



Sleep Quality and Self-compassion as Predictors of Aggression in High School Students

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ARTICLE INFO

Article History:

Received 12.05.2019

Received in revised form

13.05.2019

Accepted 20.05.2019

Available online

26.05.2019

ABSTRACT

In the current study, the relationships between aggression, self-compassion and sleep quality of high school students have been examined. 529 high school students (66% females and 34% males) participated in the study. Data were collected from participants through using a Pittsburgh Sleep Quality Index (PSQI), Aggression Questionnaire (AQ), Self-Compassion Scale (SCS), and Descriptive Questionnaire. The predictors of aggressiveness of the variables determined by simple correlation were investigated by multiple linear regression. According to the results, there was a positive and significant relationship between aggression levels and all sub-dimensions of self-compassion and sleep quality. In addition, it was observed that the levels of aggressiveness were significantly predicted by the sub-dimensions of self-compassion and sleep quality, and that the first three most effective predictive variables were over-identification, self-judgment and sleep quality.

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Keywords:

Aggression, High school students, Self-compassion, Sleep quality, multiple regression

1.Introduction

Aggression has emerged as significant public and school health problem that include behaviors ranging from physical assaults, hate-based language, bullying to other crimes (Robers, Kemp, & Truman, 2013). Aggression is defined as intentional injurious or vandal behavior (Archer & Coyne, 2005; Bandura, 1978) and aggressive behavior intentionally causes physical and psychological harm, or distress to others (Krahé, 2013). Aggression among student is a serious psychosocial problem (Khoury-Kassabri, Benbenishty, Astor, & Zeira, 2004; Warman & Cohen, 2000), that is usually defined as relatedly hostile thoughts, angry feelings, aggressive behaviors (Buss, 1961) and low self-control capability (Özdemir, Vazsonyi, & Cok, 2013; Winstok 2009). Aggression is categorized as hostility, instrumental, indirect, verbal or physical, passive, permitted and altruist aggression (Ainsworth, 2002; Kirsh, 2006; Wiehe, 1998). Buss and Perry (1992) view aggression as a concept that is formed by elements such as “verbal aggression”, “physical aggression”, “anger”, and “hostility”, further, they approach these elements as the means of expression of aggression.

Aggressive behavior has a negative impact on both the attackers and victims. Many aggressive students show psychosocial maladaptation, low academic performance, lack of continuity to school, and various mental health problems, including various depressive symptoms (Ostrov & Godleski, 2009; Piquero, Daigle, Gibson, Piquero, & Tibbetts, 2007). Research indicates that aggression has been associated with social support (Wolff, Frazier, Esposito-Smythers, Becker, Burke, Cataldo, Spirito, 2014), music (Greitemeyer, 2011), interpersonal relationship styles (Koç, 2014), age, gender, academic success (Bacıoğlu & Özdemir 2012;

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<http://dx.doi.org/10.17220/ijpes.2019.02.008>

Sneathen & Puymbroeck, 2008), attachment (Kaplan & Aksel, 2013), emotional intelligence (García-Sancho, Salguero, & Fernández-Berrocal, 2014), irregular sleep (Lemola, Schwarz, & Siffert, 2012), sleep deprivation (Cote, McCormick, Geniole, Renn, & MacAulay, 2013; Kahn-Greene, Lipizzi, Conrad, Kamimori, & Killgore, 2006).

Sleep that is critical to health and well-being has effects on individuals' behavior and mental health (Megdal & Schernhammer, 2007; Vaughn, Salas-Wright, White, & Kremer, 2015). In general, despite to acceptance of sleep problems increased with age, the importance of sleep for the development of adolescents is ignored. (Ireland & Culpin 2006). Research also suggests a link between inadequate sleep and reduced visual and motor acuity, a number of problematic behaviours, negative effect on individuals' health and well-being, impaired memory and attention, performance and activity, cognitive deficits including slower and more variable response time (Bonnet, 2011; Preišegolavičiūtė, Leskauskas, & Adomaitienė, 2010; Vaughn et al. 2015). Research on adolescent sleep problems suggests that particular factors specifically affect adolescent sleep. These factors include early morning school schedules, earlier waking up times, social obligations, increased academic demands and delayed sleep onset (Carskadon, 1990).

Sleep problems such as poor quality sleep or lack of sleep is common among students. (Carskadon, Mindell, & Drake, 2006; Suen, Hon, & Tam, 2008). Research indicates that inadequate sleep is significantly related with aggression (Coulombe, Reid, Boyle, & Racine, 2011; Jenni & Dahl, 2007; Haynes, Bootzin, Smith, Cousins, Cameron, Stevens, 2006; O'Brien, 2009), higher impulsivity and less self-regulation (Kahn-Greene et al. 2006), lower optimism (Haack & Mullington, 2005), circadian rhythms (Bronsard & Bartolomei, 2013; Önder, Beşoluk, İskender, Masal, & Demirhan, 2014), and behavioural problems (Bates, Viken, Alexander, Beyers, & Stockton, 2002; Chervin, Dillon, Archbold, & Ruzicka, 2003). Apart from the sleep-related variables, aggression and self-compassion also affect adaptation, well-being and students' performance in school.

Self-compassion is an element of self-perception that is different from self-evaluative (Neff & Vonk, 2009), it is an alternative way of looking at positive self-regard (Krieger, Hermann, Zimmermann, & Holtforth, 2015). Self-kindness, a sense of common humanity, and mindfulness have been described as three major elements of self-compassion (Neff, 2003b). Self-kindness is the tendency to be affectionate and thoughtful toward ourselves rather than being harshly critical or judgmental (Gerber, Tolmacz, & Doron, 2015). A sense of common humanity contains that a person's experiences as depending on others' experiences, and mindfulness involves keeping a balanced view on one's experiences, including negative or threatening events and related to holding emotions in non-judgmental awareness (Neff, 2003b; Adams & Leary, 2007). The process of over-identification, isolation, and self-judgment was identified with an evaluation perspective as a low levels of self-compassion by Neff and colleagues. (Barry, Loflin, & Doucette, 2015).

Research indicates that self-compassion has been associated with greater life satisfaction, social connectedness (Neff, 2003a), curiosity, happiness, positive affect, agreeableness and conscientiousness (Neff, Rude, & Kirkpatrick, 2007), adaptive functioning (Neff, 2004), self-efficacy (Iskender, 2009), well-being (Neff, Pisitsungkagarn, & Hsieh, 2008), social supports, and academic success (Conway, 2007). However, self-compassion demonstrated significant negative correlations with aggression (Barry et al. 2015).

Aggression is affected by many factors and some are related to individual differences. Predicting the impact of individual differences on aggression can be valuable for education and psychology practices. We have assumed that aggression is associated with sub-dimensions of self-compassion and sleep quality. However, no study was found in the literature that investigates the relationship between these variables. Therefore, the main purpose of the present study is to investigate the relationships between aggression, sleep quality, and self-compassion for the first time in the Turkish high school population. We also hypothesized that self-compassion and sleep quality are the predictors of aggression.

2. Method

In this study, it is aimed to investigate the relationship between aggression status, sleep quality and self-compassion in high school students. In this respect, the study is a quantitative study and a relational research design. Relational research patterns are used to determine the relationship between two or more

variables and their relationship level, and to predict the possible outcomes of these relationships (Creswell, 2012; Fraenkel, Wallen, & Hyun, 2012).

2.1. Participants

The study group consisted of 527 high school students. The distribution of the participants by age and gender is given in Table 1.

Table 1. Frequency and Percentage Distribution of Students in the Study Group by Age and Gender

		F			%		
Gender	Female	347			66		
	Male	180			34		
Age	14	15	16	17	18	Total	
Female	19	173	75	65	15	347	
Male	8	88	43	33	10	182	
Total	27	261	118	98	25	529	

2.2. Data Collection Instruments

In order to collect the data, Self-compassion Scale, The Pittsburg Sleep Quality Index and Aggression Questionnaire were used.

2.2.1. Self-Compassion Scale (SCS)

Self-compassion Scale was developed by Neff (2003b), it is a self-rated questionnaire assessing self-compassion. Turkish adaptation of this scale was carried out by Akın, Akın, and Abacı (2007). The scale includes 26 items on sub-dimensions such as self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification. In the adaptation study, the internal consistency coefficients of the scale for sub-dimensions were .72 and .80, and test-retest reliability coefficients were found between .56 and .69. In the current study, the internal consistency coefficient for dimensions is between .68 and .71 and .72 for the whole scale. SCS is a Likert-type scale with items scored between 1 and 5 from strongly disagree to strongly agree.

2.2.2. Pittsburgh Sleep Quality Index (PSQI)

The Pittsburgh Sleep Quality Index (PSQI) is a self-rated questionnaire assessing sleep quality and this scale was developed by Buysse, Reynolds, Monk, Berman, and Kupfer (1989). There were 19 items containing seven components (subjective Sleep Quality, sleep-onset latency, sleep duration, sleep efficiency, sleep disturbances, use of sleeping medications, and day time dysfunction). The seven subscale scores are added together to create a global sleep quality score. Global PSQI scores range from 0 to 21 and 5 and higher scores indicating sleep disturbance (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). Turkish adaptation of this scale was carried out by Ağargün, Kara, and Anlar (1996) and they reported the internal Consistency coefficient of the scale was .80; in the current study, it was .61.

2.2.3. Aggression Questionnaire (AQ)

The Aggression Questionnaire (AQ) developed by Buss and Perry (1992) was used to assess aggression. This questionnaire measures physical aggression, verbal aggression, anger, and hostility. Responses are given on a 5-point scale from extremely uncharacteristic of me to extremely characteristic of me. Higher scores refer to higher levels of physical aggression, anger, hostility and verbal aggression. The scale was adapted into Turkish by Madran (2013) and it was reported the internal Consistency coefficient of the scale was .85; in the current study, it was .86.

2.3. Statistical analysis

In this study, simple correlation analysis was used to determine the relationship between aggression, and self-compassion and sleep quality. In addition, multiple linear regression analysis was used to determine whether the aggression levels of high school students were predicted by sleep quality and self-compassion. SPSS 24 package program was used for analysis.

3. Results

The relationship between aggression levels of the 527 high school students and the level of self-compassion and sleep quality was examined by simple correlation analysis. The descriptive statistics of the variables examined in Table 2 and the correlation values of the variables are given in Table 2.

Table 2. Correlation Values Showing the Relationships between Arithmetic Mean, Standard Deviation and Variables Regarding Information Obtained from Aggression, Self-compassion and Sleep Quality Scales

Variables	A	1	2	3	4	5	6	7
Aggression (S)	-							
Predictive variables								
1.Self-compassion	.17*	-						
2.Self-judgment	.43**	.13*	-					
3.Common humanity	.15*	.55**	.17**	-				
4.Isolation	.40**	.11*	.63**	.13**	-			
5.Mindfulness	.12*	.65**	.16*	.56**	.10*	-		
6.Over-identification	.44**	.14*	.62**	.17**	.66**	.19**	-	
7.Sleep Quality	.25**	-.09*	.20**	-.18*	.20**	-.13*	.16*	-
Mean	84,36	14.23	13.02	10.88	11.50	11.55	11.40	7.61
Standard deviation	18,76	4.32	4.87	3.61	3.99	3.67	3.94	3.19

** p < .001., * p < .01.

When Table 2 is examined, it is seen that there are statistically significant relationships between aggression and all subscales of self-compassion and sleep quality.

It was found that there is a low positive level of self-indulgence ($r = .17$, $p < .01$), a moderate positive level of self-judgment ($r = .43$, $p < .001$), a low positive level of awareness of awareness of sharing ($r = .15$), a moderate positive level of alienation ($r = .40$, $p < .001$), a low positive level of consciousness ($r = .12$, $p < .01$) and a moderate positive level of ($r = .44$, $p < .001$) over-identification, relationship between aggression and above-mentioned sub-dimensions of self-compassion. When the relationship between aggression and sleep quality was examined, it was found that the relationship between these two variables was low and positive ($r = .25$, $p < .001$).

Multiple linear regression analysis was used to investigate whether aggression levels of high school students were predicted by self-compassion sub-dimensions and sleep quality. The fact that the correlations of the independent variables with the dependent variable are significant and the relationship between the independent variables is not higher than 0.80 provides evidence that regression analysis can be performed on these variables (Büyüköztürk, 2006).

In addition, Variance Increment Factor (VIF), Tolerance Value and State Condition index (CI) values were examined in order to control the hypothesis of multiple correlation assumptions from the basic assumptions of multiple regression analysis. The results are given in Table 3.

Table 3. Coefficient Table for Multiple Correlation Assumptions

	(VIF)	TI	(CI)
Constant			1.000
Self-kindness	1.925	.519	5.964
Self-judgment	1.926	.519	7.298
Common humanity	1.649	.606	12.254
Isolation	2.100	.476	13.148
Mindfulness	1.937	.516	14.486
Over-identification	2.063	.485	14.914
Sleep Quality	1.067	.937	16.398

It is expected that the value of Variance Increase Factor (VIF) being examined for multi-correlation assumption is less than 10, Tolerance value is greater than 0.00 and the State condition index (CI = Condition Index) is less than 30 (Hair, Black, Babin, Anderson & Tatham, 2006; Tabachnick, Fidell, & Osterlind, 2001; Uyanik & Guler, 2013). When examined in accordance with all these limits, it was found that the data set used in the study did not have multiple correlation problems and the data were suitable for multiple linear regression analysis. Table 4 shows the results of multiple linear regression analysis with the related variables.

Table 4. Predictive Level of Self-compassion and Sleep Quality

Variables	B	Standart Error	B	t	p	r	Partial r
Constant	46.540	3.672		12.676	.000		
Self-kindness	.035	.226	.008	.155	.877	.007	.006
Self-judgment	.753	.201	.196	3.749	.000	.162	.141
Common humanity	.342	.251	.066	1.364	.173	.060	.051
Isolation	.449	.256	.096	1.754	.080	.077	.066
Mindfulness	-.006	.268	-.001	-.024	.981	-.001	-.001
Over-identification	1.010	.257	.212	3.932	.000	.170	.148
Sleep Quality	.947	.228	.161	4.152	.000	.179	.156
F(7-519)= 26.854		p= 0.00		R= .516		R ² = .266	

The multiple regression analysis was used to reveal how self-kindness, self-judgment, consciousness- on-awareness of sharing, alienation, consciousness, over-identification and sleep quality variables, which are thought to have an effect on the aggression levels of high school students predicted the level of aggression, and self-compassion sub-dimensions and sleep quality were found to be the significant predictors of aggression (F(7-519)= 26.854 p<0.01).

These variables and the level of aggression of high school students is 27% (R² = .27). When the standardized regression coefficients were examined, it is seen that the first most effective three predictive variables of aggression are over-identification ($\beta = .212$), self-judgement ($\beta = .196$) and sleep quality ($\beta = .161$).

When the significance of the regression coefficients was analysed, it was found that the significant predictors of aggression variable were over-identification (p <0.01), self-judgment (p <0.01) and sleep quality (p <0.01). According to the results of multiple linear regression analysis, the regression equation predicting aggression is as follows: Aggression = 46.54 + 1.01 * (over-identification) + .947 * (sleep quality) + .753 * (self-judgment) + .449 * (alienation) + .342 (being conscious of the shares) + .035 * (self-indulgence) - .006 (Awareness).

4. Discussion

The aim of this study is to investigate the relationships between aggression, self-compassion, and sleep quality in Turkish High School Students. The results showed the relationship between aggressiveness and sleep quality. Aggression was found slightly correlated with self-compassion positive sub-dimensions (self-kindness, common humanity and mindfulness) and moderately correlated with negative sub-dimensions (self-judgment, isolation and over-identification). However, sleep quality was found negatively correlated with self-compassion positive sub-dimensions (self-kindness, common humanity and mindfulness) and positively correlated with self-compassion negative sub-dimensions (self-kindness, common humanity and mindfulness).

Similar results were reported in previous research (Cote et al. 2013; Coulombe et al. 2011; Jenni and Dahl 2007; Lemola et al. 2012). We also hypothesized that self-compassion and sleep quality are predictors of aggression. The multiple regression analysis was used to reveal how the variables such as self-kindness, self-judgment, common humanity, isolation, mindfulness, over-identification and sleep quality that are thought to have an effect on the aggression levels of high school students predicted the level of aggression, and self-compassion sub-dimensions and sleep quality were found to be the significant predictors of aggression.

Recent studies on aggression have shown that people with aggression were found to be associated positively with sleep insufficiency (Coulombe et al. 2011; Haynes et al. 2006; Jenni & Dahl, 2007; O'Brien, 2009), behavioral problems (Bates et al. 2002), irregular sleep (Lemola, Schwarz, & Siffert, 2012), and sleep deprivation (Cote et al. 2013; Kahn-Greene et al. 2006). The first three most predictive variables in the order of importance were found to be over-identification, self-judgment and sleep quality. The prediction of aggression by sleep quality was supported by relational research findings from previous studies (Cote et al., 2013; Ireland, Culpin, 2006).

The over-identification, isolation, and self-judgment were identified with an evaluation perspective as a low level of self-compassion by Neff and colleagues. (Barry, Loflin, & Doucette, 2015). The individual's judging and criticizing himself brutally, over-identifying one's painful thoughts and feelings were found to be related to aggression as negative aspects of self-compassion and self-judgment and over-identification such as sleep quality were found to be important predictors of aggression.

The present study has several implications for future research. Firstly, research results needed to reinforce by further studies relating to self-compassion, aggression, and sleep quality. Although there are studies on aggression in high school students (such as Cote et al. 2013; García-Sancho, Salguero, & Fernández-Berrocal, 2014; Kaplan & Aksel, 2013; Koç, 2014; Wolff et al. 2014), this study discusses the relationship of aggression in these students with sleep quality and self-compassion. In this way, sleep quality and the predominant effect of self-sufficiency on aggression are also revealed. The predominant effect of sleep quality and self-compassion on aggression has been also revealed.

There are some limitations in this study. First, most of the students indicated that they have a low sleep quality. This condition may affect reported results. Second, the participants are high school students and study results are difficult to generalize to other student groups. Third, the data is limited to the declaration of the students. For this reason, it can be advisable for researchers to repeat the study with larger groups of students and at different levels of learning.

This study has also several implications for prevention of aggression. Aggression negatively affects students' daily routines, school performance and relationships with family and friends. Therefore, it is suggested that mental health professionals and educators should develop interventional strategies for preventing aggression.

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