

Original Article

## Validity and reliability of the Subjective Happiness Scale Arabic version among Saudi working women



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### المخلص

**أهداف البحث:** قياس السعادة الذاتية للمرأة العاملة السعودية في هذا الوقت من التحول الكبير، أمر ضروري للحصول على صورة متوقعة عن الوضع الحالي للمرأة في المملكة العربية السعودية. لذلك، قمنا باختبار صلاحية وموثوقية النسخة العربية من مقياس السعادة الذاتية عند استخدامها للنساء السعوديات العاملات. تتناول هذه الدراسة أيضا العوامل التي تؤثر على السعادة الذاتية للمرأة السعودية العاملة.

**طرق البحث:** أجريت دراسة التحقق هذه على 300 امرأة سعودية عاملة لاختبار الخصائص السيكومترية للنسخة العربية من مقياس السعادة الذاتية. تم تحديد الصلاحية من خلال تحليل المكون الرئيسي وتحليل العوامل المؤكدة. وتم إجراء الانحدار المتعدد لفحص العوامل التي تؤثر على السعادة الذاتية.

**النتائج:** كشف تحليل المكون الرئيسي عن عامل واحد يفسر ما يقرب من 66% من تباين النموذج. وكشف تحليل العوامل المؤكدة النتائج التالية: مؤشر الملاءمة المعياري = 0.982، ومؤشر التوافق المقارن = 0.990، ومؤشر تكرار لويس = 0.971، ومؤشر جودة الملاءمة = 0.986، ومؤشر جودة الملاءمة المعدل = 0.929، وجذر متوسط الخطأ التربيعي للتقريب = 0.086. وكان معامل ألفا كرونباخ للنسخة العربية من مقياس السعادة الذاتية في العينات الأولى والثانية 0.824 و 0.830 على التوالي. أثرت الوظيفة وساعات العمل والراتب الشهري على السعادة الذاتية للمرأة السعودية العاملة.

**الاستنتاجات:** قدمت الدراسة أدلة تدعم صحة وموثوقية النسخة العربية من مقياس السعادة الذاتية عند استخدامه بين النساء السعوديات العاملات. ويمكن لهذه الأداة الصالحة والموثوقة فتح طرق وفرص مدهلة في النهوض بأجندة أبحاث

المرأة في المملكة العربية السعودية والدول الأخرى الناطقة بالعربية من أجل التقدم الاقتصادي والاجتماعي.

**الكلمات المفتاحية:** التحليل السيكومتري؛ المملكة العربية السعودية؛ السعادة الذاتية لدى النساء؛ دراسات المرأة

### Abstract

**Objective:** Measuring Saudi women's subjective happiness during the present period that has brought great transformations in gender equality in KSA is essential to gather reliable information about the present situation of women in KSA. This study intends to test the validity and reliability of the 'Subjective Happiness Scale' Arabic version (SHS-A) when applied to Saudi working women. This study also examines the factors that affect the subjective happiness of Saudi working women.

**Methods:** This validation study was conducted among 300 Saudi working women to test the psychometric properties of the SHS-A. Validity was evaluated using principal component analysis (PCA) and confirmatory factor analysis (CFA). Multiple regression analysis was also carried out to examine the factors affecting subjective happiness.

**Results:** The PCA identified one factor that explained approximately 66.0% of the variance of the model. The CFA revealed the following findings: normed fit index = 0.982, comparative fit index = 0.990, Tucker-Lewis index = 0.971, goodness-of-fit index = 0.986, adjusted goodness-of-fit index = 0.929, and root mean square error of approximation = 0.086. The  $\chi^2/df$  value was 2.09 ( $\chi^2 = 4.189$ ,  $p = .123$ ). The Cronbach's alpha of

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the SHS-A in the first and second samples was 0.824 and 0.830, respectively. Employment position, working hours, and monthly salary were found to influence the subjective happiness of Saudi working women.

**Conclusions:** This study provides evidence that supports the validity and reliability of the SHS-A when used among Saudi working women. This valid and reliable tool can open further avenues and opportunities for advancing women's research agenda in KSA and other Arabic-speaking countries for economic and societal progress.

**Keywords:** Monthly salary; Psychometric analysis; KSA; Subjective happiness; Working women

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## Introduction

In recent years, KSA has experienced a dramatic transformation through its Vision 2030 program, which envisions the country as an 'ambitious nation' with a 'thriving economy' and a 'vibrant society'. This vision aims to change the country's political and social landscapes and increase political, social, educational, and gender equality, particularly for women. Vision 2030 further assures women's equal rights to education, employment, and health. The participation of women in civic life is a crucial facet of Vision 2030. These advancements are proposed to ensure 'rich, happy, and fulfilling' lives for everyone in the country.<sup>1</sup> Thus, opportunities in different sectors of society are now becoming available to women owing to this vision. Employment for women in public and private sectors has skyrocketed, and women have begun to enjoy the rights they were once deprived of in the country.<sup>2</sup> However, as these changes occur across KSA, working women's actual happiness remains unknown. Happiness is an important indicator of people's quality of life and wellbeing as well as human and national development and progress.<sup>3,4</sup>

Subjective happiness is used to describe an individual's happiness, life satisfaction, or perception of their quality of life.<sup>5</sup> Researchers use different methods and tools to measure individuals' happiness, such as the 'Subjective Happiness Scale' (SHS) and 'Oxford Happiness Questionnaire'.<sup>4,6</sup> Fundamental factors influencing subjective wellbeing include temperament, social relationship quality, the overall quality and standards of society, and individuals' abilities to meet their basic needs.<sup>5</sup>

The government of KSA has adopted various initiatives to enhance women's status in society. The latest reforms in the country's legal structure provide exceptional support to women to enhance their status, such as the appointment of more than thirty women to the Saudi Shoura Council in 2013, the promotion of women in key managerial positions, and allowing women to drive.<sup>7</sup> Moreover, different

initiatives are implemented through Saudi Vision 2030 to increase women's employment by 20%–30% by 2030, covering numerous training programs and a wide variety of industries, including information technology, engineering, telecommunication, health and medicine, and cosmetology.<sup>8</sup> Such initiatives are valuable and beneficial for increasing employment, as more than 50% of women in the country are educated.<sup>8</sup> According to the latest record of the country's labour force, the labour participation rate of Saudi females (15 years old and above) in the fourth quarter of 2020 was 33.2%, a significant increase from the 17.7% in the second quarter of 2016.<sup>9</sup> However, despite the tremendous advances in Saudi women's participation in the labour market, there are several issues and concerns that still need to be addressed. For instance, compared to men, Saudi women remain in lower job positions with lower incomes. Moreover, some Saudi women have claimed to face difficulties getting recognition and respect in their workplace. Nonetheless, the creation of work policies that promote the well-being and success of Saudi women in the workplace is encouraged.<sup>10</sup>

Subjective happiness is considered to be one of the indicators of a vibrant economy and society. Hence, examining people's happiness is imperative to ensuring their satisfaction and quality of life. The SHS is commonly used to measure happiness in different regions across the globe.<sup>11</sup> Szabo found that SHS scores among the Hungarian population correlated positively with life satisfaction and optimism and had an inverse relationship with pessimism.<sup>12</sup> Spagnoli and colleagues ascertained a strong reliability of the SHS in Portuguese society and examined its criterion validity by comparing it with an evaluation of satisfaction.<sup>13</sup> Chien et al. employed multidimensional measures to investigate the validity of the SHS, and their findings showed that the Chinese version of the scale demonstrated strong validity in evaluating happiness.<sup>14</sup> Moreover, the SHS has a strong correlation with multidimensional wellbeing measures, such as positive and negative affect and satisfaction. These studies indicate that the SHS can provide valid information about individuals' happiness, wellbeing, and living standards. Therefore, the same tool can be used in Saudi society to determine women's happiness.

The SHS may also be applicable for determining Saudi working women's current status in terms of happiness because a literature review of previous studies shows that it can provide valid information about an individual's life from different life satisfaction perspectives regardless of gender. The SHS has excellent validity and reliability and thus could be utilised to evaluate Saudi women's happiness extensively.<sup>4</sup> The Saudi government implemented different initiatives to improve women's social and economic status. Therefore, it is important to examine how happy and satisfied Saudi women are concerning the new and ongoing initiatives for their empowerment using a validated tool. Measuring Saudi working women's happiness index may support the government and private sector in developing future policies for improving women's life and wellbeing in the country. Determining the validity and reliability of the SHS Arabic version (SHS-A) in measuring Saudi working women's happiness can help evaluate the impact of employment initiatives on working women in the country and identify gaps in the current initiatives that must be revised and

improved to ensure real happiness amid great societal transformation. Thus, we tested the validity and reliability of the SHS-A when utilised for Saudi working women. This study also examines the factors affecting the subjective happiness of Saudi working women.

## Materials and Methods

### *Design, settings & samples*

This validation study was carried out in a city located in Riyadh Province, KSA. The city is located approximately 320 km west of Riyadh City with a population of approximately 54,000 at the latest recording. Two sets of samples were collected for the study. The first set of samples ( $n = 150$ ) was employed for the principal component analysis (PCA), and the second set of samples ( $n = 150$ ) was utilised for the confirmatory factor analysis (CFA). Both sets of samples were chosen conveniently from the study setting. The size of the samples was adequate to perform both types of factor analyses based on a 10:1 sample-to-item ratio.<sup>15</sup> The selection criteria for the research participants were Saudi women who were employed during the study period and who were 18 years old and above. Such women from other cities were excluded from the study.

### *Instrument*

Data collection was conducted using the online survey platform Survey Monkey. Information on the respondents' age, marital status, education, family type, type of employment, present employment position, length of work experience, weekly working hours, and salary was collected in the first part of the survey.

The SHS-A, which is a four-item measure originally created by Lyubomirsky and Lepper, comprised the second part of the survey.<sup>4</sup> The scale was developed based on a subjectivist approach to happiness and was employed to assess the subjective happiness of individuals from different age groups in various countries (i.e. USA and Russia). Two items in the scale examine individuals' 'characterisation of themselves based on absolute ratings and ratings relative to their peers'. The remaining items identify whether the respondent is happy or unhappy and determine the extent to which the characterisations describe the respondent. A seven-point Likert scale is used for the responses. Item four must be reverse-coded before the scale score can be calculated. The mean score of the four items is calculated to obtain a single composite score of global subjective happiness. High scores indicate high levels of happiness. The tool's Cronbach's alphas were from 0.79 to 0.94, and its stability reliability was 0.72. Strong correlations were also observed between the scale and other happiness measures ( $r = 0.52-0.72$ ), thereby implying satisfactory convergent validity.<sup>4</sup> Permission to use the scale was given by Lyubomirsky (personal communication, March 18, 2019).

The SHS was translated into Arabic using the forward-backward translation method. Two separate translations from English to Arabic were performed by two bilingual social science Saudi professionals. A third translator synthesised the two translations to create a single translation.

Two translators separately translated the Arabic version back to English. The Arabic and back-translated versions were checked by a group of ten social and health sciences experts. The panel judged the content validity of the Arabic version employing a four-point Likert scale from 'not relevant' to 'highly relevant'.<sup>16</sup>

### *Data collection and ethical considerations*

The University of Hail Ethics Committee (H-2020-022) provided approval of the main study's protocol before this study commenced. The online survey link was forwarded to potential respondents via social media. The link was also posted to social media platforms typically used by the targeted respondents. Part 1 of the online survey covered information regarding the study and an electronic informed consent form. This part clarified the study's purpose and importance, the rights of the participants, the potential risks involved, and the voluntary nature of participation. The potential respondents were instructed to click 'yes' to signify their willingness to be involved in the study. The respondents were then instructed to click 'next' to access the survey. Responses were recorded automatically and stored in a password-protected computer. Confidentiality and privacy were ensured throughout the study period. Data collection for the first set of samples was performed in June 2020, and data collection for the second set of samples was conducted in August 2020.

### *Statistical analysis*

SPSS version 22.0 and AMOS version 23.0 were used to analyse the data to achieve the study's objectives. Descriptive analyses of the demographic and work variables were performed using frequency count, percentage, mean, and standard deviation (SD). The I-CVIs and S-CVI/Ave were estimated and interpreted as acceptable if they were at least 0.78 and 0.90, respectively.<sup>16</sup> The item means and item-total correlations (ITC) were estimated. Items with ITCs between 0.30 and 0.80 were retained. The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were performed to determine sample adequacy ( $\geq 0.60$ ) and whether the factor model was appropriate, respectively. PCA was conducted with the varimax rotation, and a factor with an eigenvalue more than 1 and a factor load more than 0.40 was extracted.<sup>17</sup> The known theoretical structure of the original SHS (single-factor scale) was also considered in deciding the factor to be extracted.<sup>4</sup> For the CFA, the root mean square error of approximation (RMSEA; acceptable values  $< .06$  to  $.08$ ), normed fit index (NFI; acceptable value  $\geq 0.95$ ), comparative fit index (CFI; acceptable value  $\geq 0.95$ ), Tucker-Lewis index (TLI; acceptable value  $\geq 0.95$ ), goodness-of-fit index (GFI; acceptable value  $\geq 0.95$ ), adjusted GFI (AGFI; acceptable value  $\geq 0.95$ ), and the model's chi-square were estimated.<sup>18</sup> Moreover, we supported the construct validity of the SHS-A using hypothesis testing. It is evident in the literature that some socio-demographic variables affect the perception of happiness.<sup>19</sup> Hence, multiple linear regression was performed to examine the influence of the respondents' sociodemographic variables on their subjective happiness. Cronbach's alpha was computed for

reliability, with an alpha  $\geq 0.70$  demonstrating acceptable reliability.<sup>20</sup>

**Results**

*Demographics and work-related profile of the respondents*

The demographic and work variables of the respondents in the two data gathering periods are presented in Table 1. The average age of the participants in the first and second data collection periods was 36.73 years (SD = 7.11 years) and 34.38 years (SD = 7.22 years), respectively. In both data collection periods, most of the respondents were married, university/college graduates, in a nuclear family, government employees, and occupying staff positions. The average length of working experience for phases 1 and 2

was 12.11 years (SD = 7.77 years) and 7.88 years (SD = 6.32 years), respectively. With regard to number of work hours per week, respondents who worked 8–24 hours per week comprised the highest proportion (46.7%), whereas the majority of the respondents in phase 2 worked 25–48 hours per week (55.3%). The majority of phase 1 respondents had a monthly salary of SAR 10,000–14,999, whereas nearly equal proportions of the respondents in phase 2 received SAR 5000–9999 (34.7%) and SAR 10,000–14,999 (36.7%) monthly.

*Validity of the SHS-A*

The CVI evaluation revealed I-CVIs ranging from 0.80 to 1.00 and an S-CVI/Ave of 0.90. The corrected ITC coefficients were from 0.52 to 0.71. The computed KMO value was 0.772, and Bartlett’s test of sphericity was significant ( $\chi^2[6] = 232.97, p < .001$ ) demonstrating the fitness of the data for factor analyses. The PCA revealed one factor with an eigenvalue of 2.64. The single factor explained approximately 66.0% of the variance of the model, with the following factor loadings: item 1 = 0.854, item 2 = 0.860, item 3 = 0.831, and item 4 = 0.695 (Table 2). These results signified excellent construct validity of the SHS-A and supported a single-factor measure of subjective happiness of Saudi working women.

Moreover, CFA (Figure 1) revealed the following findings: NFI = 0.982, CFI = 0.990, TLI = 0.971, GFI = 0.986, AGFI = 0.929, and RMSEA = 0.086. The  $\chi^2/df$  value was 2.09 ( $\chi^2 = 4.189, p = .123$ ).

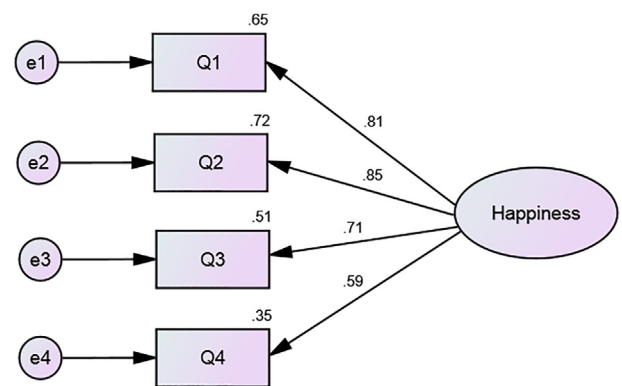
**Table 1: Socio-demographic variables of the respondents.**

| Variable                    | Phase 1 (n = 150) |      | Phase 2 (n = 150) |      |
|-----------------------------|-------------------|------|-------------------|------|
|                             | n                 | %    | n                 | %    |
| Age (Mean $\pm$ SD)         | 36.73 $\pm$ 7.11  |      | 34.38 $\pm$ 7.22  |      |
| Marital status              |                   |      |                   |      |
| Single                      | 28                | 18.7 | 46                | 30.7 |
| Married                     | 112               | 74.7 | 94                | 62.7 |
| Divorced/<br>Widowed        | 10                | 6.7  | 10                | 6.7  |
| Education                   |                   |      |                   |      |
| High school or below        | 12                | 8.0  | 18                | 12.0 |
| University/<br>College      | 122               | 81.3 | 94                | 62.7 |
| Graduate program            | 16                | 10.7 | 38                | 25.3 |
| Type of family              |                   |      |                   |      |
| Nuclear family              | 112               | 74.7 | 101               | 67.3 |
| Extended family             | 38                | 25.3 | 49                | 32.7 |
| Type of employment          |                   |      |                   |      |
| Private                     | 10                | 6.7  | 39                | 26.0 |
| Public                      | 140               | 93.3 | 111               | 74.0 |
| Position                    |                   |      |                   |      |
| Staff position              | 135               | 90.0 | 127               | 84.7 |
| Managerial position         | 15                | 10.0 | 23                | 15.3 |
| Work experience (years)     | 12.11 $\pm$ 7.77  |      | 7.88 $\pm$ 6.32   |      |
| Working hours per week      |                   |      |                   |      |
| 8–24 hours                  | 70                | 46.7 | 50                | 33.3 |
| 25–48 hours                 | 62                | 41.3 | 83                | 55.3 |
| > 48 hours                  | 18                | 12.0 | 17                | 11.3 |
| Monthly salary <sup>a</sup> |                   |      |                   |      |
| < 5000 SAR                  | 11                | 7.3  | 26                | 17.3 |
| 5000 to 9999 SAR            | 34                | 22.7 | 52                | 34.7 |
| 10,000 to 14,999 SAR        | 84                | 56.0 | 55                | 36.7 |
| 15,000 to 20,000 SAR        | 21                | 14.0 | 17                | 11.3 |

<sup>a</sup> 1 USD = 3.75 SAR.

**Table 2: Item mean, standard deviation, item–total correlations, alpha if item is deleted, and factor loadings (n = 150).**

| Item                   | Mean | SD   | ITC  | Factor loading |
|------------------------|------|------|------|----------------|
| Q2                     | 5.29 | 1.45 | 0.71 | 0.860          |
| Q1                     | 5.36 | 1.48 | 0.70 | 0.854          |
| Q3                     | 4.94 | 1.52 | 0.68 | 0.831          |
| Q4                     | 4.54 | 1.51 | 0.52 | 0.695          |
| Total mean             | 5.03 | 1.21 |      |                |
| Eigenvalue             |      |      |      | 2.64           |
| Variance explained (%) |      |      |      | 66.04%         |



**Figure 1: Confirmatory factor analysis model for the Subjective Happiness Scale Arabic version.**

**Table 3: Results of multiple linear regression analysis examining the influence of socio-demographic variables on subjective happiness (n = 300).**

| Predictor variables                            | $\beta$ | SE-b | Beta  | t     | p        | 95% CI |       |
|--|---------|------|-------|-------|----------|--------|-------|
|  |         |      |       |       |          | Lower  | Upper |
| Age  | 0.02    | 0.01 | 0.10  | 1.13  | .261     | -0.01  | 0.04  |
| Marital status (Reference: Married)            |         |      |       |       |          |        |       |
| Single   | 0.14    | 0.19 | 0.05  | 0.76  | .451     | -0.23  | 0.51  |
| Divorced/Widowed                               | 0.17    | 0.26 | 0.04  | 0.66  | .507     | -0.34  | 0.69  |
| Education (Reference: University/College)      |         |      |       |       |          |        |       |
| High school or below                           | -0.28   | 0.24 | -0.07 | -1.19 | .236     | -0.75  | 0.19  |
| Graduate program                               | -0.09   | 0.18 | -0.03 | -0.52 | .603     | -0.45  | 0.26  |
| Type of Family                                 | -0.14   | 0.15 | -0.05 | -0.94 | .348     | -0.44  | 0.16  |
| Type of employment                             | -0.11   | 0.23 | -0.03 | -0.46 | .647     | -0.56  | 0.35  |
| Position                                       | 0.68    | 0.20 | 0.19  | 3.42  | .001**   | 0.29   | 1.08  |
| Work experience (years)                        | 0.01    | 0.01 | 0.09  | 1.00  | .316     | -0.01  | 0.04  |
| Working hours per week (Reference: > 48 hours) |         |      |       |       |          |        |       |
| 8–24 hours                                     | 1.19    | 0.21 | 0.48  | 5.60  | <.001*** | 0.77   | 1.61  |
| 25–48 hours                                    | 0.68    | 0.21 | 0.28  | 3.26  | .001**   | 0.27   | 1.10  |
| Monthly salary (Reference: < 5000 SAR)         |         |      |       |       |          |        |       |
| 5000 to 9999 SAR                               | 0.58    | 0.26 | 0.22  | 2.18  | .030*    | 0.06   | 1.10  |
| 10,000 to 14,999 SAR                           | 0.81    | 0.28 | 0.33  | 2.90  | .004**   | 0.26   | 1.35  |
| 15,000 to 20,000 SAR                           | 0.71    | 0.33 | 0.20  | 2.12  | .035*    | 0.05   | 1.37  |

Note. The dependent variable was the overall mean of the Subjective Happiness Scale Arabic version.  $\beta$  is the unstandardised coefficients; SE-b is the Standard error.

$R^2 = 0.233$ , Adjusted  $R^2 = 0.195$ .

\*Significant at 0.05, \*\*Significant at .01, \*\*\*Significant at .001.

To further support the construct validity, we tested the hypothesis that some socio-demographic variables affect the perception of happiness using multiple regression. For the combined sample ( $n = 300$ ), the highest mean was reported in item 1 ( $M = 5.36$ ,  $SD = 1.48$ ), followed by items 2 ( $M = 5.29$ ,  $SD = 1.45$ ), 3 ( $M = 4.94$ ,  $SD = 1.52$ ), and 4 ( $M = 4.54$ ,  $SD = 1.51$ ). An overall average of 5.03 ( $SD = 1.21$ ) was recorded in the SHS-A. The regression model was significant ( $F[14, 285] = 6.18$ ,  $p < .001$ ) and explained 19.5% of Saudi working women's subjective happiness. Employment position, working hours, and monthly salary were significant factors that influenced the subjective happiness of the Saudi working women. Specifically, Saudi women occupying managerial positions reported higher levels of subjective happiness than those with staff positions ( $\beta = 0.68$ ,  $p = .001$ , 95% CI = 0.29, 1.08). Moreover, the women who worked 8–24 hours ( $\beta = 1.19$ ,  $p < .001$ , 95% CI = 0.77, 1.61) and 25–48 hours ( $\beta = 0.68$ ,  $p = .001$ , 95% CI = 0.27, 1.10) per week reported significantly higher scores in the SHS-A than those who worked more than 48 hours per week. The Saudi women who received a monthly salary of SAR 5000–9999 ( $\beta = 0.58$ ,  $p = .030$ , 95% CI = 0.06, 1.10), SAR 10,000–14,999 ( $\beta = 0.81$ ,  $p = .004$ , 95% CI = 0.26, 1.35), and SAR 15,000–20,000 ( $\beta = 0.71$ ,  $p = .035$ , 95% CI = 0.05, 1.37) reported significantly higher scores in the SHS-A than those with a monthly salary below SAR 5000 (Table 3).

#### Reliability of the SHS-A

The Cronbach's  $\alpha$  of the 4 items of the SHS-A in the first and second samples was 0.824 and 0.830, respectively, thereby indicating acceptable internal consistency reliability.

#### Discussion

We tested the validity and reliability of the linguistically adapted SHS-A for measuring the subjective happiness of Saudi working women. The SHS-A demonstrated acceptable reliability and validity in our study and was deemed appropriate for measuring the 'subjective happiness' construct among Saudi women who were employed. The reliability test of the scale in the two data collection periods yielded Cronbach's alpha values greater than the cut-off value of 0.70, thereby indicating coherency and agreement between the four items of the SHS-A.<sup>20</sup> Earlier investigations reported acceptable reliability of the SHS when translated into different languages such as Chinese,<sup>14</sup> Hungarian,<sup>12</sup> Portuguese,<sup>13</sup> and Brazilian.<sup>21</sup> Our findings complement those of the existing literature supporting the SHS's reliability as a brief measure of subjective happiness.

The test for content validity reflected I-CVIs and an S-CVI/Ave that were more than the acceptable lower limit. Polit and Beck suggested that when a panel consisting of 6–10 experts examines the content validity of the tool, I-CVIs of not less than 0.78 and an S-CVI/Ave of at least 0.90 imply excellent content validity.<sup>16</sup> The indices reported in our study surpassed these recommended lower limits, thereby demonstrating excellent content validity. This finding indicated that the items were a good fit for the scale and underwent strong construct conceptualisation. However, this finding is not surprising, considering that the development of the scale items was based on a subjectivist approach for measuring happiness, meaning that the items intend to measure happiness from the perspective of the respondent.<sup>4</sup> Nonetheless, our findings provided evidence that the content of the scale was appropriate for

representing the subjective happiness of Saudi working women.

The PCA supported a single component of the SHS-A, with a variance of more than 50.0% of the subjective happiness of the sampled Saudi working women explained. The values of the loadings of the four items in the single factor were relatively high, thereby indicating that the variance in the Saudi working women's subjective happiness was heavily accounted for by the four items.<sup>22</sup> These findings signified the excellent construct validity of the SHS-A and that a single-factor measure of subjective happiness among Saudi working women was supported.<sup>23</sup> The result of the PCA was confirmed by the results of the CFA, which indicated the acceptable fit of the SHS-A's one-factor solution. Most of the indices reported in the CFA were above the acceptable values, thereby indicating that the model had good fit. However, the AGFI value was slightly lower than the acceptable value ( $\geq .95$ ). According to Schreiber et al., the AGFI often performs poorly in simulation studies, which could explain our finding.<sup>18</sup> Nonetheless, the overall model fit of the SHS-A was supported by the model chi-square ( $p > .05$ ) and acceptable levels of the NFI, CFI, TLI, GFI, and RMSEA. The single-factor solution of the SHS-A accords with other versions of the scale reported in previous studies.<sup>11,12,14</sup> Thus, our findings supported the acceptable construct validity of the SHS-A when used for measuring the subjective happiness of Saudi working women.

The regression analysis identified current employment position, working hours, and monthly salary as the factors influencing Saudi working women's subjective happiness. This finding provided evidence that socio-demographic variables influenced the respondents' perception of happiness; thus, strengthening the construct validity of the SHS-A. The findings revealed that a high monthly salary was associated with high levels of subjective happiness. Improved economic position was reported in previous studies as a factor associated with high levels of happiness. For instance, a study of Chinese women reported a strong positive relationship between their happiness and adequate savings.<sup>24</sup> Another study concluded that having a high income enhances an individual's happiness through increased access to fundamental human needs and wants, thereby improving the availability of social support and providing avenues to access recreational activities.<sup>25</sup> Moreover, a high socioeconomic status could create a high sense of self-oriented satisfaction and pride and other amusements.<sup>26</sup> Our finding aligns with the 'enhancement hypothesis', which posits that having a high income can lead to enhanced economic, social, and symbolic resources for women, which can eventually enhance their wellbeing.<sup>27</sup> This hypothesis could also explain the high level of subjective happiness of the Saudi working women occupying high positions reported in our findings. Holding a managerial position may give women a sense of power, control, and fulfilment, which could lead to improved life satisfaction and happiness. Moreover, having a managerial position can empower women and improve their self-confidence, self-esteem, and self-efficacy, which could lead to a happier life. A high salary and leadership role in the workplace can open valuable opportunities to women and boost their economic empowerment, which may eventually lead to greater happiness.<sup>26</sup>

Furthermore, our findings showed that shorter working hours per week was associated with a happier life than longer working hours per week. A similar result was reported in a US study, in which happiness was perceived to be low by individuals working slightly longer than the standard 40 hours per week.<sup>28</sup> Evidence supported the detrimental effect of long working hours per week on an individual's health and wellbeing. For example, research reported that individuals working long hours tend to be 29.0% more at risk of experiencing a stroke, and individuals working long hours for the past 10 year are 45% more at risk of experiencing a stroke.<sup>29</sup> Although inconclusive, the 2019 World Happiness Report observed that the top five happiest countries had 100 fewer hours than the Organisation for Economic Cooperation and Development (OECD) average. Similarly, the bottom five countries in the list had more working hours than the OECD average.<sup>30</sup> This finding can be explained partly by the bad effects of long working hours on employees' mental health, such as high levels of stress, depression, and suicidal intentions, as reported in a Korean study.<sup>31</sup> These explanations could also be applicable to our findings.

Various limitations exist in our study and should be considered when interpreting the findings. Although the construct validity of the SHS-A was supported by the PCA and CFA, other construct validity tests (i.e. convergent validity and discriminant validity), were not employed. In addition, reliability was only supported by the Cronbach's alpha for internal consistency. Thus, future investigations should examine the stability of the tool over time by conducting a test-retest reliability test. While the sample size was adequate for PCA and CFA based on a 1-item to 10-sample ratio, future studies should consider using a larger sample size, especially for CFA, as some of the fit indices are sample sensitive. Another limitation of the study is the sampling technique, which limited the generalisability of the results.

## Conclusion

This study concludes that the SHS-A has acceptable validity and reliability and is capable of providing a reliable and valid measurement of the subjective happiness of Saudi working women. The SHS-A has been proven to possess good internal consistency and excellent validity when used among Saudi working women. Having a high monthly income and occupying a managerial position positively influence Saudi working women's subjective happiness, whereas long work hours per week is associated with low subjective happiness.

## Recommendations

Our study provides valuable input concerning women's happiness, especially during a period of great transformation in KSA regarding gender equality. The evidence supporting the validity and reliability of the SHS-A reported in this study can open significant avenues and opportunities in various sectors to advance women's agenda for economic and societal progress. The SHS-A can be used for research, education, assessment, policymaking, and interventions and/or policy evaluations related to women's happiness, wellbeing, and empowerment in KSA and the Arab world.

Fundamentally, studies on women's subjective happiness can be conducted with this tool, which can subsequently inform policies and interventions ensuring women's happiness and life satisfaction. This study can also open opportunities for cross-cultural studies on women's subjective happiness. Moreover, the SHS-A can be employed as an assessment tool for the subjective happiness of Saudi working women, which can become the basis for planning and implementing workplace policies and interventions enhancing happiness at work. Accurate evaluations of policies and interventions to support women's happiness, wellbeing, satisfaction, and empowerment can also be achieved by the SHS-A. Specifically, in KSA, the SHS-A can be a powerful and useful tool to ensure the current transformations concerning gender equality and women's empowerment, the proper implementation of Vision 2030, and that its results are truly reflective of the current situation of women in the country.

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### Conflict of interest

The authors have no conflicts of interest to declare.

### Ethical approval

This study was approved by the Research Ethics Committee of the University of Hail on February 22, 2020, with reference number H-2020-022.

### Consent

Informed consent was obtained from the participants to signify their understanding regarding the study and their voluntary participation in the survey.

### Authors' contribution

All authors were involved in the conception and design of the study. NA and JPC collected, organised, analysed, and interpreted the data and wrote initial draft of article. All authors were involved in writing the final draft of the article, have critically reviewed and approved the final draft, and are responsible for the content and similarity index of the manuscript.

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