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MANAGERS' SLEEP DEFICIT AND STRESS-COPING STRATEGIES IN CONTEMPORARY ORGANISATIONS – EMPIRICAL ANALYSIS

Magdalena KRACZLA

Akademia Wyższej Szkoły Biznesu, Dąbrowa Górnicza, magda.kraczla@wp.pl; ORCID: 0000-0002-9382-4249

Purpose: This article seeks to establish whether there is a relationship between the amount of sleep managers have per night and their behaviour when in stressful situations, with particular reference to their choice of coping strategy.
Design/methodology/approach: In order to establish the relationship between managers' sleep duration and their preferred styles of coping with stress, two specific research tools were employed: a Polish adaptation of the Coping Inventory for Stressful Situations (CISS) and the author's own questionnaire assessing respondents' daily hours of sleep.
Findings: The research showed that as a variable, sleep deficit is not sufficient to explain the behaviour of managers in situations of emotional stress. However, when treated as an independent variable, sleep duration can be used to identify certain interesting behavioural aspects of managers in their professional environment.
Research limitations/implications: It is advisable to extend the research to include a larger research group and to distinguish other variables specific to the functioning of people in managerial positions.
Practical implications: The lack of any correlation between the extent of sleep deprivation and behaviours aimed at reducing stress may indicate that these behaviours stem more from specific individual factors (e.g. gender or age) and environmental conditions rather than sleep duration. Identifying these conditions and understanding how they can be modified may help to shape the well-being of managers and their employees.
Social implications: If organisations factored sleep duration into their work/health equation, this would help direct their efforts towards ensuring the well-being of their managers, which would lead to increased efficiency and performance.
Originality/value: Sleep duration does not appear to be a variable that sufficiently explains the coping strategies employed by managers, as these are more influenced by age and gender, for example. The research showed that the group of managers analysed here did not meet the recommended standards of eight hours sleep a day, with sleep duration being heavily dependent on the respondents' age.

Keywords: manager, stress, stress-coping strategies, sleep, sleep deficit.

Category of the paper: research paper.

1. Introduction

Contemporary corporate cultures that glorify managers who devote more than one hundred hours a week to their professional work are of interest to scientists and researchers who seek to determine how effectively managers function in stressful organisational situations when combined with significant daily sleep deficiency.

According to the literature on the subject, when experienced over a period of time, the effects of sleep deficiency contribute to a significant deterioration in the functioning of the body in its biological, cognitive, emotional and social dimensions. As a consequence, this situation leads to a decrease in work efficiency and difficulties in coping with professional challenges (Czeisler, 2016; Ehrenberg, 2016).

This phenomenon created an opportunity for the empirical research undertaken by the author to assess the preferred styles of coping with organisational stress that are demonstrated by modern managers, determine their individual sleep index by indicating the average number of hours they sleep per day and establish the relationship between the daily amount of sleep declared by managers and the choice of their approach to stressful situations. As expected, this relationship has a direct impact on managerial effectiveness at work and leads to increased difficulties in coping with professional challenges. Therefore, it is absolutely in the best interest of modern organizations to prioritize the problem of managerial sleep deprivation and treat it as a good basis for defining suitable policies in order to counteract sleep deficit among their executives.

As shown by numerous studies, sleep deprived managers still try their best to maintain the highest possible level of efficiency in fulfilling their role even when they face an increasing number of stressful situations every day. The aim of this article is to reveal the relationship between the sleep deprivation experienced by people in managerial positions and the activities they undertake to cope with stress. This relationship may determine how a particular manager's work style is influenced by the amount of sleep they get per day.

2. Managerial stress and coping strategies

In contemporary organizations, managerial roles are performed in highly stress-inducing conditions, and therefore an ability to cope with stress effectively is one of the most valued competences of a modern manager (Kraczla, 2016). Currently, managerial positions belong to a group of workplace positions that are regularly exposed to extensive mental strain, which generates a high level of emotional tension related to the presence of a wide range of stress factors (Cenin, 1994). For this reason, in terms of coping with emotions triggered by numerous

stressful situations, the competence of managers is of vital importance and cannot be overestimated. Managerial roles are pivotal when analysing the question of stress in any organisation. As indicated in literature on the subject, the managerial profession is associated with what is known as bipartite agency, meaning that the **responsibility that they take for their subordinates is one of the crucial areas generating the greatest stress** (cf. Hallowell, 2011; Pocztowski, 2003; Schultz, D., and Schultz, S., 2006). For management, the theory of bipartite agency at work means that the concept of agency should be applied by a manager in two ways – both towards themselves and towards their subordinates. In practice, a person in a managerial position might seek to satisfy their own personal need for agency whilst at the same time making it possible to satisfy the sense of agency of their employees. This becomes possible when a manager actively shapes the working conditions and environment in order to allow for their own as well as other people's agency. The resulting effect of such action is the humane and empathetic treatment of their subordinates, which in turn is highly correlated with the work effectiveness of their teams (Biela, 2001). Therefore, it is important for managers to be able to cope with their own emotional burdens at the same time as supporting their employees in overcoming any concerns and threats they might experience (Penc, 2000). As emphasized by Zbiegień-Maciąg (1996), the manager's actions must be the driving force for their team. As head of an organisation's human resources, a manager must be in control of the events that occur within that organisation. To do so, they must manage information in a skilful way and efficiently coordinate people's activities in rapidly changing conditions. Lipka (2002) emphasizes the inevitable need for modern organizations to be able to act in situations of permanent uncertainty and risk. This specificity of the contemporary business environment requires managers to make sure their teams operate in a reliable manner even when they are faced with unexpected changes and threats. As argued by Davenport and Harding (2012), what really counts in modern managers is their flexibility, resistance to a huge number of stimuli, ability to calculate risk and make quick decisions based on insufficient data, and bear the consequences of the choices they make. All these activities should take place in constant cooperation with other people based on new partnership principles. The stress accompanying all these processes is not just as a result of the 'hard' aspects of achieving goals, but it is also often related to the interpersonal relationships that are involved, especially their quality and shape (Nieckarz, 2014).

The struggles that managers undertake when coping with both their own and their subordinates' stress will often influence the final outcome of their tasks and the atmosphere of cooperation and collaboration within the organization (Kraczla, 2016).

Unsurprisingly, effectiveness in dealing with situations of physiological stress and emotional tension depends on both the individual characteristics of a given person and the type and dynamics of the stressful situation itself. When describing human struggles with stress, literature frequently mentions the concept of resources. Usually, resources are defined as psychological, social and biological factors that act as 'moderators in the course of experiencing

and coping with stress' (Ogińska-Bulik, 2006). In this sense, resources include everything an individual has at their disposal in the stress management process. For example, Moos and Schaefer (1993) define resources as 'a complex set of personality, dispositional, and cognitive factors that are part of the psychological context of coping'. On the other hand, Sęk (2005) defines personal resources as 'specific functional properties of features potentially existing in a person's environment, in people themselves, and in their relationship with the environment'. The author distinguishes between internal and external resources. Internal resources are mental resources including emotional competences, cognitive and intellectual functions, temperament, and biological resources in the form of genetic determinants and one's level of immune and physiological resistance. On the other hand, external resources mean the resources of the biological and physical environment as well as socio-cultural resources.

An interesting categorization of resources is introduced by R.S. Lazarus and S. Folkman (1984) who distinguish:

- health and energy,
- positive beliefs,
- ability to solve problems,
- social abilities (after Ogińska-Bulik, 2006).

R.S. Lazarus (1999) used the term **coping resources** to emphasize the importance of one's personal properties such as health, energy resources as well as positive convictions about oneself, other people and the surrounding reality. Additionally, R.S. Lazarus and S. Folkman (1984) underlined the important impact a sense of danger has on one's ability to use personal resources in various life circumstances. The extent of the perceived threat determines the level of use of one's own personal resources. In turn, the perception of resources and their availability is determined by one's personal beliefs and values, which differentiate the behaviour of an individual in various specific circumstances.

In the subject literature, there are many different studies that have resulted in diverse classifications for the approaches and mechanisms that are used to cope with stress and stressful conditions (Łosiak, 2009).

The notion of **coping with stress** can be understood as a **process**, **strategy** and **style** (Heszen-Niejodek, 2000). The **process of coping with stress** refers to all the activities undertaken by an individual in a stressful situation. These activities often span long periods of time and are dynamic in nature as they might include different management strategies closely related to changes in the characteristics of the situation and the individual themselves. **Strategies for coping with stress** include the cognitive and behavioural activities of a given person in a stressful situation. Actions taken are often determined by such characteristics as one's gender, age, psychophysical condition, personality, and may be conditioned by the features of the stressful situation itself. The **style of coping with stress** refers to the 'individual differentiation of dispositions determining behaviour in stressful conditions' (Heszen-Niejodek, 2000). Therefore, it refers to the relatively permanent features of an individual, which

define their characteristic way of solving problems in stressful situations (Heszen-Niejodek, 2000; Wrześniewski, 2000).

Since this article presents the outcome of empirical research conducted by means of the Coping Inventory for Stressful Situations (CISS), which is a questionnaire deployed as a research tool to diagnose tendencies in coping with stress, it is worth referring to the approach developed by N.S. Endler and D.A. Parker (1990). When considering the category of **coping style**, the authors identify three coping styles (Lazarus, and Folkman, 1984):

- Task-oriented style.
- Emotion-oriented style.
- Avoidance-oriented style.

It can be noticed that the variety of activities undertaken by people functioning in situations of stress is associated with different ways of thinking, different emotionality, and different behavioural patterns (Endler, and Parker, 1990, 1994).

Awareness of one's preferences in terms of the style of coping with stress that one adopts allows each individual to recognize their inclination to take specific actions and then consider them with regard to their actual effectiveness in coping with stressful situations.

3. Managers and sleep deficit

The effectiveness of the actions taken by managers in stressful situations depends on both an individual's predispositions and the specificity of a particular stressful situation arising within their organisation.

Culturally, contemporary organisations accept and even prefer the style of working under time pressure that involves multitasking and a very fast pace for delivery of assigned tasks (Czeisler, 2006, 2016). In many corporations, managers work about one hundred hours a week with only five hours sleep a night (Czeisler, 2006, 2016). The pace of work of managers and the requirement of more than twelve hours availability in any working day have become essential criteria for assessing professional performance and the desired standards for managerial positions (Berndt, 2015).

People holding managerial positions believe that sleep limited to only 5-6 hours a night can be compensated for during the day with stimulants and short power naps that will allow their brain to be sufficiently efficient all through the day. However, many studies have shown that when people lack sleep, neither power naps nor caffeine can help maintain adequate levels of concentration, memory, logical thinking, learning, and rational decision-making. They might result in a temporary increase in cognitive and emotional performance but, nonetheless, they will not ensure the proper efficiency of the human brain – whether biological or mental (Czeisler, 2006, 2016; Dinges, 1995). According to Ch.A. Czeisler (2006, 2016), managers who

present this attitude and downplay the effects of sleep deprivation pose a serious threat to themselves, the employee teams they manage, and the entire organisation.

As demonstrated in the research carried out by Harvard Medical School's Institute of Sleep Medicine, significant sleep deficit directly affects one's work efficiency and leads to the phenomenon known as 'ineffective attendance at work'. As a consequence, it contributes to numerous losses in the functioning of the organisation and becomes a catalyst for many unfavourable social and economic phenomena (Hemp, 2005).

The world's leading authorities on sleep research, sleep biology, and human alertness, precisely describe the physiological basis for the need for sleep. They emphasise the fact that in order to improve performance at work, one must not ignore the basic aspect of human biology, namely sleep. Therefore, the problem of sleep deficiency experienced by managers should be treated with the utmost seriousness to prevent compromising how efficiently their brains operate and posing a threat to themselves and others (cf. Banks, and Dinges, 2007; Czeisler, 2006, 2016; Dinges, 1995; Hemp, 2005; Kripke et al., 2012; Walker, 2019; Winters, and Kelley, 2018).

Two-thirds of adults living in highly developed countries do not sleep 8 hours a day as recommended by the World Health Organization and the American National Sleep Foundation (Walker, 2019). Regularly sleeping less than 6 hours a day impacts in a number of ways: it weakens the immune system; more than doubles the risk of cancer; enhances the development of cardiovascular disease, Alzheimer's, diabetes or strokes; can trigger the emergence of mental disorders including depressive moods, anxiety or suicidal thoughts (cf. Ancoli-Israel et al., 2008; Chopin et al., 2011; Moraes et al., 2006; Pittman, and Karle, 2018; Walker, 2019).

It may therefore be concluded that deliberately depriving oneself of sleep brings no real benefit to anyone. Meanwhile, many managers still tend to nourish the conviction that limiting the amount of sleep they have each night will gain them more work time and increase their efficiency (Czeisler, 2016). Researchers Zimbardo and Boyd (2009), who have been dealing with the psychology of time for thirty years, demonstrate how certain aspects of the environment, such as pace of life, are so commonly accepted and disseminated that they begin to affect the thoughts, feelings and behaviours of individuals.

The aforementioned feeling of 'saving time' which some managers might experience when they shorten their sleep time may be of a very subjective nature to begin with. However, once this attitude becomes more commonplace in organisational and social environments and gives rise to a specific conviction about the relationship between managerial efficiency and limited sleep time, it can very quickly shape work and social cultures that glorify abandoning sleep (cf. Czeisler, 2016; Hemp, 2005). However, regardless of how an individual decides to invest their time by engaging in specific activities, they will always have to accept the fact that this means they will be unable to take on other activities, which are seemingly endless in nature, and 'investing one's time unreasonably involves the costs of lost opportunities' (Zimbardo, and Boyd, 2009). Therefore, it may be concluded that any choice one makes is always

associated with losing the possibility of doing something else. When referring to management, such time economy makes managerial functioning appear to be an endless set of tasks to do. Fulfilment of current tasks at short time intervals and with reduced sleep time does not in fact accelerate the implementation of managerial function in its entirety, as there are always further requirements and expectations from the organization. Meanwhile, a chronic lack of sleep destroys the psychophysical condition of a manager, affecting work efficiency and the accuracy of their decisions related to cooperation and the creation of social bonds (Czeisler, 2006; Ehrenberg, 2016; Walker, 2019).

Managers should focus on the development of programs that would optimize stress management within their organisations. It is important that these programs also take into account the policy of counteracting employee sleep deprivation, as this is one of the key factors triggering the physiology of stress in the cognitive-emotional structures of the brain (Czeisler, 2016). The essence of stress management is to prevent an excessive build-up of stress for any individual in a given environment (Pocztowski, 2003; Terelak, 2004). Importantly, good policy-making with regard to sleep hygiene is actually also an effective economic strategy (Czeisler, 2006).

It is therefore clear that poor sleep quality has a significant detrimental effect on the human brain, its cognitive functions and emotional reactions. People who experience regular sleep deficiency have difficulties with concentration as well as with the processes of remembering and then recalling remembered content; their general health deteriorates. When observing such people, excessive and violent emotional reactions are clearly visible, which are caused by 'restless' amygdala activated by a lack of sufficient sleep (Pittman, and Karle, 2018). All the major systems and organs of the human body suffer damage from constant sleep deprivation. Sleep deprivation ruins the basic biological systems of the human body in many ways and affects the cardiovascular, metabolic, reproductive and immune systems. Furthermore, many common serious health conditions such as heart disease, diabetes, obesity, cancer and premature dementia, are linked to sleep deprivation (Walker, 2019).

4. Strategies for coping with stress in the context of sleep deficit – analysis of research findings

The results presented below are from a research project carried out by the author on a group of managers from 2019-2021.

Empirical research into the relationship between sleep duration and the style of coping with stress was carried out on a group of 92 managers (i.e. people holding positions related to managing other people's work) at various management levels in various organizations. However, out of this initial group, a total of 80 people qualified for further analyses as

12 questionnaires did not meet the quality requirements – some were incomplete and on others, the responses were incorrectly marked or ambiguous.

The analysed group consisted of 40 women and 40 men. All the people participating in the study were university graduates. There were 22 people in the age group 26-35, 40 people in the age group 36-45, and 18 people in the age group 46-55. The average daily sleep duration in the group was 6.52 hours per person, with 39 people getting 5-6 hours of sleep per day and 41 people sleeping for 7-8 hours daily.

The presented research was conducted by means of two research tools. The Coping Inventory for Stressful Situations (CISS) was used to assess the strategies adopted to deal with stressful situations. The Polish version of the CISS questionnaire developed by J. Strelau, A. Jaworowska, K. Wrześniewski and P. Szczepaniak (2013) obtained psychometric parameters almost identical to those obtained by N.S. Endler and J.D.A. Parker, which proves it to be an accurate and reliable version of the questionnaire analysing stress coping strategies (Wrześniewski, 2000). However, in order to address and analyse managers' sleep deficits, the author developed her own questionnaire in order to determine the daily sleep rate of respondents.

5. Analysis of research findings

The surveyed group of managers was diversified in terms of both gender and age. In order to ascertain any possible relationship between the gender of the respondent and their daily sleep duration, the obtained data was analysed by means of a Chi-squared test. This analysis showed that there is no statistical relationship between gender and sleep duration applying the Chi-square 1.25; $p > 0.05$ and the effect of this relationship is also weak using Cramer's $V = 0.13$. As a result, it may be concluded that the daily length of sleep for men and women is similar. The results are presented in Table 1.

Table 1.
Relationship between gender and sleep duration

Hours of sleep per day		**Gender**		**Total**
		men	**women**	
5-6 h	observed	17	22	39
	% from column	43%	55%	49%
7-8 h	observed	23	18	41
	% from column	57%	45%	51%
Total	observed	40	40	80
	% from column	100%	100%	100%

The obtained result, which did not indicate any significant difference between the daily sleep duration of men and women, may be considered consistent with the intuition and expectations of the author. The professional requirements associated with managerial roles, along with cultural changes with regard to people's social roles both within and outside the family all mean that, on average, women and men have a similar amount of time to sleep. This phenomenon is therefore fully understandable in the context of the professional positions held by the research participants as nowadays women in managerial positions are required to be as effective as men and follow similar behavioural patterns. To sum up the point, it seems that there is no correlation between gender and the duration of sleep per day within the group of managers being analysed.

However, the situation is different when we take into account the age of the respondents. The relationship between age and sleep duration is statistically significant. This dependency was identified by means of a Chi-squared test, which returned a result of 11.18, $p < 0.01$, thus indicating a significant relationship, although the effect of this relationship within the analysed group is rather more moderate with Cramer's $V = 0.37$. Analysis of the cross-table results showed that people aged 26-35 and 36-45 tend to sleep for a longer rather than shorter timeframe, while those aged 46-55 tend to sleep for a shorter rather than longer timeframe. The results are presented in Table 2.

Table 2.
Relationship between age and sleep duration

Hours of sleep per day		**Age**			**Total**
		26-35	**36-45**	**46-55**	
5-6 h	observed	9	15	15	39
	% from column	41%	38%	83%	49%
7-8 h	observed	13	25	3	41
	% from column	59%	63%	17%	51%
Total	observed	22	40	18	80
	% from column	100%	100%	100%	100%

The obtained correlation is intuitively understandable. Young and middle-aged people have a greater need for sleep and want to get relief from their everyday efforts and the stress involved in high intensity professional and non-professional work. As numerous studies show, sleep is the best way to regenerate cognitive, emotional and behavioural abilities quickly (see Czeisler, 2006, 2016). The shorter sleeping time of managers aged 46-55 may result from a sense of loss that is more noticeable for older people and a different, more subjectively felt passage of time (cf. Zimbardo, and Boyd, 2009). It transpires that with age, people feel that time passes faster and faster and they realise that the implementation of intended goals requires greater amounts of this passing time.

For this research, the strategy for coping with stress was assessed by means of a CISS questionnaire. The table below presents the descriptive statistics of the measurements taken along with the results of the Kolmogorov-Smirnov test. The obtained results are consistent with the results of theoretical normal distribution, and are presented in Table 3.

Table 3.
Descriptive statistics of CISS measurements and normal distributions tests

	SSZ	SSE	SSU	ACZ	PKT
N	80.00	80.00	80.00	80.00	80.00
M	64.35	40.13	39.15	16.39	15.40
SE	0.73	1.22	1.17	0.70	0.47
95% CI PU – lower	62.92	37.73	36.86	15.02	14.48
95% CI PU – upper	65.78	42.52	41.44	17.75	16.32
Me	64.00	40.00	39.00	16.00	16.00
SD	6.53	10.92	10.45	6.24	4.18
Minimum	46.00	17.00	20.00	8.00	5.00
Maximum	76.00	73.00	70.00	39.00	24.00
Kolmogorov-Smirnov	0.08	0.06	0.05	0.09	0.05
p	0.710	0.961	0.990	0.562	0.991

In order to verify any differences between the genders in terms of CISS measurements, a series of analyses were performed using the Student's T-test for independent samples. The analysis of the results in Table 4 below shows that women had a lower level of SSZ measurements than men and a significantly higher level of SSE, SSU, ACZ and PKT measurements than men. The strength of these differences, as determined by Cohen's *d* coefficient, indicates strong gender differences d = [min = 0.49 - max = 0.85].

Table 4.
Gender differences in terms of CISS scales

Scale	T-test	df	p	Cohen's d	Women (a)		Men (b)		Difference
					M	SD	M	SD	
SSZ	-2.21	78	0.030	-0.49	62.77	6.15	65.92	6.59	a < b
SSE	3.79	78	< .001	0.85	44.40	9.56	35.85	10.62	a > b
SSU	3.32	78	0.001	0.74	42.8o	9.79	35.50	9.90	a > b
ACZ	2.74	78	0.008	0.61	18.23	6.41	14.55	5.55	a > b
PKT	2.72	78	0.008	0.61	16.63	4.02	14.18	4.02	a > b

The obtained results are consistent with the literature on the subject and the author's research. Although the similarity of the occupational function might suggest unifying tendencies, the choice of coping strategies seems to be strongly influenced by personality variables, in this case related to gender. Situational variables, common for managers and independent of gender, do not have such a significant impact on the choice of coping strategies as biological traits, which are strongly correlated with personality variables. This is an important and interesting result, especially in the context of the great pressure in modern science to interpret behaviours with particular consideration to situational variables. Without undermining their influence, this research seems to indicate the significant influence of biological factors and related personality factors (cf. Wrześniewski, 2000).

In order to verify the differences between age groups in terms of CISS measurements, a series of one-way analyses of variance for independent samples was performed. Analysis of the results presented in Tables 5 and 6 shows that age did not differentiate any of the measures obtained by means of the CISS test.

Table 5.
Differences between age groups in term of CISS scales – results of variance analysis

Scale	F	df1	df2	p
SSZ	0.22	2	41.59	0.807
SSE	0.13	2	36.75	0.882
SSU	0.00	2	35.4	0.997
ACZ	0.23	2	36.61	0.798
PKT	0.05	2	39.37	0.951

Table 6.
Differences between age groups in terms of CISS scales – descriptive statistics

Scale	Age	N	M	SD
SSZ	26 – 35	22	63.64	6.86
	36 – 45	40	64.47	6.77
	46 – 55	18	64.94	5.77
SSE	26 – 35	22	40.86	13.62
	36 – 45	40	39.50	9.56
	46 – 55	18	40.61	10.64
SSU	26 – 35	22	39.00	12.75
	36 – 45	40	39.17	8.85
	46 – 55	18	39.28	11.24
ACZ	26 – 35	22	16.95	7.96
	36 – 45	40	16.45	5.37
	46 – 55	18	15.56	5.93
PKT	26 – 35	22	15.50	3.94
	36 – 45	40	15.25	4.21
	46 – 55	18	15.61	4.62

To assess whether sleep duration influences the choice of dominant coping strategy as measured by means of the CISS questionnaire, a series of analyses were performed using the Student's T-test for independent samples. Analysis of the results presented in Table 7 shows that there are no significant differences between sleep duration and the adopted strategies for coping with stress.

Table 7.
Differences between sleep duration groups in terms of CISS scales

Scale	T-test	df	P	Cohen's d	5-6 h (a)		7-8 h (b)		Difference
					M	SD	M	SD	
SSZ	-0.67	78	0.504	-0.15	63.85	7.17	64.83	5.90	a = b
SSE	1.09	78	0.279	0.24	41.49	11.44	38.83	10.38	a = b
SSU	0.39	78	0.700	0.09	39.62	10.66	38.71	10.35	a = b
ACZ	0.07	78	0.947	0.02	16.44	6.72	16.34	5.82	a = b
PKT	0.61	78	0.545	0.14	15.69	3.97	15.12	4.41	a = b

The obtained result is extremely interesting from a cognitive point of view. It seems to indicate that length of sleep and the cognitive and emotional consequences that are associated with it are not decisive in the process of choosing a coping style. The literature on the subject suggests that the choice of stress coping style is influenced by both individual and situational factors, and the final behaviour in a stressful situation is the result of both (cf. Henszen-Niejodek, 2000). In light of the obtained results, one can formulate a thesis that environmental factors – and sleep duration is one of these – affect coping strategies in a less significant way than individual factors and related personality factors. It would also appear to be the case that strategies for coping with stress have their own grounding in solid foundations relatively independent of environmental variables.

Such an interpretation seems fully justified in the context of the professional positions held by the people who were the subjects of this research. Managers are particularly exposed to various pressures and related stresses (see Hallowell, 2011). Therefore, they must develop mechanisms to enable them to cope with such situations quickly, and in a universal way, that do not require excessive intellectual and emotional effort.

It is worth noting at this point that transferring justification of coping style choice from environmental to individual factors means that managers are freed from the need to interpret a situation anew each time and assign it a meaning dependent on the 'here and now', which of course is associated with a large intellectual effort, takes a lot of time and is never going to be a win-win situation for managers. The choice of strategy for coping with stress would be most optimal if it resulted from the characteristics of the situation, the individual characteristics of a given person and the state of their personal resources (cf. Ogińska-Bulik, and Jurczyński, 2008). However, for pragmatic reasons, such as managers' lack of time or the large amount of effort that might be involved, the optimal solution is neither the most convenient nor the most frequently chosen strategy.

Therefore, it seems that the process of choosing a coping strategy has its roots in deeply embedded, perhaps even unconscious, habits and behaviour patterns associated with emerging stressful situations. The internalization of these strategies results in their relative independence from situational conditions and this seems to be the reason why some managers have their own preferences when adopting their chosen way of reacting to stress, regardless of the variable and diversified situational conditions. After all, there must be a reason why it is often said that some people (including managers) 'always behave this way'. The findings generated by the author's research indicate that length of sleep is a situational variable that does not significantly affect the choice of stress management strategy. It also transpires that other determinants, especially individual determinants, may play a much greater role and be of more importance.

This interpretation seems to be confirmed by the other results obtained in the study. To verify the differences between the CISS scales and particular age groups and sleep durations, analysis was performed in each of these subsets. This approach returned very interesting results for managers aged 26-35 and those who declared their daily sleep duration as 5-6 hours. Measurements carried out by means of the non-parametric Friedman test showed significant differences between the SSZ, SSE and SSU scales: Chi-Squared (2) = 8.22; p, 0.05 (only three CISS measurements were selected for the analysis because of the identical measurement unit). In order to detect specific differences between the pairs of measurements, a non-parametric Durbin-Conover post-hoc test was performed. Subsequent analysis showed that the intensity of the SSZ measurement was significantly higher than the intensity of SSE and SSU; the test statistics were DC = 3.02; $p < 0.01$, and DC = 3.32; $p < 0.01$. The analysis did not show any significant differences between the SEZ and SSU measurements. The obtained results are presented below in Table 8.

Table 8.
Differences between CISS measurements in age group 26-35, sleeping 5-6h per day

	SSZ	**SSE**	**SSU**
M	63.78_a	42.89_b	42.33_b
SE	2.57	5.46	4.79
Median	66.00	39.00	43.00
SD	7.71	16.39	14.38

Note: Various subscripts in the estimates of the mean (M) indicate a significant difference with $p < 0.01$.

The obtained results seem to confirm the interpretation of managerial behaviour in stressful situations, as outlined above. Only the youngest management group demonstrate a statistically significant relationship between stress coping strategies and sleep duration. Apparently, young managers have not yet developed 'their own' universal conduct strategies. In the older age groups, the correlation between sleep duration and the coping strategies they adopt seems to disappear. This might be because they have held their managerial positions for longer and have developed their own response styles independent of variables such as sleep. These styles are highly internalized and are not sensitive to disruptions such as shorter sleep hours. Young managers do not have such permanent behaviour patterns yet. Therefore, they act in a manner dependent on managerial context, broadly understood work efficiency, and under the influence of disorders resulting from insufficient sleep; hence, the correlation between short sleep duration, young age and the choice of a task-based stress coping style. It can be assumed that, with time, they will also develop other styles of coping with stress – SSE and SSU – which, internalized, will shape their behaviour in the future regardless of the influence of situational factors such as lack of sleep.

6. Conclusions

The application of sleep duration as an independent variable in the presented research allowed the author to identify some interesting phenomena. The average daily sleep duration for the entire analysed group of managers was 6.52 hours. It may be concluded that these managers did not suffer from significant sleep deficits, but at the same time did not meet the commonly recommended daily sleep of 8 hours. Regularly sleeping less than 6 hours a day can have devastating consequences for the functioning of the human body. In line with the subject literature, the obtained results confirm that the phenomenon of lack of sleep is particularly characteristic of this professional group. It is also worth noting that the author's studies have shown that managers in the younger age groups sleep longer, on average, than managers in the older age groups. This is also an interesting conclusion that is somewhat contradictory to the reports of other authors regarding the so-called culture of boosters that glorify fast life with little sleep, as this is considered a waste of time.

The conducted research did not show any relationship between length of sleep time and the gender of managers. This result would seem to reflect the cultural changes taking place not just in contemporary companies, where the number of women in managerial positions is constantly growing, but also in families, where cultural changes mean that responsibilities are distributed more and more evenly. Of course, this issue requires further and more in-depth research.

Based on the analyses undertaken, it can be concluded that sleep time, as an independent variable used to explain the decision-making process related to adopting a specific stress coping style, finally turned out to be of little importance. There was no statistically significant association between length of sleep duration, either longer or shorter sleep time, and the way in which stress was dealt with by people holding managerial roles. These styles appear to be much more dependent on variables other than sleep length.

The apparent lack of correlation between having a good night's sleep and stress-relief behaviours seems to indicate that such behaviours stem from more persistent and established individual or environmental characteristics other than sleep duration. The fact that the length of one's daily sleep can be very changeable and some people might not even be fully aware of their own sleep patterns might explain why sleep is not really a determinant of one's choice of stress coping mechanism. As the author's research shows, stress coping style is much more related to the gender of managers: men definitely prefer a task-oriented style of coping with stress, while women prefer a more emotional and avoidant style. However, what is also interesting, from the point of view of statistics, is that age does not significantly alter a person's choice of coping style. It would seem that this might be related to the thesis outlined above that stress coping style, although undoubtedly dependent on environmental variables, is also firmly embedded in the characteristics of an individual, which remain unchanged with age.

7. Summary

The presented research attempts to draw conclusions about the relationship between sleep duration and the way that managers deal with the occupational stress they face at work.

The results of the research seem to indicate that sleep duration is not a variable that can explain the stress coping styles that are adopted by people holding managerial positions. There is no sufficient, i.e. statistically significant, relationship identified between the length of one's daily sleep and the task-, emotion- or avoidance-oriented styles for coping with stress. Therefore, it seems that it is necessary to continue searching for important factors influencing people's choice of behaviour in stressful situations. One of these factors might be gender: women cope with stress differently to men, more often using emotional and avoidance styles. However, it is also important to bear in mind the possible existence of other factors, because having knowledge of all the factors involved and how these change over time and according to circumstance, largely determines the well-being of both managers and their employees.

The phenomenon of stress and the question of how to deal with stress cannot be overestimated. It is all the more important for people in managerial positions, which are particularly stressful due to their so-called bipartite agency, i.e. responsibility for one's own behaviour and achieved results and also the behaviour and results of one's subordinates. Although literature on the subject says that the decision to choose one method for coping with stress over another results from the nature of the situation itself, the individual characteristics of a particular person and the scope of their personal resources, further and more detailed studies in this area are still needed.

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