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IS Sleep Quality Associated with Emotion Regulation and Moral Decision-making?

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Abstract

Introduction: Adequate sleep may help regulate emotions, which in turn may influence moral decision-making. Therefore, the aim of the current study was to examine the relationship between sleep quality, emotion regulation and moral decision-making.
Method: In this descriptive online survey, we administered three questionnaires, including the Pittsburgh Sleep Quality Index, the Emotion Regulation Questionnaire, and the Moral Decision-Making Questionnaire, to 306 non-randomly selected employees of the Iranian National Tax Administration who were surveyed via the Internet between December 2021 and January 2022.
Results: Analysis of data based on Kendall's Tau correlation coefficient showed no significant relationship between sleep quality with emotion regulation and decision-making and most of their subscales. Only a weak direct relationship was observed between some indicators of poor sleep quality (poor subjective sleep quality, sleep disturbances, and use of sleep medications) and utilitarian low-conflict direct moral decision-making.
Conclusion: According to findings it can be stated that for people who have sufficient cognitive capacity, time to manage their emotions, and access to society's established moral values, poor sleep quality may not be significantly associated with poor emotion regulation and moral decision-making.

Keywords: Sleep Quality, Emotion Regulation, Decision-making

Introduction

Employees of the Iranian National Tax Administration, like many other working adults in Iran may suffer from various sleep problems [1, 2] while also dealing with several moral dilemmas [3]. A moral dilemma is a problematic situation that involves a conflict between two undesirable options, both implying negative consequences [4]. People who are sleep deprived, particularly under stressful situations, may have more trouble making moral judgments, and they make different choices from when they are well-rested. For example, Barnes, and Gunia [5] reported that difficult conditions associated with sleep deprivation may lead to low moral awareness. A review of studies on the negative impact of sleep loss on decision-making supports the idea that sleep deprivation may be linked to difficulties in making moral judgments. According to these studies, sleep inadequacy may affect neural substrates related to decision-making, especially areas involved in risk-taking tendencies [6]. Thus, sleep deprivation impairs major cognitive functions, including decision-making, and may impair the ability to integrate emotion and cognition to guide moral judgments [7]. The results of some laboratory studies confirm that long hours of total sleep deprivation are associated with decreased ability to make moral decisions [8-10]. According to recent research, there is an insignificant relationship between sleep deprivation and moral

decision-making [11, 12]. Therefore, research into the relationship between poor sleep and moral decision-making appears to be inconclusive

A more nuanced understanding of the nature of the relationship between sleep and moral decision making may be provided by the social intuitionist theory [13]. It suggests that moral judgment is automatic, unconscious, intuitive, and highly related to emotions. Moral judgment is influenced not by predictions or explicit reasoning, but by the quick and relatively automatic acceptance or disapproval of an action under the impact of socio-cultural influences [14]. In support of the role of emotions in moral decision-making, brain imaging studies have also demonstrated the role of limbic networks in moral judgments [15, 16]. Greene [17] argued that automatic emotional responses and cognitive-logical control are both involved in moral judgments. When people consider moral dilemmas, they automatically have a negative emotional reaction because they hate hurting others. If this feeling is so powerful that it inhibits reasonable evaluation of the cost/benefit of injuring others, the utilitarian solution (e.g., sacrificing one person to rescue more people) is rejected and a deontological one is provided [18]. Similarly, Tassy et al. [19], and Haidt [20] demonstrated that emotions and logic play a shared role in moral decision-making, with participants experiencing fear, sadness, compassion, guilt, anger, hatred, regret, and humiliation when contemplating moral dilemmas. Therefore, according to theories and research on moral decision-making, various emotions are experienced throughout the moral decision-making process, and people's decisions are influenced by how these emotions are regulated.

Emotion regulation is the process through which people manage their emotions as well as how they experience or express them [21]. Moral dilemmas often lead to negative emotions such as anger, humiliation, and hatred [22], and these negative emotions often lead to deontological moral judgments [23, 24]. Thus, those with low emotion regulation are more likely to hold a deontological moral judgment. Consistent with this prediction, Zhang et al. [25] reported that the moral decisions of people with difficulty in regulating emotions are more deontological. In a study involving moral dilemmas, Szekely and Miu [23] found that the more cognitive reappraisal is used as a component of emotion regulation, the more likely it is that utilitarian moral decisions will be made. Overall, it appears that emotion regulation helps in the accuracy of cost-benefit calculations in moral decision-making, resulting in more utilitarian responses.

Health-related factors that may influence the quality of emotion regulation, such as sleep quality, are worth investigating. Sleep is sometimes seen to be a natural emotion regulator [26], hence sleep loss can impair emotion regulation. Sleep insufficiency has generally been reported to increase reactivity to negative emotional stimuli [27]. Specifically, Rapid Eye Movement (REM) sleep is essential in the organization of emotional experiences. For example, sleep has been shown to promote the generalization of the extinction of conditioned fear [28]. However, there have been many problems in the conceptual and empirical study of the relationship between sleep and emotion regulation. However, studies suggest that insufficient or poor sleep may lead to negative and maladaptive changes in various aspects of emotional experience [29].

Most studies have examined the effects of sleep deprivation in the laboratory, but this study measured the relationship between sleep quality and moral decision making in a realistic situation with a reasonably large sample size to help clarify these contradictory findings. Also, so far, few studies have evaluated the relationship between sleep, various aspects of emotion, and moral decision-making (e.g., 26). For example, Killgore et al. [8] showed that sleep deprivation makes it more difficult for a person to make rapid decisions on problems including emotional information. The study also discovered that those with greater emotional intelligence make more stable judgments under sleep loss in the face of emotionally charged dilemmas than people with moderate or low emotional intelligence. Despite these studies and theories, there is still much ambiguity about the relationship between different indicators of sleep quality and emotion regulation, moral decision-making, and the perceived difficulty of moral dilemmas. As a result of the inconsistencies and uncertainties in the literature, the current study does not propose a hypothesis, but rather raises two fundamental questions: 1) What is the relationship between the components and overall score of sleep quality and the subscales and the total score of emotion regulation? 2) What is the link between the components and total score of sleep quality and participants' moral decision-making in different types of moral dilemmas and their perceived difficulties?

Method

In this descriptive online survey, the statistical population included all employees of the Iranian National Tax Administration (n = 23700) at the time of the research. Participants between the ages of 18 and 60 who gave informed consent to participate were included in the study. Exclusion criteria included submission of an incomplete or clearly invalid questionnaire, as well as reporting a history of mental health problems and/or current stressful living conditions. Studies suggest that by taking a sample of more than 300, the statistics derived from the sample are likely to be the same as the true value in the target population (e.g., 30). Therefore, a total of 306 (131 female) employees aged 26-59 (39.74 ± 6.49) years old volunteered (non-randomly) in this study. Participants were mainly highly educated, with 77.2% (n=236) having a master's degree or Ph.D., 22.2% (n=68) having a bachelor's degree, and only 0.7% (n=2) having a high school degree. These individuals were selected from the employees of this organization in all provinces of Iran and were invited to participate in the study by a phone call or by sending advertisement links on the organization's social media. The questionnaires were administered online (via https:porsline.ir) from December 18, 2021, to January 5, 2022. When filling out the questionnaires, the

first author was in contact with the participants and guided them in case of any ambiguity. There was no time limit for answering the questionnaires. None of the participants reported any psychiatric or major neurological problems. Participants did not receive any compensation to participate in the study, and only a report on the study results was sent to each of them. This study has been approved by the ethics committee of Islamic Azad University, Research Sciences Branch (Ethical Code: IR.IAU.SRB.REC.1400.259).

The instruments used in the present study are as follows:

Moral Decision-Making Questionnaire: This questionnaire consists of 18 items taken from the Moral Decision-Making Questionnaire of Carmona-Perera, and Caracuel [31]. The questionnaire was carefully translated into Persian by a qualified translator and was then matched with the English version to ensure its accuracy. This questionnaire presents four types of problems for decision making: 1) Non-moral decision-making (8 rather simple questions that assess the capacity to make general judgments unrelated to morality. 2) Indirect moral decision-making: comprises of two questions that assess participants' moral decision-making in a hypothetical circumstance in which they must choose between allowing multiple individuals to die naturally or conducting an indirect action (e.g., pressing a button) to murder only one person. 3) Low-conflict direct moral decision-making: comprises four questions that place participants in a hypothetical circumstance in which they can directly harm someone for a large or personal benefit. 4) High-conflict direct moral decision-making: comprises four questions that place participants in a hypothetical circumstance in which they must choose between directly murdering one person and failing to save numerous lives.

It should be noted that following each moral dilemma, participants rated the degree of difficulty of the dilemma from 1 (very easy) to 5 (very difficult). To ensure the construct validity of the questionnaire, exploratory factor analysis was performed using the principal component analysis and varimax rotation method. The Kaiser-Meyer-Olkin value (0.68) was acceptable and Bartlett's Test of Sphericity (X^2_{approx} = 741.20; P <0.001) showed that appropriate factors could be extracted from the data. Finally, the four-factor structure of the questionnaire was confirmed. All factors had eigenvalues > 1 (Overall Cronbach alpha = 0.664): 1) Non-moral decision-making (α = 0.67); 2) Indirect moral decision-making (α = 0.71); 3) Low-conflict direct moral decision-making (α = 0.77); and 4) High-conflict direct moral decision-making (α = 0.69). These four factors explained a total data variance of 61.28%.

Pittsburgh Sleep Quality Index (PSQI): This questionnaire [32] consists of 19 items and is used to assess participants' usual sleep quality over the past month. This tool consists of seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Scores for each question range from 0 to 3. Therefore, the overall score for sleep quality ranges between 0 and 21. A higher score indicates lower sleep quality. The diagnostic sensitivity, specificity, and cut-off scores of this tool are 89.6%, 86.5%, and >5, respectively [32]. In the present study, the available Persian translation of this questionnaire was used and a qualified translator matched the Persian text with its original English version. Farrahi Moghaddam and Nakhaee [33] translated this questionnaire into Persian, tested its validity and reliability, and found a 0.54 correlation coefficient between the Persian PSQI and the General Health Questionnaire (GHQ; 34) and as a result had good internal consistency (α = 0.77). Cronbach's alpha was 0.661 in this study which suggests adequate internal consistency.

Emotion Regulation Questionnaire: The original version of this questionnaire [34] consists of 10 questions and two subscales: 1) Cognitive Reappraisal (6 items) and 2) Expressive Suppression (4 items), with the internal consistency of 0.79 and 0.73 in Gross and John's research [34], respectively. In this study, the available translation of this questionnaire was used and before implementation, a qualified translator matched its Persian text with the original English version. However, after implementation, it was found that one of the items related to cognitive reappraisal does not have the necessary consistency with the other items. After exploratory factor analysis by principal component analysis and varimax rotation, this item was not included in either scale of the questionnaire and, therefore, was removed. In the present study, Cronbach's alpha of cognitive reappraisal and expressive suppression was 0.80 and 0.65, respectively and the overall alpha of emotion regulation was 0.70. Moreover, the implementation of exploratory factor analysis also confirmed the construct validity and two-factor structure of this questionnaire; because both factors had eigenvalues >1 and showed a large difference from the next factors. These two factors explained a total data variance of 56.04%.

Data were analyzed using IBM SPSS26 software. The results of the Kolmogorov-Smirnov (KS) and Shapiro-Wilk (SW) tests showed that none of the main variables (except the overall score of emotion regulation in the KS test), as well as none of their subscales, had a normal distribution. Furthermore, there were several outliers in the study's primary variables, and our analyses revealed that they were not attributable to errors in data entry or computations, but rather reflected true individual differences. Therefore, the removal or modification of outliers or normalizing the distribution of variables was not a proper strategy. As a result of the lack of fundamental parametric statistics assumptions, the median and Interquartile Ranges (IQR) were used to describe the data. Also, Spearman's rank correlation coefficient was not used to examine the relationship between continuous variables. Instead, Kendall's rank correlation coefficient was used due to its superiority when there is a possibility of a non-linear relationship [35]. Also, the Wilcoxon signed-rank test was used to compare the participants' answers to emotion regulation subscales and the Friedman test was used to compare the answer to various moral questions and their difficulty.

Results

Table 1 shows the median and interquartile range of the main variables and their components. Individuals preferred cognitive reappraisal over expressive suppression for emotion regulation, according to the Wilcoxon signed-rank test. (Z = -13.17; P <0.001). Also, the comparison of participants' responses using the Friedman test showed that they responded differently depending on the type of moral dilemmas (X^2 = 386.89; P <0.001). The pairwise comparisons using the Wilcoxon signed-rank test showed that participants in high-conflict indirect and direct moral dilemmas provided more utilitarian responses than those in Low-conflict direct moral decision-making. Also, in indirect dilemmas, they provided more utilitarian responses than in direct dilemmas (Ps <0.001). According to the Wilcoxon signed-rank test, participants considered some types of moral dilemmas more difficult than others (X^2 = 218.32; P <0.001). Pairwise comparisons with the Wilcoxon signed-rank test showed that participants found moral decision-making more difficult in low-conflict dilemmas than indirect and high-conflict moral dilemmas and that indirect moral dilemmas were perceived as more difficult than high-conflict moral dilemmas (Ps <0.001).

Table 1. Descriptive Statistics and the Normality Tests

Variable	Median	IQR	Skewness	P for KS	P for SW
Cognitive reappraisal	26	7	-0.906	< 0.001	< 0.001
Expressive suppression	14	7	-0.009	0.003	0.003
Emotion regulation	39	10.25	-0.377	0.091	0.003
Non-moral DM	8	1	-1.941	< 0.001	< 0.001
Non-moral DM (difficulty)	33	10	-0.327	< 0.001	< 0.001
Indirect moral DM	2	0	-1.927	< 0.001	< 0.001
Indirect moral DM (difficulty)	6	4	0.176	< 0.001	< 0.001
Low-conflict direct moral DM	0	0	2.525	< 0.001	< 0.001
Low-conflict direct moral DM (difficulty)	16	5	-0.585	< 0.001	< 0.001
High-conflict direct moral DM	2	2	0.024	< 0.001	< 0.001
High-conflict direct moral DM (difficulty)	10	6	0.508	< 0.001	< 0.001
Total utilitarian moral DM	4	2	0.289	< 0.001	< 0.001
Total difficulty in moral decision-making	31	11	0.492	< 0.001	< 0.001
Subjective sleep quality	1	2	0.098	< 0.001	< 0.001
Sleep latency	1	2	0.501	< 0.001	< 0.001
Sleep duration	1	1	0.685	< 0.001	< 0.001
Habitual sleep efficiency	0	1	1.304	< 0.001	< 0.001
Sleep disturbances	1	0	0.692	< 0.001	< 0.001
Use of sleeping medication	0	0	2.643	< 0.001	< 0.001
Daytime dysfunction	1	1	0.550	< 0.001	< 0.001
Total sleep quality	6	5	0.602	< 0.001	< 0.001

IQR = interquartile ranges; KS = Kolmogorov-Smirnov; SW = Shapiro-Wilk; DM = decision-making

Furthermore, the median score of participants on all the sleep quality components was 0 or 1, suggesting that no component had more than 50% of the participants reporting they had major sleep problems. Interestingly, however, the median sleep quality scores [6] were above the cut-off point of this test [5], showing that more than 50% of the participants had poor sleep quality. Also, the reported sleep duration of the participants (not shown in Table 1) was significantly lower than the recommended 7 h/day for adults (mean = 5.83; standard deviation = 1.73). Table 2 shows Kendall's Tau correlation coefficients among sleep quality indicators and emotion regulation subscales. The statistical significance of these correlations was calculated as two-tailed due to the lack of a directional hypothesis. As it can be seen in Table 2, none of these components and subscales, as well as the overall scores of sleep quality and emotion regulation, show a significant correlation. The closest correlation coefficient to the statistical significance level was the negative relationship between cognitive reappraisal and sleep quality (r = -0.081; P = 0.067), which would be significant if we considered it one-tailed (P = 0.034); i.e. the higher the participants sleep quality, the greater their use of cognitive reappraisal strategy. However, these correlation coefficients are very small and indicate that there is little or no correlation between the two variables.

Table 2. Kendall's Tau Correlation Coefficient between Sleep Quality and Cognitive Reappraisal Components

	SSQ	SL	SDU	HSE	SDIS	USM	DD	TSQ
Cognitive reappraisal	-0.081	-0.024	-0.047	0.033	-0.063	-0.052	-0.068	-0.062
Expressive Suppression	-0.029	-0.070	-0.033	0.036	0.001	0.027	-0.009	-0.015
Emotion regulation	-0.071	-0.041	-0.056	0.034	-0.033	-0.009	-0.042	-0.046

There is no significant relationship between sleep quality and emotion regulation measures

SSQ = subjective sleep quality; SL = sleep latency; SDU = sleep duration; HSE= Habitual sleep efficiency; SDIS = Sleep disturbances; USM = Use of sleeping medication; DD = Daytime dysfunction; TSQ = Total sleep quality

Kendall's Tau correlation coefficients between sleep quality measures and moral and non-moral decision-making, as well as perceived difficulty in making the decisions, are shown in Table 3. The components and total score of sleep quality showed no significant or minor association with the Moral Decision-Making Questionnaire components. As it can be seen in Table 3, the general ability to make non-moral decisions is negatively correlated with using sleep medications (P <0.05). Also, perceived difficulty in making non-moral shows a small inverse relationship with sleep disturbances (P <0.05). The other significant relationship is with low-conflict direct moral decision-making. The lower the habitual sleep efficiency and the longer the sleep duration, the more utilitarian this sort of decision was (P <0.01). Utilitarian decision-making in low-conflict direct moral dilemmas was also correlated with the use of sleep medications (P <0.01). There was no significant relationship between other sleep quality subscales and moral decision-making.

Table 3. Kendall's Tau Correlation Coefficient between Sleep Quality Indicators and Moral Decision-making

	SSQ	SL	SDU	HSE	SDIS	USM	DD	TSQ
Non-moral DM	-0.071	0.036	-0.067	-0.091	-0.080	-0.107*	0.044	-0.072
Non-moral DM (difficulty)	-0.071	0.009	-0.025	-0.041	-0.101*	0.037	0.055	-0.047
Indirect moral DM	0.033	0.099	0.015	0.080	0.032	-0.090	-0.049	0.053
Indirect moral DM (difficulty)	0.049	0.023	0.037	0.012	0.048	0.056	-0.006	0.018
Low-conflict direct moral DM	0.140**	-0.012	0.061	-0.022	0.180**	0.134*	-0.054	0.050
Low-conflict direct moral DM (difficulty)	-0.064	0.030	0.010	-0.005	-0.081	0.025	0.091	-0.012
High-conflict direct moral DM	-0.019	0.049	-0.029	0.005	-0.066	0.058	-0.017	0.012
High-conflict direct moral DM (difficulty)	0.015	-0.028	0.044	0.066	0.045	0.051	0.018	0.025
Total utilitarian moral DM	0.034	0.033	-0.040	0.017	0.011	0.088	-0.035	0.032
Total difficulty in moral decision-making	0.004	0.010	0.002	0.026	0.004	0.047	0.045	0.012

* 0.05 < P; ** 0.01 < P

DM = decision-making; SSQ = subjective sleep quality; SL = sleep latency; SDU = sleep duration; HSE= Habitual sleep efficiency; SDIS = Sleep disturbances; USM = Use of sleeping medication; DD = Daytime dysfunction; TSQ = Total sleep quality

Discussion

The present study aimed to evaluate the relationship between sleep quality, emotion regulation, and moral decision-making. Analysis of the data using Kendall's Tau correlation coefficient showed no significant relationship between sleep quality and emotion regulation and decision making and most of their subscales. Only a weak direct relationship was observed between some indicators of poor sleep quality (poor subjective sleep quality, sleep disturbance, and use of sleep medication) and utilitarian, low-conflict, direct moral decision-making. In summery we found that 1) there is no significant relationship between poor sleep quality and emotion regulation; 2) There is a small but significant relationship between utilitarian decision-making in low-conflict moral decisions and the three components of poor sleep quality, namely low subjective sleep quality, sleep disturbance, and use of sleeping medications; and 3) Contrary to studies conducted in other countries (e.g., 36), Iranian participants provided more utilitarian responses in indirect moral dilemmas and high-conflict direct moral dilemmas than in low-conflict direct moral dilemmas. At the same time, they found it less difficult to make moral decisions on low-conflict moral dilemmas than on indirect moral dilemmas and high-conflict direct moral dilemmas.

Previous studies have shown that the number of hours of sleep deprivation is a key factor in the severity of the effect of sleep deprivation on performance. Killgore et al. [8] found that 53 hours of continuous wakefulness resulted in longer delays in responding to personal moral dilemmas. Lowe et al. [37] also noted the exacerbation of neurobehavioral dysfunction over a longer period of sleep deprivation. Although Killgore et al. [8] and Olsen et al. [9] found that partial sleep deprivation impairs the adult's ability to reason morally in the long run, from these data, it can be concluded that the ability to make moral decisions is significantly reduced only with complete and long-term sleep deprivation; but partial or short-term sleep deprivation may have little effect on moral decision-making. In line with this, some studies have shown that short-term sleep deprivation has no significant effect on moral decision-making [9, 10]. In particular, the results of a recent meta-analysis of six studies [11] showed that there is only a weak relationship between sleep and moral utilitarianism. Therefore, the findings of the present study, along with recent studies, indicate that short-term or partial sleep deprivation may have no significant effect on the way people make moral decisions.

It has been hypothesized in this study that individuals' moral decisions, especially in hypothetical situations are not easily affected by the amount and quality of one's sleep because this kind of decision is rooted in one's beliefs and is also influenced by the socio-cultural context. Also, when there is an unlimited opportunity to respond, the negative effects of sleep deprivation on thinking and emotion may be offset by spending more time. Consistent with this argument, Minkel, and McNealy [38] showed that normal healthy adults can cope with mild to moderate sleep disturbance without showing major changes in neurological or mental-emotional function, at least in response to passive experiences of negative stimuli, and most aspects of sleep have no relationship with emotional

function. These findings are interpreted as evidence that the human nervous system can maintain the regulatory effect of negative emotions in the sleep disturbance observed in the general population. This result is also consistent with the results of the present study and the lack of any relationship between sleep components and emotion regulation and moral decision-making.

Although it has been reported that when responding to moral dilemmas, neural activity in areas of the brain associated with emotional response and emotion regulation increases [15], our findings showed no significant relationship between emotion regulation and moral decision-making. This finding is contrary to previous research. For example, Zhang et al. [25] showed that people with low emotion regulation are less likely to evaluate utilitarian moral decision-making positively. Cognitive reappraisal, by reducing emotional arousal, can reduce the emotion-linked deontological biases in moral decision-making [23]. On the other hand, other researchers [39] found no effect of positive emotions on impersonal moral decision-making. What we found in this study was a positive relationship between the cognitive reappraisal subscale as well as the overall score of emotion regulation with deontological low-conflict personal moral decision-making, which is not consistent with the above results. Some researchers have focused on the strategies used in emotion regulation. For example, Feinberg et al. [40], and Szekely and Miu [23], in contrast to the present study, found that cognitive reappraisal leads to more utilitarian moral judgments. Also, Lee, and Gino [41] reported that expressive suppression leads to more utilitarian judgments; while in the present study, no relationship was observed between expressive suppression and moral decision-making. The varied readings of the questionnaire items by participants may have resulted in these disparate outcomes. We hypothesize that diverse perceptions have been impacted by participants' views derived from their socio-cultural milieu.

The present study has several limitations. First, all data is self-reported, and participants may not have been able to accurately assess their sleep, emotion regulation strategies, and how they would make moral judgments in the real world. Subsequent studies can measure these variables using objective tools. Second, participants in this study had no time-limit for completing the questionnaires. It is possible that some individuals who spent a significant amount of time filling out the questionnaires gradually amended their initial moral judgments and eventually supplied answers based on religious values or social norms. This point is also raised in the study of Cellini et al. (26). Learning may also influence how individuals respond. When participants encounter dilemmas with the same structure, they may form a schema of moral dilemmas and ultimately make decisions only based on their previous decisions in previous dilemmas. Another limitation was that most of the participants were highly educated and so, their cognitive capacity may have moderated the consequences of poor sleep on their emotion regulation and moral decision-making. It is suggested that future research explore the relationship between sleep, emotion regulation and moral decision making in a more general population and under time constraints. Finally, important factors such as demographic characteristics, socioeconomic status, and religiosity may have a relationship with sleep quality and moral decision-making, which are suggested to be considered in future studies.

Conclusion

Overall, no significant relationship was found between different indicators of sleep quality with emotion regulation and the way we respond to moral dilemmas, as well as the perceived difficulty in responding to them. However, these findings do not imply that people's sleep quality has no effect on their emotion regulation or moral judgment, but rather that lower sleep quality may have no significant relationship with how people with high educational levels respond to self-report questionnaires on emotion regulation and moral decision-making with no time limit. Future studies will clarify the relationship between these variables, using objective tools, different mediators, and more diverse participants.

Conflict of Interest

The authors have no financial or non-financial conflicts of interest relevant to the content of this article to declare.

Ethical Approval

All participants volunteered and received no compensation other than a report of the results. Before taking part in this study, the participants completed an informed consent form. The Helsinki Declaration was adequately addressed, and the study was approved by the Islamic Azad University, Research Sciences Branch's ethics committee (Ethical Code: IR.IAU.SRB.REC.1400.259).

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