

Social Psychology

Development and Validation of the Attitudes Toward Singlehood Scale Among Undergraduate Students in Malaysia and India

Chee-Seng Tan¹ ^a, Siew-May Cheng² , Sanju George³ 

¹ Department of Psychology and Counselling, Universiti Tunku Abdul Rahman, Kampar, Malaysia, ² Department of Languages and Linguistics, Universiti Tunku Abdul Rahman, Kampar, Malaysia, ³ Rajagiri School of Behavioural Sciences and Research, Rajagiri College of Social Sciences (Autonomous), Kochi, India

Keywords: attitudes, gender difference, life satisfaction, measurement invariance, singlehood, young adults, reliability, validity

<https://doi.org/10.1525/collabra.24808>

Collabra: Psychology

Vol. 7, Issue 1, 2021

Although romantic relationships have been found to boost well-being, some studies demonstrated that staying single has similar beneficial effects. One cause of such contradiction is probably due to the lack of a quantitative measurement of attitudes toward singlehood. To address this methodological gap, four studies involving 1,276 undergraduate students in Malaysia and India were conducted to develop and examine the psychometric qualities of the Attitudes toward Singlehood Scale (AtSS). Study 1 selected 15 items from the pool and identified a 3-factor solution using exploratory factor analysis. However, a 9-item second-order factor model was found superior in Study 2 using confirmatory factor analysis. The 9-item AtSS demonstrated good internal consistency and test-retest reliability measured two weeks apart as well as construct and criterion validity. Study 3 further supported the superiority of the 9-item second-order factor model with replicated results of Study 2 on a new sample. Measurement invariance test supported scalar invariance across gender while ANCOVA showed female participants displaying higher scores than male counterparts. Study 4 then examined the properties of the 9-item AtSS on a sample of young adults in India. The results are consistent with Study 2 and 3, lending further support to the usability of the AtSS in different cultural contexts. Overall, the consistent findings promote the AtSS as a promising tool for assessing young adults' attitudes toward singlehood. Implication and suggestions for future studies are also discussed.

While social relationships promote people's happiness and general well-being abundantly (Lehmann et al., 2015), undergraduate students who are currently or had previously been in romantic relationships appear to be more socially mature, better-adjusted, and less self-centered than those currently and always single (DePaulo & Morris, 2006). Individuals engaged in high-quality romantic relationships are also able to enjoy ideal well-being when compared to singles (Hudson et al., 2020; McCabe et al., 1996).

According to Lehmann et al. (2015), one's current relationship status (partnered vs unpartnered) is crucial in determining life satisfaction and reducing distress, let alone marital status. Hope et al. (1999) arguably asserted that individuals in committed relationships, including married people (even when controlling for pre-marital life satisfaction levels), achieve greater life satisfaction following better well-being than their single peers. Likewise, fear of being single is found negatively related to life satisfaction, emotional well-being, and psychological well-being (Adamczyk, 2017) and positively related to loneliness (Spielmann et al., 2013).

On the other hand, marriage or romantic relationships may not be beneficial to well-being. Glenn & Weaver (1988) reported increasing happiness among never-married males and decreasing happiness among married females. In the realm of single studies, DePaulo and colleagues (DePaulo, 2015; DePaulo & Morris, 2005, 2006) strongly assert that research does not support the popular belief whereby getting married makes people lastingly happier or definitively healthier. Furthermore, when comparing the health status of the currently-married to the different categories of unmarried people including singles, divorcees, widows, and widowers, the divorced and widowed but not the singles are always the ones who are less healthy than the currently-married (DePaulo, 2013). In the same vein, Bookwala & Fekete (2009) found that compared to their married counterparts, never-married adults experienced lower negative affect when they have higher self-sufficiency (i.e., autonomy). Moreover, among those who scored high in personal mastery (i.e., a sense of control over life events), never-married adults reported a similar level of negative affect as married adults. In other words, always single people could be

as healthy and happy as people who stay married (DePaulo, 2013; DePaulo & Morris, 2006).

Amidst the acclaimed benefits of staying single, the undisputable global number of young people staying single is growing tremendously as compared to that of people involving in romantic relationships (Rich, 2019; United States Census Bureau, 2017; Wu, 2017). To illustrate, over 44% unmarried population in 2012 compared to 28% unmarried population in 1970 and 49% married couples in 2011 compared to about 70% in 1970 in the United States (DePaulo, 2014). Among them, emerging adults (e.g., undergraduate students) or younger cohorts are found staying single for longer periods (Chandler et al., 2004) as they highly regard their personal lives over social lives (Takada, 1992). Others realize the benefits of being single (e.g., Lehmann et al., 2015), for instance, autonomy, temporal control, improved sociability, career development, and freedom from others' demands not prevalent in those peers in partnership (Whillans, 2014). Late modern individualization also witnesses singles experiencing the freedom of alternative social roles and lifestyles liberally (Galčanová & Vacková, 2016). As for some, they may simply enjoy singlehood more than others who are long searching for partners (Frazier et al., 1996).

Some studies reported singlehood that could be an individual choice for privacy and alone time that may also result from complications in securing relationships after painful experiences or simply one's career, spiritual or religious choice (Band-Winterstein & Manchik-Rimon, 2014; Timonen & Doyle, 2014). Besides, Apostolou et al. (2020) summarized reasons for singlehood due to (1) opportunities in increased fitness; (2) mismatch between ancestral and modern conditions; and (3) different restrictions. In their examination of 648 American singles, several revealed reasons include poor flirting skills, freedom, fear of getting hurt, having different priorities, and being too picky. Men tend to be single compared to women as they did not intend to build families and wished to freely flirt around. Meanwhile, women stayed single to be safe from getting hurt besides perceiving themselves as non-desirable partners. As opposed to older people staying single to freely fulfill their needs, younger people were singles as they had poor flirting skills, appeared not as desirable mates as well as disliked commitments themselves.

Apart from that, Pepping et al. (2018) identified three subgroups of long-term singles not engaged in romantic relationships that involve: (1) singlehood due to attachment-system deactivation, (2) singlehood due to attachment-system hyperactivation, and (3) singlehood as a secure personal choice. Specifically, individuals with attachment-system deactivation usually are not willing to get intimate with others to prevent possible distress and disappointment. Meanwhile, individuals displaying attachment-system hyperactivation exhibit high proximity and intimacy to their partners but have little faith in the equal return of proximity (Mikulincer & Shaver, 2012). Fear of abandonment may result in less topical reciprocity and more aggressive clinging behavior thus causing poor well-being (Adamczyk, 2017; Lehmann et al., 2015). Finally, for individuals choosing singlehood as a secure personal choice, chosen singlehood was linked to satisfaction with

a single status, self-fulfillment, and self-autonomy whereas constrained singlehood would reflect regret and dissatisfaction with single status (Timonen & Doyle, 2014). Taken together, singlehood may be deemed satisfactory for individuals only when singlehood was indeed their choice (Lehmann et al., 2015).

Overview of the Studies

As reviewed above, while some studies found that being in a relationship is beneficial to well-being, other studies too found being single having a similar positive effect. Nevertheless, the observed rising amount of singlehood with the mixed findings (e.g., Lehmann et al., 2015) and most notably, the lack of suitable measurements (Lehmann et al., 2015) warrant the present study to develop a quantitative measure to understand the people's attitudes toward singlehood. Moreover, the shortcomings of previous incomprehensive qualitative investigations (Apostolou, 2019) and examination in solely the Greek cultural context other than different cultural contexts (Apostolou, 2017) could be overcome in the present study. As such, attitudes among individuals remaining single could be uncovered in the present study. Furthermore, the singlehood issue deserves instant attention as despite its acclaimed benefits, singles are reported not likely to reproduce with figures as alarmingly low as less than 2 percent of children born outside marriage (e.g., in Japan and Korea; Jones, 2007). If left unattended, such reduction in marriage and fertility rates (e.g., in Japan, Atoh, 2008; Ronald et al., 2018) will escalate into other societal issues (e.g., labor shortages; Atoh, 2008) especially in aging societies.

Taking all these issues into consideration, the present study aimed to address the methodological gap by initiating quantitative development and validation of a newly designed Attitudes toward Singlehood Scale (AtSS) to measure people's attitudes toward singlehood. Following Hogg and Vaughan's (2005) definition that an attitude is "a relatively enduring organization of beliefs, feelings, and behavioral tendencies towards socially significant objects, groups, events or symbols" (p. 150), we employed Ostrom's (1969) ABC model of attitudes as a reference to characterize attitudes toward singlehood in three dimensions: affect, behavior, and cognition. The affective component involves a person's feelings (e.g., dislike) about being single. The behavioral component indicates an individual's behavior influenced by his or her attitudes toward singlehood. Finally, the cognitive component refers to a person's belief about singlehood. Overall, the AtSS is expected to provide researchers a tool to evaluate attitudes toward singlehood that can offer a new direction for singlehood research, for instance, in clarifying the contrast reported in the findings that singlehood is detrimental to one's well-being when single people are found happy (Kislev, 2019). The AtSS will help reveal the reasons for such inconsistencies. Specifically, researchers may apply the AtSS to assess single people's attitudes toward singlehood and identify those who have positive attitudes toward singlehood besides uncovering their reasons for feeling happy whenever applicable.

Four studies were conducted in the present research. Study 1 was conducted with twofold goals: first, to develop

an item pool and select potential items from the pool to develop the initial version of the AtSS; second, to examine the factorial structure of the selected items using exploratory factor analysis (EFA). Study 2 was then conducted to verify the factorial structure revealed in Study 1 using confirmatory factor analysis (CFA) as well as investigate the reliability and validity of the AtSS. Convergent validity was tested by correlating the AtSS score with the score of a single item that measures preference for staying single as well as comparing AtSS scores between single participants and those in a relationship. On the other hand, discriminant validity was tested by investigating the relationship between AtSS scores with social anxiety and narcissism scores. Meanwhile, concurrent validity was tested by correlating the AtSS score with life satisfaction and well-being. The rationales of the above mentioned tests were further explained in Study 2.

Study 3 was undertaken to replicate the findings of Study 2 on a new sample as well as testing measurement invariance of the scale across genders. Finally, Study 4 aimed to understand the usability of the AtSS in different cultural backgrounds by examining the qualities of the AtSS among young adults in India. All studies were approved by the scientific and ethical review committee of Universiti Tunku Abdul Rahman (ref. no: U/SERC/72/2019) with informed consent obtained from all the participants.

Study 1: Items Development

Development of Item Pool and Item Selection

In groups of three to six members, specifically 164 students who enrolled in the university course of Psychological Testing and Measurement brainstormed and generated three items for each of the dimensions of the ABC model. The group members discussed and selected the most appropriate items for each dimension using the content validity ratio method. The first author then compiled all the proposed items and eliminated conceptually overlapping items, resulting in 28, 30, and 32 items for affective, behavioral, and cognitive dimensions respectively. After that, the same group of students was invited to sort the items (for each dimension) into two groups (0: suitable vs. 1: less or not suitable) and rank those items from the most important to the least important. Based on the sorting and ranking task results, the top 10 items for each dimension (i.e., 30 items in total) were selected to form the initial version of the AtSS.

Participants and Procedure

The sample consisted of 182 undergraduate students in Malaysia (107 females and 75 males) with a mean age of 21.30 ($SD = 1.82$). The majority of the participants identified themselves as Chinese (86.8%) and Buddhists (69.2%). Moreover, 71.4% of the participants reported that they were not in a romantic relationship during the survey.

Measures

Attitudes toward Singlehood Scale (AtSS)

The 30 items were administered to the 182 students re-

cruited in Study 1. Respondents indicated the extent to which they agreed with the items on a 7-point Likert scale (1: strongly disagree, 7: strongly agree). Individuals who report a higher mean score tend to have positive attitudes toward singlehood (i.e., being single is beneficial).

Results and Discussion

The responses of the 30-item AtSS were first submitted to EFA using Jamovi 1.0.0 (The jamovi project, 2019) to examine the theoretical 3-factor model. EFA results with Promax rotation and principal axis factoring estimation as well as the number fixing of factor to three indicated that the items are suitable for factor analysis: Kaiser-Meyer-Olkin (KMO) = .915 and statistically significant Bartlett's test of sphericity, $\chi^2(435) = 3063, p < .001$. To minimize respondents' burden, the top five items (with the highest factor loading) loaded on the three dimensions were selected respectively to form the AtSS.

The responses of the 15 items were then submitted to another EFA to understand whether the three dimensions remained with the items loading on the target dimension. Parallel analysis was used to determine the number of factors. The results showed a 3-factor solution: KMO = .923; statistically significant Bartlett's test of sphericity, $\chi^2(105) = 1584, p < .001$, which explained 59.4% of the total variance (see Table 1). All items loaded on the target dimension and no cross-loading was found. Factor loadings ranged from 0.443 to 0.903 while uniqueness ranged from 0.298 to 0.552. Overall, the model showed a good fit: $\chi^2(63) = 96.20, p = .005$, Tucker-Lewis Index (TLI) = .962, root-mean-square error of approximation (RMSEA) = .057.

Reliability and Validity

Reliability was assessed using Cronbach alpha and McDonald's omega. The overall scale showed good internal consistency ($\alpha = .923, \omega = .925$) illustrated in the three subscales: $\alpha = .905$ and $\omega = .907$ for the affective subscale, $\alpha = .800$ and $\omega = .802$ for the behavioral subscale, and $\alpha = .878$ and $\omega = .879$ for the cognitive subscale.

The present study that identified half of the 30 preliminary generated items in constructing the initial version of the AtSS showed sound supports accounted for by affective, behavioral, and cognitive dimensions. Moreover, good internal consistency was observed for the overall AtSS and the three subscales. However, further analysis is required to confirm the exploratory findings. Study 2 was then conducted to fulfill the goal by examining factorial structure, reliability, and validity of the AtSS on a new sample.

Study 2

The main goal of Study 2 was to identify the best fit model for the (15-item) AtSS. Specifically, the model revealed in Study 1 was tested and compared with several competing models such as a two-factor model with a combined (affective and behavioral) factor and cognitive factor. The results are expected to shed light on the factorial structure of the AtSS. Moreover, the reliability and validity of the AtSS were examined on a new sample.

Table 1. Results from an Exploratory Factor Analysis for the 15-item Attitudes toward Singlehood Scale

AtSS item	Factor loading			Uniqueness
	1	2	3	
Factor 1: Affective				
1. I feel happy when I am single.	.863	-.049	-.044	.347
2. I feel comfortable to lead my life by myself.	.689	.049	-.018	.491
3. I feel positive for being single.	.903	-.002	-.129	.298
4. I feel comfortable being single.	.850	.032	-.040	.278
5. I enjoy being single.	.840	.020	-.002	.273
Factor 2: Cognition				
6. I think it is not necessary to be in a romantic relationship.	-.110	.874	.061	.288
7. I do not need to get into a romantic relationship to live a happy life.	.037	.756	.005	.385
8. Engaging in a romantic relationship is not important.	-.057	.752	.090	.398
9. I think my life is complete even without a romantic partner.	.270	.555	.064	.348
10. I can live independently without a partner in my life.	.278	.579	-.143	.502
Factor 3: Behavior				
11. I feel that being in a committed relationship distracts me from achieving my personal goals.	-.197	-.070	.865	.455
12. I do not want a romantic commitment.	-.178	.277	.650	.429
13. I choose to commit myself to establish a career rather than a romantic relationship.	.269	.011	.496	.525
14. I have better control over my life when I am single.	.243	.076	.443	.552
15. I stay single to have more personal space.	.398	-.083	.449	.529

Note. $N = 182$. The extraction method was principal axis factoring with an oblique (Promax) rotation. Factor loadings above .40 are in bold.

Participants and Procedure

The sample consisted of 308 undergraduate students (152 males and 156 females) in Malaysia aged from 18 to 29 years old ($M = 20.66$, $SD = 1.66$) with eight missing values. Of the sample, 91.9% identified themselves as Chinese (one participant did not report), 78.2% as Buddhists (followed by Christians, Hindus, and Muslims), and 99.0% as Malaysians. Moreover, 205 participants reported that they were single and 102 were in a romantic relationship (one participant did not report).

Measurements

The reliability of the measurements was reported in the Reliability and Validity section. For all the measurements, a higher score indicates a higher level in the respective psychological construct.

Attitudes toward Singlehood Scale (AtSS)

The 15 items revealed in Study 1 were employed in Study 2.

Single Item of Preference for Being Single

Since there is no measure of inclination of being single yet, following Lehmann and colleagues' (2015) practice, an item ("To what extent do you prefer to be single?") was added as an indicator for content validity. Participants an-

swered the item using a sliding scale ranging from 0 to 100. Higher scores represent a higher preference for being single.

Satisfaction with Life Scale (SWLS; Diener et al., 1985)

Participants responded to the 5-item SWLS using a 7-point Likert scale (1: *strongly disagree*, 7: *strongly agree*) to reveal their overall satisfaction with life.

Mini-Social Phobia Inventory (Mini-SPIN; Fogliati et al., 2016)

The 3-item Mini-SPIN was developed for screening social anxiety disorder. Using a 5-point Likert scale from 1 (*Not at all*) to 5 (*Extremely*), respondents reported the extent to which they were portrayed by each statement in the last 7 days.

Scales of General Well-Being (SGWB; Longo et al., 2018)

Respondents reported their well-being level using the SGWB. Specifically, they indicated the extent to which the 14 items truly described their overall experience in life using a 5-point Likert scale ranging from 1 (*Not at all true*) to 5 (*Very true*).

Single Item Narcissism Scale (SINS; Konrath et al., 2014)

The SINS was used to assess the narcissism level. Participants reported the extent to which they agreed with the item “I’m a narcissist” on a 7-point Likert scale (1: strongly disagree, 7: strongly agree). A definition (of a narcissist) was provided to help respondents understand the term.

Analytic Strategies

Several commonly reported indicators were used to examine and compare the appropriateness of the tested models. According to Hu & Bentler (1999), Tabachnick & Fidell (2007), and Steiger (2000), a model that shows (a) $\chi^2/df < 3$, (b) comparative fit index (CFI) and TLI $> .95$, (c) RMSEA $\leq .05$, and (d) standardized root mean square residual (SRMR) $< .08$ is a good-fit model. Modification indices were referred and would be adjusted if the preferred model did not meet the suggested cut-off criteria.

In the present study, the reliability of the measurements was evaluated using Cronbach alpha and McDonald omega coefficients. The same participants were invited to answer the AtSS in two weeks’ intervals for assessing test-retest reliability of the AtSS. Convergent validity was measured by the association between scores of the AtSS and preference for being single as well as the compared AtSS scores between participants who were in a relationship and were single. The latter is expected to report a higher score in AtSS. On the other hand, discriminant validity was tested by investigating the relationship between AtSS scores with social anxiety and narcissism scores. Literature has shown that people who are socially anxious (Pepping et al., 2018; Sparrevohn & Rapee, 2009) and too picky (Apostolou et al., 2020) tend to remain single. Therefore, it is important to demonstrate that the AtSS is not measuring social anxiety and narcissism. A non-significant or weak relationship would also distinguish the attitudes toward singlehood from anxiety and narcissism. Finally, based on the findings that people who have positive attitudes toward singlehood tend to be happier with their single lives (Kislev, 2019), concurrent validity was tested by correlating the AtSS score with life satisfaction and well-being. Specifically, it is assumed that AtSS will have a positive relationship with life satisfaction and well-being respectively for single individuals but not for those in a relationship.

Results and Discussion

Several CFAs (with maximum likelihood estimator) were conducted using JASP 0.10.2 to examine the following five competing models: (1) single-factor model (Model 1), (2) two-factor models in which two of the three factors were combined into one factor, for example, the joint factor (of affective and behavior dimensions) and cognitive factor (Model 2a to 2c), and (3) second-order model with three first-order factors (Model 3). The 3-factor model that was statistically similar to the second-order factor model was not included. The three factors were found highly correlated with each other ($r_s > .74$). CFA results (see Table 2) showed the single factor model and all two-factor models poor fit.

Meanwhile, Model 3 showed an acceptable fit to the data. We then referred to modification indices for suggestions of further improvement. The modified model (model 3a) with residual covariance between items 14 (“I have better control over my life when I am single”) and 15 (“I stay single to have more personal space”) as well as items 3 (“I feel positive for being single”) and 4 (“I feel comfortable being single”) showed a better fit than Model 3. In addition, inspection on the modification indices suggested that some of the items may be conceptually overlapping with others. Therefore, we selected the three items with the highest factor loading from each of the three factors to develop and test a 9-item version of the AtSS. The second-order factor model with nine items (Model 4) was found superior to all other tested models and hence, was selected to represent the structure of the AtSS. The (standardized) factor loadings of the three first-order factors on the attitudes toward singlehood were 0.87, 0.88, and 0.77 for affective, behavioral, and cognitive dimensions, while the factor loadings for the nine items ranged from 0.686 to 0.93 (see Table 3).

Reliability

Table 4 shows the reliability for AtSS, SWLS, social anxiety, and SGWB as well as the test-retest reliability for the 9-item AtSS. All the measures including the subscales of the AtSS showed good to excellent internal consistency ($\alpha_s > .814$, $\omega_s > .822$). Moreover, the AtSS was found to have good test-retest reliability. To further ensure that the AtSS applies to all individuals regardless of their relationship status, we also examined the reliability of the AtSS for respondents who were single and currently in a relationship. The results were consistent with those reported above and hence, were not reported here for the sake of clarity. The results are available upon request to the corresponding author.

Validity

Convergent validity was tested in two ways. First, we compared overall and subscale AtSS scores of respondents who were single and in relationships. Results showed that single individuals reported significantly higher scores than their counterparts in relationships in all the AtSS scores ($t_s > 4.545$, $p < .001$). In addition, we examined the relationship between AtSS scores and preference for staying single. Considering that the relationship between AtSS and other variables may be varied in those single and those in a relationship, we analyzed the associations of the variables separately for the two groups. The overall and three subscale scores of the AtSS positively correlated with the preference for staying single for both groups (see Table 5).

Discriminant validity was tested by the relationship between the AtSS scores with social anxiety and narcissism. There was no relationship between AtSS scores and social anxiety for all participants regardless of their relationship conditions apart from the positive but weak relationship between the behavioral subscale score and social anxiety for single participants. Narcissism, on the other hand, had a positive relationship with the overall AtSS score (i.e., the average across nine items) for single participants. Further-

Table 2. Goodness-of-fit Indices for the Attitudes toward Singlehood Scale (Study 2)

	Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA [90% CI]	SRMR	BIC
1	One-factor	824.51	90	9.16	.788	.753	.164 [.154, .175]	.086	13947.09
2a	Two-factor: Combined & Affective	490.09	89	5.51	.884	.864	.122 [.112, .133]	.070	13618.38
2b	Two-factor: Combined & Behavior	694.46	89	7.80	.826	.794	.150 [.140, .161]	.082	13822.75
2c	Two-factor: Combined & Cognition	577.92	89	6.49	.859	.834	.135 [.125, .145]	.086	13706.21
3	2nd-order with 15 items	364.85	87	4.19	.920	.903	.103 [.092, .114]	.059	13504.56
3a	2nd-order with 15 items and residual covariance ^a	281.17	85	3.31	.943	.930	.087 [.076, .099]	.061	13432.30
4	2nd-order with 9 items	98.62	24	4.11	.959	.939	.101 [.081, .122]	.055	8275.52

Note. $N = 308$. CFI = comparative fit index, TLI = Tucker-Lewis index, RMSEA = root-mean-square error of approximation, CI: confidence interval, SRMR = standardized root mean square residual, BIC = bayesian information criterion.

^a residual covariance was added between items 14 and 15 as well as Items 3 and 4.

All chi-square values were significant at the .001 level.

Table 3. Standardized Factor Loading for the 9 items of the Attitudes toward Singlehood Scale

No. ^a	Item	Standardized Factor Loading		
		Study 2	Study 3	Study 4
1/1	I feel happy when I am single.	.818	.780	.888
3/2	I feel positive for being single.	.882	.923	.945
4/3	I feel comfortable being single.	.933	.913	.914
13/4	I choose to commit myself to establish a career rather than a romantic relationship.	.686	.696	.853
14/5	I have better control over my life when I am single.	.848	.826	.878
15/6	I stay single to have more personal space.	.829	.833	.784
7/7	I do not need to get into a romantic relationship to live a happy life.	.800	.836	.883
8/8	Engaging in a romantic relationship is not important.	.831	.847	.876
9/9	I think my life is complete even without a romantic partner.	.818	.832	.863

Note. ^aThe item number in the 15-item version / the 9-item version.

more, both groups of participants reported a positive relationship between narcissism and the behavioral subscale of the AtSS.

Finally, concurrent validity was examined by the correlation between the AtSS scores with life satisfaction and general well-being. The overall and three subscale AtSS scores were positively correlated with life satisfaction scores for single participants but not for those in a relationship. Similarly, there was a positive relationship between the overall and subscale AtSS scores, except the cognitive subscale score, with general well-being.

Taken together, the findings of Study 2 indicate that the AtSS is best accounted for by the 9-item second-order

model that lends support to the reliability and validity of the 9-item AtSS. Note that, however, the 9-item AtSS was explored based on the suggestion of modification indices. Therefore, it is necessary to examine the 9-item AtSS with a new dataset to confirm its superiority.

Study 3

The main goal of Study 3 was to investigate psychometric qualities of the 9-item AtSS which was revealed on an exploratory basis in Study 2. Meanwhile, the 15-item AtSS was used in the present study to compare competing models and identify the best fit model.

Table 4. Mean, Standard Deviation, and Reliability for Target Variables (Study 2)

No.	Variable	M_{T1}	SD_{T1}	M_{T2}	SD_{T1}	Alpha		Omega		Test-retest
						T1	T2	T1	T2	
1	AtSS	4.44	1.15	4.36	1.25	.913	.934	.915	.935	.72***
1a	Affect	4.90	1.28	4.55	1.50	.910	.963	.912	.964	.69***
1b	Behavior	4.51	1.26	4.43	1.26	.824	.858	.831	.863	.54***
1c	Cognition	3.92	1.43	4.12	1.44	.856	.860	.857	.864	.65***
2	Satisfaction	4.21	1.05	-	-	.814	-	.822	-	-
3	Social anxiety	5.93	3.02	-	-	.832	-	.832	-	-
4	GWB	3.43	0.70	-	-	.918	-	.919	-	-

Note. $N_{T1} = 308$; $N_{T2} = 66$. Alpha = Cronbach alpha coefficient; Omega = McDonald omega coefficient; Test-retest = test-retest reliability; M = mean score for the whole sample; SD = standard deviation for the whole sample; T1 = time 1; T2 = time 2; AtSS = 9-item Attitudes toward Singlehood Scale; Affect = affective subscales of the AtSS with 3 items; Behavior = behavioral subscales of the AtSS with 3 items; Cognition = cognitive subscales of the AtSS with 3 items; Satisfaction = life satisfaction; GWB = general well-being. *** $p < .001$

Table 5. Correlation between Attitudes toward Singlehood Scale and Other Variables (Study 2)

		1	1a	1b	1c	2	3	4	5	6
1	AtSS	1	.85***	.85***	.83***	.04	.05	-.19	.15	.59***
1a	Affect	.86***	1	.62***	.54***	.07	-.01	-.13	.03	.45***
1b	Bhv	.85***	.63***	1	.54***	.01	.68	-.22	.25*	.52***
1c	Cognition	.87***	.62***	.60***	1	.01	.06	-.12	.10	.51***
2	LS	.35***	.39***	.30***	.23**	1	-.07	.44***	-.01	-.05
3	SocAnx	.12	.08	.14*	.10	-.01	1	-.26**	-.02	.03*
4	GWB	.22**	.34**	.15*	.09	.57***	-.14*	1	-.02	-.10
5	Narcissism	.18**	.13	.21**	.13	-.06	.16*	.01	1	.11
6	Preference	.64***	.63***	.51***	.52***	.14*	.07	.11	.15*	1

Note. AtSS = Attitudes toward Singlehood Scale; Bhv = behavioral dimension of attitudes toward singlehood; LS = life satisfaction; SocAnx = social anxiety; GWB = general well-being; Preference = preference for staying single. The below diagonal line shows the correlation between AtSS and other variables for single participants ($n = 196$ to 205). The above diagonal line shows the correlation between AtSS and other variables for participants in a relationship ($n = 99$ to 102).

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

Participants and Procedure

A total of 444 undergraduate students in Malaysia participated in Study 3. There were 235 female and 209 male students with a mean age of 20.44 ($SD = 1.14$, range = 18 to 25). The majority of the participants identified themselves as Chinese (93.5%) and Buddhists (84.9%). Moreover, 142 of the students were in a romantic relationship while 302 of them were single. The participants were recruited for a subsequent larger project and received additional course credit for answering an online survey.

Measurement

The 15-item AtSS, 5-item SWLS (Diener et al., 1985), 3-item SINS (Konrath et al., 2014), Mini-SPIN (Fogliati et al., 2016), and a single-item of preference for staying single used in Study 2 were employed in the present study.

Statistical Analysis

The analyses were consistent with Study 2 with the ex-

ception that test-retest reliability was not examined and the SGWB was not included to examine concurrent validity.

Results and Discussion

To further clarify the superiority of the 9-item AtSS, CFAs were carried out to examine and compare the second-order factor models of the 15- and 9-item versions. Although the 15-item second-order factor model was acceptable: $\chi^2(87) = 490.47$, $p < .001$, CFI = .921, TLI = .905, RMSEA = .102, 90% confidence interval (CI) [.093, .111], SRMR = .066, the 9-item second-order factor model demonstrated a better fit: $\chi^2(24) = 86.95$, $p < .001$, CFI = .977, TLI = .965, RMSEA = .077, 90% CI [.060, .095], SRMR = .043. As a result, the 9-item version is preferably adopted. The standardized factor loadings ranged from .696 to .923 (see Table 3).

Reliability

Table 6 shows the descriptive statistics, correlation, and reliability coefficients for the 9-item AtSS and other mea-

Table 6. Descriptive Statistics, Correlation, and Reliability for Measurements (Study 3)

		1	1a	1b	1c	2	3	4	5
1	AtSS	1	.89***	.83***	.84***	-.20*	.14	-.09	.59***
1a	Affect	.86***	1	.63***	.64***	-.16	.13	-.11	.52***
1b	Bhv	.87***	.71***	1	.50***	-.25**	.14	-.09	.48***
1c	Cognition	.85***	.56***	.56***	1	-.11	.09	-.03	.49***
2	LS	.13*	.20***	.12*	.04	1	-.14	.02	-.14
3	SocAnx	-.02	-.12*	-.003	.06	-.22***	1	.09	.09
4	Narcissism	.01	.04	.01	-.02	.002	-.02	1	-.12
5	Preference	.57***	.53***	.51***	.43***	-.05	-.02	.02	1
	M_{overall}	4.30	4.65	4.40	3.85	4.33	6.09	3.74	46.63
	SD_{overall}	1.15	1.30	1.27	1.42	1.00	2.81	1.41	26.98
	α_{overall}	.913	.903	.826	.875	.821	.816	NA	NA
	ω_{overall}	.915	.906	.829	.876	.833	.819	NA	NA

Note. $N = 444$ for all measurements except for Preference ($N = 439$). AtSS = Attitudes toward Singlehood Scale; Bhv = behavioral dimension of attitudes toward singlehood; LS = life satisfaction; SocAnx = social anxiety; Preference = preference for staying single; M = mean, SD = standard deviation, α = Cronbach alpha; ω = McDonald omega; NA = not applicable. Below diagonal line shows the correlation between AtSS and other variables for single participants ($n = 299$ to 302). Above diagonal line shows the correlation between AtSS and other variables for participants in a relationship ($n = 140$ to 142).

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

surements. All the measurements showed good internal consistency. As in Study 2, correlation analysis was conducted for the single participants and those in relationships respectively. The overall and three subscale scores AtSS were positively correlated with each other for both groups of participants.

Validity

As in Study 2, convergent validity was first tested by comparing the AtSS score between single participants and those in a relationship. Independent t-test showed that single individuals reported significantly higher scores than their counterparts in relationships in the overall and all subscale scores of the AtSS ($t_s > 3.96$, $p < .001$). In addition, the overall and subscale scores of the AtSS consistently showed a positive association with the single item preference for staying single score regardless of the participants' relationship conditions. The findings are congruent with the results of Study 2 and shed light on the convergent validity of the AtSS.

Furthermore, the overall and subscale AtSS scores did not show negative relationships with both social anxiety and narcissism. The results remained for single participants and those who were in a relationship. The only exception is that the affective subscale score was negatively associated with social anxiety for the single participants. The non-significant results highlight the conceptual differences between attitudes toward singlehood and the two constructs that offer support to the discriminant validity of the AtSS.

Finally, mixed findings were found for life satisfaction. The results for single individuals showed the overall and subscale scores of AtSS that positively associated with life satisfaction score apart from the relationship with the cognitive subscale score. On the other hand, for those in a relationship, both the overall score and the behavioral subscale scores negatively correlated with life satisfaction while no

relationship was observed for the affective and cognitive subscale scores. The discrepancies between the two groups lend further support to people's positive attitudes toward singlehood that can be advantageous to well-being besides demonstrating the concurrent validity of the AtSS.

Measurement Invariance across Genders

As the sample consisted of a comparable number of male ($n = 209$) and female ($n = 235$) respondents, we ran an additional analysis to examine if the 9-item AtSS structure is equivalent across the two gender groups using maximum likelihood estimator and fixing residual variance. The baseline model of the two gender groups was first investigated by conducting CFA on the two datasets respectively. Results showed that the 9-item second-order model fit the data for both genders (see Table 7). Next, we submitted the combined dataset to CFA and found support for the configural invariance (Model 1). Then, the metric invariance (i.e., fixing factor loadings across the groups; Model 2) was examined by comparing the chi-square value ($\Delta \chi^2$) and CFI value (ΔCFI) of Model 1 and Model 2. Results showed that the $\Delta \chi^2$ was not statistically significant with $\Delta CFI < .01$ (Cheung & Rensvold, 2002) indicating that metric invariance is supported. Finally, scalar invariance (i.e., fixing intercept; Model 3) was examined. The (Model 2 vs. Model 3) results indicated that $\Delta \chi^2$ was not significant and ΔCFI was less than .01, suggesting that the intercepts are equivalent across the two groups. As scalar variance is supported, we conducted an analysis of covariance (ANCOVA) to compare the attitudes toward singlehood score between the two gender groups. Narcissism was included as a covariate variable because we found that male participants scored higher than female participants in narcissism: $t(442) = 2.585$, $p = .01$, $M_{\text{male}} = 3.92$ ($SD_{\text{male}} = 1.44$) vs. $M_{\text{female}} = 3.57$ ($SD_{\text{female}} = 1.37$). Therefore, it is important to statistically control

Table 7. Goodness-of-fit indices for Tests of invariance of 9-item Attitudes toward Singlehood Scale Across Genders

Baseline Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA [90% CI]	SRMR	
Male (N=209)	66.829	24	2.78	.966	.949	.092 [.067, .119]	.053	
Female (N=235)	51.090	24	2.13	.980	.970	.069 [.043, .096]	.035	
MI	χ^2	df	CFI	Model Comparison	$\Delta\chi^2$	df	p	Δ CFI
Model 1: Configural invariance	117.918	48	.973	-	-	-	-	-
Model 2: Metric invariance	121.896	60	.976	2 vs. 1	3.978	12	.983	.003
Model 3: Scalar invariance	129.818	65	.975	3 vs. 2	7.922	5	.161	.001

Note. Using maximum likelihood estimator and fixing residual variance. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual; MI = measurement invariance; $\Delta\chi^2$ = difference in chi-square value; Δ CFI = difference in CFI value.

for the effect of narcissism to examine if there is a gender difference in attitudes toward singlehood. ANCOVA results showed that the gender effect, but not narcissism, was significant: $F(1,441) = 18.932$, $p < .001$, $\eta_p^2 = .041$. Female participants ($M = 4.52$, $SD = 1.11$) reported a higher (attitudes toward singlehood) value than their male counterparts ($M = 4.05$, $SD = 1.15$). A similar measurement invariance test was also conducted on single individuals. The results are consistent with the above report and female participants ($n = 164$) scored higher than male counterparts ($n = 138$). For the sake of clarity, the analysis outputs were not presented here but are available upon request to the corresponding author. Notably, the measurement invariance test was not conducted on individuals who were currently in a relationship due to the small sample size.

Collectively, the findings are consistent with Study 2 supporting that the 9-item AtSS has sound reliability and validity. The measurement invariance test further supported that the construct measured by the 9-item AtSS measures is equivalent across male and female individuals.

Study 4

Study 4 aimed to examine the psychometric qualities of the 9-item AtSS in a different cultural group. The results will shed light on the applicability of the 9-item AtSS in different cultural contexts.

Participants and Procedure

The sample consisted of 342 undergraduate students (220 female and 122 male students) in India. The mean age was 23.35 ($SD = 3.13$, range = 18 to 35). The sample mainly consisted of Indians (97.7%). There were 46.5% Hindus, 38.6% Christians, 12.9% Muslims, and 2% non-religious students. Moreover, 109 students were in a romantic relationship while 233 of them were single. The participants were recruited for a subsequent larger project. Their participation was voluntary and they did not receive any rewards for answering an online survey.

Measurement and Statistical Analysis

Study 4 employed the same measurements and statistical analysis as in Study 3 except that attitudes toward singlehood were measured by the 9-item AtSS.

Results and Discussion

Table 8 summarizes the CFA results for the four competing models. The unidimensional model and all the 2-factor models (i.e., Model 2a to 2c) showed poor fit except Model 2c. The hypothetical second-order model with three first-order factors (i.e., Model 3) not only showed a good fit but also outperformed other models. Hence, Model 3 is selected to represent the factorial structure of the 9-item AtSS. The factor loadings ranged from .784 to .945. Since the RMSEA value of Model 3 exceeded .80, we referred to the modification indices for potential improvements' suggestions. Specifically, item 7 ("I do not need to get into a romantic relationship to live a happy life") was allowed to cross-load on the affective subscale. All the indicators of the modified model (Model 3a) were within the suggested range.

Reliability

Table 9 shows the descriptive statistics, correlation, and reliability coefficients for AtSS and other measurements. The reliability test showed that all measurements used in Study 4 had good internal consistency. Similarly, correlation results were presented for the single participants and those in a relationship respectively. The overall and the three subscale scores of AtSS were positively correlated with each other for both groups of participants.

Validity

An independent t-test was first conducted to examine differences in AtSS scores between single participants and those in a relationship. As reported in Study 2 and Study 3, single individuals achieved significantly higher scores than their counterparts in relationships in the overall and all

Table 8. Goodness-of-fit Indices for the Attitudes toward Singlehood Scale (Study 4)

	Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA [90% CI]	SRMR	BIC
1	One-factor	358.56	27		.895	.861	.189 [.172, .207]	.059	9070.013
2a	Two-factor: Combined & Affective	258.87	26		.927	.898	.162 [.144, .180]	.048	8976.157
2b	Two-factor: Combined & Behavior	347.05	26		.899	.860	.190 [.173, .208]	.060	9064.339
2c	Two-factor: Combined & Cognition	151.21	26		.960	.945	.119 [.101, .137]	.037	8868.503
3	2nd-order	101.87	24		.975	.963	.097 [.078, .117]	.030	8830.834
3a	2nd-order with cross-loading ^a	67.37	23		.986	.978	.075 [.055, .096]	.018	8802.165

Note. $N = 342$. CFI = comparative fit index, TLI = Tucker-Lewis index, RMSEA = root-mean-square error of approximation, CI: confidence interval, SRMR = standardized root mean square residual, BIC = bayesian information criterion.

^a Item 7 cross loaded on affective and cognitive factors.

All chi-square values were significant at the .001 level.

Table 9. Descriptive Statistics, Correlation, and Reliability for Measurements (Study 4)

		1	1a	1b	1c	2	3	4	5
1	AtSS	1	.94***	.94***	.91***	.01	.26**	-.05	.55***
1a	Affect	.91***	1	.85***	.76***	.03	.26**	-.05	.62***
1b	Bhv	.94***	.84***	1	.75***	-.02	.18	-.03	.54***
1c	Cognition	.88***	.65***	.73***	1	.003	.28**	-.06	.38***
2	LS	.25***	.32***	.26*	.11	1	-.03	.24*	-.14
3	SocAnx	-.01	.05	.05	-.11	.06	1	.02	.15
4	Narcissism	.04	.05	.08	-.02	.23***	.30***	1	-.05
5	Preference	.65***	.64***	.59***	.55***	.11	-.04	.05	1
	M_{overall}	4.44	4.61	4.48	4.24	3.87	4.70	2.53	52.42
	SD_{overall}	1.42	1.46	1.54	1.58	1.34	3.15	1.49	23.38
	α_{overall}	.956	.946	.892	.907	.908	.883	NA	NA
	ω_{overall}	.955	.944	.889	.907	.906	.881	NA	NA

Note. $N = 342$ for all measurements except for Preference ($N = 339$). AtSS = Attitudes toward Singlehood Scale; Bhv = behavioral dimension of attitudes toward singlehood; LS = life satisfaction; SocAnx = social anxiety; Preference = preference for staying single; M = mean, SD = standard deviation, α = Cronbach alpha; ω = McDonald omega; NA = not applicable. Below diagonal line shows the correlation between AtSS and other variables for single participants ($n = 235$). Above diagonal line shows the correlation between AtSS and other variables for participants in a relationship ($n = 109$).

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

subscale scores of the AtSS ($ts > 7.55$, $p < .001$). Similarly, a positive relationship between the single item preference for staying single score and the overall and subscale scores of the AtSS was found in both groups of participants. The findings consistently support the convergent validity of the AtSS.

Furthermore, the overall and subscale scores of the AtSS did not show a relationship with social anxiety for single participants. However, there was a positive relationship between the overall and subscale AtSS scores except for the behavioral subscale score and social anxiety for those in

a relationship. In other words, individuals in relationships tend to experience higher social anxiety if they show positive attitudes toward singlehood affectively and cognitively, and vice versa. On the other hand, there was no relationship between the overall and subscale AtSS scores and narcissism scores for single participants and those in a relationship. The nonsignificant results indicate that attitudes toward singlehood are conceptually different from social anxiety and narcissism especially for the single participants, supporting the discriminant validity of the AtSS.

Finally, results on single individuals showed a positive

relationship between the overall score and subscale scores of the AtSS with life satisfaction score apart from the relationship with the cognitive subscale score. On the other hand, for those in a relationship, both the overall score and subscale scores of the AtSS did not have a relationship with life satisfaction. The differences between the two groups of participants support the notion that people's favorable attitudes toward singlehood can enhance well-being as well as the concurrent validity of the AtSS.

General Discussion

The present research developed and examined psychometric properties of the Attitudes toward Singlehood Scale (AtSS) in four studies. To our best knowledge, it is the first multidimensional quantitative measurement for individuals to self-report their attitudes toward singlehood.

Based on the ABC model of attitudes, preliminary items of the AtSS were designed to address the affective, behavioral, and cognitive components of people's attitudes toward singlehood. The EFA results supported that the selected 15 items can be accounted for by a 3-factor model (Study 1). Study 2 then demonstrated that a second-order model with a general single-by-choice factor and three first-order subfactors outperformed other competing models. Out of our expectations, a shorter version of the AtSS with nine items is superior to the 15-item version. Similarly, the results of Study 3 further support the superiority of the 9-item version. Finally, the 9-item version also showed a good fit in a sample of undergraduate students in India (Study 4). The findings across the studies indicate that the 9-item AtSS is best represented by a second-order structure and the structure holds in two different cultural contexts. The latter provides the first piece of evidence to the cross-cultural adaptability of the AtSS.

Overall, the 9-item AtSS demonstrated excellent reliability. Both Cronbach alpha and McDonald omega coefficients were greater than .82 for the overall scale and the three subscales of the AtSS in Study 2 through Study 4. Furthermore, the test-retest reliability with a two-week interval was good ($r > .54$). The congruent results support that the 9-item AtSS has good internal consistency.

Besides, the 9-item AtSS also demonstrates good validity. In line with our predictions, the 9-item AtSS score was found to have a positive relationship with the preference for staying single. In other words, individuals who favor staying single also scored higher in the AtSS. Similarly, in line with our assumption, the comparison between those in a relationship and singlehood showed that the latter reported a higher score in the AtSS. The abovementioned results were consistently observed in Study 2 through Study 4 thus lending support to the convergent validity of the AtSS. In other words, the AtSS has the potential to reveal the extent to which individuals would rather stay single than engage in a relationship.

Meanwhile, the discriminant validity of the (9-item) AtSS is also evident. For those who were single, both social anxiety and narcissism had a positive but weak relationship with the behavioral subscale of the AtSS respectively (Study 2), while social anxiety was negatively and weakly associated with the affective subscale of AtSS in Study 2 and

Study 3. Likewise, neither the AtSS overall scale nor its subscales had a relationship with social anxiety and narcissism respectively in Study 4. The findings demonstrate that attitudes toward singlehood are conceptually different from social anxiety and narcissism. Hence, further studies are necessary to clarify the mixed findings. For instance, it would be interesting to understand if social anxiety and narcissism could be antecedent factors of attitudes toward singlehood.

In addition, the AtSS shows good criterion validity. Specifically, the overall AtSS score was found to have a positive relationship with life satisfaction (Study 2 through Study 4) and general well-being (Study 2) for single individuals. The overall AtSS score, however, had no relationship with life satisfaction and well-being for those in a relationship (Study 2 and Study 4). Study 3 even showed a negative relationship between the overall AtSS score and life satisfaction. In other words, individuals who have positive attitudes toward singlehood are more likely to be satisfied with their lives and have high levels of well-being. The findings not only support the concurrent validity of the AtSS but also offer preliminary evidence that having positive attitudes toward singlehood is beneficial to individuals' well-being. The latter suggests a new direction to reconcile the mixed findings of the relationship between marriage and well-being. In a similar vein, the weak to moderate correlation between attitudes toward singlehood and life satisfaction scores (for single participants) offers recommendations for future researchers to further investigate the causal relationship between the two constructs using a longitudinal design.

In essence, the 9-item AtSS shows measurement invariance across genders (Study 3). The results highlight that the AtSS is appropriate for measuring the construct of attitudes toward singlehood among male and female young adults. The measurement equivalence also allows the investigation of gender differences in attitudes toward singlehood. Female participants reported a higher score in attitudes toward singlehood than their male counterparts. Future studies are thus recommended to explore the causes and effects of the gender difference in attitudes toward singlehood.

Taken together, the development of the 9-item AtSS has a significant contribution to the literature. In particular, the emergence of the AtSS fills the methodological gap by allowing researchers to measure people's attitudes toward singlehood. The distinction helps clarify the inconsistent findings of the consequences of being single besides identifying the positive and negative impacts of attitudes toward singlehood. Practically, researchers may also use the AtSS to identify the antecedent factors of attitudes toward singlehood. The results are expected to indirectly shed light on the issue of divorce and the low birth rate.

Nevertheless, although the results support that the 9-item AtSS is useful, the scale is far from being the perfect tool. It is important to note that the responses of the 9 items in both Study 2 and Study 3 were derived from the 15-item version. There lies a possibility that the results for the 9-item AtSS are confounded by the other items. Therefore, it is crucial to examine and verify the qualities of the 9-item AtSS in the local context. As the 9-item AtSS also shows sound properties in another sample with different cultural backgrounds, we are optimistic about the perfor-

mance of the scale. Meanwhile, future researchers are reminded of further examination on the factorial structure and psychometric qualities of the AtSS, for instance, by examining the validity of the 9-item AtSS using other measurements such as the Well-Being Profile (Marsh et al., 2020) and fear of being single (Spielmann et al., 2013). In addition, the present study was limited to young adults in two countries. It is unknown whether the AtSS has equivalent sound properties in other population and cultural groups. Future researchers are thus suggested to extend their focus to other age groups and to translate the AtSS into local languages in investigating the applicability of the AtSS in other cultural contexts.

Conclusion

The present study developed and validated the 9-item Attitudes toward Singlehood Scale (AtSS) to address the need for a quantitative assessment of attitudes toward singlehood. Results support that the AtSS is a useful measurement of young adults' attitudes toward singlehood thus underpinning its potential for examining the relationship between attitudes toward singlehood and individuals' well-being.

Contribution

Contributed to conception and design: CST, SMC
Contributed to acquisition of data: CST, SMC, & SG

Contributed to analysis and interpretation of data: CST
Drafted and/or revised the article: CST, SMC
Approved the submitted version for publication: CST, SMC, & SG

Acknowledgements

The authors thank students of Jan2019 UAPP2013 class for their suggestion and participation.

Funding Information

The authors did not receive support from any organization for the submitted work.

Competing Interests

The authors have no conflicts of interest to declare that are relevant to the content of this article.

Supplemental Material

Peer Review History

Data Accessibility Statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author on request.

Submitted: November 11, 2020 PDT, Accepted: June 01, 2021 PDT



This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CCBY-4.0). View this license's legal deed at <http://creativecommons.org/licenses/by/4.0> and legal code at <http://creativecommons.org/licenses/by/4.0/legalcode> for more information.

REFERENCES

- Adamczyk, K. (2017). Direct and indirect effects of relationship status through satisfaction with relationship status and fear of being single on Polish young adults' well-being. *Personality and Individual Differences, 111*, 51–57. <https://doi.org/10.1016/j.paid.2017.01.056>
- Apostolou, M. (2017). Why people stay single: An evolutionary perspective. *Personality and Individual Differences, 111*, 263–271. <https://doi.org/10.1016/j.paid.2017.02.034>
- Apostolou, M. (2019). Why men stay single: Evidence from reddit. *Evolutionary Psychological Science, 5*(1), 87–97. <https://doi.org/10.1007/s40806-018-0163-7>
- Apostolou, M., O, J., & Esposito, G. (2020). Singles' Reasons from being single: Empirical evidence from an evolutionary perspective. *Frontiers in Psychology, 11*, 746. <https://doi.org/10.3389/fpsyg.2020.00746>
- Atoh, M. (2008). Family changes in the context of lowest-low fertility: The case of Japan. *International Journal of Japanese Sociology, 17*(1), 14–29. <https://doi.org/10.1111/j.1475-6781.2008.00109.x>
- Band-Winterstein, T., & Manchik-Rimon, C. (2014). The experience of being an old never-married single: A life course perspective. *The International Journal of Aging and Human Development, 78*(4), 379–401. <https://doi.org/10.2190/ag.78.4.d>
- Bookwala, J., & Fekete, E. (2009). The role of psychological resources in the affective well-being of never-married adults. *Journal of Social and Personal Relationships, 26*(4), 411–428. <https://doi.org/10.1177/0265407509339995>
- Chandler, J., Williams, M., Maconachie, M., Collett, T., & Dodgeon, B. (2004). Living alone: Its place in household formation and change. *Sociological Research Online, 9*(3), 42–54. <https://doi.org/10.5153/sro.971>
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*(2), 233–255. https://doi.org/10.1207/s15328007sem0902_5
- DePaulo, B. (2013). *Is it healthier to live with someone?* <https://www.psychologytoday.com/gb/blog/living-single/201305/is-it-healthier-live-someone-0>
- DePaulo, B. (2014). A singles studies perspective on mount marriage. *Psychological Inquiry, 25*(1), 64–68. <https://doi.org/10.1080/1047840x.2014.878173>
- DePaulo, B. (2015). *Marriage vs. single life: How science and the media got it so wrong*. CreateSpace.
- DePaulo, B., & Morris, W. L. (2005). Singles in society and in science. *Psychological Inquiry, 16*, 57–83. https://doi.org/10.1207/s15327965pli162&3_01
- DePaulo, B., & Morris, W. L. (2006). The unrecognized stereotyping and discrimination against singles. *Current Directions in Psychological Science, 15*(5), 251–254. <https://doi.org/10.1111/j.1467-8721.2006.00446.x>
- Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13
- Fogliati, V. J., Terides, M. D., Gandy, M., Staples, L. G., Johnston, L., Karin, E., Rapee, R. M., Titov, N., & Dear, B. F. (2016). Psychometric properties of the mini-social phobia inventory (Mini-SPIN) in a large online treatment-seeking sample. *Cognitive Behaviour Therapy, 45*(3), 236–257. <https://doi.org/10.1080/16506073.2016.1158206>
- Frazier, P., Arikian, N., Benson, S., Losoff, A., & Maurer, S. (1996). Desire for marriage and life satisfaction among unmarried heterosexual adults. *Journal of Social and Personal Relationships, 13*(2), 225–239. <https://doi.org/10.1177/0265407596132004>
- Galčanová, L., & Vacková, B. (2016). “How to wind the clock of the day?” Solo living phenomena and the various stabilities of home. *Home Cultures, 13*(3), 225–254. <https://doi.org/10.1080/17406315.2016.1258124>
- Glenn, N. D., & Weaver, C. N. (1988). The changing relationship of marital status to reported happiness. *Journal of Marriage and the Family, 50*(2), 317–324. <https://doi.org/10.2307/351999>
- Hogg, M., & Vaughan, G. (2005). *Social psychology*. Prentice Hall.
- Hope, S., Rodgers, B., & Power, C. (1999). Marital status transitions and psychological distress: Longitudinal evidence from a national population sample. *Psychological Medicine, 29*(2), 381–389. <https://doi.org/10.1017/s0033291798008149>
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55. <https://doi.org/10.1080/10705519909540118>

- Hudson, N. W., Lucas, R. E., & Donnellan, M. B. (2020). The highs and lows of love: Romantic relationship quality moderates whether spending time with one's partner predicts gains or losses in well-being. *Personality and Social Psychology Bulletin*, 46(4), 572–589. <https://doi.org/10.1177/0146167219867960>
- Jones, G. W. (2007). Delayed marriage and very low fertility in Pacific Asia. *Population and Development Review*, 33(3), 453–478. <https://doi.org/10.1111/j.1728-4457.2007.00180.x>
- Kislev, E. (2019). *Happy singlehood: The rising acceptance and celebration of solo living*. University of California Press.
- Konrath, S., Meier, B. P., & Bushman, B. J. (2014). Development and validation of the single item narcissism scale (SINS). *PLoS ONE*, 9(8), e103469. <https://doi.org/10.1371/journal.pone.0103469>
- Lehmann, V., Tuinman, M. A., Braeken, J., Vingerhoets, A. J. J. M., Sanderman, R., & Hagedoorn, M. (2015). Satisfaction with relationship status: Development of a new scale and the role in predicting well-being. *Journal of Happiness Studies*, 16(1), 169–184. <https://doi.org/10.1007/s10902-014-9503-x>
- Longo, Y., Coyne, I., & Joseph, S. (2018). Development of the short version of the Scales of General Well-Being: The 14-item SGWB. *Personality and Individual Differences*, 124, 31–34. <https://doi.org/10.1016/j.paid.2017.11.042>
- Marsh, H. W., Huppert, F. A., Donald, J. N., Horwood, M. S., & Sahdra, B. K. (2020). The well-being profile (WB-Pro): Creating a theoretically based multidimensional measure of well-being to advance theory, research, policy, and practice. *Psychological Assessment*, 32(3), 294–313. <https://doi.org/10.1037/ass0000787>
- McCabe, M. P., Cummins, R. A., & Romeo, Y. (1996). Relationship status, relationship quality, and health. *Journal of Family Studies*, 2(2), 109–120. <https://doi.org/10.5172/jfs.2.2.109>
- Mikulincer, M., & Shaver, P. R. (2012). *Attachment in adulthood: Structure, dynamics, and change* (2nd ed.). Guilford Press.
- Ostrom, T. M. (1969). The relationship between the affective, behavioral, and cognitive components of attitude. *Journal of Experimental Social Psychology*, 5(1), 12–30. [https://doi.org/10.1016/0022-1031\(69\)90003-1](https://doi.org/10.1016/0022-1031(69)90003-1)
- Pepping, C. A., MacDonald, G., & Davis, P. J. (2018). Toward a psychology of singlehood: An attachment-theory perspective on long-term singlehood. *Current Directions in Psychological Science*, 27(5), 324–331. <https://doi.org/10.1177/0963721417752106>
- Rich, M. (2019). *Going solo: The Japanese women rejecting marriage for the freedom of living single*. <http://www.independent.co.uk/life-style/love-sex/marriage/japan-women-marriage-relationship-independence-happy-life-a9042636.html>
- Ronald, R., Druta, O., & Godzik, M. (2018). Japan's urban singles: Negotiating alternatives to family households and standard housing pathways. *Urban Geography*, 39(7), 1018–1040. <https://doi.org/10.1080/02723638.2018.1433924>
- Sparrevohn, R. M., & Rapee, R. M. (2009). Self-disclosure, emotional expression and intimacy within romantic relationships of people with social phobia. *Behaviour Research and Therapy*, 47(12), 1074–1078. <https://doi.org/10.1016/j.brat.2009.07.016>
- Spielmann, S. S., MacDonald, G., Maxwell, J. A., Joel, S., Peragine, D., Muise, A., & Impett, E. A. (2013). Settling for less out of fear of being single. *Journal of Personality and Social Psychology*, 105(6), 1049–1073. <https://doi.org/10.1037/a0034628>
- Steiger, J. H. (2000). Point estimation, hypothesis testing, and interval estimation using the RMSEA: Some comments and a reply to Hayduk and Glaser. *Structural Equation Modeling*, 7(2), 149–162. https://doi.org/10.1207/s15328007sem0702_1
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Allyn & Bacon/Pearson Education.
- Takada, A. (1992). Contemporary youth and youth culture in Japan. *International Journal of Japanese Sociology*, 1(1), 99–114. <https://doi.org/10.1111/j.1475-6781.1992.tb00009.x>
- The jamovi project. (2019). *jamovi*. (Version 1.0.0) [Computer Software]. <https://www.jamovi.org>
- Timonen, V., & Doyle, M. (2014). Life-long singlehood: Intersections of the past and the present. *Ageing and Society*, 34(10), 1749–1770. <https://doi.org/10.1017/s0144686x13000500>
- United States Census Bureau. (2017). *Unmarried and Single Americans week: Sept. 17-23*. <https://www.census.gov/newsroom/facts-for-features/2017/single-americans-week.html>

Whillans, J. (2014). The weekend: The friend and foe of independent singles. *Leisure Studies*, 33(2), 185–201. <https://doi.org/10.1080/02614367.2013.833971>

Wu, J. (2017). *More young Chinese choose to be single*. http://www.china.org.cn/china/2017-02/15/content_40290284.htm

Appendix A: Attitudes toward Singlehood Scale

Below are 9 items that may or may not apply to you. Select a score from 1 (Strongly disagree) to 7 (Strongly agree) to indicate the extent to which you agree with the item.

There is NO right or wrong answer.

1. I feel happy when I am single.
2. I feel positive for being single.
3. I feel comfortable being single.
4. I choose to commit myself to establish a career rather than a romantic relationship.
5. I have better control over my life when I am single.
6. I stay single to have more personal space.
7. I do not need to get into a romantic relationship to

live a happy life.

8. Engaging in a romantic relationship is not important.
9. I think my life is complete even without a romantic partner.

Scoring

To generate an affective subscale score, average scores on items 1, 2, and 3. To generate a behavioral subscale score, average scores on items 4, 5, and 6. To generate a cognitive subscale score, average scores on items 7, 8, and 9. Finally, to calculate an overall score, average scores from all 9 items.

SUPPLEMENTARY MATERIALS

Peer Review History

Download: https://collabra.scholasticahq.com/article/24808-development-and-validation-of-the-attitudes-toward-singlehood-scale-among-undergraduate-students-in-malaysia-and-india/attachment/63805.docx?auth_token=nT2PybNc2MQAmMH76ra8
