

Wellbeing profiles and their relationships to gender, homeownership, income, marriage, and education: Exploring hedonic and eudaimonic wellbeing in the East

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Abstract: Prior research has not yet to establish a clear understanding of the relationship between hedonic wellbeing (HWB) and eudaimonic wellbeing (EWB), particularly how they manifest within individuals. Moreover, it remains unclear whether HWB and EWB operate similarly across different cultural contexts. This study applies Latent Profile Analysis (LPA) to identify distinct wellbeing profiles among 1,283 residents (51.1% male) in a major coastal and capital city in China, spanning all ten districts. Five wellbeing profiles emerged: extremely low EWB, extremely low HWB, slightly low WB, slightly high WB, and extremely high WB. Notably, unlike findings from Western studies, no divergent wellbeing profiles—such as high HWB combined with low EWB, or vice versa—were observed in the Chinese sample. Multinomial logistic regression further revealed that homeownership was one of the strongest predictors of wellbeing, even after controlling for income. These findings contribute to the ongoing debate on the HWB-EWB relationship and suggest that cultural, cognitive, and linguistic differences may shape how individuals conceptualize and internalize wellbeing. This study offers valuable insights for policymakers and researchers seeking to promote wellbeing in a holistic manner, emphasizing the need to consider social and cultural contexts when evaluating wellbeing frameworks.

Keywords: hedonic wellbeing; eudaimonic wellbeing; cultural differences; homeownership; China

1. Introduction

The study of wellbeing has garnered considerable attention from various fields such as psychology, sociology, economics, and statistics (Layard & De Neve, 2023). The exploration of wellbeing initially began in the field of psychology and has been the focus of significant research in the West world for over five decades and largely categorised studies into two distinct paradigms, hedonia and eudaimonia (Ryan & Deci, 2001). Hedonia is more concerned with immediate pleasures and feelings, whereas eudaimonia emphasises self-actualization and virtues (Ryff & Singer, 2008). The relationship between these two paradigms has been a subject of ongoing debate, with some researchers arguing that they are closely intertwined (e.g., Waterman, 2008), while others propose that they are distinguishable constructs (e.g., Linley, Maltby, Wood, Osborne, & Hurling, 2009). Despite extensive research on wellbeing, few studies have comprehensively investigated the associations between predictive variables and wellbeing profiles encompassing both hedonic (HWB) and eudaimonic (EWB) dimensions. Additionally, it

remains uncertain whether hedonic and eudaimonic wellbeing are similarly configured across different cultural backgrounds. In Western populations, research by Pancheva et al. (2021) demonstrated that individuals could exhibit high EWB alongside low HWB, or vice versa, suggesting culturally specific interpretations and mechanisms underlying these experiences of wellbeing. However, such findings may not universally apply to other cultural contexts. Consequently, this study aims to explore the coexistence of hedonic and eudaimonic wellbeing within a Chinese population, employing latent profile analysis to access a Chinese understanding of HWB and EWB. By accounting for the cultural context in which these constructs are perceived, this research aims to elucidate the complex interplay between predictive variables and wellbeing profiles, incorporating both HWB and EWB.

1.1 The indicators of wellbeing profile

Two distinct paradigms, hedonia and eudaimonia, each with its own understanding of what constitutes a well-lived life, have emerged in the literature (Ryan & Deci, 2001; Ryff, Boylan, & Kirsch, 2021). Researchers of HWB are interested in determining people's subjective wellbeing (SWB), which commonly consists of life satisfaction (LS), positive affect (PA), and negative affect (NA) (Diener, 2009; Diener, 1984). On the other hand, eudaimonic researchers place an emphasis on EWB, which is typically measured via psychological wellbeing (PWB), a multidimensional construct that includes pursuing meaningful goals, self-acceptance, positive relationships with others, autonomy, environmental mastery, and personal growth (e.g., Ryff & Singer, 2008). Waterman's paper (2008, for review) provides clear examples of these four terms: HWB, SWB, EWB, and PWB and conveys that hedonia and eudaimonia are "inter-related but reliably distinguishable."

For decades, researchers have often debated whether there is a meaningful distinction between HWB and EWB. According to research conducted in China, the United States, and the United Kingdom, subjective and psychological wellbeing are closely connected, but each has a distinct higher order factor structure (Biaobin, Xue, & Lin, 2004; Keyes et al., 2002; Linley, Maltby, Wood, Osborne, & Hurling, 2009). Others, however, believe that subjective wellbeing is a precondition for psychological wellbeing because it is impossible to have eudaimonia without feeling hedonia (e.g., Kashdan et al., 2008; Waterman, 2008). Therefore, these researchers posit that the relationship between these two wellbeing conceptions is closer than previous research indicates. Intriguingly, a cross-cultural study of subsamples from seven geographic regions suggested that a single overarching construct more accurately captures hedonia and eudaimonia as measured by self-reported subjective and psychological wellbeing than two separate constructs (Disabato, Goodman, Kashdan, Short, & Jarden, 2016). Variable-centred research has yielded a variety of approaches to illustrate the relationship between HWB and EWB, but there is little consensus on the relationship between HWB and EWB. Person-centred research, which identifies latent groups with a specific set of characteristics within a population (Spurk, Hirschi, Wang, Valero, & Kauffeld, 2020; Henderson & Knight, 2012), may offer new insights into how individuals perceive the relationship between HWB and EWB.

Person-centred studies have examined wellbeing profiles in various populations, including adolescents with mental health-related indicators (e.g., Reinhardt, Horváth, Morgan, & Kokonyei, 2020), employees in France and the United Kingdom during lockdown (e.g., Harju et al., 2021), self-employed participants from 29 European countries with job-related wellbeing indicators (e.g., Bujacz, Eib, & Toivanen, 2020) and the general American adult population (Pancheva et al., 2021). However, the diverse research questions and indicators used in these studies make it difficult to compare results and contribute to a clearer understanding of wellbeing

concepts. Moreover, various dimensions such as engagement, beneficence, and vitality are considered in different wellbeing models (e.g., Martela & Riekkki, 2018; Huppert & So, 2013) adds to the complexity of comparing results. To address these issues, the current study aimed to assess the relationships between HWB and EWB using commonly used measurements in a Chinese population, in order to make the results more comparable and understandable.

Finally, previous studies show that culture can influence people's understanding of wellbeing (Lomas, 2015; Lambert et al., 2020; Veenhoven, 2012) and which variables influence SWB most (Diener et al., 2003). In a cross-cultural study, it was found that approximately one-fourth of the variance in the psychological definition subcategories of understanding happiness could be explained by country membership (Delle Fave et al., 2016). In North America, wellbeing is characterized by personal achievement and an emphasis on maximizing positive emotions, while in Eastern cultures, wellbeing is focused on relationships and maintaining a balance between positive and negative emotions (Uchida et al., 2004). Furthermore, research has discovered that Eastern individuals tend to analyse objects holistically, focusing on themes and general similarities between constituent parts, while Western people are more likely to adopt an analytic cognitive style which enables them to analyse things in a context-independent manner (Varnum et al., 2010). Moreover, researchers also challenged the universality of the modern concept of wellbeing (Joshanloo & Weijers, 2024). Deploying a holistic thinking style regarding wellbeing (Henderson & Knight, 2012), with a focus on recognition of similarity and complementarity, it is probable that EWB and HWB are more entwined in the minds of Chinese people than Westerners, which is suggested by the insights from cognitive psychology (Varnum et al., 2010). It was therefore expected that Chinese people's interpretation of EWB and HWB differ from that of their Western counterparts, and that the degree of divergence between these hedonic and eudaimonic measurements in Chinese people is less significant. Consequently, this study employed a person-centred approach, namely Latent Profile Analysis, to examine the coexistence of HWB and EWB in the Chinese population.

1.2 Demographic predictors of wellbeing profiles

Although many studies have examined how sociodemographic factors relate to various measures of wellbeing, few have investigated the links between these predictive variables and wellbeing profiles while considering both HWB and EWB. Examining how different demographic characteristics may influence an individual's likelihood of belonging to a particular wellbeing profile is essential to better comprehend these different profiles. Understanding these associations can provide valuable insights into how to promote and improve the wellbeing of individuals with different demographic backgrounds.

Gender is one of the key demographic components in wellbeing research. With a few outliers in low-income nations, large datasets from various countries have shown that women have higher levels of wellbeing than men (e.g., Graham & Chattopadhyay, 2013). One study based on two rounds of the Chinese General Social Survey (CGSS) came to a similar conclusion (Asadullah, Xiao, & Yeoh, 2018). However, because large-scale research or national surveys only collect data on hedonia (see Layard & De Neve, 2023), we know very little about gender differences in PWB. Pancheva et al. (2021) investigated gender differences in HWB and EWB and discovered that being female was associated with a lower probability of belonging to a combined low wellbeing profile (both HWB and EWB), whereas being male was associated with a higher probability of belonging to a combination of high HWB and low EWB, however same finding was not revealed in the study on the self-employed population (Bujacz et al., 2020). This study adopted a person-

centred approach to see whether gender predicts membership in combined wellbeing profiles in a Chinese sample.

Socioeconomic status (SES), with proxies such as housing, is viewed as one of the most powerful determinants of life-cycle satisfaction (Van Praag, Frijters, & Ferrer-i-Carbonell, 2003). Homeownership is seen as a foundation for "ontological security," which could potentially boost residential stability and social status (Saunders, 1989). While previous research in developed countries has focused primarily on the relationship between homeownership and housing satisfaction (Azimi & Esmailzadeh, 2017), there have been few studies that have examined the association between homeownership and overall life satisfaction (Hu et al., 2020). In China, however, homeownership is deeply embedded in the culture and is considered a sign of success (Zheng, Yuan, & Zhang, 2020). Several quantitative and qualitative studies have confirmed that homeownership is significantly associated with SWB in China (Hu, 2011; Hu & Ye, 2020; Kerstetter et al., 2022). However, there is a paucity of empirical research on the effect of homeownership on EWB or wellbeing profiles. Together, the current study looked into the relationship between homeownership and wellbeing profiles with both HWB and EWB.

The relationship between income and happiness is one of the most intriguing issues in the literature since the emergence of the economics of happiness or wellbeing (Clark et al., 2008). In microeconomic studies, income has been found to be positively associated with both subjective and psychological wellbeing (e.g., Kaplan et al., 2008), but Easterlin's paradox (1974) claims that above a particular threshold happiness does not grow when a country's income (GDP) rises (Clark et al., 2008). A group of economists specializing in Subjective Wellbeing (SWB) have concluded that, within a specific context, wealthier individuals are generally happier than their less affluent counterparts. Upon reviewing extensive evidence, they have determined that, as a benchmark, a unit increase in log-transformed income corresponds to a 0.3-point increase in wellbeing on a 10-point scale (Layard & De Neve, 2023). Pancheva's study (2021) using person-centred approach discovered that their findings resonate with Easterlin's results, in which a higher income was related to a decreased likelihood of both low HWB and EWB, but no significant effect was detected in responses to other wellbeing clusters, examining the relationship between income and wellbeing clusters. Additionally, Bujacz et al.'s study (2020) identified an unhappy profile (the lowest wellbeing level group) linked to the lowest level of income but no significant effect of income on predicting wellbeing membership. Therefore, similar results are expected to be found in the current study.

Marital status and happiness have been extensively researched and are considered to be closely related (Hawkins & Booth, 2005). Numerous research has found that marital status is associated with improved subjective and psychological wellbeing (Shapiro & Keyes, 2008). In a longitudinal sample, a positive causal link was discovered between marriage and subjective wellbeing (Stutzer & Frey, 2006). Notably, some studies evaluated the relationships between marital status and psychological wellbeing using health-related questionnaires rather than EWB-related questionnaires to assess psychological wellbeing (e.g., Kim & McKenry, 2002). A recent study by Hu et al. (2024), involving a substantial adult sample in China, has shown that under the influence of Confucian values, marriage is associated with increased SWB, with married individuals typically reporting higher happiness levels than their single counterparts in Chinese society. Limited study has looked the relation between marital status and EWB. Interestingly, using person-centred approach, Pancheva et al.'s (2021) study found not only that those who are married are less likely to experience a low HWB and EWB, but also eudaimonic benefit of marriage is more significant than the hedonic benefit. However, the same effect of marital status was not found in Keyes et al.'s (2002) study.

Lastly, the effect of education level on happiness is a significant demographic variable to explore, although the results are inconsistent (Kristoffersen, 2018). Some researchers have documented a positive relationship between education and subjective wellbeing (e.g., Blanchflower and Oswald, 2004), whereas others have discovered a negative relationship (e.g., Shield et al., 2009). According to one study conducted in 35 countries (both eastern and western), the number of years spent in education was a strong predictor of life satisfaction (Cheung & Chan, 2009). Moreover, after controlling for income, employment status, and other socio-economic variables, data from Spain indicate that education has a positive (direct) effect on happiness (Cuñado & de Gracia, 2012). Inconsistent results have also pertained to the association between education level and wellbeing groups. Even though both studies indicated that a higher education is linked to a lower likelihood of falling into both the low hedonic and eudaimonia clusters, Pancheva et al. (2021) did not replicate Keyes et al.'s (2002) finding of a high EWB and low HWB pattern that is determined by education level. It is important to note, the categorization in Keyes et al. (2002)'s study is based on SWB and PWB scale tertile standing, so the impact of educational level on wellbeing profiles remains unclear.

Despite a significant amount of wellbeing research undertaken worldwide and cross-culturally, little emphasis has been paid to how different wellbeing concepts are understood in non-Western contexts. Building on earlier research, the current study addressed the following issues: First, it aimed to investigate the wellbeing profiles of the Chinese population using HWB and EWB indicators with a person-centred approach to capture the intricate relationships. Moreover, cultural variations were expected to influence how Chinese individuals perceive HWB and EWB, leading to distinctive characteristics that differ from the previous findings. Finally, this study investigated how different sociodemographic variables influence Chinese people's membership in distinct wellbeing profiles. The study hypothesized that female individuals, homeowners, higher earners, married individuals, and those with higher levels of education would have higher wellbeing profiles.

2. Method

2.1 Participants and procedure

This study employed a door-to-door survey method to collect data from a representative sample of residents in Hangzhou, a major coastal and capital city in China. A stratified sampling technique was utilized to enhance representativeness. The sampling strategy covered ten administrative districts in Hangzhou, with 40 designated sampling points across 34 urban streets and 6 suburban townships. Households were preselected based on residential type and geographic distribution, ensuring coverage of both 20 commercial and 20 non-commercial residential areas (e.g., resettlement housing, affordable housing). The survey was conducted by five field teams, each consisting of one supervisor (faculty) and three undergraduate student researchers which have experiences with door-to-door data collection. The survey was administered using tablets, and respondents could either complete it independently or opt for an enumerator-assisted format if they had difficulties reading or using digital devices. To encourage participation, each respondent received a small token of appreciation valued at 3 RMB upon survey completion.

Fieldwork was conducted over a three-day period, during which research teams visited the selected households, provided a detailed explanation of the study's purpose, and collected responses. A total of 1,300 households were approached, yielding 1,283 valid responses (51% male), resulting in a participation rate of 98.6%. However, 45% of participants did not provide their age information. Based on the available data, the age range of respondents in this study was

19 to 84 years. Our survey allowed participants to skip questions at their discretion, meaning the missingness were not at random, could be related to privacy concerns or specific demographic traits. Thus, to avoid potential biases and lose statistical power, we decided to not include age in the analysis.

The study adhered to established ethical research guidelines. Participants were informed of their right to withdraw at any time. The study was approved by the academic ethics review committee of the affiliated institution.

2.2 Measures

2.2.1 Demographic characteristics

Personal demographic information was collected at the beginning of the survey. Sex was classified as "female," "male," or "other." Similarly, information on homeownership (yes/no/preferred not to say) and marriage (yes/no/preferred not to say) was gathered in the same manner. Because no one responded as "other" or "preferred not to say", sex, homeownership, and marriage were treated as binary variables and entered as predictors in subsequent analyses. Homeownership was asked by "Do you own at least one house/flat in XXX?".

Individual monthly income was measured on a 5-point scale (less than 2000 RMB, 2001-5000 RMB, 5001-10000 RMB, 10001-50000 RMB, more than 50001 RMB). The cutting points were based on the distribution of monthly income of this city's citizens from China's National Bureau of Statistics as well as consultation with economists with expertise. The level of education was also asked on a 5-point scale (less than high school, high school, associate degree, undergraduate, post-graduate, and more).

2.2.2 Hedonic Wellbeing in Cantril Scale (WICS)

Single and numeric questions are highly valued and widely employed in both research and policy due to their brevity and cost-effectiveness (Bowling, 2004; Kaiser & Oswald, 2022). Single-item measures can be used in conjunction with multidimensional measures to provide broad summary assessments of that many aspects of respondents' health (Bowling, 2004), in this case for measuring wellbeing. The Cantril scale (Cantril, 1965) was adopted to measure individuals' self-reported wellbeing/ happiness level in the ladder. The top of the ladder represents the best wellbeing (最幸福 *xingfu*) people, and the bottom of the ladder represents the worst wellbeing (最不幸福) people. On which step of the ladder would you say you personally feel you stand at this time? In keeping with the previous study, a single-item indicator of overall satisfaction with life was considered as one measurement for HWB (Pancheva et al., 2021). Thus, this measurement was also considered one aspect of assessing HWB.

2.2.3 Hedonic Satisfaction with Life Scale (SWLS)

A pre-validated self-report measure – the Chinese version of the SWLS – was used to assess HWB as a clear agreement on life satisfaction is the core element of Hedonia, but not so much for the absence of negative emotions (Pavot & Diener, 1993; Huta & Water, 2014). The SWLS consists of 5 items (for example, "I am satisfied with my life") scored on a 7-point Likert scale (1= "strongly disagree", 3= "neither agree or disagree", 7= "strongly agree") where higher scores represent higher life satisfaction. According to a prior study (Xiong & Xu, 2009), the alpha coefficient for SWLS in China is .78. Cronbach's alpha for this scale was .89 in this study.

2.2.4 Eudaimonic Flourishing Scale (FS)

The translated Flourishing Scale (FS; Diener et al., 2010) was used to assess EWB, and it has shown satisfactory psychometric properties in a Chinese community sample (Tang et al., 2016, $\alpha = .90-.93$). The FS consists of 8 items in assessing distinct dimensions such as relationships, self-esteem, purpose, and optimism (for example, "I live a purposeful and meaningful life") measured on a 7-point Likert Scale (1= "strongly disagree", 3= "neither agree or disagree", 7 being "strongly agree"). The higher the total score, the better one's psychological wellbeing. Cronbach's alpha for this scale was .89 in this study.

2.3 Data Analysis

To identify participant subgroups, the analysis employed Mplus 8 (Muthen & Muthen, 1998–2018) using maximum likelihood estimator with robust standard errors (MLR) (Muthen, 2004). This person-centred approach yielded latent profiles with more uniform response patterns (Muthen & Muthen, 2000). To determine the optimal number of profiles, multiple latent profile models (1-class to 6-class) were investigated with HWB and EWB as indicators using standardized units to facilitate interpretation. The Akaike information criterion (AIC); the Bayesian information criteria value (BIC); the adjusted BIC (aBIC); the Lo, Mendell, and Rubin likelihood ratio test (LMR-LRT) (Lo, Mendell, & Rubin, 2001); the bootstrapped likelihood ratio test (BLRT); and Entropy were used in interpreting the data. Lower BIC and AIC values indicate a better fit (Nylund et al. 2007). If the p-value for VLMR, LMR-A, or BLRT is significant, the k-class model outperforms the k-1-class model. Classification precision is represented by entropy values ranging from 0 to 1, with larger values indicating better precision (Jung & Wickrama, 2008). Following the identification of the many types of wellbeing profiles, multinomial logistic regressions via the R3STEP method (Asparouhov & Muthen, 2014) were used to examine the associations between demographic factors, and various wellbeing profiles.

3. Results

3.1 Descriptive statistics

The bivariate correlation of main study variables is presented in Table 1.

3.2 Identification of wellbeing profiles

The results of the LPA models indicated that the 5-class solution produced the optimal description of wellbeing profiles (see Table 2). First, the 6-class solution had the lowest AIC, BIC, and aBIC; however, the smallest profiles only contained 3 people, which is 0.2% of the population. Moreover, VLMR and LMRA were not significant, indicating that the 6-class solution was not superior to the 5-class solution. Thus, the 6-class solution was ruled out. Besides the 6-class solution, the 5-class solution had the lowest AIC, BIC, and aBIC. Moreover, VLMR and LMR-A were significant in the 5-class solution, indicating that 5-class was superior to 4-class. Last, the 5-class solution also had the highest entropy among the rest of the 5 classes. The elbow plot is included in the Appendix (Figure A1).

Table 1. Descriptive statistics and bivariate correlations for all study variables

	Cantril Life scale	Life satisfaction	Flourishing	Gender	Homeownership	Income	Marital status	Education
Wellbeing in Cantril scale	-							
Life satisfaction	.57***	-						
Flourishing	.63***	.41***	-					
Gender	.06*	.01	-.05	-				
Homeownership	.24**	.31**	.21**	-.03	-			
Income	.06*	.12**	.19**	-.25**	.27**	-		
Marital status	.16**	.26**	.16**	-.02	.16**	.18**	-	
Education	-.05	-.03	.10**	-.08**	.04	.46**	-.20**	-
M	7.26	24.79	44.87	.51	.57	2.75	.63	3.12
SD	1.73	5.69	6.27	.50	.50	.98	.48	1.18

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

Table 2. Model fit indices for the latent profile classification with 1-6 classes

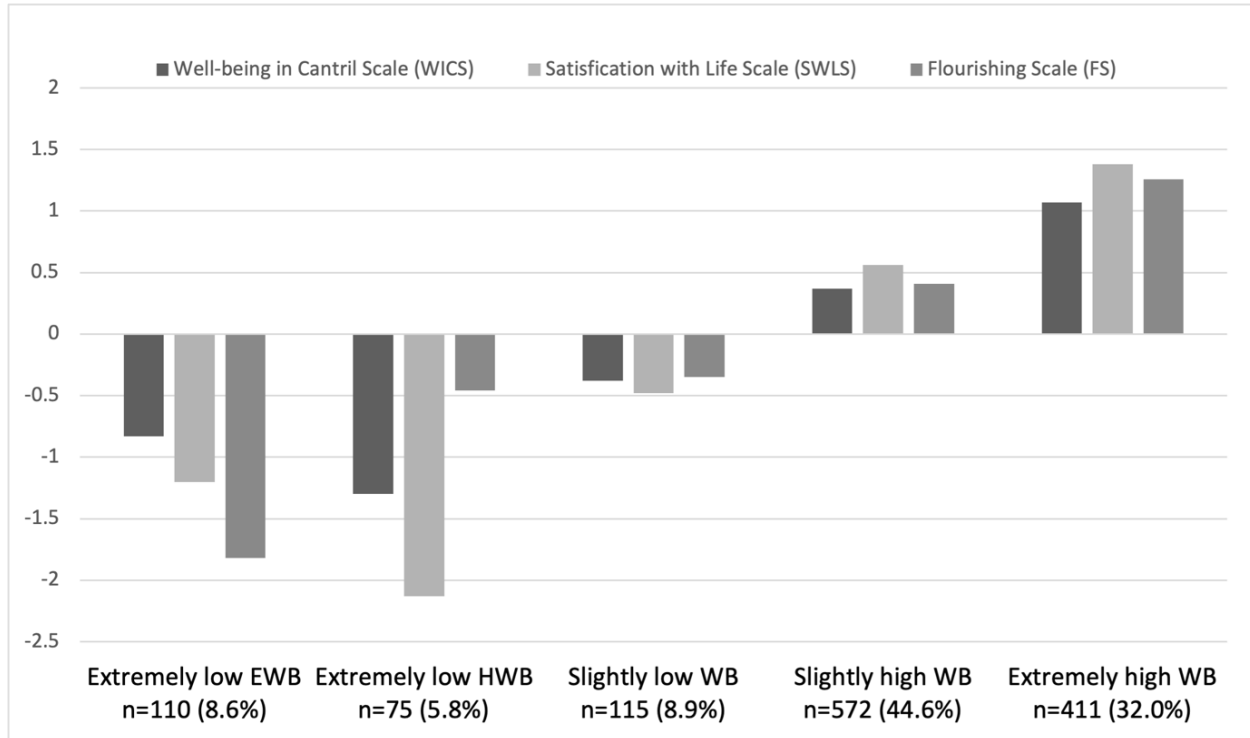
Profile	AIC	BIC	aBIC	VLMR p-value	LMR-A p-value	BLRT p-value	Entropy	Group	Smallest profile (%)
1	10932.0	10962.9	10943.9	-	-	-	-	1283	100
2	10019.2	10070.7	10039.0	$p < .001$	$p < .001$	$p < .001$	0.76	467/816	36.4
3	9851.9	9924.1	9879.6	$p = .09$	$p = .1$	$p < .001$	0.71	189/524/570	14.7
4	9749.6	9842.4	9785.2	$p < .05$	$p < .05$	$p < .001$	0.77	94//422/143/624	7
5	9659.7	9773.1	9703.3	$p < .05$	$p < .05$	$p < .001$	0.77	110/75/572/411/115	5
6	9586.6	9720.7	9638.1	$P = .1$	$P = .1$	$P < .001$	0.8	75/410/132/113/3/550	0.2

Note. Values in bold type indicate the chosen model in this study. AIC= Akaike information criterion; BIC= Bayesian information criterion; aBIC= the adjusted Bayesian information criterion; VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio test; LMR-A= Lo, Mendell, and Rubin Adjusted likelihood ratio test; BLRT= bootstrapped likelihood ratio test. * $p < .05$; ** $p < .01$; *** $p < .001$

Five profiles were revealed in Figure 1. The extremely low EWB group contained 8.6% of the participants. All of the people in this profile had standardized WICS, SWLS, and FS scores that were less than zero. Additionally, this population has the lowest PWB of all the groups. The extremely low HWB group (n = 75, 5.8%) had the lowest HWB (both WICS and SWLS) of the five groups, with all standardized WICS, SWLS, and FS scores less than zero. In the third profile, the group labelled "slightly low wellbeing" contained 8.9 percent of the participants. Individuals who made up this profile scored all standardized WICS, SWLS, and FS slightly lower than zero. All of the wellbeing measurements in the first three groups had their standardized scores less than zero, representing roughly one-quarter of the total population. With over 75% of participants, the fourth and fifth groups were the most common. Both groups' standardized WICS, SWLS, and FS

scores were greater than zero. The fourth group was labelled as "slightly high wellbeing," and it made up 44.6% (n = 572) of the sample. And the last group, which made up 32.0% (n = 411) of the sample, was identified as the "extremely high wellbeing group." These two groups also had similar score patterns. The fourth group had moderate WICS, SWLS, and FS levels, while the last group had the highest level of all measurements.

Figure 1. The standardized means of wellbeing indicators for final profiles solution



3.3 Socio-demographic predictors

Table 3 shows the effects of gender, homeownership, income, marriage, and education on the likelihood of belonging to each of the five profiles. The probability of an individual belonging to the reference profile relative to another profile was calculated. The effect of gender was only significant in one comparison, which revealed that males are more likely to fall into the slightly high WB (as a reference group) than the extremely low HWB group.

The effect of homeownership was significant in the majority of comparisons. In short, people with a house or flat are less likely to fall into extremely low EWB and HWB and more likely to fall into those more adaptive groups. The only exception was that no significant difference was found when comparing extremely low EWB with extremely high WB. However, when compared slight low WB group with the other two more adaptive groups (the slightly high and the extremely high groups), owning a property significantly predicted membership in the slightly low WB group ($B = 1.33, p < 0.01, \text{odds ratio [OR]} = 3.79$; $B = 1.68, p < 0.001, \text{OR} = 5.38$).

Interesting, when controlling for homeownership, gender, marriage, and education together with income, no significant effect was found on income in predicting the membership of the wellbeing Group.

Table 3. Coefficients for the five profiles with gender, homeownership, income, marriage and education as predictors

Predictors	Slightly high WB vs extremely low HWB		Slightly high WB vs extremely low EWB		Slightly high WB vs extremely high WB		Slightly high WB vs slightly low WB		Extremely high WB vs slightly low WB	
	β	OR	β	OR	β	OR	β	OR	β	OR
Gender	-0.65*	0.52**	0.05	1.05	-0.18	0.833	-0.17	0.845	0.02	1.02
Homeownership	-1.31**	0.27***	-0.70*	0.50**	-0.35	0.704	1.33**	3.788*	1.68***	5.38*
Income	-0.09	0.91	-0.28	0.76	-0.20	0.819	0.08	1.085	0.28	1.32
Marriage	-0.60	0.55	-1.30***	0.27***	-0.69**	0.503***	-0.33	0.723	0.36	1.44
Education	-0.10	0.91	-0.49***	0.61***	-0.04	0.958	-0.59***	0.556***	-0.54***	0.58***

Predictors	Extremely low HWB vs extremely low EWB		Extremely low HWB vs extremely high WB		Extremely low HWB vs slightly low WB		Extremely low EWB vs extremely high WB		Extremely low EWB vs slight low WB	
	β	OR	β	OR	β	OR	β	OR	β	OR
Gender	0.70	2.01	0.46	1.59	0.48	1.61	-0.23	0.79	-0.22	0.80
Homeownership	0.61	1.84	0.96*	2.62	2.65***	14.09*	0.35	1.42	2.04***	7.66*
Income	-0.18	0.83	-0.11	0.90	0.18	1.191	0.08	1.08	0.36	1.43
Marriage	-0.71	0.49	-0.09	0.91	0.27	1.312	0.62	1.85	0.98*	2.66
Education	-0.39*	0.68*	0.06	1.06	-0.49*	0.614	0.45**	1.56*	-0.10	0.91

Note. β represents the regression coefficient. OR (odds ratio) is the probability of an individual staying in the reference profile divided by the probability to transition to another profile. While β shows the change in log odds of profile membership, OR indicates how many times more or less likely it is for individuals to be in one profile versus another as a function of predictor variables. Gender is coded 0=girl, 1=boy; Homeownership is coded 0=not owning a home, 1=owning a home. Marriage is coded 0=not married, 1= married. Groups in bold type indicate the reference groups. * $p < .05$; ** $p < .01$; *** $p < .001$

The comparison of the extremely low EWB and extremely high WB with a slightly high WB as the reference group revealed that the married people were more likely to fall into the slightly high WB rather than the other more extreme groups ($B = -1.30$, $p < 0.001$, odds ratio [OR] = 0.27; $B = -0.69$, $p < 0.01$, OR = 0.53). Moreover, married people were more likely to fall into the slight low WB than the extremely low EWB compared to unmarried people ($B = 0.98$, $p < 0.05$, odds ratio [OR] = 2.66, $p > 0.05$).

Finally, education level is another significant predictor in this study. People with higher education were less likely to fall into the extremely low EWB group in comparison to either the slightly high WB, the extremely low HWB, or the extremely high WB ($B = -0.49$, $p < 0.001$, odds ratio [OR] = 0.61; $B = -0.39$, $p < 0.05$, OR = 0.68; $B = 0.45$, $p < 0.01$, OR = 1.56). When compared to the slightly high WB and the slightly low WB, people with higher education were more likely to fall into the slightly high WB ($B = -0.59$, $p < 0.001$, OR = 0.56). When compared to the extremely low HWB and the slightly low WB, people with higher education were more likely to fall into the extremely low HWB ($B = -0.49$, $p < 0.05$, OR = 0.61, $p > 0.05$).

4. Discussion

4.1 Profiles of wellbeing

In this study, five profiles, namely the extremely low EWB, the extremely low HWB, the slightly low WB, the slightly high WB, and the extremely high WB group, were identified as representing different degrees of wellbeing. Interestingly, Pancheva et al.'s (2021) findings share lots of similarities with the current study, which also found five unique clusters (Uniformly Low Wellbeing, Mixed High EWB/Low HWB, Mixed High HWB/Low EWB, Somewhat High Wellbeing and Mostly High Wellbeing) using self-organized map clustering techniques. Somewhat High Wellbeing and Mostly High Wellbeing, as well as the slightly high WB, and the extremely high WB group found in the current study are all considered as more adaptive groups. Interestingly their level of wellbeing profile indicators exhibited similar levels within each group, which contrasted with the patterns seen in other maladaptive groups. This outcome to some extent reflects Leo Tolstoy's (1995) expression that "All happy families are alike; each unhappy family is unhappy in its own way."

Before jumping into discussing the difference of results in different cultural contexts, it is necessary to reflect on the assumption that these results can be compared cross-culturally.

- 1. Chinese people may not be able to understand these concepts and measurements of wellbeing the same way that Westerners do because these concepts may fundamentally be untranslatable in another language, or the measurements are not as ready as to the Chinese context compared to the Western tradition.**

Chinese people may not have the same understanding of wellbeing concepts and measurements as Westerners, which could affect the validity of cross-cultural comparisons. For instance, Research conducted on Chinese adolescents indicated that Ryff's six-factor model of psychological wellbeing exhibited only a barely satisfactory fit, suggesting that constructs of EWB or PWB may not be as relevant to Chinese culture as they are to Western culture (Gao & McLellan, 2018). Besides construct equivalence, cross-cultural research requires structure equivalence, metric equivalence, and scalar equivalence as essential elements (van de Vijver & Leung, 2011). However, it is often observed that the equivalence of the semantic content of the items is overlooked, as highly culturally loaded words are challenging to translate accurately (Boehnke, 2022). For example, previous studies have highlighted the challenge of translations as two different translations of the word "popular" in Chinese have revealed an opposite correlation

with other variables (Niu et al., 2016; Zhou & McLellan, 2020). Thus, careful consideration should be given to the semantic equivalence in addition to psychometric equivalence when conducting cross-cultural comparisons.

Moreover, significant linguistic distinctions between the East and the West may influence how individuals perceive things (Varnum et al., 2010). Because wellbeing concepts, such as SWB, PWB, EWB and HWB, are more Westernized ideas, Chinese citizens may not be familiar enough with them to assess them, like Wittgenstein (1996) held that an expression has meaning only in the context of one's own life. Thus, it is still possible that Chinese participants in this study comprehended those items differently compared to Western participants, or that they were unable to fully understand the concepts of HWB and EWB in the absence of exposure to Western contexts (McLellan, 2019). Further, researchers also pointed out that only western-invented items lead to the systematic exclusion of items that have been developed outside of the Western world (Boehnke, 2022), resulting in a pseudo-etic trap, as termed by Ford et al. (2015). This also echoes with some research that has proposed utilizing a 6-item expanded SWLS (E-SWLS) that covers intra- and inter-personal aspects as a better measure of wellbeing in Chinese culture (Tang et al., 2016). Thus, some researchers believe when comparing wellbeing across cultures, it may be more logical to employ culturally, and contextually relevant assessments as opposed to relying uncritically on existing scales from literature.

2. Chinese people may be able to understand these concepts and measurements of wellbeing in the same way that Westerners do. Still, the cultural, linguistic, and cognitive differences between Chinese and the Westerners impact their answers to these measurements.

Linguistic theories suggest that even culturally specific concepts can be broken down into universally recognized components (Wierzbicka, 2004). As concepts like SWB, PWB, EWB, and HWB have been deconstructed into different constructs and items, it's possible that Chinese individuals understand these measurements in the same way as Westerners. Moreover, a substantial similarity was observed across countries regarding the prominent definitions of happiness, which aligns with findings from previous cross-cultural studies (Delle Fave et al., 2016). The present era, marked by continuous cultural communication, multilingualism, and knowledge exchange on the internet, presents a unique opportunity for rigorous cross-cultural studies. In this case, the results are comparable.

The current study found a notable difference from a previous study on the general adult American population, where around 30% of respondents had contrasting scores in their EWB and HWB (Pancheva et al., 2021). This was explained that personal progress often comes at the expense of happy emotional states. However, no such divergent group was found in the Chinese sample. Moreover, the extremely low HWB and extremely low EWB groups found in this study appear similar to the low EWB/high HWB and low HWB/high EWB groups from the previous study (Pancheva et al., 2021), where there were high differences between EWB and HWB. However, the extremely low HWB group in this study had both EWB and HWB scores lower than the average mean, whereas the mixed high HWB/low EWB group had EWB scores higher than the average mean and HWB scores lower than the mean. In other words, EWB and HWB were in the same direction in the Chinese sample. It is worth noting that the prevalence of the two maladaptive groups identified in this study was less than 15%, which is significantly lower than the corresponding group in the previous study (30.1%). A detailed comparison table between the two studies is included in the Appendix (Table A2).

The absence of a mixed high HWB/low EWB or a high EWB/low HWB group in the Chinese sample may be due to the following reasons. To begin with, the cognitive differences between

Easterners and Westerners may influence how people perceive and respond to these measurements. From a cross-cultural perspective, East Asians tend towards holistic cognition, while Westerners tend towards more analytic processes (Varnum et al., 2010). People's attention, classification, attribution, and reasoning are the most evident differences between these two cognitive inclinations. Chinese thinking processes, in particular, are more holistic in that they categorize objects based on themes and family resemblance (Nisbett, Peng, Choi, & Norenzayan, 2001). As a result, Chinese people may find it more difficult to focus on a single dimension than analytic thinkers, who can more easily separate items from their settings; instead, holistic thinkers pay close attention to relationships and context when assessing EWB and HWB. As a result, the connection between these two concepts got stronger and more cohesive for holistic thinkers.

On top of that, cultural variations like collectivism and individualism may also play a role here. Confucianists place a high value on "harmony," which refers to "balancing and reconciling contrasts and conflicts," and this harmony philosophy can be applied to individual thought, social interactions, and even the world (Li, 2008; Li, 2013). This may lead Chinese individuals to understand EWB and HWB more convergently in order to establish internal harmony. Interestingly, a previous study by Delle Fave et al. (2011) found and illustrated that both Asian culture and Western culture have distinct roots of appreciating harmony, which highlights the need for researchers to further understand this phenomenon. Finally, some academics believe that differences in language can be utilized to explain cultural disparities in reasoning styles (Logan, 1986; Hamers & Blanc, 2000). A more widely accepted value in Chinese culture, referred to as "xingfu (幸福)," may influence how Chinese individuals understand and report their responses to EWB and HWB measurements, as the words for "wellbeing" and "happiness" are often translated into the same Chinese word. This inline to a previous finding that a single overarching construct better captures Hedonia and Eudaimonia as measured by self-reported subjective and psychological wellbeing (Disabato et al., 2016). Together, cognitive, cultural, and linguistic traditions in Chinese culture may lead to a more similar understanding of HWB and EWB, compared to their Western counterparts. It emphasizes the significance of acknowledging cultural variations when examining wellbeing and interpreting previous research outcomes.

4.2 Predictors of wellbeing profiles

Homeownership was one of the strongest factors that predicted participants' memberships in this study, even after controlling for income. In general, the results showed that homeownership had a protective effect in preventing individuals from falling into either of the two extremely low wellbeing teams. This conclusion is consistent with earlier research in the Chinese setting that demonstrates a strong causal relationship between homeownership and SWB, even when new homeowners' financial issues are included (e.g., Zhang et al., 2018; Hu et al., 2020; Zheng, Yuan, & Zhang, 2020). This maybe explained by Chinese cultural norm of "An Ju Le Ye(安居乐业)" " emphasizes secure and peaceful residence and work satisfaction, with homeownership as a key aspect. Furthermore, homeowners also have a better sense of belonging to their community and a higher social status than renters, hence raising their PWB (Hu, 2011). However, when compared between the slightly low, slight high, and extremely high wellbeing groups, people who have a house or flat are more likely to fall into the slightly low wellbeing group other than the other two more adaptive groups. Although previous studies have shown that homeownership has a causal relationship with subjective wellbeing (Zheng, Yuan, & Zhang, 2020), this study suggests that homeownership-related issues such as mortgages and housing price volatility may still hinder individuals from achieving optimal wellbeing. While homeownership may prevent the worst

wellbeing outcomes, it may also limit individuals from achieving the best outcomes. Future research could look into what factors are associated with property ownership that prevent people from having a more adaptive wellbeing.

In addition, the level of education is the second-strongest indication among these demographic factors. In contrast to the effect of homeownership on predicting membership in the low WB group, those with a higher level of education have a greater chance of belonging to the slightly high or extremely high wellbeing groups as compared to the slightly low group. When a person is not in the absolute worst situations, it appears that owning a home inhibits them from having the highest wellbeing profiles, whereas schooling would help them achieve better profiles. Furthermore, when compared between the extremely low EWB and the slightly high WB, the extremely low HWB, or the extremely high WB, the higher education level, the lower possibility that an individual will fall into the extremely low EWB. This result is consistent with earlier studies indicating that a higher level of education decreases the risk of having a high HWB/low EWB combo (Pancheva et al., 2021). This appears to support the findings of a study conducted on another American population, which indicated that the low HWB/high EWB group has the highest mean level of education (Keyes et al., 2002). It appears that education level has a unique effect on EWB, as those with a higher education are less likely to fall into the extremely low EWB group.

Furthermore, when comparing slightly high WB and slightly low WB to extremely low EWB, it was discovered that married individuals were less likely to fall into the extremely low EWB category. This concurs with earlier variable-centred studies that discovered divorce and single status to be strongly connected with low psychological wellbeing (Shapiro and Keyes, 2008). Since no such difference was observed when comparing the extremely low HWB group to other groups, it is plausible to believe that this finding is consistent with a prior study that concluded that the effect of marriage is "more pronounced for the eudaimonic than the hedonic wellbeing dimension" (Pancheva et al., 2021). More studies needed to further understand this special relationship between marriage and eudaimonia.

Lastly, gender and income had the least predictive power for membership in wellbeing groups. The previous study found that being female is connected with a decreased risk of experiencing joint low wellbeing patterns, whereas being male is associated with an increased risk of experiencing a combination of high HWB and low EWB (Pancheva et al., 2021). This sample did not yield the same outcome. Furthermore, there was no significant effect of income on predicting membership in the wellbeing group which differs from a previous study conducted in Europe (Bujacz et al., 2020). Our findings are consistent with the recent relationship identified between income and SWB, where income alone explains only a very small portion of the variations in SWB (Layard & De Neve, 2023). Social comparison and adaptation have been proposed to explain these counterintuitive results (Card et al., 2012; see also Layard & De Neve, 2023, Chapter 13). However, one study suggested that money is a more important factor in explaining SWB among Chinese (Chen, 2012) due to the relatively lower income in China; which does not appear to be the case in our sample after controlling for homeownership, gender, marriage, and education. This may be related to the fact that this sample was collected in a coastal, more developed city where people had higher salaries, reducing the importance of money for happiness. This may partially explain the divergent outcome, but further investigation is required to help in understanding it.

4.3 Limitations and suggestions for future research

Several limitations should be addressed. First, one limitation of this study is the exclusion of age as a predictor in the analysis. While age was initially intended to be included, a substantial portion of respondents did not provide their age information. Given the high proportion of missing data, including age in the model could have introduced bias or reduced the robustness of the findings. Future studies could consider strategies to improve age reporting to better assess the role of age. Second, this study compared its outcomes with a previous study conducted in the western sample to illustrate the similarities and differences. However, it is challenging to rule out the possibility that the various analytical techniques and measurements applied in these two studies contributed to the divergent results. Future research could therefore use more consistent analytical techniques and measurements to justify these findings. For example, the measurement of positive and negative affect was excluded in order to maintain the questionnaire length, despite the fact that it is an essential component of SWB. This metric might be included in future studies to give a more comprehensive picture of the relationship between HWB and EWB and cultural differences. Third, our research was limited to a cross-sectional design, which made it impossible to establish a causal association between the variables. Longitudinal designs could be used by future researchers to better investigate the directional effect. Furthermore, although this study provides representative data from a coastal city, past research has indicated that individuals in China's rice-farming regions exhibit lower levels of happiness compared to those in wheat-growing areas (Lee, Talhelm & Dong, 2023), leading to the question of whether people in distinct regions of China possess divergent perceptions of wellbeing. Despite this, the study underscores the significance of acknowledging social and cultural contexts when comprehending wellbeing.

5. Conclusion

By using a person-centred approach and evaluating the relationships of these profiles with demographic factors as predictors while comparing results from diverse cultural backgrounds, this study adds to our understanding about the ongoing debate between HWB and EWB. Notwithstanding its limitations, the research has important theoretical and practical implications for policymakers as well as scholars. Importantly, the study suggests that Chinese individuals may have more harmonious understandings of HWB and EWB, highlighting several possible cultural explanations for this difference. The study shows that homeownership is a strong predictor of both HWB and EWB suggests that affordable housing policies, particularly in China, may be essential for avoiding extremely low levels of wellbeing. Furthermore, even after controlling for income, the study reveals education as one of the biggest predictors of wellbeing. Individual income has little predictive value when education and homeownership are taken into consideration, showing that investing in education may be a more effective way of boosting people' wellbeing. These findings offer valuable insights into understanding the relationship between HWB, EWB and other demographic variables from a cross-cultural perspective and provide policymakers with evidence to inform their investments in promoting the wellbeing of their people.

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Data availability statement

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Author contribution statement

W.Z. conceived of and designed the study, W.Z. and H.W. collected data, W.Z. performed the data analysis and interpretation, and drafted the manuscript; and D.J. helped with drafting the manuscript. R.M., H.W., and H.Q. advised on the study design and the data interpretation and helped to draft the manuscript.

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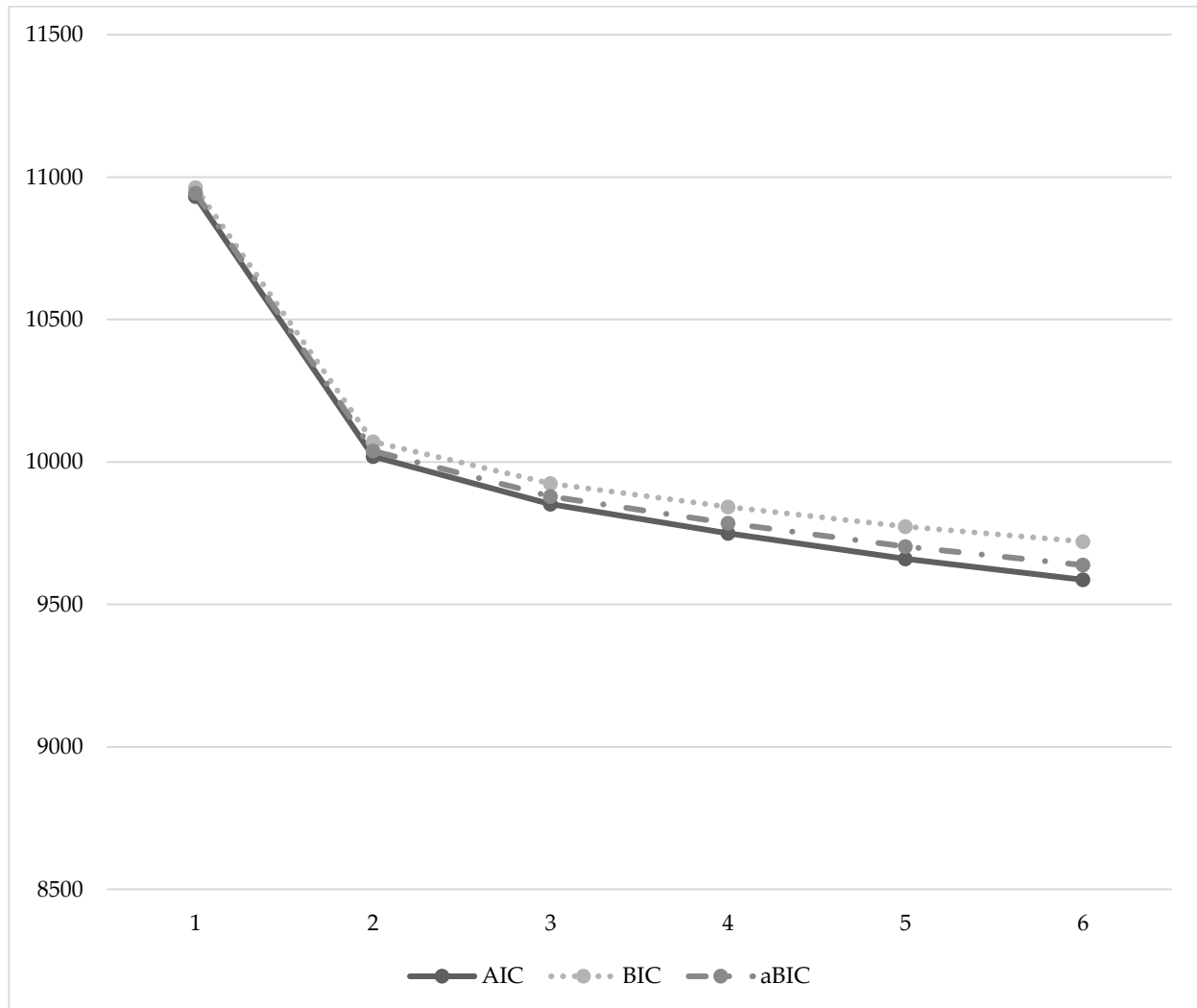
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Appendix

Figure A1. Elbow plot of the information criteria for 1-6 classes



Note. AIC= Akaike information criterion; BIC= Bayesian information criterion; aBIC= the adjusted Bayesian information criterion

In Figure A1, the elbow plot shows the turning point is at the 2-class solution. However, the 5-class solution revealed two distinct groups with distinct patterns when compared to the 2-class solution. Taken together with other criteria, the 5-class solution was the optimal model.

Table A2. A comparison table between the profiles in this study and those in Pancheva et al.'s study.

Group comparison	Percentage	Similarities and differences
Slightly Low Wellbeing vs Uniformly Low Wellbeing	8.9% vs 23.61%	All dimensions/variables are lower than sample average.
Extremely Low SWB vs Mixed High EWB/Low HWB	5.8% vs 15.71%	Both groups had HWB aspects higher EWB. However, extremely low SWB group has both SWB and PWB lower than average mean whereas Mixed High EWB/Low HWB has EWB higher than average mean and HWB lower than mean.
Extremely Low PWB vs Mixed High HWB/Low EWB	8.9% vs 14.48%	The differences between EWB and HWB are high. However, extremely low PWB group has both SWB and PWB lower than average mean whereas Mixed High HWB/Low EWB has EWB higher than average mean and HWB lower than mean.
Slightly High Wellbeing vs Somewhat High Wellbeing	44.6% vs 27.14%	Both groups had wellbeing dimensions and factors all slightly higher than average.
Extremely High Wellbeing vs Mostly High Wellbeing	32.0% vs 19.06%	Both groups had the best wellbeing across all dimensions and factors.