

Validation of the Arabic Version of the Social Networking Time Use Scale (SONTUS) in Saudi Context

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Abstract

The objective of this study was to examine the psychometric properties (i.e., construct validity; internal consistency reliability) of the Arabic version of the Social Networking Time Use Scale (SONTUS) among Saudi undergraduate students (N = 508). Results of study showed that the Arabic version of the SONTUS contained three subscales and overall had good psychometric properties. These results suggest that the SONTUS can be used to measure the frequency of time spent using SNSs among Saudi students. University faculty and administrators in Saudi Arabia as well as in the Arabic world can benefit from understanding students use of SNS.

Keywords: *Undergraduate Students, Online Learning, Social Study, Factor Analysis, Psychometric Properties.*

1. Introduction

One of the most prominent revolutions of the last century is the Internet and its ability to connect people from all over the globe instantly. In doing so, the Internet has paved the way for all societies to converge and become acquainted with each other. The Internet has also produced a dramatic leap in social relations and interactions among individuals across borders, societies, and cultures. To facilitate such communication, social-networking sites (SNSs), or social media, arose and have become what some might describe as an indispensable part of everyday life for millions of people. SNSs have played a dramatic role in changing the world by creating a small cosmopolitan village that is amazingly and rapidly connected. SNSs are online platforms for virtual communities that allow people to socialize with diverse individuals and groups, construct profiles, search for people with similar interests, and

interact and communicate with their contacts (boyd & Ellison, 2007). Davis, Deil-Amen, Rios-Aguilar, and Gonzolez Canche (2012) offer a more comprehensive definition for SNSs, describing them as “web-based and mobile applications that allow individuals and organizations to create, engage, and share new user-generated or existing content, in digital environments through multi-way communication” (p. 1). From both definitions, it is clear that SNSs include all social media and computer-mediated communication applications, such as Twitter, Facebook, Snapchat, LinkedIn, and Instagram.

The use of SNSs has filtered into and gained a stronghold in the Arab region, especially Saudi Arabia (SA), which presents itself as the most religious (i.e., Islamic) country in the region and is known for having a tremendous influence on many aspects of people’s lives and activities. Of the country’s population, young Saudi people have become ardent users of SNSs. Researchers have found that of all SNS users around the world, a very high percentage of them are young adult Saudis (Blogger, 2018; Geronimo, 2018). It is a mixed group, with students at all levels of education. Such pervasive use of SNSs among the student population in SA has prompted many of the country’s institutions of higher education to adapt to the use of social media in learning environments. Some studies have shown that both students and faculty members in SA have started to incorporate the use of many SNSs into their academic lives to reap the benefits these sites bring to education (Alabdulkareem, 2014; Alghamdi & Plunkett, 2018; Alim, 2017; Alqahtani, 2016; Alqahtani, Issa, Issa, & Isaias, 2017; Stanger, Alnaghaimshi, & Pearson, 2017). Other studies have shown that many Saudi students have a positive attitude toward the use of SNSs in educational

environments and that they believe their use has helped them to improve their performance in many ways (Al-Anzi, 2013; Al-Zahrani, 2013; Aifan, 2015; Alqahtani, 2016; Alghamdi & Plunkett, 2018).

2. Objectives/Purposes

This study examined the psychometric properties of the Arabic version of the Social Networking Time Use Scale (SONTUS) among university students in Saudi Arabia. The cross-validation technique (i.e., Exploratory Factor Analysis [EFA] and Confirmatory Factor Analysis [CFA]) was used to evaluate the psychometric properties of the Arabic version of the SONTUS as well as the Internal Consistency Reliability. The main research questions included: RQ1: What is the factor structure of the Arabic version of the SONTUS? RQ2: What are the psychometric properties of the Arabic version of the SONTUS?

Demographic data and responses to the items on the SONTUS were collected from undergraduate students at Umm Al-Qura university (UQU) in SA. Students were asked to indicate how often they used SNS in specific places and situations. Examining the psychometric properties of the Arabic version of the SONTUS can produce a reliable and valid Arabic scale in measuring frequency of SNS where few exist. Results may provide useful information to different groups in higher education, such as, faculty members, administrators, students, and other researchers in understanding the use of SNS among university students.

3. Methods

3.1. Participants and Procedure

After IRB approval, a link to the scale on Qualtrics was sent to undergraduate students at UQU. The online survey was sent to undergraduate students during the 2019 academic year spring and summer semesters. The link included text that explained the purpose of the study and the voluntary, anonymous nature of the responses, the Arabic version of the SONTUS, and demographic questions. Data from 508 Saudi undergraduate students at UQU

were collected through an administration of the Arabic version of the SONTUS.

3.2. Data Sources/Evidence

The Social Networking Time Use Scale (SONTUS) was developed by Olufadi in 2015 to measure time spent on SNSs by users in Nigeria. The SONTUS was translated into Arabic. The Arabic version of the SONTUS contained 29 items to measure time spent on the use of SNSs by students. The item response format was a 5-point Likert scale ranging from 1 (Never) to 5 (Always). Higher scores indicated more time spent using SNSs. In addition, the Arabic version of the SONTUS included some demographic information, such as gender, age, years of study, college.

3.3. Data Analysis

In this study, a split-sample cross-validation technique was used to analyze the data. This technique involves dividing the sample into two almost identical subsets in preparation for the next step in the data analysis process. The next step is to perform Exploratory Factor Analysis (EFA) with the first dataset and Confirmatory Factor Analysis (CFA) with the second dataset (Cudeck & Browne, 1983). In addition, Internal Consistency Reliability was calculated using Cronbach's (Coefficient) Alpha for each factor in the Arabic version of the SONTUS. The whole study data ($N = 508$) was randomly divided into two datasets: EFA ($n = 296$) and CFA ($n = 212$). SPSS version 25.0 was used for the EFA, and LISREL 9.2 Edition was used for the CFA.

4. Results

4.1. Demographic, Item Descriptive Statistics/Correlations and assumptions

The EFA sample consisted of 296 students, 165 students (55.7%) were male, while 131 students (44.3%) were female (see Table 1). The CFA sample consisted of 212 students (i.e., roughly 40% of the total original sample). One-hundred eight (50.9%) students were male and 104 (49.1%) students were female (see Table 1). The descriptive statistics for the SONTUS items

and their correlations were evaluated before running the EFA and CFA. Inter-item correlations were used to determine the relationships between each item and the other items in the measure. Before conducting factor analysis, the following assumptions were checked: (1) Outliers, (2) Normality, (3) Sample Size, (4) Outliers and (5) Factorability. The results from the evaluation of assumptions indicated that running factor analysis would be appropriate.

Table 1. Demographic Information for the Study Participants (N = 508)

| Variable | n | % |
|----------------|-----|------|
| Gender | | |
| Male | 165 | 55.7 |
| Female | 131 | 44.3 |
| Age | | |
| 18-20 | 90 | 30.4 |
| 21-23 | 155 | 52.4 |
| 24 + | 51 | 17.2 |
| Marital Status | | |
| Never Married | 212 | 71.6 |
| Married | 84 | 28.4 |

Note. EFA = Exploratory Factor Analysis; CFA = Confirmatory Factor Analysis.

4.2. RQ1: Exploratory Factor Analysis (EFA)

The Kaiser-Meyer-Olkin (KMO) value and Bartlett’s Test of Sphericity were examined. The KMO for the SONTUS items was .810, which is considered a meritorious value based on Kaiser’s (1974) suggested descriptive terms. Bartlett’s Test of Sphericity was significant ($\chi^2 [406] = 1963.36, p < .01$), verifying that the SONTUS correlation matrix was not an identity matrix. An EFA using Principal Axis Factoring (PAF) and Oblique (Promax) rotation was conducted on the SONTUS items to explore potential underlying factors.

Multiple EFAs were conducted. The first analysis was performed to determine the number of factors to extract, while subsequent analyses were conducted with three extracted factors (i.e., Based on the examination of the Scree Plot and Kaiser’s rule [i.e., eigenvalues greater than 1]). The results of the

second iteration showed that 12 of the 29 items were considered problematic and were removed. Based on the Five criteria proposed by Thurstone (1947) and the factor loading of .40 and above, the remaining 17 items loaded sufficiently onto three factors. All items had a loading of .40 or greater, and the three factors explained 43.79% of the variance. After inspection of the items that loaded on each factor, they were labeled based on the content of the items within each factor (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Factor 1 had seven items (i.e., Items S10, S12, S15, S16, S21, S23 and S26) related to the use of SNSs in an academic setting and in public places, therefore this factor was labeled “Use in Academic and Public Places.” Factor 2 had five items (i.e., Items S14, S18, S24, S27, and S29) related to the use of SNSs for stress relief so this factor was named “Use in Stress Relief.” Lastly, there were five items on Factor 3 (i.e., Items S1, S3, S5, S7, and S9) and all these items pertained to the use of SNSs during free time, so this factor was labeled “Use in Free Time.”

Table 2: Final Exploratory Factor Analysis (EFA) Factor Loadings for the Social Networking Time Use Scale (SONTUS; N = 17)

| Item | Factor | | |
|--|--------|------|---|
| | 1 | 2 | 3 |
| S16. When you are in a meeting. | .649 | | |
| S12. When you are in the class receiving lecture. | .617 | | |
| S15. When you are watching academic-related video lectures or those related to your job. | .548 | | |
| S26. When you go to the cinema house to watch movie(s). | .517 | | |
| S10. When you are reading in the library for academic purposes (e.g., the recommended text for class). | .462 | | |
| S23. When you are at a seminar/workshop or training program. | .410 | | |
| S21. When you are doing school or job-related assignment at home. | .401 | | |
| S29. When you need to reduce your emotional stress. | | .657 | |
| S14. When you need to reduce your mental stress. | | .589 | |

| Item | Factor | | |
|--|--------|------|------|
| | 1 | 2 | 3 |
| S24. When you want to reduce the pressure of your daily routines. | | .588 | |
| S27. When you are trying to forget your financial challenges. | | .549 | |
| S18. When you have gone through a lot of stress. | | .540 | |
| S9. When you are in bed about to sleep. | | | .615 |
| S3. When you are at a place to repair your car, house appliances, etc. | | | .567 |
| S1. When you are listening to music, radio, religious lectures etc. | | | .458 |
| S5. When you are waiting for someone (e.g., friends) either in their house or at a pre-arranged place. | | | .455 |
| S7. When you are a passenger in a car/bus/train for at least two minutes. | | | .424 |

Coefficient (Cronbach's) Alpha (α) was used to measure internal consistency reliability for each factor (Cronbach, 1951). The reliability for each factor in the Arabic version of the SONTUS was calculated. The three factors (i.e., Factor 1: Use in Academic and Public Places; Factor 2: Use in Stress Relief; and Factor 3: Use in Free Time) had acceptable values for reliability (i.e., .76, .74, and .64, respectively).

4.3. RQ2: Confirmatory Factor Analysis (CFA).

To confirm the model generated from EFA results (i.e., the three-factor structure), CFA was conducted with the second dataset ($N = 212$). Multiple CFAs were performed. The results from the initial CFA model also showed that all paths (i.e., standardized loadings) between each item and the corresponding factor were significant ($p < .05$ for all). The values of the fit indices, however, indicated that the model did not fit the data. The Chi-square test was significant ($\chi^2 = 210.275$, $df = 116$, $p < .001$). The Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Residual (SRMR) were both .061. The values of the Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI) were .89 and .86, respectively (See Table 3). Based on the recommended values for the fit indices (Schumacker & Lomax, 2016), the initial CFA produced a poorly fitting model. The initial model, therefore, was modified (See Figure 1).

To modify the model, changes were made that included freeing error covariances between several items (Item S10 and Item S23 & Item S18 and Item S29). Further investigation of these Items showed that Items S10 and S23 as well as Items S18 and S29 are conceptually correlated to each other and loading on the same latent variable. These modifications helped to improve the fit indices for the final model with the final model showing acceptable overall model fit ($\chi^2 = 147.499$, $df = 114$, $p < .001$; RMSEA = .03; SRMR = .05; GFI = .92; AGFI = .90; (See Table 3).

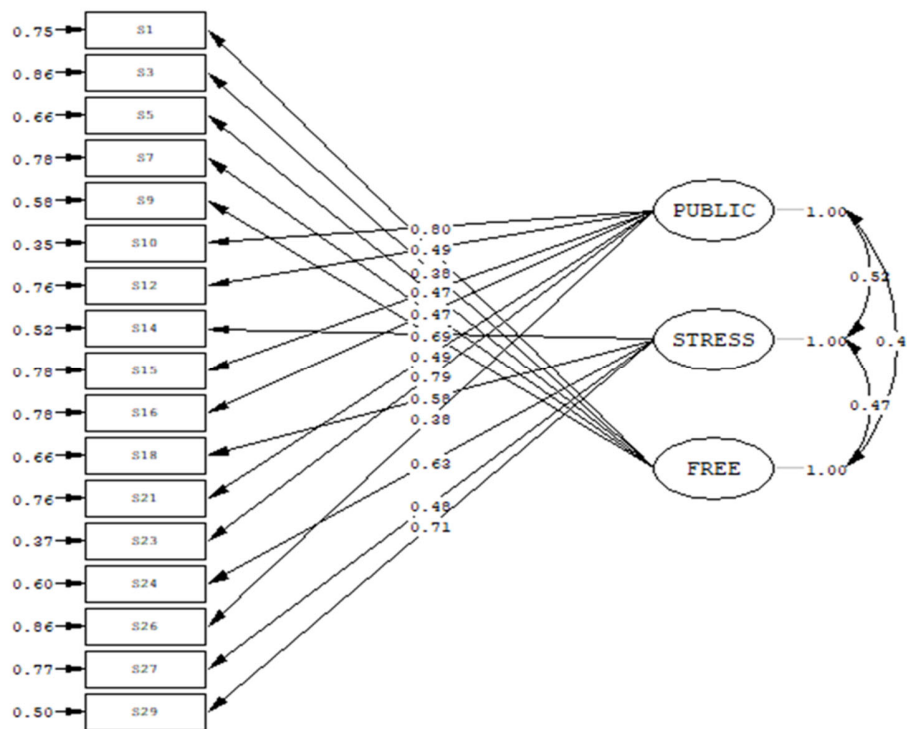


Figure 1. The final Confirmatory Factor Analysis (CFA) model for the 17-item Social Networking Time Use Scale (SONTUS).

Table 3: Fit Indices for the Four CFA Models

| Indexes | Acceptable fit value | Initial model | Second model | Final model |
|----------|-----------------------------------|---------------|--------------|-------------|
| χ^2 | $p > .001$ | $p < .001$ | $p < .001$ | $p < .001$ |
| RMSEA | $< .05$ | .06 | .04 | .03 |
| SRMR | $< .05$ to $.08$ | .06 | .05 | .05 |
| GFI | $\geq .95$ or at least $\geq .90$ | .89 | .92 | .92 |
| AGFI | $\geq .95$ or at least $\geq .90$ | .86 | .89 | .90 |

Note. RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Residual; GFI = Goodness of Fit; AGFI = Adjusted Goodness of Fit Index.

5. Discussion

The goal of this study was to evaluate the psychometric properties of the Arabic version of an existing English-language SNS use scale (i.e., the Social Networking Time Use Scale, or SONTUS) in a sample of undergraduate students at Umm Al-Qura University (UQU) in SA. All 29 items on the English version of the SONTUS were used in the Arabic version of the SONTUS and the scale covered many of the activities and occasions for which students were likely to use SNSs. EFA was conducted to determine the psychometric properties of the 29 items on the SONTUS. The results showed that 17 items loaded onto three different factors: (1) Use in Academic and Public Places, (2) Use in Stress Relief, and (3) Use in Free Time. The results of the CFA confirmed these three factors.

In summary, the results from the current study showed that the Arabic version of the SONTUS consisted of 17 items and that these items

are valid and reliable measures of how much time students spend on SNSs in three different contexts. The higher subscale scores from the students indicated that undergraduate students in SA use SNSs frequently. This version of the SONTUS, therefore, can be considered one of the few Arabic-language scales with good psychometric evidence that can accurately measure the amount of time undergraduate students spend on SNSs.

6. Educational Significance/Scientific Importance

The results from the current study showed that the Arabic version of the SONTUS consisted of 17 items and that these items are valid and reliable measures of how much time students spend on SNSs in three different contexts. The higher subscale scores from the students indicated that undergraduate students in SA use SNSs frequently. This version of the SONTUS, therefore, can be considered one of the few Arabic-language scales with good psychometric evidence that can accurately measure the amount of time undergraduate students spend on SNSs.

The conflicting views about the benefits of SNSs and whether using such sites should be restricted for young people in SA creates a need to clarify exactly how these sites are used in the university student population. The current study, therefore, developed a standardized Arabic scale to measure the amount of time that students spend on SNSs and their attitudes toward such sites. The resulting measures from this study can provide a clear and complete picture of students' behaviors and attitudes towards the quantity and quality of their SNS use in various contexts. The findings in the study can also provide leaders at Saudi institutions with guidance as they review and modify their policies on the use of SNSs for educational purposes. University educators, administrators, and students will benefit from this study not only in SA, but in other countries in the Arabic world, as it provides reliable and valid measures in the Arabic language to measure different aspects of SNS use.

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