

Differences of adaptation to school and self-resilience before and after sleep education for adolescent

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This study aims to verify the effectiveness of sleep education by identifying the differences of adaptation to school and self-resilience of the high school students before and after sleep education for a certain period of time. The conclusion of this study is presented below: First, there were differences in adaptation to school and self-resilience of the high school students before and after sleep education for the high school students. After sleep education, adaptation to school environment and school friends became higher, and also the emotion control, personal relations and optimism, which are the subvariables of self-resilience, became higher. Second, there were differences in adaptation to school and self-resilience before and after sleep education by grade of the


high school students. The freshmen's adaptation to school friends and adaptation to school life, which are the subvariables of adaptation to school, increased after sleep education. The sophomores' adaptation to school environment, which is the subvariable of adaptation to school, went up higher after sleep education. The freshmen's emotion control, vitality and personal relations, which are the subvariables of self-resilience, were higher after sleep education. The sophomores' personal relations, which are a subvariable of self-resilience, went up higher.

Keywords: High school students, Sleep education, Adaption to school, Self-resilience

INTRODUCTION

In Korea, the 9 o'clock school attending time system is executed in the middle schools in Gyeonggi Province recently to guarantee student's right to sleep. In addition to schools, the interest in sleep increases in overall society. Sleep is a basic physical requirement, and is essential to recover physical functions and maintain energy and health (Foreman and Wykle, 1995). If one has enough sleeping hours, one's self-protection ability to cope with various difficulties improves by recognizing oneself as a valuable and responsible existence, due to high subjective sense of happiness or high satisfaction on life (You and Lee, 2014). On the contrary to this, if sleep is not enough, one can experience stress or depression (Seo, 2009). The lack of sleep may affect school life: many studies (Sadeh et al., 2003) reveal that insufficient sleeping hours negatively affects self-protection ability, in addition to lower cognitive ability and executive ability, because of lacking sleeping hours. Regarding the status of adolescent's sleeping hours, it was

exhibited that Korean adolescents' weekday sleeping hours are reduced by an hour, as they go to higher grade (Statistics Korea, 2009). The ratios of Korean middle school, specialized high school and general high school adolescent, who cannot have proper 8 hr and 30 min of sleeping hours, recommended by the U.S. National Sleep Foundation, were 74.8%, 89.8%, and 97.9%, respectively (Korea Centers for Disease Control & Prevention, 2011). As such, the reasons why Korean adolescents cannot have enough sleeping hours can be study, and the use of smartphones and computers. Improper sleeping habit and unguaranteed sleeping hours not only hinders study, but no good effect is caused to the students' posture. Improper sleeping habit at home has a huge impact on adaptation to school life. Here, adaptation to school means an active and creative interaction process to harmonize and balance school environment and an individual by changing the environment to meet personal needs in the school environment and changing oneself, according to school environment's requirements (Kelley et al., 2005). This can be connected with a variable of

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self-resilience. People with self-resilience have effective intelligence and flexibility, are adaptive to stressful situation and change their awareness, recognition and behavioral strategy, according to the need of specific context (Block and Kremen, 1996). Also, self-resilience, as a protective factor to ease the influence of risk factors, plays a mediating role between risk factors and adaptation level (Yu et al., 2004). This study set up a nap as the major variable enabling high school students to adapt to school life and foster self-resilience. This study offers 15 min of nap for high school students suffering from study to provide an opportunity to rest for both body and mind, and make school, which is a major provider of stress, a more comfortable space. Such a nap time may offer the flexibility of thinking and psychological stability. The purpose of this study is to verify the effectiveness of sleep education by identifying the differences of adaptation to school and self-resilience before and after the sleep education for high school students for a certain period of time.

MATERIALS AND METHODS

Subject

The subject of this study was the entire Gyeyang High School students located in Incheon as of June 2013, except those who were absent from school or did not participate in the questionnaire survey on the survey day among the freshmen, sophomores and seniors, who submitted the questionnaire responses. The questionnaire responses were received in two occasions, and the collected number of the questionnaires was 2,243 questionnaire copies. Among these, 2,215 responses were used for the final analysis, except for 28 questionnaire responses, which were judged to be insincere in response or in which some survey responses were omitted. Table 1 exhibits the grade distribution of the high school students used for data analysis in this study.

Survey tool

This study used questionnaire as a data collection tool to examine how adaptation to school and self-resilience became different before and after receiving the sleep education.

The tool used to measure adaptation to school was the Scale of Adaptation to School by Kim (2000) and the scale developed by Lee and Cho (2006) as a tool to measure self-resilience. The Cronbach α values are shown in Table 2.

Procedure

During a semester, this study carried out sleep education, after

Table 1. Grade level according to the number and percentage of test time

Time check	Grade	No. (%)
Before-test	1	349 (31.13)
	2	367 (32.74)
	3	405 (36.13)
	Total	1,121 (100)
After-test	1	354 (32.36)
	2	370 (33.82)
	3	370 (33.82)
	Total	1,094 (100)

Table 2. Reliability of the measurement tool

Configuration index	Cronbach α
Adaptation to school	0.770–0.879
Self-resilience	0.611–0.736

awarding nap time to the high school students for 15 min every day at certain time to examine how adaptation to school and self-resilience became different for the high school students participating in the sleep education before and after participating in the sleep education, and then, the purpose of this study was explained to home room teachers. Under the teachers' guidance, the students were instructed to reply the questions using the self-administered method. The completed questionnaires were immediately collected.

Data processing

The questionnaire responses judged to be insincere or improper were excluded from the analysis among the completed response data for this study, and IBM SPSS Statistics ver. 21.0 (IBM Co., Armonk, NY, USA) was used to solve research problems. For data analysis, the statistical techniques used in this study are as follows, and each hypothesis was verified at the significance level of $\alpha = 0.05$.

RESULTS

Differences of adaptation to school and self-resilience before and after sleep education for the high school students

To identify the differences of adaptation to school before and after the sleep education for the high school students, the results of independent sample *t*-test are demonstrated in the following Table 3.

According to Table 3, adaptation to school had statistically significant differences before and after the sleep education for the high school students ($P < 0.05$).

Table 3. Results of independent sample *t*-test of differences of adaptation to school before and after sleep education for the high school students

Sleep education	No.	Adaptation to				
		School environment	School teachers	School classes	School friends	School life
Before	1,121	3.20±0.26	3.36±0.32	3.32±0.30	3.48±0.36	3.55±0.33
After	1,094	3.21±0.27	3.33±0.32	3.31±0.30	3.49±0.34	3.51±0.34
<i>F</i> (sig)		4.676 (0.031)	0.094 (0.759)	0.229 (0.633)	4.797 (0.029)	1.540 (0.215)

Values are presented as mean ± standard deviation.

Table 4. Results of independent sample *t*-test of differences of adaptation to school and self-resilience before and after sleep education by grade of the high school students

Sleep education	No.	Emotion control	Vitality	Personal relations	Optimism	Curiosity
Before	1,121	3.44±0.29	3.43±0.34	3.53±0.32	3.44±0.35	3.49±0.33
After	1,094	3.46±0.31	3.44±0.35	3.55±0.30	3.47±0.34	3.46±0.34
<i>F</i> (sig)		4.040 (0.045)	3.251 (0.072)	6.553 (0.011)	5.230 (0.022)	0.378 (0.539)

Values are presented as mean ± standard deviation.

Table 5. Results of independent sample *t*-test of differences of adaptation to school before and after sleep education by grade of the high school students

Grade	Sleep education	No.	Adaptation to				
			School environment	School teachers	School classes	School friends	School life
1	Before	349	3.27±0.30	3.39±0.34	3.38±0.32	3.51±0.36	3.52±0.34
	After	354	3.27±0.30	3.36±0.34	3.34±0.33	3.55±0.33	3.60±0.31
	<i>F</i> (sig)		0.288 (0.592)	0.054 (0.817)	1.010 (0.315)	8.899 (0.003)	4.708 (0.030)
2	Before	367	3.17±0.23	3.36±0.30	3.31±0.28	3.50±0.34	3.56±0.32
	After	370	3.20±0.25	3.35±0.33	3.33±0.30	3.50±0.36	3.54±0.34
	<i>F</i> (sig)		6.049 (0.014)	2.995 (0.084)	3.635 (0.057)	2.246 (0.112)	2.246 (0.094)
3	Before	405	3.17±0.24	3.33±0.32	3.27±0.29	3.42±0.35	3.50±0.34
	After	370	3.17±0.23	3.29±0.30	3.25±0.27	3.45±0.35	3.46±0.34
	<i>F</i> (sig)		0.031 (0.860)	1.832 (0.176)	2.869 (0.091)	0.076 (0.783)	0.159 (0.690)

Values are presented as mean ± standard deviation.

According to the test period of adaptation to school, adaptation to school environment and adaptation to school friends among the subvariables of adaptation to school showed statistically significant differences. However, adaptation to school teachers, classes, and school life did not show statistically significant differences.

In more detail, adaptation to school of the high school students was higher after sleep education (mean, 3.21) than before sleep test (mean, 3.20). Adaptation to school friends was also higher after sleep education (mean, 3.49) than before sleep education (mean, 3.48).

To find out self-resilience before and after sleep education for the high school students, the results of independent sample *t*-test are shown in the following Table 4.

According to Table 4, self-resilience, before and after sleep education for the high school students, showed statistically significant differences ($P < 0.05$ and $P < 0.01$).

Although, emotion control, personal relations, and optimism, which are the subvariables of self-resilience, showed statistically significant differences, vitality and curiosity did not show statistically significant differences.

In more detail, the high school students' emotion control became higher after sleep education (mean, 3.46), compared to before sleep education (mean, 3.44). Personal relations became also higher after the sleep education (mean, 3.55), compared to before sleep education (mean, 3.53). Lastly, optimism demonstrated higher result after sleep education (mean, 3.47), compared to before sleep education (mean, 3.44).

Differences of adaptation to school and self-resilience before and after sleep education by grade of the high school students

To find out the differences in adaptation to school before and

Table 6. Results of independent sample *t*-test of differences of self-resilience before and after sleep education by grade of the high school students

Grade	Sleep education	No.	Emotion control	Vitality	Personal relations	Optimism	Curiosity
1	Before	349	3.47±0.33	3.47±0.37	3.55±0.32	3.52±0.33	3.54±0.33
	After	354	3.48±0.28	3.48±0.35	3.60±0.29	3.46±0.35	3.50±0.35
	<i>F</i> (sig)		12.710 (0.001)	4.125 (0.043)	12.421 (0.001)	3.624 (0.057)	2.538 (0.112)
2	Before	367	3.43±0.28	3.44±0.32	3.54±0.31	3.47±0.34	3.49±0.31
	After	370	3.45±0.29	3.44±0.34	3.57±0.29	3.42±0.35	3.45±0.33
	<i>F</i> (sig)		0.295 (0.587)	1.776 (0.183)	4.882 (0.027)	2.122 (0.146)	1.864 (0.173)
3	Before	405	3.41±0.30	3.37±0.33	3.50±0.32	3.41±0.35	3.44±0.34
	After	370	3.44±0.30	3.41±0.33	3.51±0.31	3.45±0.36	3.44±0.33
	<i>F</i> (sig)		0.001 (0.979)	0.025 (0.873)	0.136 (0.712)	0.618 (0.432)	0.366 (0.545)

Values are presented as mean ± standard deviation.

after sleep education by grade of the high school students, this study conducted an independent sample *t*-test, and Table 5 shows the test results.

According to Table 5, the freshmen and sophomores demonstrated statistically significant differences in adaptation to school before and after sleep education by grade of the high school students ($P < 0.05$ and $P < 0.01$), but seniors did not show statistically significant differences.

Although, freshmen showed statistically significant differences in adaptation to school friends and adaptation to school life, which are the subvariables of adaptation to school, they did not show statistically significant differences in adaptation to school environment, adaptation to teachers and adaptation to classes. In more detail, adaptation to school friends was higher after sleep education (mean, 3.55), compared to before sleep education (mean, 3.51). And, adaptation to school life was higher after sleep education (mean, 3.60), compared to before sleep education (mean, 3.52). The sophomores demonstrated statistically significant differences in only adaptation to school environment, which is the subvariable of adaptation to school, and did not demonstrate statistically significant differences in the remaining variables. In more detail, adaptation to school environment after sleep education (mean, 3.20) was higher before sleep education (mean, 3.17). Lastly, the seniors showed no statistically differences before and after sleep education.

To find out self-resilience before and after sleep education by grade of the high school students, this study conducted an independent sample *t*-test, and the results are shown in the following Table 6.

According to Table 6, the freshmen and sophomores demonstrated statistically significant differences in self-resilience before and after sleep education by grade of the high school students

($P < 0.05$, $P < 0.01$, and $P < 0.001$), however, the seniors did not demonstrate statistically significant differences.

The freshmen showed statistically significant differences in emotion control, vitality and personal relations, which are the subvariables of self-resilience, but significant differences were not shown in optimism and curiosity. In more detail, emotion control after sleep education (mean, 3.47) was higher than the result before sleep education (mean, 3.48), and higher vitality was demonstrated after sleep education (mean, 3.48), compared to before sleep education (mean, 3.55). Lastly, personal relations showed higher result after sleep education (mean, 3.60), compared to before sleep education (mean, 3.55).

Although, the sophomores exhibited statistically significant differences in personal relations, a subvariable of self-resilience ($P < 0.05$), significant differences were not exhibited in vitality, personal relations, optimism and curiosity. In more detail, the sophomores' self-resilience was higher after sleep education (mean, 3.57), compared to before sleep education (mean, 3.54).

The seniors did not show statistically significant differences in self-resilience as well, as shown in adaptation to school.

DISCUSSION

This study aims to verify the effectiveness of sleep education by identifying the differences of adaptation to school and self-resilience of the high school students before and after sleep education for a certain period of time. The conclusion of this study is presented below:

First, there were differences in adaptation to school and self-resilience of the high school students before and after sleep education for the high school students. After sleep education, adaptation to school environment and school friends became higher, and

also the emotion control, personal relations and optimism, which are the sub-variables of self-resilience, became higher.

As a result, adaptation to school environment showing differences means that student needs are required to be properly adjusted and the stress accompanied to school environment should be tackled by learner's proper accepting the school environment. During the sleep education, which is a new activity, the high school students came to adapt to the environment, and they received less stress and had composure, because they did not receive teacher's intervention, and therefore, adaptation to school environment seemed to be enhanced. Adaptation to school friends means a student properly understands various things happening in personal relations with school friends, controls his/her needs, and copes with various types of stress between friends. The reason why differences in adaptation to school friends were showing, as the students received sleep education, is that the opportunity to collide with friends was reduced, and an opportunity to promote psychological stability was obtained, as the students conducted the same static behavior of sleep at the same time.

These results are supported by the research result of Lee (2003), saying self-resilience increases through a training program.

At school, the students continuously participate in study during the set time, whether they wish or not, and they interact with teachers or friends. Since the students can find composure of mind, as they have time to recharge alone without thinking others during the 15 min of sleeping hours, optimism is generated, and emotions can be controlled. From these, personal relations seem to have resilience.

Second, there were differences in adaptation to school and self-resilience before and after sleep education by grade of the high school students. The freshmen's adaptation to school friends and adaptation to school life, which are the subvariables of adaptation to school, increased after sleep education. The sophomores' adaptation to school environment, which is the subvariable of adaptation to school, went up higher after sleep education. The freshmen's emotion control, vitality and personal relations, which are the subvariables of self-resilience, were higher after sleep education. The sophomores' personal relations, which are a subvariable of self-resilience, went up higher. However, the seniors showed no differences in adaptation to school and self-resilience before and after sleep education. The freshmen, who entered high school not long ago, quickly adapted to the new program of sleep education with smaller resistance, while the seniors who led school life a long time seemed not to have composure in mind to accept the new program, due to stress arising from college entrance exam,

and thus such a result was generated. Because of the class schedule of the seniors, they could not continuously participate in the sleep education, which appeared to have an influence on drawing such a result. Also, the freshmen could find composure through the program of sleep education, since they had tension and psychological stress, due to adaptation to new school system, which helped to foster self-resilience. Since the sleep education can provide the resilience of thinking to the adolescents, it can be a good program to guide adolescents.

It was confirmed that 15 min of sleep education affected emotion control and adaptation to school, arising from unstable sleeping habit. In this regard, various programs that can provide composure in thinking to adolescents, in addition to study-centered curriculum at school, need to be developed and offered.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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