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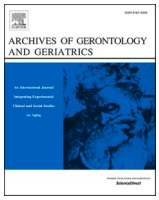

Does life get better after middle age? Cultural comparisons of trends and key predictors of life satisfaction across the lifespan

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HIGHLIGHTS

- The pattern of life satisfaction (LS) followed a U-shaped trajectory in British participants
- The pattern of LS across the lifespan followed an inverted U-shape in Indonesian participants
- Psychological well-being, social relationships, and environment were important in explaining LS in both cultures
- LS was further impacted by other distinct factors in each group, such as anxiety and religiosity in Indonesian participants and depression in British participants

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ABSTRACT

Background: This study investigated 1) whether there are differences in the trajectory of life satisfaction (LS) across the lifespan between British and Indonesian adults, and 2) which factors are associated with LS overall, and according to culture and age.
Methods: 1355 participants aged 18 to 91 were included: 649 British and 706 Indonesian. Participants completed an online questionnaire examining LS, quality of life (which included physical health, psychological wellbeing, social relationships, and environment), depression, anxiety, and religiosity. Data were examined looking at all participants within each culture and then by further separating each cultural group into three age groups (Young adults/YA (18-39), middle-aged/MA (40-59), older adults/OA (60+).
Results: The trajectory of LS across the lifespan was U-shaped in British participants but followed an inverted U-shaped pattern in Indonesian participants. Regression analyses on Indonesian and British participants (when all ages were grouped together) revealed that psychological well-being, social relationships, and environment were significantly associated with LS in both cultures, but LS was further impacted by other distinct factors in each group, such as anxiety and religiosity in Indonesian participants and depression in British participants. On analysing the age groups separately some of these predictors of LS were no longer significant, or were only applicable to specific age group(s) and/or one country.
Discussion: Psychological well-being, social relationships, and environment are important variables which should be incorporated into LS interventions for both cultures. Addressing the distinct needs of different cultures and age groups may further help when tailoring LS interventions for these different groups.

1. Background

Life satisfaction (LS) is often used as a measure of well-being. Diener et al. (1985) defined LS as the cognitive-judgment element of subjective well-being. Hall (2014) described it as a favourable disposition toward the entirety of one's life experience. Adults who were very dissatisfied with their lives faced a 107% higher risk of mortality compared to those who were very satisfied with their lives (Lee & Singh, 2020). A substantial number of studies have reported that levels of LS vary throughout the lifespan (Blanchflower & Oswald, 2008; Helliwell &

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Putnam, 2004; Kageyama & Sato, 2021; Mroczek & Spiro, 2005; Park et al., 2019). LS can change with age (Hsu, 2012; Park et al., 2019) due to factors such as physical, psychological, and social-economic changes (Rony et al., 2024; World Health Organization, 2023). Bittmann (2020) proposed that the relationship between age and LS can be classified into one of three possible trends: a linear decline, a U-shaped trajectory, and a decline followed by a stable period in old age or a slight increase.

The variation in predictors of LS across age is increasingly recognised as a critical area of inquiry. Sulandari, Coats, Miller, et al. (2024) highlighted that as individuals age, the positive association between social support and LS weakens, indicating shifts in the factors that contribute to well-being over the lifespan. Similarly, Joshanloo and Jovanović (2021) suggested that while certain predictors, such as social support and psychological variables, remain generally consistent across age groups, their predictive power may vary significantly. Ji et al. (2022) stressed that it is important to consider culture when investigating trajectories of LS across the lifespan. Realo and Dobewall (2011) suggested that a universal trajectory may not exist; the relationship between age and LS is likely to vary along with important cultural differences. In Western countries, for example Finland, New Zealand, Sweden, and the UK, LS tends to follow a U-shaped pattern where it is higher in young and older adults but shows a dip during middle adulthood. This is in contrast to Eastern countries, such as India, Pakistan, Thailand, and Zimbabwe, where LS tends to continuously decline through adulthood (Bittmann, 2020).

Socioemotional selectivity theory (SST) (Carstensen, 2021) can provide a comprehensive framework for studying age-related differences in well-being which may help to explain variations in life satisfaction trajectories. According to SST, as people age and perceive their future time as more limited, their priorities shift from knowledge seeking and exploration to emotionally important objectives and connections. This motivational shift contributes to why, with increasing age, individuals frequently experience increased psychological well-being despite age-related losses such as declining social status, physical health, social networks, and social engagement. SST also provides a prism through which to understand cultural variations in age-related shifts in goals or values which may influence individuals' well-being across cultures. However, this theory is from a Western perspective which may not be suit for cross-cultural study.

More recent frameworks from cultural and developmental psychology that emphasise role transitions and familial norms (Hartanto et al., 2024; Minkov et al., 2017) may better explain cultural variations in life satisfaction trajectories. These perspectives clarify how culturally embedded expectations, such as interdependence, obedience, conformity, and strong in-group loyalty in collectivist cultures or autonomy, independence and self-expression, prioritising universalism, and the rule of law over social hierarchy and exclusion in individualist ones influence the relevance of factors associated with ageing. For instance, in collectivist societies, older adults may derive well-being more from familial support, while in individualist contexts, personal meaning or autonomy may play a larger role. This framing could help to explain why predictors of life satisfaction may vary across cultural contexts.

However, previous studies suggest that there is conflicting evidence regarding whether the determinants of LS through the lifespan vary across culture. Suh and Oishi (2002) proposed that in individualistic cultures, LS is primarily influenced by internal attributes, such as personal emotions and self-perception. In contrast, in collectivist cultures, LS is more strongly shaped by social factors, including societal norms, interpersonal relationships, and external evaluations from others. However, a comprehensive meta-analysis (Sulandari, Coats, Miller, et al., 2024), synthesising findings from 57 studies across 21 countries, provides compelling evidence that the associations between enhanced physical capabilities, higher levels of social support, and lower experiences of loneliness, depression, and anxiety are equally robust across both Western and Eastern populations, highlighting their universal relevance.

Given these diverse and sometimes conflicting findings regarding LS and its trends and predictors across different cultures and age groups, further research is crucial to establish a more definitive and cross-culturally validated pattern of LS through the lifespan. The present study focused on how LS trends and associated factors during adulthood differed between two cultural groups: British people living in the United Kingdom (UK) and Indonesian people living in Indonesia. With a population of around 270 million (BPS-Statistics Indonesia, 2020), Indonesia represents the fourth largest populated country in the world. Cultural factors significantly shape experiences of ageing through lifespan, yet research on ageing well among the Indonesian remains limited. Most older Indonesians live in extended families, a structure that contrasts with the more individualistic living arrangements typical in Western countries. This distinction may influence perspectives on ageing well, perhaps due to the variation of social structure, values, and health and social care systems. Studying ageing within this context could provide insights not only for Indonesia but also for similar collectivist cultures, where research in this area is also scarce. In contrast, the UK, with its 67 million residents (Office for National Statistics, 2022), reflects a Western model of ageing. It is ethnically diverse, highly individualistic, and supported by government-funded initiatives that promote healthy ageing through healthcare, social services, and community engagement (Department of Health, 2001; Government Office for Science, 2016; Office for Health Improvement & Disparities, 2022; Woods & Crampin, 2020). In Indonesia, while government programmes exist (The National Team for The Acceleration of Poverty Reduction & The SMERU Research Institute, 2020), family and community networks remain central to older people's care (Sulandari, Coats, Taufik, et al., 2024; Triandis, 2001). These cultural differences likely shape distinct experiences that in turn shape the key factors of ageing well. Understanding these variations is crucial for developing culturally sensitive interventions and best practices in ageing policy and support systems.

Past studies have typically investigated LS across age groups; however, gaps remain. Research has been limited by the exclusion of middle-aged adults (MA) and a lack of cross-cultural comparisons (Berenbaum et al., 2013; Busseri & and Samani, 2023; Ji et al., 2022; Sulandari et al., 2025), or by only focusing on YA and MA and omitting an OA group (Soylu, 2023). Some other studies have included participants from all adulthood stages; however, their findings remain inconsistent (Bartram, 2021; Bittmann, 2020; Choi et al., 2023; Karwetzky et al., 2022) regarding the LS trajectories. Researchers have also investigated predictors of LS across the lifespan and cultures, but the body of research remains limited in terms of the predictor variables examined. For example, previous studies have focused on marriage, employment, prosociality, and life meaning (Jebb et al., 2020); social support, household income satisfaction, positive affect, and negative affect (Joshanloo & Jovanović, 2021); or financial security and urbanicity (Swami et al., 2025). The present study sought to address this gap by measuring a wide range of factors using regression models to identify the best predictors across age and culture. We chose to measure physical health, psychological well-being, social relationships, environment, depression, anxiety, and religiosity, both to ensure we covered enough breadth and because these factors were identified as critical determinants of LS across culture and the lifespan in our previous study (Sulandari, Coats, Taufik, et al., 2024).

A cross-culture and cross-age investigation that includes all life stages and participants from different cultural backgrounds is essential for developing a more nuanced understanding of how LS is influenced across the lifespan. Ensuring that key predictors of LS are accurately identified among groups will guarantee that health promotion or interventions aimed at enhancing well-being are appropriately tailored to different cultures and age groups. Therefore, this study aimed to investigate 1) whether there are differences in LS trajectories across the lifespan between British and Indonesian adults and 2) which factors are associated with LS overall, and according to culture and age. We hypothesised that LS trajectories and its predictors will differ

significantly by culture and age group.

2. Method

2.1. Participants and recruitment

British participants were recruited via social media, a flyer, word of mouth or the School of Psychology student participant pool in exchange for course credits. An online paid recruitment platform, prolific, was also used to recruit more participants aged 28-40 ($n = 44$) and 40+ ($n = 270$) in a second wave of data collection, due to a smaller number of people from these groups participating in this study using the former recruitment approaches. Prolific ensures that all participants are real people through a thorough verification process. Indonesian participants were also recruited via social media and word of mouth, and for the older Indonesian participants, some of them were helped by the family member or a research assistant to access the online questionnaires. Altogether 670 British participants and 735 Indonesian participants responded. Data were considered incomplete for a participant when they missed one set or more of the measures or they did not meet the criteria from each scale to be useable, for example, entries missing more than 20% within the measure. The incomplete datasets amounted to 4 for British participants and 23 for Indonesian participants. 17 British participants and 6 Indonesian participants provided no information regarding age or birth year so were excluded. This resulted in 1355 usable cases for the analysis which included 649 British aged 18 to 86 years old, mean age 39.35 (SD = 19.62) and 706 Indonesian aged 18 to 91, mean age 43.83 (SD = 16.55). Data were collected between 15 April 2024 to 15 November 2024 for the UK participants and to 22 September 2024 for the Indonesian participants. Ethical approval was gained from School of Psychology, University of Leeds (PSCETHS-1171; 7/03/2024).

2.2. Procedure

Participants completed an online questionnaire using the Qualtrics XM Platform™ which took 15-30 min. An information sheet was provided before completion of the questionnaire alongside a consent form to check willingness to participate.

2.3. Measures

This study examined LS, quality of life (physical health, psychological well-being, social relationships, and environment), depression, anxiety, and religiosity. We used well validated and widely used scales in this study. The details relating to internal consistency scores are provided in the Appendix file, alongside examples of the items in the scales used to measure these variables and the power calculation score.

Life satisfaction. The Riverside Life Satisfaction Scale (RLSS) (Margolis et al., 2019) was employed to assess LS. It contains six items. Participants evaluated their agreement with each item on a 7-point Likert scale (1 = Strongly disagree, 2 = Moderately disagree, 3 = Slightly disagree, 4 = Neither agree nor disagree, 5 = Slightly agree, 6 = Moderately agree, 7 = Strongly agree). This scale was designed to enhance the widely recognised Satisfaction with Life Scale (SWLS) (Diener et al., 1985) by offering greater bandwidth by incorporating indirect indicators while maintaining strong internal consistency and test-retest reliability. Items 2, 4, and 6, categorised as indirect indicators. The final ratings ranged from 6 to 42, with elevated numbers signifying increased LS. For the Indonesian version of this scale, we used forward and back translation for adaptation to the Indonesian context version from Novanto et al. (2021).

Quality of life (THE WHOQOL GROUP). A multi-dimensional instrument, the World Health Organization QoL scale (WHOQOL-BREF) (The whoqol group, 1998) was employed to measure four QoL domains (physical health, psychological well-being, social relationships, and environment). This scale is widely used globally and well-validated. Each item is assessed on a Likert scale ranging from 1 to 5, with various response anchors, where higher scores reflected a higher level of QoL. The domain scores were computed by multiplying the average score of each domain by four, in accordance with the WHOQOL-BREF scoring manual. The English and Indonesian translated version were accessed through World Health Organization (2024).

Depression. Depression was measured using the Patient Health Questionnaire-9 (Kroenke et al., 1999; Patient Health Questionnaire Screeners) which comprises the 9 items that underpin the diagnosis of depressive disorders in the DSM-IV. This scale is widely used globally and well-validated. Participants rated a scale ranging for each item as 0 = *not at all*, 1 = *several days*, 2 = *more than half the days*, and 3 = *nearly every day*. Higher scores show a higher level of depression, ranging from 0 to 27. The English and Indonesian version were accessed through the Patient Health Questionnaire Screeners (2024).

Anxiety. The Generalized Anxiety Disorder (GAD)-7 scale (Spitzer et al., 2006) was employed to measure anxiety. This scale is widely used globally and well-validated. The GAD-7 includes 7 items which have response options from 0 = *not at all*, 1 = *several days*, 2 = *more than half the days*, and 3 = *nearly every day*. Higher scores show a higher level of anxiety, ranging from 0 to 21. The English and Indonesian version were accessed through the Patient Health Questionnaire Screeners (2024).

Religiosity. The Centrality of Religiosity Scale (CRS) (Huber & Huber, 2012), was used to measure religiosity. This measure consists of 5 items scored from 1 ('never/not at all') to 5 ('very often/very much so'), total possible scores range from 5 to 25. Higher scores indicate higher levels of religiosity. The reliability of this questionnaire has been explored in a general quota population sample of 1768, producing a Cronbach's alpha coefficient of .85 (Prutskova, 2021). For the Indonesian version of this scale, we used the forward and back translation for adaptation to the Indonesian context version from Novanto et al. (2021).

Missing items, i.e., entries missing no more than 20 % within the measure (Downey & King, 1998), for LS, depression, anxiety, and religiosity measures, featured a missingness rate of <0.003 % were imputed using predictive mean matching (Van Buuren, 2018) with five iterations with R's mice package. For each missing cell, five cases without missing values for that variable were identified. One of these five cases was randomly selected, and its score for that variable was imputed into the missing cell. For QoL, we referred to the WHOQOL-BREF scoring manual.

2.4. Data Analysis

First, descriptive analyses for all potential predictors of LS were conducted. Second, a trajectory was visualised, illustrating the relationship between age and LS. Third, Pearson's correlations were conducted to determine relationships between variables of interest and LS in all samples and in the British and Indonesian groups separately. Fourth, multiple regression analyses were performed to identify the most important determinants of LS among British and Indonesian groups and among age groups (YA = 18-39 years old; MA = 40-59 years old; OA = 60 and above). The outcome variable was LS, measured by RLSS. The set of predictive variables included QoL (physical health, psychological well-being, social relationships, & environment), depression, anxiety, and religiosity. All analyses were carried out using R software version 4.4.2 for data visualisation (*ggplot2* package) and confirmatory factor analysis (CFA) test (*lavaan* package) and SPSS 28 for others statistical tests. CFA was used to test configural, metric, and scalar invariance across the UK and Indonesia samples. The configural model showed good fit across countries, supporting a consistent factorial structure: $\chi^2(14) = 65.28$, $p < .001$; CFI = 0.988; RMSEA = 0.074 [90 % CI: 0.056–0.092]; SRMR = 0.025. When constraining loadings for metric invariance, model fit remained acceptable: $\chi^2(19) = 93.33, p < .001$; $\Delta\chi^2 = 28.04$, df = 5, $p < .001$; ΔCFI = 0.006; RMSEA = 0.076; SRMR = 0.041, supporting metric invariance and allowing valid comparisons of associations across countries. Although scalar invariance was not

supported (ΔCFI = 0.017; RMSEA = 0.100), it was not considered as a significant concern since our primary analyses did not involve direct comparisons of latent means across countries (Putnick & Bornstein, 2016). Instead, we used total outcome scores as observed variables in separate regression models for each group, focusing on associations with the outcome, life satisfaction.

3. Results

For details of participant characteristics see Table 1. Both groups were predominantly female, accounting for around 70 % of participants. The living arrangements were varied in both groups; however, living with friends was relatively uncommon in Indonesia. Both groups primarily consisted of individuals who were either married or never married; fewer participants were divorced, separated, or widowed. Moreover, the majority of participants in Indonesia were working, while in the UK, most were either working or pursuing education. In Indonesia, the highest representation was among those with "below undergraduate" and undergraduate-level qualifications, whereas in the UK, participants were predominantly undergraduate or postgraduate degree holders. For parental status, the majority of participants in Indonesia had children, whereas in the UK, the distribution was almost equal for those who did or did not have children. The ethnicity background largely reflected the dominant ethnic groups in each country; "White British" in the UK and "Javanese" in Indonesia.

Tables 2 and 3 confirmed that higher levels of physical health, psychological well-being, social relationships, environment and lower levels of depression and anxiety were significantly correlated with greater LS in both groups (Indonesian and British participants); however, among Indonesian participants, higher levels of religiosity were also significantly correlated with greater LS.

3.1. Life satisfaction trajectory across the lifespan between British and Indonesian adults

Fig. 1 shows the trajectories of LS over the lifespan. Results revealed distinct trends across the groups. In the Indonesian group, LS reached its highest point around middle age before declining sharply in later years. In contrast, the UK group exhibited a decline in early middle age followed by a continuous climbing pattern with increasing age, reaching its peak in older adulthood. The overall pooled trajectory for both groups showed a more stable pattern, with moderate fluctuations but indicated a slightly U-shaped pattern of LS before aged 60.

To analyse this relationship in more detail, we added the age squared values to the regression model (Table 4). To evaluate whether the inclusion of a quadratic age term improved model fit, a model (age only) with a quadratic model (age and age^2) were compared. The quadratic model explained significantly more variance, for Indonesian participants, $\Delta R^2 = .027$, $F(1, 703) = 13.19$, $p < .001$ and for British participants, $\Delta R^2 = .051$, $F(1, 646) = 17.20$, $p < .001$, supporting the inclusion of the age^2 term. In this model, the coefficient of age squared was ($\beta = 1.30$, $p < .001$.), indicating the presence of a U-shaped relationship in British participants and inverted U-shaped relationship in Indonesian participants ($\beta = -.94$, $p < .001$). Strikingly, in Indonesia, even though LS increased in MA, it remained within the moderate range (see Figure note for cutoffs) of LS and declined to an almost low level of LS toward the end of the lifespan. In contrast, in the UK, even though LS decreased in MA, it still stayed within the moderate range and reached a high level of LS after 70 years old. For Indonesian participants, the highest LS reported was during adulthood was between aged 30 to 40 and 60 to 70 while the lowest level of LS was before aged 20 and after 85. For British participants, the highest level of LS was after aged 65 and the lowest was aged 35 to 45.

Table 1
Characteristics of the participants.

Characteristics	Number of participants (%)		
	All n = **1,355**	**Indonesian** n = **706**	**British** n = **649**
Gender			
Male	383 (28.3)	207(29.3)	176 (27.1)
Female	929 (68.6)	463(65.6)	466 (71.8)
Other or prefer not to say	43(3.2)	36(5.1)	7(1.1)
Living arrangement			
Living alone	133(9.8)	49(6.9)	84(12.9)
Living with friends	140 (10.3)	5(0.7)	135 (20.8)
Living with partner/spouse	372 (27.5)	177(25.1)	195 (30.1)
Living with child(ren)/parent(s)	292 (21.5)	200(28.3)	92(14.2)
Living with partner/spouse and child (ren)/parent(s)	261 (19.3)	178(25.2)	83(12.8)
Other or prefer not to say	157 (11.6)	97(13.7)	60(9.2)
Marital status			
Married	669 (49.4)	449(63.6)	220 (33.9)
Divorced/Separated	52(3.8)	9((1.3)	43(6.6)
Widowed	59(4.4)	47(6.6)	12(1.9)
Never married	510 (37.6)	166(23.5)	344(53)
Other or prefer not to say	65(4.8)	35(5)	30(4.6)
Working status			
Working (employed or self-employed)	668 (49.3)	398(56.4)	270 (41.6)
Unemployed	122(9)	99(14)	23(3.5)
In education	277 (20.4)	50(7.1)	227(35)
Retired	121(8.9)	32(4.5)	89(13.7)
Disabled (not able to work)	12(0.9)	0	12(1.9)
Others or prefer not to say	155 (11.4)	127(18)	28(4.3)
Educational background			
No qualification	114(8.4)	6(0.8)	108 (16.6)
Below undergraduate level	679 (50.1)	340(48.2)	339 (52.2)
Undergraduate degree	293 (21.6)	262(37.1)	31(4.8)
Postgraduate qualification (Masters or PhD)	224 (16.5)	60(8.5)	164 (25.3)
Other or prefer not to say	45(3.3)	38(5.4)	7(1.1)
Children			
None	565 (41.7)	180(25.5)	385 (59.3)
1	160 (11.8)	94(13.3)	66(10.2)
2	364 (26.9)	233(33.0)	131 (20.2)
3	144 (10.6)	104(14.7)	40(6.2)
More than 3	70(5.2)	49(6.9)	21(3.2)
Other or prefer not to say	52(3.8)	46(6.5)	6(0.9)
Ethnicity			
Javanese (for Indonesian) and White British (for British)	1,102 (81.3)	575(81.4)	527 (81.2)
Other or prefer not to say	253 (18.7)	131(18.6)	122 (18.8)

3.2. Effects of all of variables of interest on life satisfaction

The regression analyses (Table 5) tested the unique contribution of all the variables of interest on LS. Results revealed that higher levels of psychological well-being ($\beta = .33$, $p < .001$), social relationships ($\beta = .22$, $p < .001$), environment ($\beta = .07$, $p < .05$), and lower levels of depression ($\beta = -.22$, $p < .001$) and anxiety ($\beta = -07$, $p < .05$) were

Table 2
Correlations between study variables and life satisfaction in Indonesia.

Variable	LS	Physical health	Psychological wellbeing	Social relationship	Environment	Depression	Anxiety	Religiosity
LS	-							
Physical health	.372***	-						
Psychological well-being	.508***	.698***	-					
Social relationship	.401***	.601***	.611***	-				
Environment	.402***	.601***	.668***	.674***	-			
Depression	−.515***	−.510***	−.647***	−.357***	−.379***	-		
Anxiety	−.497***	−.404***	−.570***	−.271***	−.311***	.830***	-	
Religiosity	.251***	.183***	.228***	.213***	.219***	−.143***	−.118**	-

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

Table 3
Correlations between study variables and life satisfaction in the UK.

Variable	LS	Physical health	Psychological wellbeing	Social relationship	Environment	Depression	Anxiety	Religiosity
LS	-							
Physical health	.458***	-						
Psychological well-being	.686***	.655***	-					
Social relationship	.546***	.313***	.488***	-				
Environment	.510***	.567***	.582***	.458***	-			
Depression	−.529***	−.572***	−.728***	−.306***	−.446***	-		
Anxiety	−.422***	−.396***	−.597***	−.235***	−.388***	.762***	-	
Religiosity	.011	−.028	.063	.089*	.039	−.027	−.023	-

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

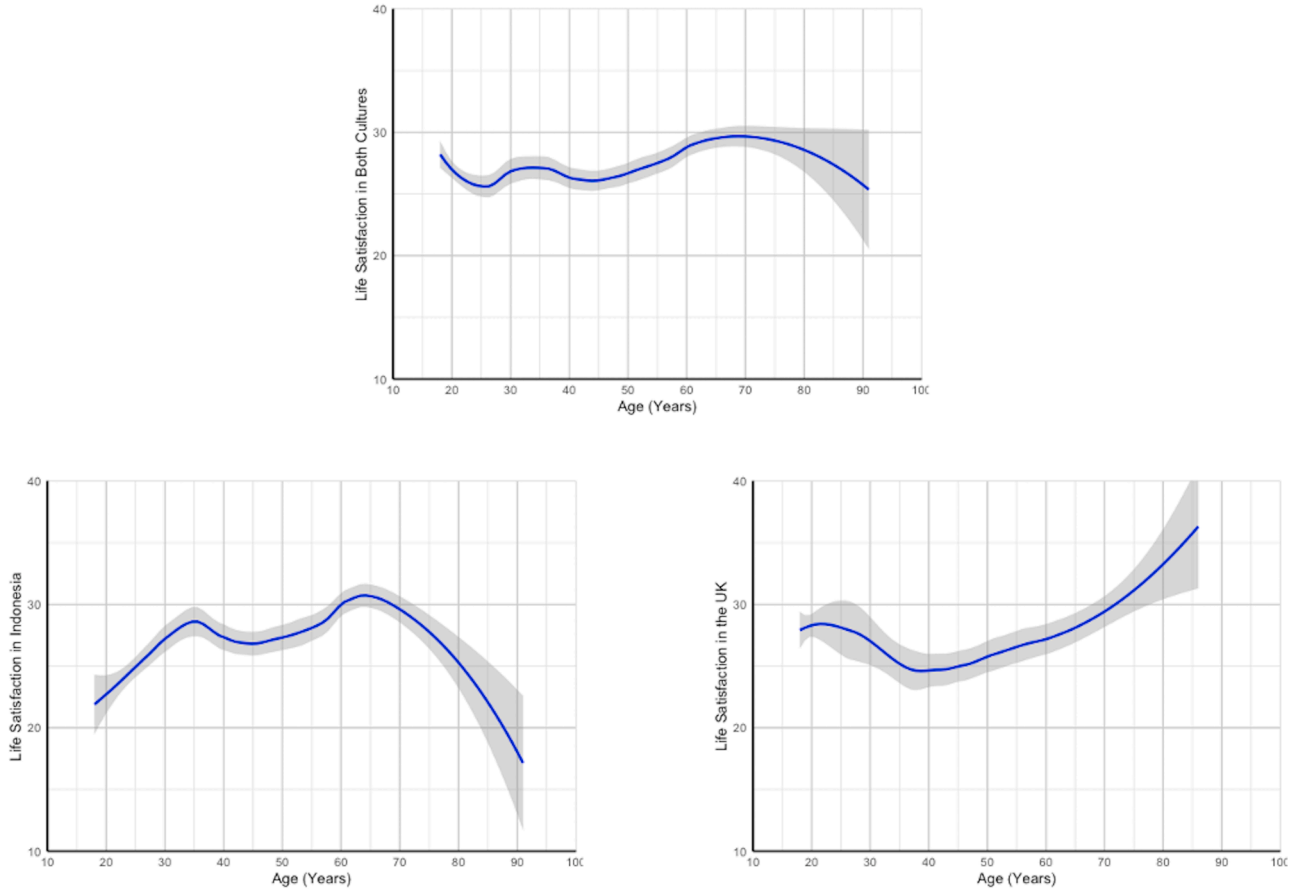

Fig. 1. Life satisfaction trajectories across cultures and in each culture. LS scores ranged from 6-42. For interpretation purpose of some of findings in this figure, LS was categorised into three ranges: low = 6-17; moderate = 18-30; and high = 31-42.

significantly associated with LS in all participants while physical health and religiosity were not, after controlling for culture and age. In separate analyses for each cultural group, it was found that in the Indonesian participants, higher levels of psychological well-being ($\beta = .12$, $p < .05$), social relationships ($\beta = .14$, $p < .01$), environment satisfaction ($\beta = .11$, $p < .05$), religiosity ($\beta = .13$, $p < .001$), and anxiety ($\beta = -.22$, $p < .001$),

Table 4
Regression analysis of life satisfaction and age.

Variable	All participants		Indonesian		British	
	B (SE)	*β*	*B (SE)*	*β*	*B (SE)*	*β*
Age	−.11(.06)	−.28	.45(.08)	1.19***	−.48 (.08)	−.13***
Age^2	.002 (.001)	.41**	−.004 (.001)	−.95***	.01 (.001)	1.30***
R^2	**.020**		**.092**		**.052**	
F	**13.94*****		**35.72*****		**17.57*****	

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

Table 5
Effect of all variables on life satisfaction in all participants and in Indonesia and the UK separately.

Variable	All participants		Indonesian		British	
	B (SE)	*β*	*B (SE)*	*β*	*B (SE)*	*β*
Culture	−.63 (.70)	−.05	-	-	-	-
Age	**−.21 (.05)**	**−.54*****	.10 (.07)	.28	−.30 (.06)	−.80***
Age^2	**.002 (.000)**	**.52*****	−.001 (.001)	−.15	.003 (.001)	.68***
Physical health	−.13 (.09)	−.05	−.11 (.15)	−.03	−.19 (.11)	−.07
Psychological well-being	**.90 (.10)**	**.33*****	**.37 (.17)**	**.12***	**1.19 (.12)**	**.46*****
Social relationship	**.52 (.06)**	**.22*****	**.38 (.12)**	**.14****	**.49 (.07)**	**.23*****
Environment	**.23 (.09)**	**.07***	**.33 (.14)**	**.11***	**.32 (.11)**	**.10****
Depression	**−.25 (.05)**	**−.22*****	−.15 (.08)	−.11	**−.23 (.07)**	**−.16****
Anxiety	**−.10 (.05)**	**−.07***	**−.33 (.08)**	**−.22*****	.001 (.06)	.001
Religiosity	.01 (.04)	.01	**.27 (.06)**	**.13*****	−.07 (.04)	−.05
R^2	**.45**		**.39**		**.57**	
F	**110.36*****		**48.45*****		**93.68*****	

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

were significantly associated with greater LS, however, neither physical health nor depression were significantly associated with LS. In British participants, greater LS was significantly associated with higher levels of psychological well-being ($\beta = .46$, $p < .001$), social relationships ($\beta = .23$, $p < .001$), environment ($\beta = .10$, $p < .01$), and lower levels of depression ($\beta = -.16$, $p < .01$), but not by physical health, anxiety, or religiosity. The total amount of variance accounted for by the covariates was 57 % in British participants and 39 % in Indonesian participants. A collinearity test in all participants showed a maximum variance inflation factor (VIF) value of 2.96 and a minimum tolerance value of 0.34, suggesting no multicollinearity among main included variables.

3.3. Factors associated with life satisfaction according to culture and stage of life

We conducted additional analysis (Table 6), controlling for age (for all analyses) and culture (only for the left-hand column: "all participants") to examine the factors that had a unique contribution to LS in each country based on age-specific groups: young adults (YA), middle-aged adults (MA) and older adults (OA). The findings showed that in young Indonesians, lower levels of depression ($\beta = -.18$, $p < .05$), followed by better social relationships ($\beta = .17$, $p < .05$) and better environment satisfaction ($\beta = .14$, $p < .05$) were significantly associated with greater LS while in young British participants, LS was significantly associated with a better psychological well-being ($\beta = .47$, $p < .001$), lower levels of depression ($\beta = -.20$, $p < .001$), better social relationships ($\beta = .16$, $p < .001$), and lower levels of religiosity ($\beta = -.09$, $p < .05$). In the MA group, better social relationships were significantly associated with greater LS in both Indonesian ($\beta = .25$, $p < .001$) and British participants ($\beta = .26$, $p < .001$). In addition to social relationships, a higher level of LS in Indonesian MA was also significantly associated with higher level of religiosity ($\beta = .17$, $p < .001$) while in British MA, LS was also significantly associated with a better psychological well-being ($\beta = .45$, $p < .001$). Greater LS in older Indonesians was only significantly associated with lower levels of anxiety ($\beta = -.53$, $p < .001$) but that was a very strong contribution. Meanwhile in older British participants, LS was significantly associated with greater psychological well-being ($\beta = .39$, $p < .001$) and better social relationships ($\beta = .27$, $p < .001$).

4. Discussion

4.1. Principal findings

The patterns of LS over the lifespan revealed distinct trends across the cultural groups. In Indonesian participants, the trajectory reflected an inverted U-shaped pattern, and in British participants it showed an upright U-shaped pattern. All tested variables had significant correlations with LS in both groups, except religiosity which did not have a significant relationship with LS in British participants. Regression analyses revealed that psychological well-being, social relationships, and environment were significantly associated with LS in both cultural groups, but LS was further impacted by other distinct factors for each group: anxiety and religiosity in Indonesian participants and depression in British participants. Additional analyses broken down into age groups within each culture showed that psychological well-being was only

Table 6
Analyses for factors associated with life satisfaction in Indonesia and British based on age-specific adult groups.

	All *(β)*			Indonesian *(β)*			British *(β)*		
	YA ($n = 621$)	MA ($n = 433$)	OA ($n = 301$)	YA ($n = 291$)	MA ($n = 258$)	OA ($n = 157$)	YA ($n = 330$)	MA ($n = 175$)	OA ($n = 144$)
Culture	−.02	.07	−.16	-	-	-	-	-	
Age	−.01	.03	−.03	.16**	.07	−.18**	−.14***	−.02	.10
Physical health	.01	−.04	−.15*	−.03	−.01	−.06	.02	−.11	−.14
Psychological well-being	**.36*****	.32***	.34***	.13	.02	.19	.47***	.45***	.39***
Social relationship	**.17*****	.27***	.17**	.17*	.25***	−.02	.16***	.26***	.27***
Environment	.07	.11*	.13	.14*	.17	.12	.04	.13	.17
Depression	**−.27*****	−.12	−.14	−.18*	−.02	.09	−.20***	−.15	−.09
Anxiety	.01	−.11	−.24***	−.14	−.16	−.53***	.07	−.05	−.10
Religiosity	−.07	.08	.05	.07	.17***	.07	−.09*	.003	−.03
R^2	**.47**	**.49**	**.47**	**.45**	**.29**	**.46**	**.52**	**.65**	**.56**
F	**59.75*****	**45.36*****	**28.31*****	**28.25*****	**12.85*****	**16.04**	**43.46*****	**38.75*****	**21.37*****

*$p < .05$, **$p < .01$, ***$p < .001$. Culture and age as controlling variable. YA = 18-39 years old; MA = 40-59 years old; OA = 60 and above.

associated with LS in British participants (for all age groups) and no longer significantly associated with LS in Indonesia. Furthermore, social relationships were significantly associated with LS in both countries in all age groups except for Indonesian OA; depression was only significantly associated with LS in YA (both Indonesian and British); religiosity was only significantly associated with LS in Indonesian YA (positively) and British MA (negatively); environment was only significantly associated with LS in the Indonesian YA; and anxiety was only significantly associated with LS in the Indonesian OA. Generally, the model was better at predicting LS in British YA than in other groups.

4.2. Comparisons with similar research

Our findings extend the literature in several ways. The findings for British participants support the U-shaped trajectory idea: that LS decreases during middle age and subsequently increases during older age (Blanchflower & Oswald, 2008; Helliwell & Putnam, 2004; Kageyama & Sato, 2021). For the Indonesian participants an inverted U-shaped pattern emerged: with LS increasing during middle age and subsequently decreasing during older age. It is possible that these differing patterns are due to government policies generally being favourable towards the older UK participants (Department of Health, 2001; Office for Health Improvement & Disparities, 2022) which may enable them to have greater emotional stability, financial well-being, and to have more opportunities to enjoy leisure activities and pursue personal interests later in life (Sulandari, Coats, Taufik, et al., 2024) while people in middle age need to cope with more complex responsibilities, such us family and work pressure. In contrast, although surprising in a collectivist society like Indonesia, where OA are traditionally respected and children are deeply valued, for Indonesian participants LS is highest for those in MA group, perhaps due to stronger family and community ties and people to support them during working years (Amin, 2017; Shiraz et al., 2020; Soetjiningsih et al., 2019). In addition, MA often find themselves in a relatively stable stage of life, enjoying financial independence, and holding a respected social position, all of which can contribute positively to their sense of well-being. LS then declines with age due to increasing concerns about health, financial stability, and limited access to retirement support in later life (Rony et al., 2024; Swami et al., 2025; World Health Organization, 2023). These factors may help explain these life satisfaction patterns and warrant further exploration in future research.

To better understand the observed cross-cultural disparities, it may be useful to use the paradigm of culturally distinct modes of being, which holds that well-being is maximised when people act in accordance with culturally supported values (Hartanto et al., 2020; Kitayama et al., 2010). Individualistic societies, such as the UK, place a high value on autonomy and self-expression. This could explain why psychological well-being, which is directly related to personal growth and autonomy, has emerged as a more reliable associated factor of life satisfaction. In contrast, in collectivistic cultures like Indonesia, values such as relationship harmony and social obligation are more important, which corresponds to the stronger predictive functions of religiosity and social support. This approach also provides insight into the various life satisfaction paths. In collectivistic societies, midlife is frequently associated with peak social embeddedness and role fulfilment, potentially improving well-being. However, as individuals become older, these functions may weaken, resulting in lower life satisfaction. In contrast, in individualistic cultures, older adulthood may provide greater autonomy and fewer social obligations, fitting more closely with cultural ideals and potentially contributing to higher life satisfaction in later years.

A previous study (Swami et al., 2025), which included the UK and Indonesia as part of 65 sampled nations, showed that LS in adulthood remained stable. However, this study focused on comparing latent mean differences in LS across nations and did not provide separate analyses for specific countries in relation to LS stability across age groups. Our current study adds to the literature by separating analyses between groups to demonstrate that for the UK participants' LS is characterised by a U-Shaped pattern whilst for Indonesian participants an inverted U-Shape emerged. Moreover, we also extend the previous research by including further important factors that were highlighted in our previous work (Sulandari, Coats, Taufik, et al., 2024). Another previous study, Bartram (2021) also included Indonesia and the UK among 69 observed nations and concluded that although there is a U-shape pattern to LS across the lifespan, the actual change in LS associated with age is very small, with only a trivial increase in later life. In comparison, Blanchflower (2021) examined 132 countries including the UK and Indonesia and concluded that the U-shaped curve in LS is a widespread phenomenon. The possible explanation for the different findings in the literature, and the contrast with what we found in our current study, is that variations in survey method and scale, such as Satisfaction with Life Scale (SWLS), a single item LS measure, or the use of varied measures of LS and well-being across different countries, as in Blanchflower study, may lead to discrepancies in reported trends. Furthermore, social, economic, political, and cultural transformations, such as post-covid pandemic era impacts and governmental policy changes could mean that LS has seen variations in recent years, compared with these earlier studies.

The observed inverted U-shape in LS across the lifespan for the Indonesian group, particularly the peak during middle age, offers meaningful insights into lifespan development theory. According to socioemotional selectivity theory (Carstensen, 2021), as individuals age, their goals and emotional experiences shift from knowledge acquisition and exploration to emotionally meaningful pursuits, which can enhance well-being in later life. However, this theory is from a Western influenced framework and contradicts this study's findings which suggest that in certain cultural contexts, like Indonesia, some conditions, such as economic insecurity and limited health infrastructure may suppress this expected late life increase in LS, indicating that developmental trajectories are not universally shaped by psychological mechanisms alone. From a cross-cultural perspective, this underscores the need to integrate cultural, economic, and institutional contexts into existing theories of well-being across the lifespan. Therefore, it is important to integrate socioemotional and cultural conditions into theories of lifespan development and well-being.

Our study findings also show that factors associated with LS vary not only across cultures but also between age groups, underscoring the need for a more nuanced understanding. While some factors, such as psychological well-being, social relationships, environment, depression, and anxiety, appear to be influential in both cultures, their impact varies depending on age. The follow-up analyses on specific age groups within each culture revealed both overlaps and crucial divergences. For example: social relationships was significantly associated with LS in both countries in all age groups except for Indonesian OA, psychological well-being was significantly associated with LS of British participants during all adulthood stages; depression was significantly associated with LS across both cultures but only in YA; religiosity was significantly associated with higher levels of LS in Indonesian MA but lower levels in British YA; environment was only significantly associated with LS of Indonesian YA; and anxiety was only significantly associated with LS of Indonesian OA. Factoring in these differences is essential for developing targeted interventions to enhance LS across diverse populations, ensuring that policies and support systems are appropriately tailored rather than relying on one-size-fits-all approaches.

A further highlight from our findings is that the factors associated with LS in our model were notably weaker among Indonesian participants, particularly those in the older age group. This finding raises important questions about the existing bias in LS research, which has historically centred on Western nations and younger, working-age individuals (Blanchflower, 2021; Cummins & Nistico, 2002). The gap in predictive accuracy suggests that current models may not fully capture the complexities of ageing and well-being in non-Western societies, pointing to an urgent need for more inclusive research. By shedding light

on this disparity, our study extends the literature, emphasising the necessity of further investigations into lifespan LS in non-Western settings, especially in older adults. Addressing this gap is not just an academic concern, it is vital for ensuring equitable support and policy development that genuinely reflects the diverse experiences of aging across the globe.

4.3. Implications

Our findings highlight that interventions to increase LS should address psychological well-being, social relationships, and environment satisfaction in both cultural groups, but must also be tailored to account for other variations in LS associated factors, such as anxiety and religiosity in Indonesian participants and depression in British participants.

Considering that LS is strongly associated with social relationships across cultures and across most of the lifespan, public health practitioners, policy makers, and healthcare professionals who are focused on designing interventions to promote LS across the lifespan should prioritise strengthening individuals' social relationships through group-based approaches where individuals engage in collective activities to foster relationships; for example: self-directed app engagement, where individuals use technology to enhance social connections independently; and individual reading and reflection sessions on things related to social connection experiences, which encourage personal growth and deeper understanding of social relationships through self-exploration (Alvarez et al., 2025). An intergenerational programme between younger and older generations which would allow the older generation to contribute wisdom, values, skills, care, and affection, while the younger generation offers contemporary knowledge, technological skills, and reciprocal attention and affection to their older people (Suragarn et al., 2021) would also be beneficial to strengthen social connections.

4.4. Strengths, limitations and future directions

The present study provides evidence of the varied patterns of LS in Western and Eastern countries and that social relationships are important for a person's LS across-culture and across-age. However, it is also essential to consider other varied factors that depend on the cultural background and age-specific group when examining LS. A potential limitation in the present study is the limited variability of the samples' demographic information, which reduces the generalisability of our findings. The cross-sectional design also means that it was not possible to draw conclusions about the temporal relationship between LS and the associated factors. Future research should undertake repeated measurements over time to ascertain whether the independent variables prospectively predict LS. Furthermore, it is possible that our measures of LS have been designed for younger, Western groups. Replicating the same data in multiple cultures or countries and age groups using more culturally appropriate measures may help to further understand what is a complex social picture. The finding that middle-aged Indonesian adults report the highest life satisfaction seems to go against the idea that traditional Indonesian cultural values emphasise respect for older adults and affection for children, or at least that these values translate into life satisfaction. Factors such as economic insecurity, limited access to healthcare, and shifting family dynamics may counteract the influence of traditional cultural norms. These latent factors that may influence LS were not directly examined in the present study and therefore represent an important limitation. Total scores of LS have been used in this study and testing for measurement invariance across countries was not considered as a significant concern. Future research using confirmatory factor analysis may help assess whether the scale functions equivalently across groups.

Finally, there is a discrepancy in the factors associated with LS when analysing all participants collectively in each country compared to the separate analyses conducted for specific age groups within each country. The possible explanations may be due to (1) the power effects in the separate age groups analyses are lower than when all participants are included together, even though all of the separate groups have good power, (2) the association of the predictors and LS is not consistent across all the age groups, 3) an interaction effect of age on the associated factors and LS may exist, leading to significant results in the full sample but not within age groups when analysed separately, and (4) how the set of predictors interacts within each group in association with LS may be different to how they uniquely contribute to LS when participants were combined.

5. Conclusion

In summary, LS across the lifespan follows a U-Shaped pattern in British participants but an inverted U-Shaped pattern for Indonesian participants. In the main analyses that included all participants, both cultures shared similar predictors of LS, for example: psychological well-being, social relationships, and environment satisfaction, however these were accompanied by other distinct factors per group, such as anxiety and religiosity for Indonesian participants and depression for British participants. On analysing the age groups separately some of these predictors of LS were no longer significant, or were only applicable to specific age group(s) and/or one country. Addressing the specific needs of each age group and each culture can enhance targeted interventions for improving LS. Policymakers and healthcare professionals should consider and prioritise these factors for different age groups when implementing strategies.

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CRediT authorship contribution statement

Santi Sulandari: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Judith Johnson:** Writing – review & editing, Validation, Supervision, Resources, Methodology, Investigation, Formal analysis, Conceptualization. **Rachel O Coats:** Writing – review & editing, Validation, Supervision, Resources, Methodology, Investigation, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix

Measures

Examples of items

Life satisfaction. Samples items include direct item such as "*I am satisfied with where I am in life right now*" and indirect item such as "*I want to change the path my life is on*".

Quality of life. Sample items of physical health include "To what extent do you feel that physical pain prevents you from doing what you

need to do?". Sample items of psychological well-being include "To what extent do you feel your life to be meaningful?". Sample items of social relationships include "How satisfied are you with the support you get from your friends?". Sample items of environment include "How healthy is your physical environment?" and "Have you enough money to meet your needs?".

Depression. Sample items of depression include "Over the last 2 weeks, how often have you been bothered by any of the following problems? Little interest or pleasure in doing things."

Anxiety. Sample items of anxiety include "Over the last two weeks, how often have you been bothered by the following problems? Feeling nervous, anxious, or on edge."

Religiosity. Sample items of religiosity include "To what extent do you believe that God or something divine exists?"

Internal consistency of the measures

Cronbach's alpha was calculated to assess the internal consistency of the measures. The alpha values for each measure are reported respectively for all participants, Indonesian participants, and British participants as follows: LS $\alpha = 0.80$, 0.78, and 0.86; physical health $\alpha = 0.77$, 0.71, and 0.81; psychological well-being $\alpha = 0.80$, 0.71, and 0.83; social relationship $\alpha = 0.70$, 0.80, and 0.71; environment $\alpha = 0.80$, 0.81, and 0.79; depression $\alpha = 0.92$, 090, and 0.87; anxiety $\alpha = 0.92$, 0.92, and 0.92; and religiosity $\alpha = 0.95$, 0.80, and 0.90.

Power calculation

The power calculation for multiple regression analysis of LS for all the participants to detect a high effect size showed a high power = 1 and $\alpha = 0.05$ with 10 predictor variables. The power calculation for each culture analyses also showed the same high power.

Data availability

The data, analytic methods or materials are available to other researchers for replication purposes, they can be accessed by contacting the authors directly

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