



Social networking time use scale (SONTUS): A new instrument for measuring the time spent on the social networking sites



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ABSTRACT

One of the key issues plaguing the existing studies on the use of the social networking sites (SNSs) is the lack of a uniform index for measuring the time spent on the sites. The present investigation tries to fill this gap by conceptualizing, developing, and validating a new construct, which we referred to as social networking time use scale (SONTUS). To achieve this, two separate studies were conducted. The data for the first study was collected from 2049 individuals through quota sampling approach. Meanwhile, in this first study, we used exploratory factor analysis to identify the dimension of the SONTUS construct. Findings from this study reveal that SONTUS has five factors with good measurement properties. The main aim of the second study (where we utilized data from 1808 people) is to carry out a confirmatory factor analysis (CFA) and tests three hypothesized models. In addition, it aims to investigate the construct validity of SONTUS; and to achieve this, we used 10 personality and well-being measures, and two theoretically related constructs to SONTUS. The CFA results showed that SONTUS has five factor solution consisting of 29 items and that the model with 5 first-order factors with 1 second-order factor is the most suitable model for the study population. Additionally, the second study provides preliminary evidence for the convergent, predictive, and incremental validity of SONTUS. Overall, the findings from our exploratory (study 1) and confirmatory (study 2) studies shows that SONTUS can be used as a standardized instrument for measuring time spent on sites.

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1. Introduction

For more than a decade, the social networking sites (SNSs) have witnessed a sporadic increase in number and popularity. In fact, as the year passes-by, so is the popularity and number of SNS increases. This is evident in the report of Duggan et al. (2015) and studies conducted by (Ellison et al., 2007; Kuss and Griffiths, 2011; Ryan and Xenos, 2011; Panek et al., 2013; Olufadi, 2015). The SNSs has occupied a central role in the way people communicate and connect with each other; and is been used by people for several reasons (e.g., communication, entertainment, learning, social, emotional etc.). Meanwhile, many authors have described the use of SNSs as beneficial and harmful. However, most of the authors that describes its use as harmful relies on the excessive use (i.e., time committed to the use of the SNSs), which might potentially affect the individual's work (e.g., performance at work) or health (e.g., addiction); see for example, studies by Shaffer et al. (2004, Griffiths, 2005, Echeburúa and de Corral (2010). By this way, several authors (e.g., Ross et al., 2009; Ellison et al., 2011; Junco, 2012a,b) have tried to estimate the amount of time people spend on the SNSs using various methods.

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As for the time people spent on SNSs, evidence from the previous studies reveal varying results. For instance, 79% of the participants in a study conducted by [Ross et al. \(2009\)](#) reported spending between 10 and 60 min on Facebook daily. They obtained this result through categorical measure of time. In another study published in 2009, [Pempek et al. \(2009\)](#) asked students to log their daily time spent on Facebook in a diary for 1 week and found that students reported spending an average of 27.93 min per day on weekdays and 28.44 min per day on weekends. Additionally, recent studies by [Ellison et al. \(2011\)](#), [Kalpidou et al. \(2011\)](#), and [Junco \(2012a,b\)](#) show that students spent around 100 min on the SNSs per day. In a more recent study carried out by [Olufadi \(2015\)](#), the participants in the study spent a substantial amount of time on the sites ($M = 175.4$, $SD = 117.26$) per day.

While the previous studies reported above have made great progress in measuring the time spent on the SNSs, their use of different measurement methods is problematic. Indeed, this could be a possible explanation for the variations in the estimates of time spent on the SNSs (as reported earlier). We present in what follows a detailed account of some of the commonly used indices for measuring the time spent on the SNSs and their limitations.

- (a) *Categorical measures of time*: [Ellison et al. \(2007\)](#), [Pierce \(2009\)](#), [Ross et al. \(2009\)](#), [Memdouh and Taswir \(2013\)](#), [Wang et al. \(2014\)](#) and [Lien and Cao \(2014\)](#) are some of the authors that have used this measure. A very important limitation of this approach is that people sometimes give answers they feel will reflect well on them; in addition, because people like to think of themselves as normal or average, the range of answer choices provided when asking for a quantity or a frequency can affect the results. For instance, the survey question developed by [Ellison et al. \(2007\)](#) and used by several authors as a measure of time use on the sites asked the participants to respond to the following question: “on a typical day, about how much time do you spend on Facebook?” The options given are (a) no time at all, (b) less than 10 min, (c) 10–30 min, (d) more than 30 min, up to 1 h. (e) More than 1 h., up to 2 h. (f) More than 2 h, up to 3 h. (g) More than 3 h. It is highly likely we get fewer people picking 3 h or more, than if the choices offered are (a) 1 h or less, (b) 2 h, (c) 3 h, (d) 4 h, (e) 5–6 h, (f) 7 h or more. In fact, only 1.5% of the participants in a study conducted by [Valenzuela et al. \(2009\)](#) reported using the sites for more than 3 h. A possible explanation for this is that the first list of choices makes 3 h sound extreme, while the second list of choices makes it seem typical. Moreover, the alternatives listed may influence the opinion of the respondents as demonstrated above. In other words, the use of categorical choices makes it difficult to include the respondents’ correct choice and may force them into an answer that would not necessarily be a first choice. Additionally, [Junco \(2012a\)](#) reported that the use of categorical choices might reflect an a priori bias on the part of the researcher regarding how much time she believe people spent on the SNSs per day. Lastly, since categorical choices restricts respondents to select from a closed-ended options (which may not reflect and captures respondents’ perceived time of use); this may lead to more introspection about how much actual time is spent on the sites ([Junco, 2012a](#)).
- (b) *Time spent (in minutes) per day*: By this method, participants are asked “how many minutes (per day) do you spend on the sites?” A number of authors ([Ellison et al., 2007, 2011](#); [Junco, 2012a,b](#); [Kalpidou et al., 2011](#); [Kujath, 2011](#); [Pempek et al., 2009](#); [Ross et al., 2009](#); [Lubis et al., 2012](#)) have employed this method. Unfortunately, this approach may be problematic in the sense that it is difficult to account for the total amount of time spent on the sites. It is also possible that people are unable to estimate the amount of the time they spent on the sites for the day. To be specific, there is variation in the daily time spent on the SNSs; sometimes people have a lot of time, other times they hardly access their SNSs account(s). Thus, there is a need to account for this variation. Moreover, if participants are for example, returning the completed questionnaire (say, in the afternoon or evening), how do we account for the time on sites for the rest of the day (e.g., at night).
- (c) *Use of daily/weekly diary*: Many authors have employed self-reported daily and or weekly diary in order to measure participants’ time use on SNSs ([HERI, 2007](#); [Pempek et al., 2009](#); [Rideout et al., 2010](#); [Jacobsen and Forste, 2011](#); [Junco, 2012a](#); [Olufadi, 2015](#)). One drawback of this approach is how to ensure people are filling the diary at the end of each day (or any time they are required to fill it) and not that they just fill it on the last day and returned. Another obvious limitation of this measurement technique is that respondents may under or overestimate their time use on SNSs; admittedly, this limitation is not peculiar to this approach but any survey that is self-report in nature. We refer readers to [Junco \(2013\)](#) for the details of the limitations of using self-report as a measure of time use on the SNSs.
- (d) *Time spent yesterday on the sites*: For this measure, the real limitation lies in the possibility of cognitive impairment that may affect respondents’ ability to recall the time spent on the SNSs the previous day. We could not rule out this possibility. An example of authors that employ this measure in their studies is ([Junco, 2012a,b](#)).

The efforts of these authors are helpful as they provide an insight into the time use by the people on the sites, however, it is not enough to capture the dimensionality of this complex construct (i.e., time use on the sites). Several other authors have improved on the limitations highlighted above and have thus presented another view of SNS usage time. Some of these authors have focused on the use of various functionalities of these sites while others have committed their time to the use of these sites for a particular set of activities or specific applications area. For instance, to measure Facebook usage, [Joinson \(2008\)](#) used a list of 28 activities, [Pempek et al. \(2009\)](#) used a list of 25 functionalities, [Junco \(2012a\)](#) used a list of 14 activities, [Mazman and Usluel \(2010\)](#) used a list of 11 educational activities, [Xu et al. \(2012\)](#) used a list of 5 activities, and [Valenzuela et al. \(2009\)](#) used a list of 4 activities. These new approach no doubt represents a major contribution to the operational definitions of SNSs usage, this is because the users task was taken into consideration. In fact, the present study

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