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Psychometric properties of sleep quality scale and sleep variables questionnaire in Turkish student sample

İsmail Önder[a1], Ercan Masal[b], Eda Demirhan[c], Mehmet Barış Horzum[d] and Şenol Beşoluk[a]

[a]*Department of Science Education, Sakarya University, Sakarya, Turkey*
[b]*Department of Secondary Science and Mathematics Education, Sakarya University, Sakarya, Turkey*
[c]*Department of Special Education, Sakarya University, Sakarya, Turkey*
[d]*Department of Computer Education and Instructional Technologies, Sakarya University, Sakarya, Turkey*

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ABSTRACT

Sleep is a physiological need that affects physical and mental performances. However, the number of individuals who experience problems DIRECTLY OR INDIRECTLY RELATED TO sleep is increasing in VARIOUS countries. Therefore, it is important to have a short, reliable and valid measure to assess both sleep quality and sleep related variables in school-age children. This study aims to carry out the validity and reliability studies for the Sleep Quality Scale and Sleep Variables Questionnaire (SQS-SVQ) used to determine sleep quality, parental control, total sleep time, mid-point of sleep and sleep efficiency and to adapt it into Turkish. The SQS-SVQ consists of seven scale items to measure sleep quality and eight questionnaire items. The validity and reliability studies of the instrument were carried out on data acquired from 4th-8th graders. Factorial validity for SQS and criterion related validity analyses were carried out for the validity of the SQS-SVQ and correlations ranged from 0.51 to 0.73. These analysis results put forth that the scale is a valid measurement tool. Internal consistency coefficient of the SQS was 0.72 and test-retest correlations of the SQS-SVQ ranged from 0.67 to 0.88. These acquired results indicated that the scale WAS reliable. Meanwhile, gender measurement invariance was tested for SQS and results indicated that gender measurement invariance was established. These results have shown that the SQS-SVQ can be used in social researches and especially in educational studies.

Keywords:
Sleep quality; total sleep time; sleep efficiency; parental control; validity; reliability

1. Introduction

Sleep is a physiological need to ensure that individuals shake off the weariness of the day and rest to be prepared for the next day (Nag and Pradhan 2012). The quality of sleep is as important as its duration for health and for optimal body functioning. Long duration of sleep but in a poor quality will not provide the expected benefit (Kabrita et al. 2014; Pilcher et al. 1997). A good sleep quality and sufficient sleep duration will increase the physical performance of the individual as well as his/her mental performances, such as attention, perception and learning while also increasing the quality of life (Şenol et al. 2012; Karagozoglu and Bingöl 2008). An insufficient sleep or a long but poor quality sleep will cause daytime sleepiness in individuals as well as slowness in perception and increase in level of inattention (Dewald et al. 2010). Daytime sleepiness may cause decrease of academic success and performance at school in students (Meijer 2008; Dewald et al. 2010; Wolfson and Carskadon 2003) and may also result in various accident and injuries due to inattention (Koulouglioti et al. 2008). Asynchrony between school schedule and students' chronotype

[1] Corresponding author's address: Sakarya University, Hendek 54300 Sakarya, Turkey
Telephone: +90 (264) 295 71 69
Fax: + 90 (264) 295 71 83
e-mail: iönder@sakarya.edu.tr
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may also cause sleep problems and sleep related problems. Waking up and retiring time of individuals on their free and work/school days can be used to determine their chronotype which differs individually and early school and work schedules were found to affect negatively the individuals especially with late chronotype (Önder et al. 2014). In addition, the amount and quality of sleep is very important for the physical and psychological development of children and adolescents (Eisenmann, 2006). It is known that individuals who suffer from insomnia and problems in sleep quality have various psychological, physiological and social problems (Matricciani et al. 2012). Insomnia may be caused by various reasons related with anatomical, physiological, psychological and social variables while it can also cause problems related with the same variables. Besides, continuous development in lightening technologies and information and communication technologies along with changes in the lifestyles of individuals have negative effects on their sleep patterns, sleep qualities, sleep durations and efficiencies (Nag and Pradhan 2012; Blunden and Galland 2014). Hence, the number of individuals who experience problems related directly or indirectly with sleep is increasing in many countries. These problems affect not only adults but also children and adolescents. Since sleep and its properties are related to many fields from health to education, many researchers are interested in this topic. That is why the measurements of sleep quality, duration and sleep related variables are beneficial for clinical applications as well as studies carried out in social sciences.

Subjective and objective methods are used to measure sleep quality (Yi et al. 2006). Polysomnography is one of the objective methods and provides very accurate data related with the physiological sleep quality of the individual. Methods such as electroencephalogram, electrooculogram and electromyelogram are used in this process. However, these methods are expensive, they require technical information and skills, need a long time for measurement and interpretation and they cannot simulate the natural sleep environment effectively (Yi et al. 2006). Actigraphy is another objective method and even though it provides accurate information regarding sleep wake pattern (Gaina et al. 2004), its limitation is that it cannot differentiate the awake but motionless individual from individual who truly sleeps (Menefee et al. 2000). Furthermore nowadays mobile phone technologies provide an opportunity to identify the individuals' quality of sleep by mobile applications (Hamida et al. 2015). Whereas sleep diaries, sleep records and sleep scale and questionnaire can be accepted as subjective methods. Even though these methods do not give sufficient information about sleep properties as much as objective methods, they provide qualitative and quantitative data regarding sleep properties (Gaina et al. 2004; Gentili et al. 1995). The most important properties of subjective methods are that they are cheap and can easily be applied to large groups of people (Gaina et al. 2004).

The most common data collection tool used in Turkey for measuring sleep quality is the Pittsburgh Sleep Quality Index (PSQI). PSQI has been used mostly in studies related with young people and adults. In addition, Boysan et al. (2010) have carried out adaptation studies for Insomnia Severity Index which is used to measure the daily functioning and sleep quality in university students. Even though the scale consisting of seven questions is easy to apply, its adaptation study has been carried for adult individuals. Whereas the scales developed for children are used mostly for clinical purposes. Öner et al. (2009) have carried out the validity and reliability studies for the Sleep Scale in Children used for the evaluation of sleep disorders in children. However, this scale is a long one consisting of 72 questions which is filled by parents. Koçoğlu et al. (2010) have developed a questionnaire to determine the sleep habits and sleep problems of primary school second graders. Since the developed measurement tool is a questionnaire, a total score cannot be calculated. Fiş et al. (2010) have adapted the Children Sleep Habits Survey into Turkish and have carried out the validity and reliability studies. This measurement tool is also a relatively long one that should be filled by parents. When the measurement tools developed or adapted for assessing children's sleep quality in Turkey are examined, various disadvantages are observed such as the large number of questions of such measurement tools, the necessity to be filled by parents or the fact that they are in questionnaire form. One another scale is The Sleep Quality Scale and Sleep Variables Questionnaire (SQS-SVQ) for measuring children and adolescents' sleep quality and sleep related variables which has not been adapted into Turkish yet.

1.2. Aim of the Study

The objective of the current study was to carry out the adaptation study of the SQS-SVQ in to Turkish student sample. The SQS-SVQ was chosen since it is a compact tool that measures sleep quality, parental

control, total sleep time, mid-point of sleep and sleep efficiency and is a relatively short, reducing participant burden and completion time.

1.3. Sleep Quality Scale and Sleep Variables Questionnaire (SQS-SVQ)

The SQS-SVQ was developed by Meijer and van den Wittenboer (2004). The original form of SQS-SVQ consists of 11 items but while getting permission from Meijer through e-mail she advised to add four more items that one is related to students' wake time in the weekend (*"What time do you wake up in the weekend? Please try to describe this as accurately as possible"*) and three items related to sleep efficiency (*"What time do you usually turn off the lights on the days you have to go to school? Please, try to describe this as accurately as possible"; "How many minutes take it generally for you to fall asleep after you turned off the lights?"; "How many minutes do you generally lie awake during the night?"*). These items are related with the items presented in the studies of Meijer, Habekothe and Van Den Wittenboer (2000), Buysse, Reynolds III, Monk, Berman and Kupfer (1989) and Roenneberg, Wirz-Justice and Merrow (2003). Accordingly the final form of the instrument was composed of a seven scale items and eight questionnaire items. The final form of the SQS-SVQ measures sleep quality, parental control, total sleep time, sleep efficiency and corrected midpoint of sleep in free days (MSF_{SC}). In the scale items which measure sleep quality the Cronbach's Alpha internal consistency coefficient of the scale was determined as 0.67.

For the questionnaire items, in the current study, the feedback of two field specialists related to whether the items are appropriate to what we intended to measure and five students' oral responses to items were investigated. In order to improve usability of the instrument related items were grouped. The items of SQS-SVQ have been given in Appendix 1.

The item numbers of each component in the instrument was as follows:

Sleep quality: items 1, 2, 3, 4, 5, 6 and 7

Parental control: item 8

Time in Bed for school days: items 9 and 13

Total sleep time for school days: items 9, 13, 14 and 15

Sleep efficiency: items 9, 13, 14 and 15

Corrected midpoint of sleep in free days: items 9, 10, 11 and 12.

The calculation of each component is presented below.

Parental control (PC): The item has two categories and it measures whether parents themselves decide on child's bed time or the child is free in deciding his/her bed time. Students are usually exposed to parental control of their sleeping time because of school schedule so it becomes important while studying sleep and sleep related features.

Sleep Quality (SQ) : The scale items which is used for measuring sleep quality is including 3 classification categories that are scored from 1 to 3. And these items related to sleep latency, awakening at night, sleep latency after awakenings, sleep quality perception as well as items related to feeling rested after sleeping. These items are also presented as criterion for the insomnia disease that is presented by Diagnostic and Statistical Manual of Mental Disorders (DSM) 4. A score of between 7 and 21 can be acquired from the scale. Two different methods can be used for the evaluation of the total score acquired from the scale. In the first method, the 1^{st}, 2^{nd}, 3^{rd}, 4^{th} and 7^{th} items are reversed and the total score obtained from the seven items is calculated, for which a score of 7 shows poor sleep quality whereas a score of 21 shows good sleep quality. Whereas in the second method, the 5th and 6th items of the scale are reversed and total score is calculated, in that case a high score acquired from the scale shows bad sleep quality, whereas a low score shows a good sleep quality.

The total sleep time, time in bed and sleep efficacy can be calculated by formulas presented in Buysse, Reynolds III, Monk, Berman and Kupfer (1989). Below formulas are presented:

Total sleep time (TST): In order to calculate TST first Time, in Bed (TIB) should be calculated. TIB can be calculated with the formula of [TIB= (24:00- item13) + item9]. And TST can be calculated with the formula of [TST= TIB- item14- item15].

Sleep efficiency (SE): can be calculated with the formula of [SE= (TST/TIB) ×100].

Corrected midpoint of sleep in free days (MSF_{SC}): Can be calculated with the formula described by Roenneberg et al. (2004), [$MSF_{SC} = MSF - 0.5 \times [SD_F - (5SD_W + 2 \times SD_F) / 7]$. The items 9, 10, 11 and 12 are used in calculating *MSF*: Midpoint of Sleep on Free days, SD_F: Sleep duration on free days, and SD_W: Sleep duration on work days. Roenneberg et al. (2004) suggest determining chronotype which is one of the individual differences by the use of MSFsc.

2. Method

The current study is an instrument adaptation study and it was carried out in the survey model. Survey model is a type of study in which the opinions of a large group of people are determined for a specific topic or event (Fraenkel and Wallen 2006).

2.1. Study Groups

In the current adaptation study, linguistic equivalence, factorial validity, concurrent validity, gender measurement invariance, internal consistency and test-retest reliability have been carried out with four different study groups in the city of Sakarya. The distributions of the participants in these study groups and descriptive statistics were presented in Table 1.

Table 1. Distributions and descriptive statistics of participants in study groups

	Linguistic equivalence	Factorial validity and gender invariance	Concurrent validity	Test-retest reliability
Type of school	Private	Public	Public	Public
Grade(s)	6,7,8	4,5,6,7,8	8	5
N (Total)	55	1000	89	54
Gender				
Female	30	525	52	32
Male	25	475	37	22
Range of Age	11-15	9-15	13-15	11-12

The students who participated in the factorial study were determined randomly with 200 students from each grade level. Whereas the study group selected for concurrent validity part consists of 89 students from the eighth grade of elementary school since the measurement tool used as a criterion (PSQI) was more suited to that age group. Students of a private school (n=55) was selected for the linguistic equivalence since those students were having their classes in English.

2.2. Process

It is possible to examine the processes carried out for the adaptation of the scale into Turkish in five sections: Translation process for linguistic equivalence, factorial validity process (exploratory and confirmatory), concurrent validity process, gender measurement invariance analysis and reliability analyses. The first section includes translation of the scale items into Turkish as well as the operations performed for the completion of the Turkish and English forms of the scale at different times by students who know both English and Turkish. Whereas the other sections consists of statistical analyses carried out for the validity and reliability of the scale. EFA, test-retest and Pearson's product moment correlation coefficient analysis were carried out via PASW 18.0, whereas CFA analyses were verified via Lisrel 8.54 and multi-group confirmatory factor analysis (MGCFA) was performed via AMOS 21.0.0.

2.2.1. Translation process for linguistic equivalence. The required consent for the adaptation of the scale was taken via e-mail from Anne Marie Meijer who is among the developers of the SQS-SVQ, after which the relevant adaptation work was started. The suggestions of Hambleton (2005) were taken into account while translating scale items into Turkish. In accordance with these suggestions, four bilingual language experts in groups of two translated the SQS-SVQ from English to Turkish independently. Afterwards, the translations

were reviewed by the researchers and discussions were carried out until a consensus was reached. The Turkish form was then back translated by four bilingual language experts in groups of two to English, independently. The English translations of the scale were reviewed by the researchers and discussions were administered whether the translated English form is equivalent with the original one. It was observed that items in both English and original forms are worded similarly which indicates that Turkish form is equivalent to original one. Afterwards operations were carried out to determine whether the translated scale is linguistically equivalent to the original one or not. The English and Turkish forms of the scale were applied to elementary students who are fluent in both languages with intervals of two weeks respectively.

2.2.2. Factorial validity process. The data set acquired from 1000 elementary school students was divided equally into two in order to carry out factorial validity studies for SQS. Factorial validity study was not conducted for the SVQ since it was composed of questionnaire items. Exploratory Factor Analysis (EFA) was carried out on one of these data sets (n=500) whereas Confirmatory Factor Analysis (CFA) was performed on the other one (n=500) for SQS.

2.2.3. Concurrent validity process. Pittsburgh Sleep Quality Index (PSQI) and the Turkish form of SQS-SVQ were applied to eighth grade elementary school students with an interval of one week for concurrent validity analysis. The reason for preferring eighth grade elementary school students was that PSQI is more suited to older students. For the concurrent validity, sleep quality, sleep efficiency, total sleep time scores obtained from PSQI and SQS-SVQ were correlated and the correlation results were investigated. Similar analysis was done for the concurrent validity of MSFsc where MSFsc and MESC scores were used.

2.2.3.1. The pittsburgh sleep quality index (PSQI). The PSQI was developed by Buysse et al. (1989) is a self-rating tool that provides detailed information about sleep quality in the past month as well as the type and intensity of sleep disorder. The index consists of 24 items and five of these items are answered by the sleep partner or roommate of the individual. However, these five items have not been used in the study. Scores related with seven components are obtained via PSQI. These are subjective sleep quality, sleep latency, sleep time, habitual sleep efficiency, sleep disorder, sleeping pill usage and daytime dysfunction. Each item is evaluated with a score of 0 to 3. The sum of the scores of these seven components gives the PSQI score. The total PSQI score varies between 0 and 21. Those with a total score of 5 and below are evaluated as having "good" sleep quality whereas those with a total score of above 5 are evaluated as having "poor" sleep quality. A PSQI score of above 5 shows that the individual has serious problems about sleep in at least two different components or that he/she has mild or moderate problems in more than three components. The scale has been adapted to Turkish by Ağargün et al. (1996). The internal consistency coefficient was reported as 0.804.

2.2.3.2. Morningness eveningness scale for children (MESC).The scale was developed by Carskadon et al. (1993) and was adapted into Turkish by Önder and Beşoluk (2013). The scale consists of 10 items with five or four choices. The scores of MESC ranges form 10 (eveningness) to 43 (morningness). Önder and Beşoluk (2013) reported internal consistency of the scale as 0.69 and test-retest reliability as 0.78.

2.2.4. Gender measurement invariance. The gender measurement invariance was tested by MGCFA. In MGCFA, configural, metric, scalar and residual invariance were tested. In line with Chen (2007)'s recommendations model differences were examined. $\Delta CFA \geq -0.010$ and $\Delta RMSEA \geq 0.015$ was treated as a sign of no invariance.

2.2.5. Reliability analyses. The reliability process was executed in two ways. At first the internal consistency of the sleep quality scale was evaluated by calculating the Cronbach's Alpha internal consistency coefficient for the data of 1000 students. In the second step, the stability was evaluated by test-retest that was applied two weeks after the first application on 54 students. Meanwhile the stability of sleep efficiency, total sleep time and MSFsc scores were determined.

3. Result

3.1. Results of Linguistic Equivalence

The correlation between the scores acquired from the Turkish and English forms of the sleep quality scale was determined as 0.87. The correlation coefficients for each item in the scale and the total score have been given in Table 2.

Table 2. The correlation coefficients for the items and the total score of the scale (SQS)

Item No	Pearson Correlation Coefficient
sq1	.662
sq2	.666
sq3	.622
sq4	.541
sq5	.639
sq6	.533
sq7	.543
Total	.874

When Table 2 is examined, the Turkish form was accepted to be equivalent to the original scale since the correlation coefficients of items and total score were moderate or close to high. Meanwhile the correlations between the questionnaire item scores gathered from Turkish and English forms for each item were calculated. The correlation scores of those items ranged from 0.83 to 1.00.

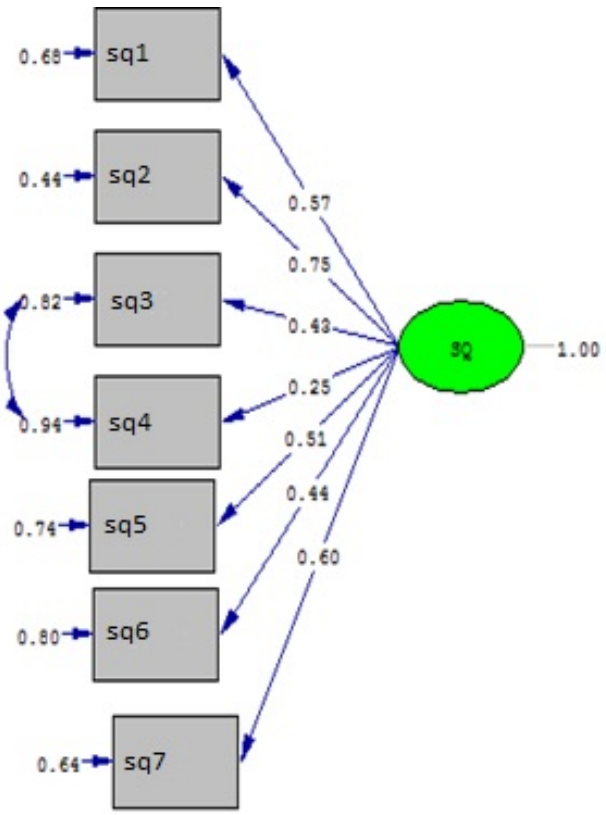
3.2. Results of Factorial Validity

The factorial validation study of the sleep quality scale (SQS) was conducted in two steps as the exploratory factor analysis and the confirmatory factor analysis.

3.2.1. Exploratory factor analysis (EFA). The single factor structure of the SQS consisting of seven items has been analyzed via EFA. First, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test was performed. The KMO value was determined as 0.77. Since this value is greater than 0.70, it was concluded that factor analysis can be made using data. Afterwards the Bartlett's Test of Sphericity was checked ($\chi 2$ =602.401, p=0.000) and it was determined that the correlation matrix was suitable for factor analysis. Single factor principal component analyses for the seven items have been carried out in EFA. The factor loadings of the items at the end of analysis were determined respectively as 0.593, 0.726, 0.625, 0.585, 0.570, 0.551 and 0.650. The eigenvalue of the factor was determined as 2.66, whereas the explained variance was 38.05 %.

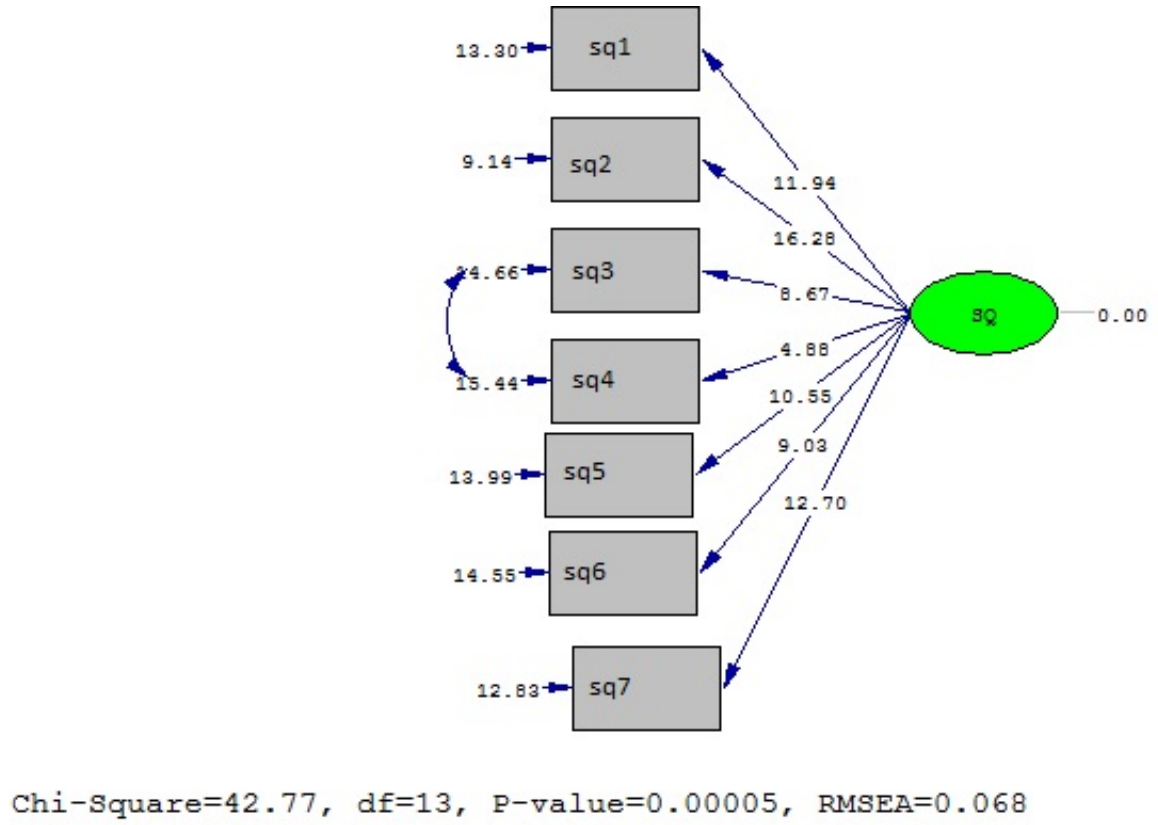
3.2.2. Confirmatory factor analysis (CFA). The model fit of the single factor structure of the sleep quality scale consisting of seven items has been tested via CFA. The standard solutions of the seven items were determined as 0.57, 0.75, 0.43, 0.25, 0.51, 0.44 and 0.60, respectively (Figure 1). The t-values were controlled after standard solutions (Figure 2). The t-values of the items were determined respectively as 11.94, 16.28, 8.67, 4.88, 10.55, 9.03 and 12.70. According to Jöreskog and Sörbom (1996), the fact that there is no red arrow related with the t-values shows that all items are statistically significant at a level of 0.05. A modification was made at the end of the analysis by taking into consideration the recommended modification between the 4th and 5th items. Fit indexes were determined at the end of all operations as $\chi 2$=42.77 (SD=13, p=0.00), $\chi 2/SD$=3.29, $RMSEA$=0.068, NFI=0.95, $NNFI$=0.95, $SRMR$= 0.040, GFI=0.98, $AGFI$=0.95, CFI=0.97. According to Byrne (1998), most of these values are at a level that puts forth good fit whereas very few are at a level that puts forth an acceptable fit. Therefore, it can be stated that all values have very good fit or are close to good fit.

Figure 1. Standard solutions of the CFA model



Chi-Square=42.77, df=13, P-value=0.00005, RMSEA=0.068

Figure 2. T values of the CFA model



3.3. Results of Concurrent Validity

The PSQI and the SQS-SVQ were applied to the 8th grade students in the elementary school with one week intervals in order to determine the concurrent validity of sleep quality. Pearson's product moment correlation was used to examine the relationship between the scores acquired from each of the two measurement tools. A statistically significant relationship was determined between the SQS and the PSQI *(r* = 0.73, p<0.01), sleep efficiency and habitual sleep efficiency score obtained from PSQI (*r* = 0. 51, *p*<0.01), total sleep time scores and sleep duration score obtained from PSQI (*r* = 0.61, *p*<0.01). Meanwhile, a statistically significant relationship was determined between the MSFsc and the MESC (*r* = -0.57, *p*<0.01).

3.4. Results of Gender Measurement Invariance

Analysis conducted regarding gender measurement invariance in the whole study group indicated that all levels (configural, metric, scalar and residual) of invariance were established. Results are presented in Table 3.

Table 3. MGCFA results of gender measurement invariance

Gender invariance	Model Fit				Model Comparisons		
	χ^2	*df*	*CFI*	*RMSEA* [90%*CI*]	Models	*ΔCFI*	*ΔRMSEA*
M1.Configural	105.18	28	.961	.053 [.042, .063]	-	-	-
M2.Metric	106.47	34	.964	.046 [.036, .056]	M2-M1	.003	-.007
M3.Scalar	120.68	41	.960	.044 [.035, .053]	M3-M2	-.004	-.002
M4.Residual	128.29	48	.960	.041 [.032, .050]	M4-M3	.000	-.003

Configural invariance results supported the one factor model for the sleep quality for both genders. In addition, metric invariance presented that the items of the scale measure the sleep quality in the same manner in both groups. Scalar invariance indicated that regardless of the group membership students with the same score in sleep quality would obtain the same score on the observed variable. Residual invariance indicated that the same level of measurement error variance was present for each item between gender groups.

3.5. Results of Reliability

The Cronbach's Alpha value for the scale was determined as 0.72. The fact that internal consistency coefficient is greater than 0.70 shows that the SQS is reliable, that is, it generates data that are consistent at an acceptable level. In the test-retest reliability analysis carried out with 54 students who were not included in the validity study, Pearson's product moment correlation coefficient was calculated using data acquired from the first application of the SQS-SVQ and the data acquired from the second application of the instrument to the same group. Correlation coefficient was determined as 0.77 for the SQS, 0.83for time in bed, 0.73 for sleep efficiency, 0.67 for total sleep time and 0.88 for MSFsc. This correlation shows that the consistency of the SQS-SVQ is acceptable.

4. Discussion and Conclusion

Sleep has an important effect on the healthy development of children and adolescents as well as the regulation of important daily functions such as various behaviors, emotions and attention. It is known that insufficient and/or poor sleep quality has negative effects on school performance, physiological and psychological health. However, daytime sleepiness due to sleep latency, insufficient sleep duration, irregular sleep patterns and poor quality sleep continues to increase in children and adolescents (Beebe 2011; Shochat et al. 2014). Hence, the need for measurement tools which are easy to understand and that can be easily filled by children and adolescents are used for measuring sleep quality and variables related with sleep continues to increase. Therefore, the adaptation study for the SQS-SVQ which was developed by Meijer and van den Wittenboer (2004) for children and adolescents has been carried out in this study.

The exploratory factor analysis of the Turkish form of the SQS has put forth that the factor structure of the scale is in accordance with the single factor structure of the original scale. In addition, the model data fit of the Turkish form has been examined via confirmatory factor analysis and the acquired fit indices have shown a good or close to good fit. These analysis results show that the factor structure of the Turkish form is verified. Moreover, criterion related validity of the SQS-SVQ has been tested via PSQI and MESC. Acceptable correlations were determined between the Turkish form of the SQS-SVQ and PSQI/MESC. All validity analyses show that the SQS-SVQ is a valid instrument. When reliability analysis results are examined, it is observed that the internal consistency coefficient of the scale (SQS) is in accordance with the internal consistency coefficient of the original scale. Furthermore, high level of correlation has been obtained for SQS-SVQ as a result of the test-retest reliability analysis of the Turkish form. When all these results are considered, it is observed Turkish form of SQS-SVQ is reliable. Meanwhile gender measurement invariance for SQS in the whole study group was established.

In conclusion, the Turkish form of the SQS-SVQ can be used to determine sleep quality, parental control, total sleep time, midpoint of sleep and sleep efficiency in children and adolescents. However, the limitation of this study is that the SQS-SVQ which was adapted into Turkish was not validated using objective data such as polysomnography or actimetry. Therefore, researchers should interpret the results by taking into account this limitation when they use this measurement tool.

Ethical concerns

The study was conducted in accordance with ethical recommendations for scientific publication (American Psychological Association, 1992), and the study was approved by the Ethics Committee of Sakarya University and informed consent was obtained from parents.

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Disclosure statement

The authors have no conflict of interest related to this study.

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Appendix

Uyku Kalitesi Ölçeği ve Uyku Değişkenleri Anketi

Aşağıdaki sorular sizin uyku düzeniniz ve uyku alışkanlıklarınız ile ilgilidir. Lütfen tüm soruları cevaplandırınız.

A. Lütfen aşağıdaki ilk **7** soruyu **okula gittiğiniz günleri** göz önünde bulundurarak cevaplandırınız.

1. Işıklar söndürülüp yatağa yattığında, aşağıdakilerden hangisi genelde senin için doğrudur? [When you are in bed and the lights are turned off:]
   - **a.** Hemen uyurum [You fall asleep at once]
   - **b.** Bir süre uyanık kalırım [You stay awake for a while]
   - **c.** Uyumam için uzun zaman gereklidir[It takes you a long time to fall asleep]

2. Uyuma sorunu yaşar mısın? [Do you have a troubled sleep?]
   - **a.** Asla [Never]
   - **b.** Bazen [Sometimes]
   - **c.** Nerdeyse her gece [Nearly every night]

3. Bazen geceleri uyanır mısın? [Do you sometimes wake up during the night?]
   - **a.** Asla [Never]
   - **b.** Bazen [Sometimes]
   - **c.** Nerdeyse her gece [Nearly every night]

4. Eğer geceleri uyanıyorsan, aşağıdakilerden hangisi genelde senin için doğrudur? [If you wake up during the night:]
   - **a.** Çoğunlukla farkına varmam [Mostly you do not notice]
   - **b.** Kısa bir süre sonra tekrar uyurum [You fall asleep again soon]
   - **c.** Tekrar uyumam uzun zaman alır [It takes you a while to fall asleep again]

5. Geceleri iyi uyur musun? [Do you sleep well at night?]
   - **a.** Hayır [No]
   - **b.** Bazen [Sometimes]
   - **c.** Evet, daima [Yes, always]

6. Sabah kalktığında kendini dinlenmiş hisseder misin? [Do you feel rested at awakening?]
   - **a.** Hayır [No]
   - **b.** Bazen [Sometimes]
   - **c.** Evet, daima [Yes, always]

7. Geceleri iyi uyuyamadığın olur mu? [Do you sleep badly?]
   - **a.** Hayır [No]
   - **b.** Bazen [Sometimes]
   - **c.** Evet, daima [Yes]

B. Lütfen aşağıdaki soruların cevaplarını, olabildiğince doğru bir şekilde **saat ve dakika** olarak yazınız.

8. Yatmaya ne zaman gideceğine karar vermene ailen izin veriyor mu? [Are you allowed to decide for yourself what time you go to bed?]
   ☐ Evet [Yes] ☐ Hayır [No]

9. Okula gittiğin günlerde saat kaçta kalkarsın? ……[What time do you wake up in the morning (on days that you have to go to school)? Please try to describe this as accurately as possible]

10. Okula gittiğin günlerde saat kaçta yatarsın? ……[What time do you usually go to bed on the days you have to go to school? Please, try to describe this as accurately as possible]

11. Hafta sonu saat kaçta kalkarsın? ……[What time do you wake up in the weekend? Please try to describe this as accurately as possible]

12. Hafta sonu saat kaçta yatarsın? ……[What time do you go to bed at weekends? Please, try to describe this as accurately as possible]

13. Okula gittiğin günlerde yattığın odanın ışıklarını saat kaçta kapatırsın? ……[What time do you usually turn off the lights on the days you have to go to school? Please, try to describe this as accurately as possible]

C. Lütfen aşağıdaki soruların cevaplarını **dakika** olarak yazınız.

14. Odanın ışıklarını kapattıktan sonra uykuya dalman genellikle kaç dakika sürer? …….dakika [How many minutes takes it generally for you to fall asleep after you turned off the lights?]

15. Gece boyunca genellikle yatağında kaç dakika uyanık olarak uzanırsın? …….dakika [How many minutes do you generally lie awake during the night?]