance effects (Podsakoff et al., 2003). Future reports could incorporate experimental measures or peer reports and not utilize self-report measures alone. Furthermore, future studies could explore the relationship between impermanence awareness/acceptance and mindfulness using other scales, such as the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), which may allow for greater clarification of how these constructs relate.

Our relatively small sample size taken exclusively from an online platform was another limitation of this study. Larger cohorts of participants will allow for greater statistical precision and insight into this construct. Furthermore, a large percent of our participants in this research had a high education level. Additional studies could validate the scale in samples with a wider range of educational levels.

In these studies, we did not measure several demographic factors, such as ethnicity. Future cross-cultural studies could measure and include participants with diverse ethnic, spiritual/religious, and cultural characteristics. This will not only allow other researchers to explore the cross-cultural validity of this scale but also to better understand the impact of cultural or spiritual identity on impermanence acceptance/awareness.

Finally, future research could explore whether impermanence awareness and acceptance may be associated with both negative (e.g., increased anxiety, fear) and positive outcomes (e.g., less trauma-related distress, greater life appreciation). As discussed earlier, growth that accompanies greater awareness and acceptance of impermanence may also involve grief, anxiety, and loss. This idea is consistent with the literature on posttraumatic growth (Janoff-Bulman, 2004) demonstrating that positive outcomes following a life-threatening experience often coexist with heightened anxiety or even symptoms of posttraumatic stress.

Author Contributions SFC designed and executed the study, analyzed the data, and wrote the paper. PR analyzed the data, wrote the results, and assisted in editing the manuscript. MBY collaborated with the design and in editing of the manuscript.

Declarations

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