OPEN ACCESS

Self-care practices in decision-making: How nutrition and habits may affect decision in business

Georgios Lountzis 1* 🕩

¹Department of Economics and Regional Development, Panteion University of Social and Political Sciences, Athens, GREECE ***Corresponding Author:** g.lountzis@panteion.gr

Citation: Lountzis G. Self-care practices in decision-making: How nutrition and habits may affect decision in business. EUR J ENV PUBLIC HLT. 2024;8(1):em0152. https://doi.org/10.29333/ejeph/14128

ARTICLE INFO	ABSTRACT
Received: 27 Nov. 2023	Decision-making process (DMP), our everyday most frequent action, has attracted the attention of a wide range
Accepted: 09 Jan. 2024	of disciplines aiming to identify and analyze its determinants, encompassing specific steps. This paper intends to investigate whether nutrition and habits of managers/employees-via hormone levels-might statistically influence DMP in the business field. Some groups of food could encourage the secretion of specific hormones, which in turn influence the brain's function that may in turn affect humans' behavior and emotional status, and hence, their decision. To explore the set hypothesis, fieldwork was undertaken to an extensive random sample, from Greek companies/organizations, using appropriately designed questionnaire to select and statistically analyze related quantitative and qualitative information. The questionnaire was distributed to the employees/managers (n=242) of Greek companies. The findings confirm this hypothesis (statistical significance, p<0.05) and indicate that DMP is influenced by nutrition and habits in interaction with body mass index.
	Keywords: lifestyle, nutrition, decision-making, self-care, business

INTRODUCTION

Business operations, efficiency, and performance depend directly on management style in terms of decision making and adopted policies [1-3]. Decision making, the core of management across all sectors of an economy, is not always rational. "Utility theory makes logical economic logic hypotheses that do not reflect people's real choices and ignore cognitive prejudices" [4]. The classical economic theory and decision making has been questioned due to two generic inadequacies: First, the brain is constructed to support 'automatic' processes, and second humans' behavior is determined by unrecognized influence of finely tuned affective (emotion) systems located in specific brain regions. These two systems are very important and vital for human beings' daily functioning. When affective systems are perturbed or damaged, by brain damage, alcohol, imbalances in neurotransmitters, stress, or the 'heat of the moment,' the deliberative system is generally unable to do the job itself [5].

The healthy lifestyle keeps our body and its endocrinology system in good condition and subsequently the hormones– that influence humans' emotions–controllable. Indeed, "among the most important behavioral factors affecting health is smoking, food and stress" [6], also consumption of fast food can lead to obesity that may cause many important health and mental issues [7, 8], while regular exercise can help manage stress (physical and mental), increase norepinephrine concentrations, a chemical that mediates the brain's response to stress [9, 10].

In addition, the exercise supports the release of endorphins, which create feelings of euphoria and happiness [11]. Studies have also shown that exercise can even improve symptoms among the clinically depressed [12]. For this reason, exercise is recommended as a treatment for people suffering from depression or anxiety, while in some cases, exercise may be just as effective as antidepressants in treating depression [13].

The decision-making is a complex process that applies to everyone and everywhere. Businesses, as a place, where the decisions have a dominant role, intend to follow the steps of the process that consists in seven steps (identification of the problem/ issue, situation analysis, possible course of actions, decision criteria, course of actions selection, implementation, check and evaluation of actions) [14, 15].

The decision-making process (DMP) is a brain process that can be influenced by someone's choices in the context of selfcare, such as a careful diet, the adoption of exercise or habits related to hobbies they love to do (e.g., reading, theater, etc.). Hormones levels may be affected by nutrition and habits that someone chooses, and in turn, to influence the brain functioning [16].

Copyright © 2024 by Author/s and Licensed by Modestum DOO, Serbia. This is an open access article distributed under the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



Figure 1. Example of cortisol secretion [17]

HOW HORMONES INFLUENCE HUMANS' EMOTIONS VIA NUTRITION AND HABITS

Having established that emotions might be influenced by our brain functionality, next is discussed the relationship between levels of hormones and the humans' emotions [18, 19] and whether humans' dietary and lifestyle could be held responsible for this relationship. Hormones can be classified into three categories based on their chemical structure:

- 1. lipid-derived,
- 2. amino acid-derived, and
- 3. peptide hormones.

Among basic hormones, cortisol, oxytocin, testosterone, vasopressin (antidiuretic hormone [ADH]), progesterone and insulin can affect human emotional status [16].

Cortisol, a steroid hormone, one of the glucocorticoids, produced in the adrenal cortex and then released into the bloodstream, which carries it throughout the body, has been found to influences humans' mood and behavior [20]. The high concentration of cortisol may lead to high blood pressure, osteoporosis, depression, mood fluctuation, anxiety, weight gain, muscle weakness, and increase thirst as well as urination frequency [21-24]. On the other hand, the decreased levels of cortisol in blood can cause symptoms such as fatigue, weight loss, muscle weakness, dizziness, mood swings and the darkening of regions of the skin. Foods with high concentration of carbohydrates and fat trigger the secretion of cortisol [25-28]. It becomes obvious that the balance of cortisol plays a very important role in emotional status regulation (**Figure 1**).

Oxytocin is quoted the "hormone of love", because it is responsible for the lactation promotion by moving the milk into the woman breast. Studies have found that it is an important chemical messenger that controls some human behaviors and social interaction. It is oxytocin that may also play a role in recognition, sexual arousal, trust, and anxiety. Some research shows that the hormone may affect addiction and stress as well. The secretion of this hormone increases when hug someone, dance, laugh, read your favorite book and listen to the music you like [29, 30].

Testosterone pays an important role to both males and females. Issues associated with testosterone levels in men include low sperm counts, shrinking of the testicles and impotence, heart muscle damage and increased risk of heart attack, prostate enlargement with difficulty urinating. In addition, might cause liver disease, acne, fluid retention with swelling of the legs and feet, weight gain (partially related to increased appetite), high blood pressure and cholesterol, insomnia, headaches, increased muscle mass, increased risk of hlood clots. stunted growth in adolescents. uncharacteristically aggressive behavior (although not well studied or clearly proven). Also, changes in testosterone levels can cause mood swings, euphoria, irritability, impaired judgment, delusions, reduced body and facial hair, increased breast size, hot flashes, irritability, poor concentration and depression, brittle bones and an increased risk of fracture [31-35].

Vasopressin (ADH): This hormone "regulates the normative social behavior in mammals" [36]. It is one of the main determinants of body's osmotic balance, blood pressure regulation, sodium homeostasis, and kidney functioning. Low levels of vasopressin in human blood may be caused by compulsive water drinking or low blood serum osmolality. The associated symptoms are "excessive urination, which is called polyuria, followed by extreme thirst, which is called polydipsia". On the other hand, the high levels of ADH caused by very serious diseases and illnesses (leukemia, cancer in pancreas, multiple sclerosis, epilepsy, cystic fibrosis, emphysema etc.) [37]. The structure of oxytocin is very similar to that of vasopressin. This similarity can cause some crossreactions: Oxytocin has a slight antidiuretic function, and high levels of AVP can cause uterine contractions [38, 39]. ADH is the hormone, which regulates the levels of the water in the body. Caffeine, alcohol, and salty foods tend to decrease the secretion of this hormone [40-43].

Progesterone exists in humans and has a dominant role in women because is essential for the reproduction and pregnancy maintenance [44]. High progesterone symptoms are also accompanied by slight dizziness, water retention, drowsiness, a feeling of spinning sensation, and tenderness in the breasts (for women). It also regulates mood and weight. On the other hand, low levels of progesterone cause symptoms such as anxiety, mood changes, depression, sleep disturbances, headaches, low blood sugar [45, 46]. Zinc, vitamin C, B6, E as well as fibers, L-arginine, magnesium are basic resources that boost the progesterone [47-49].

Insulin is an anabolic hormone–produced by pancreatic islets–that regulates the metabolism of the carbohydrates, proteins as well as fats by promoting the absorption of glucose from the blood into liver, fat and skeletal muscle cells [50, 51].

If a situation causes more insulin levels than required (e.g., more energy consumed or less food consuming), cells take too much glucose from the blood, which drives to the low blood glucose levels (hypoglycemia). In that condition, liver releases the stored glucose to balance the relevant levels in the blood. The low glucose levels make a person feel ill. The human body experiences sweating, hunger, anxiety, tremor, palpitations, and pale complexion, symptoms of individuals with low blood glucose level. If the levels are too low for some time and no prompt action is taken, then will impact the brain too, causing confusion, dizziness, fits, or coma. Indicative symptoms of hypoglycemia during sleep may be nightmares, or crying out, feeling tired, irritable, or confused after waking up [52]. On the other hand, the high levels of glucose in blood can be caused due to some diseases (e.g., diabetes). Consumption of high sugar products can cause high glucose levels in the blood causing tensity, angriness, sadness, faintness, thirstiness, tiredness, nervousness, lethargic, blurredness vision, headaches [53].

The discussed extensive literature review enabled us to group the foods and habits that may encourage the secretion of the discussed hormones, which in turn expected to humans' emotional status. Recent research in neuroscience has shown that the genetic control of intelligence is correlated with the structure of brain regions [54]. This may explain why humans' behaviors differentiate from person to person. People were born under different conditions (environmental and prenatal conditions), which possibly have affected the brain structure and the relevant functionality [55]. In that respect, the behavior outcome seems to be shaped based on the genetic frame and factors that could be influenced by life experiences and personal aspects of individuals as spirituality and political ideology [56]. Human behavior differences could be explained taking into consideration, firstly, the fact that general neurobiological systems¹ have a different sensitivity to the classes of stimulus for each individual and, secondly, these differences are obvious as feature variation both in subjective emotional experience and in apparent patterns of emotional expression [57].

Brain functionality depends on a variety of chemical substances. The different levels of hormones affect the brain and its reaction to external triggers, and hence the human's behavior [58]. From the above, nutrition and the choices that someone has in his/ her daily life may impact these biochemical substances and influence brain functionality. Lifestyle includes diet (the type and quality of daily diet), exercise as well as habits in relation to the daily routine that one follows [59]. Lifestyle seems to have an important role in management decisions because hormones have an impact on humans' emotions. A healthy (or not) lifestyle may affect humans' emotions, and hence, it affects employees and managers and consequently the management decision.

DECISION-MAKING

Decisions are part of humans' daily life. Choices made by people are influenced by a group of factors: Past experiences, a variety of cognitive biases, individual differences, and personal beliefs [60]. DMP is a complex procedure that consists of different steps [14, 61]. This process is connected to brain functionality [62]. Researchers attempt to elucidate decisionmaking networks in the primate brain [63]. Hence, decisionmaking is a process that is executed by the brain and is affected by different factors (i.e., hormones, which are basic role in the brain's functions). These factors influence the biochemical substances of the human brain, which are responsible for people's decisions because the emotions-that are affected by hormonal secretions-and their process may modulate the impact of the influence on DMP [64].

DMP is not something new. This process applies to everyone and everywhere. Companies and organizations follow the steps that DMP encompasses to find alternatives or/and solutions. This process includes seven steps:

- 1. identification of the problem/issue,
- 2. situation analysis,
- 3. Possible course of actions,
- 4. Decision criteria,
- 5. Course of actions selection,
- 6. implementation, and
- 7. check and evaluation of actions [14, 15].

Research findings shows that there is a hormonal influence in DMP [65]. Hormones may affect the human behavior as well as the choices they make [66]. The emotional status that someone experiences could affect the final decisions of someone [67, 68]. Recent neurophysiological studies state that DMP follows a specific neurobiological mechanism. This mechanism includes "a multicomponent valuation stage, implemented in ventromedial prefrontal cortex and associated parts of striatum, and a choice stage, implemented in lateral prefrontal and parietal areas" [67, 69]. Based on that, the concentration and synthesis of the biochemical substances of the brain at the moment someone takes a decision seems to play a decisive role. Any decision taken is influenced by some factors. Some of them are due to exogenous environment and some others due to endogenous personal status. Motivating and influencing parameters can be external or/internal [70, 71]. Environmental factors (exogenous) such sounds, colors etc. are able to influence the decision process [72, 73]. In addition, the personal traits of the decision maker (endogenous) can affect the final decision. The speed of thinking and data processing is another factor that can influence the process [74]. The over-analyzing or the fast taken procedures might cause issues during DMP [75]. Another dimension is the capability of adapt [76]. It depends on the decision maker's personality and how he/she manages the dynamic environment and the relevant changes [77]. In addition, the biases and preferences of the person who receives the decisions are crucial for the process. Any opinion based on non-objective evidence can affect DMP. In cases, where a business is to take a sophisticated decision, the experts (e.g., consultants, scientists) are influencing final decisions [78, 79].

From the above, DMP seems not to be a simple procedure. This process consists in many parts and encompasses different

¹ Behavioral activation or facilitation system and behavioral inhibition system.

and intercorrelated components [66, 80]. The decisions can be influenced by both exogenous and endogenous factors. The decision maker's emotional status is one of the crucial components that affects the process [68, 81]. The influence of the brain may be caused by hormone levels, which in turn, are affected by nutrition and lifestyle, and hence, there is an impact on the emotional balance status.

RESEARCH METHODOLOGY

This article is dealing with the findings of a primary research carried out through questionnaire.

Further to the literature review and based on the scope of this article, the quantitative data analysis has been selected. Thus, data has been collected from a suitable sample of managers (principals, supervisors) and employees, through questionnaire developed in order to investigate the main hypothesis. In addition, the quantitative approach allows the study of the correlations between several variables, such as the degree of correlation between the responses of managers and employees, their lifestyle, and decision-making.

Formulation of Main Hypothesis

DMP is a complicated procedure that encompasses a variety of factors. Unconscious [79] and the total balance of humans' hormones can affect the decisions received [13]. The lifestyle and the daily habits are enough to influence the emotional human's status [6, 8, 12]. On the other hand, the rational theory of decision-making is obsolete [4, 5, 82]. Studies have shown that the people are influenced by their emotional status [83, 84], and hence, their brain chemical consistency changes, which influences their decisions accordingly. In that context, the main hypothesis of this study, which has been formulated is to investigate whether the managers/employees' decisions are influenced by their nutrition and habits.

In that frame, the research is dealing with the Greek businesses. Greek managers and employees have answered to the questionnaire developed for the scope of this research.

Questionnaire Design

For the main research question of the paper to be empirically examined, a suitable questionnaire was developed and distributed to managers and employees from the Greek business market.

The questionnaire consists of five parts and includes 69 statements and questions. In the first part (A–10 statements), the respondent is called to fill out some demographics information like gender, age, marital status, etc. The second part (B–19 statements) is related to the business/workplace's frame, the third part (C–Five statements) is for the colleagues/teams' habits, the fourth part (D–10 statements) includes statements about nutrition and habits, and the fifth part (E–25 statements) is related to the internal impact. Especially for part D, each statement describes a habit (dietary or exercise). A more detailed analysis for each statement follows in the next paragraphs.

The answers for part D and part E are indicated on a five-Likert scale. Grade 1 indicates "never" and grade 5 indicates "very frequently". The questions 2, 3, 4, 5, 6, and 9 have inverse formulation (hence, inversed score calculation).

Part A asks for demographics information such the gender, age, educational background, marital status, net monthly family income, children, weight, and height. This information can assist with the calculation of body mass index (BMI) that provides the status of obesity. The calculation formula is BMI=Weight (kg)/height $(m)^{2}$ (BMI categories: underweight=<18.5, normal weight=18.5-24.9, overweight=25.0-29.9, obesity=BMI of 30.0 or greater). This part is able to describe the general profile of the respondents. Part B includes questions/statements related to the business that the respondent is working for: Type and sector of employment, years of experience, positions they have (managers or employees), and statements for benefits provided regarding the business trips, the time of commuting [85, 86], and the possible special management of people who needs special care (e.g., pregnant, diabetics, disabled personnel) [87, 88]. Part C is related to the respondent's workplace environment and his/her colleagues. They are asked if the environment has influenced him/ her regarding the nutrition and dietary habits [89]. Part D provides a score for the lifestyle (nutrition and habits) of the respondent in terms of the emotional status/ balance. Includes statements for the nutrition as the consumption of homemade food, sugar products, caffeine, and refreshments, processed tomatoes products, non-whole grain foods and fried cooked meals, trans-fat (fast-food), tuna, yolks, seafood, and red meat. As far as the habits, the statements are for the time spent for arts (theatre, music, writing/ reading), and the time they give for contact with the people they love. Regarding the lifestyle, questions for nicotine and work out are included. At this point, it would be very useful to be mentioned that depending on the overall score that a respondent achieves, he/she belongs to one of the categories of emotional balance status (low, mid, and high). Part E focused on the lifestyle changes that someone has absorbed, and which degree has affected the decisions in terms of data analysis, speed, and risk. The decisions are categorized into three different types: Personal life decisions related to work, and assets management. The questionnaire closes with statements regarding the emotion's regulation.

As stated above, the emotions-and behavior-are influenced by the hormones and the relevant chemical synthesis of the decision-maker brain. The basic concept of the questionnaire is to investigate the relationship between nutrition, habits and lifestyle with the decisions taken by the managers and/or employees. The instrument was reviewed by 10 people with different educational and experience backgrounds. The final version of the instrument was released for pilot testing. On the 20th of May 2021, the questionnaire officially distributed to the Greek businesses.

The instrument's reliability has been checked through Cronbach's alpha. The coefficient alpha is the most common for assessing the reliability of questionnaires. In this context, Cronbach's alpha is selected to assess the validity of the questionnaire. Acceptable reliability limit for coefficient alpha is >0.8 [90]. However, values between 0.6-0.7 are considered acceptable and values over 0.9 provides an excellent reliability [91, 92].

Table 1. Sample

Chracteristic	Percentage (%)		
Gender			
Male	42.56		
Female	57.44		
Age			
18-25	1.65		
26-34	17.36		
35-44	43.80		
45-54	27.69		
55-64	8.26		
65+	1.24		
Education			
Primary	0.41		
High school	6.61		
IEK	3.31		
TEI	10.74		
AEI	29.75		
MSc/MD	43.39		
PhD	5.37		
Other	0.41		
Marital status			
Married	60.33		
Single	21.49		
Cohabit	9.09		
Divorced	8.26		
Widower/widow	0.83		
Number of children			
0	36.78		
1	23.14		
2	34.30		
3	5.37		
4+	0.41		
Family monthly net income (EUR)			
<1,000	14.05		
1,001-2,000	40.08		
2,001-3,000	19.01		
>3,000	26.86		
Employment			
Employee	82.23		
Freelancer	17.77		
Employment sector			
Private	74.79		
Public	20.25		
Private & public	4.96		
Position	50 50		
Principal (manager)	30.58		
Supervisor (manager)	22.31		
Employee	47.11		
Management experience (years)	71.40		
	12.91		
	12.81		
6.9 years	5 77		
0-7 years	<u> </u>		
12-15 years	9.20		
15-18 years	1.96		
18-21 years	±.70 5 70		
21-24 years	2.07		
24-27 years	3 72		
>27 years	3.72		
21 juin	5.14		



Figure 2. BMI of sample (Source: Author's own elaboration, using data from field study conducted in 2021)

STATISTICAL ANALYSIS & FINDINGS

Sample Description

The collected information was coded and statistically analyzed.

The questionnaires distributed to the Greek companies from the 20th of May 2021 until the 2nd of July 2021. The number of responses collected was 242: 128 are managers (principals/supervisors) and 114 employees.

The majority of the respondents (74.79%) work in the private sector and have a manager position (52.89%). In addition, 68.60% of the participants have experience in a management position and 43.39% of the sample have completed a post-graduate program. The 60.33% are marriage and the 63.22% are parents (>1 child). **Table 1** presents a description of the sample.

The research uses sample from Greek companies/organizations of various sectors and sizes (**Table** 1). Particularly, it was asked by participants to fill out a questionnaire with sincerity and spontaneity.

Survey Findings

The respondents have been asked to input their weight and height in order for BMI to be calculated. Based on the responses, the half sample indicates a normal BMI (**Figure 2**). 47.52% indicates a BMI bigger than 25, which means overweight/obesity.

Based on part D of the questionnaire, the scores have been classified indicating the degree of the emotional status balance that the respondents might achieve. In that respect, four classes generated: High emotional status balance: Respondents who consume food and have habits/lifestyle that keep the body in balance; mid high emotional status balance: Respondents who consume some food and have habits/lifestyle that boost the secretion of some hormones with impact on the emotions; mid low emotional status: Respondents who consume some food and have habits/lifestyle that cannot help to keep a normal hormones balance in their body; low emotional status: Respondents who



Figure 3. Balance of emotional status (Source: Author's own elaboration, using data from field study conducted in 2021)

Table 2. Lifestyle changes affect way I process data

	Work	Personal life	Management of assets
Strongly agree	11.16%	11.16%	12.81%
Agree	31.40%	35.54%	26.03%
Subtotal	42.56%	46.70%	38.84%
Undecided	33.88%	34.30%	35.12%
Disagree	16.12%	12.81%	14.46%
Strongly disagree	7.44%	6.20%	11.57%
Subtotal	23.56%	19.01%	26.03%

Table 3. Lifestyle changes have affected speed of DMP

	Work	Personal life	Management of assets
Strongly agree	14.05%	9.50%	11.16%
Agree	33.47%	33.47%	25.62%
Subtotal	47.52%	42.97%	36.78%
Undecided	29.75%	33.47%	34.30%
Disagree	14.88%	17.77%	15.70%
Strongly disagree	7.85%	5.79%	13.22%
Subtotal	22.73%	23.56%	28.92%

consume food and have habits/lifestyle that cannot help to keep a normal hormones balance in their body.

Figure 3 presents the distribution of the sample to these categories. According to **Figure 3**, most of the sample (60.74%) indicates a mid-high emotional balance.

The sample outcome on the question whether the lifestyle change affects the respondents' decisions regarding the way they process the data prior to taking a decision is quoted in **Table 2**.

Most of the sample participants agree that the changes of their lifestyle have influenced the way of how they process the data and information they receive before they have a final decision. In more detail, 42.56% agree that their decisions related to the work are influenced by changes in lifestyle, 46.70% agree the same when they must take decision for their personal life, and 38.84% agree that their decisions–regarding the asset management–are affected by any change related to their lifestyle.

Next the participants' view, **Table 3**, the speed of DMP and whether it is affected by the lifestyle changes or not is presented. According to **Table 3**, 47.52% agrees that the speed of DMP–in work–is influenced; 42.97% agrees that these

Table 4. Lifestyle changes have affected risk-taking of DMP

	Work	Personal life	Management of assets
Strongly agree	11.96%	9.09%	11.16%
Agree	30.58%	28.93%	25.21%
Subtotal	42.54%	38.02%	36.37%
Undecided	29.75%	38.02%	32.64%
Disagree	20.25%	16.94%	17.77%
Strongly disagree	7.44%	7.02%	13.22%
Subtotal	27.69%	23.96%	30.99%

changes can affect the speed of their DMP when they decide for personal issues, while 36.78% agrees the same for the decisions related to the asset management.

The risk of the decisions seems to be affected by the changes in lifestyle. According to **Table 4**, 42.54% of the respondents agree that the risk-taking of DMP is influenced when they are going to take decisions related to their work; 38.02% agree the same for their personal life decisions; when they must decide for their assets, 36.37% agree that the lifestyle changes can affect the degree of the risk-taking.

Main Hypothesis Testing

The main hypothesis of this research was to find out if nutrition, habits (NHL), and BMI are factors that can influence DMP. In this regard, we proceeded to statistically analyze our data to check the correlation between DMP, NHL, and BMI. This relationship was verified through two-way ANOVA (**Table 5**). The results statistically confirm the a-priori hypothesis of a correlation between DMP with BMI and NHL's interaction with BMI (F=2.35, p=0.03<0.05).

In addition, the results of ANOVA test show a correlation between the decision-making and BMI, which is statistically significant (F=2.83, p=0.04 < 0.05). This was expected because BMI is a general picture of someone's lifestyle following.

DISCUSSION & CONCLUSIONS

A healthy lifestyle that includes healthy eating habits and physical exercise are a field of intensive research these days. The functioning of the human body depends significantly on the quality of the food we consume. Therefore, it is necessary to intervene by agencies to educate citizens on how to choose the food they will consume [93]. Adopting a healthy lifestyle in terms of nutrition, exercise and more general habits in a person's daily life can help the proper functioning of the brain and therefore a better emotional balance since this can improve DMP. The self-care practices seem to improve not only the human lives within workplace [94] but also the decision they made.

The set hypothesis of the present paper was examined using fieldwork information of our developed questionnaire. The statistical analysis of the coded information shows that statistically significant correlation between DMP and nutrition, habits in interaction with BMI exists, confirmed our hypothesis. In addition, the statistical analysis showed the statical significance between DMP and BMI. Further statistical analysis of the survey findings shows that most respondents agree that changes in nutrition, habits and lifestyle affect DMP. Of course, there is a percentage of 29.00% to 35.00% who

Fable 5. Two-way AN	OVA for DMP	, NHL, & BMI
----------------------------	-------------	--------------

Source	Type III sum of squares	df	Mean square	F	Significance
Corrected model	1,511.241ª	13	116.249	1.747	0.050
Intercept	22,465.766	1	22,465.766	337.7	0.000
NHL_4Categories	461.285	3	153.762	2.311	0.080
BMI_Categories	564.996	3	188.332	2.831	0.040
NHL_4 Categories*BMI_Categories	1,094.252	7	156.322	2.350	0.030
Error	15,169.259	228	66.532		
Total	215,761.000	242			
Corrected total	16,680.500	241			

Note. aR-squared=0.91 (adjusted R-squared=.39); DMP=f (NHL, BMI); & Dependent variable: DM_Totals

believe that lifestyle changes do not–positively or negatively– affect the way they make decisions.

It is important to note that less than half of the sample has a normal BMI. In addition, the vast majority of the sample have adopted a lifestyle as well as nutrition and habits that can maintain their emotional balance at an average level. Only 12.81% are those who have adopted habits that allow them to maintain a high mental balance.

The results highlight how important is self-care both in terms of nutrition and exercise, as well as in the general habits one adopts in one's daily life. The findings show that implementing healthy self-care practices can not only benefit health per se but also influence DMP.

Based on these data, lifestyle changes can affect DMP either it concerns employment or asset management issues or even issues related to personal life and relationships with others. Summarizing, the healthy lifestyle might affect the emotional status of managers and employees. DMP has statistically significant correlation with nutrition, habits, and BMI. The three DMP dimensions (data processing, speed, and risk-taking) are influenced by lifestyle changes.

Funding: No funding source is reported for this study.

Declaration of interest: No conflict of interest is declared by the author.

Ethical statement: The author stated that the study did not require ethical approval. The research was addressed to a random sample, anonymously after respondents consented to participate voluntarily according to the statement provided - before each participation to the survey - by the Department of Economics and Regional Development, Panteion University of Social and Political Sciences.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the author.

REFERENCES

- Becker B, Gerhart B. The impact of human resource management on organizational performance: Progress and prospects. Acad Manag J. 1996;39(4):779-801. https://doi.org/10.2307/256712
- Johnson RR. Officer attitudes and management influences on police work productivity. Am J Crim Justice. 2011;36(4): 293-306. https://doi.org/10.1007/s12103-010-9090-2
- Noe RA. Is career management related to employee development and performance? J Organ Behav. 1996;17(2):119-33. https://doi.org/10.1002/(SICI)1099-1379(199603)17:2<119::AID-JOB736>3.0.CO;2-O

- 4. Kahneman D. Thinking fast ans slow. London (UK): Penguin Books Ltd.; 2012.
- Camerer C, Loewenstein G, Prelec D. Neuroeconomics: How neuroscience can inform economics. J Econ Lit. 2005; XLIII:9-64. https://doi.org/10.1257/0022051053737843
- 6. Kafatos A, Manios Y, Markatji I, et al. Regional, demographic and national influences on attitudes and beliefs with regard to physical activity, body weight and health in a nationally representative sample in the European Union. Public Health Nutr. 1999;2(1a):87-95. https://doi.org/10.1017/s1368980099000130 PMid: 10933628
- Jagielski A, Brown A, Hosseini-Araghi M, Neil Thomas G, Taheri S. Quality of life and mental health in extreme obesity. A study of individuals attending a specialist weight management service. Appetite. 2015;87:393. https://doi.org/10.1016/j.appet.2014.12.168
- 8. Zerva S, Zerdila M. Obesity: A chronic disease. The Step of Asclepius; 2009.
- Dishman RK, Renner KJ, White-Welkley JE, Burke KA, Bunell BN. Treadmill exercise training augments brain norepinephrine response to familiar and novel stress. Brain Res Bull. 2000;52(5):337-42. https://doi.org/10.1016/ S0361-9230(00)00271-9 PMid:10922511
- Greiwe JS, Hickner RC, Shah SD, Cryer PE, Holloszy JO. Norepinephrine response to exercise at the same relative intensity before and after endurance exercise training. J Apl Physiol. 1999;86(2):531-5. https://doi.org/10.1152/ jappl.1999.86.2.531 PMid:9931187
- 11. Harber VJ, Sutton JR. Endorphins and exercise. Sports Med. 1984;1:154-71. https://doi.org/10.2165/00007256-198401020-00004 PMid:6091217
- 12. Krawczynski M, Olszewski H. Psychological well-being associated with a physical activity programme for persons over 60 years old. Psychol Sport Exerc. 2000;1(1):57-63. https://doi.org/10.1016/S1469-0292(00)00004-2
- 13. Wegner M, Helmich I, Machado S, Nardi AE, Arias-Carrion O, Budde E. The effects of exercise on anxiety and depression disorders: Review of meta-analyses and neurobiological mechanisms. CNS Neurol Disord Drug Targets. 2015;13(6):1002-14. https://doi.org/10.2174/ 1871527313666140612102841 PMid:24923346
- 14. Lunenburg FC. The decision making process. Natl Forum Educ Adm Superv J. 2010;27(4):1-13.

- 15. Saaty T. Decision making with the analytic hierarchy process. Int J Serv Sci. 2008;1(1):83-98. https://doi.org/10. 1504/IJSSCI.2008.017590
- 16. Molnar C, Gair J. Concepts of biology. B.C. Open Textbook Project; 2013.
- Aronson D. Cortisol–Its role in stress, inflammation, and indications for diet therapy. Today's Dietit. 2009;11(11):38.
- Susman EJ, Inoff-Germain G, Nottelmann ED, Loriaux D, Cutler Jr GB, Chrousos GP. Hormones, emotional dispositions, and aggressive attributes in young adolescents. Child Dev. 1987;58(4):1114-34. https://doi.org/10.2307/1130551 PMid:3608660
- Wirth MM, Gaffey AE. Hormones and emotion: Stress and beyond. In: Robinson M, Watkins E, Harmon-Jones E, editors. Handbook of cognition and emotion. The Guilford Press; 2013. p. 63-94.
- 20. Kaimal G, Ray K, Muniz J. Reduction of cortisol levels and participants' responses following art making. J Am Art Ther Assoc. 2016;33(2):74-80. https://doi.org/10.1080/07421656.2016.1166832 PMid:27695158 PMCid: PMC5004743
- 21. Björntorp P, Rosmond R. Obesity and cortisol. Nutr. 2000;16(10):924-36. https://doi.org/10.1016/S0899-9007 (00)00422-6 PMid:11054598
- 22. Fraser R, Ingram MC, Anderson NH, Morrison C, Davies E, Connell JM. Cortisol effects on body mass, blood pressure, and cholesterol in the general population. Hypertension. 1999;33(6):1364-8. https://doi.org/10.1161/01.HYP.33.6. 1364 PMid:10373217
- 23. Grynderup MB, Kolstad HA, Mikkelsen S, et al. A two-year follow-up study of salivary cortisol concentration and the risk of depression. Psychoneuroendocrinol. 2013;38(10): 2042-50. https://doi.org/10.1016/j.psyneuen.2013.03.013 PMid:23597874
- 24. Singh R, Goyal M, Tiwari S, Ghildiyal A, Nattu SM, Das S. Effect of examination stress on mood, performance and cortisol levels in medical studies. Indian J Physiol Pharmacol. 2012;56(1):48-55.
- 25. Andrews RC, Herlihy O, Livingstone DE, Andrew R, Walker BR. Abnormal cortisol metabolism and tissue sensitivity to cortisol in patients with glucose intolerance. J Clin Endocrinol Metab. 2002;87(12):5587-93. https://doi.org/ 10.1210/jc.2002-02004 PMid:12466357
- 26. Epel ES, McEwen B, Seeman T, et al. Stress and body shape: Stress-induced cortisol secretion is consistently greater among women with central fat. Psychosom Med. 2000; 62:623-32. https://doi.org/10.1097/00006842-200009000-00005 PMid:11020091
- Kudielka BM, Hellhammer DH, Wüst S. Why do we respond so differently? Reviewing determinants of human salivary cortisol responses to challenge. Psychoneuroendocrinol. 2009;34(1):2-18. https://doi.org/10.1016/j.psyneuen.2008. 10.004 PMid:19041187
- 28. Sher L. Type D personality: The heart, stress, and cortisol. QJM: Int J Med. 2005;98(5):323-9. https://doi.org/10.1093/ qjmed/hci064 PMid:15820973

- 29. Holt-Lunstad J, Birmingham W, Light KC. Influence of a "warm touch" support enhancement intervention among married couples on ambulatory blood pressure, oxytocin, alpha amylase, and cortisol. Psychosom Med. 2008;70(9): 976-85. https://doi.org/10.1097/PSY.0b013e318187aef7 PMid:18842740
- 30. Anninou V. How to activate the 4 main neurotransmitters of your brain, which affect your happiness? Eductor.gr; 2021.
- 31. Cherney K. 8 testosterone-boosting foods. Healthline.com; 2020.
- 32. Harvard Medical School. Harvard Health Publishing: Harvard Medical School. Available at: https://www.health.harvard.edu/drugs-and-medications /testosterone--what-it-does-and-doesnt-do (Accessed: 26 November 2023).
- 33. Lee D, Tajar A, Pye SR, etal. Association of hypogonadism with vitamin D status: The European male ageing study. Eur J Endocrinol. 2012;166(1):77-85. https://doi.org/10. 1530/EJE-11-0743 PMid:22048968
- 34. Ochner C, Geliebter A, Bauer C, Hashim S. Effects of strength and aerobic training on metabolic syndrome, insulin, and testosterone levels in dieting obese subjects. Appetite. 2007;49(1):318. https://doi.org/10.1016/j.appet. 2007.03.150
- 35. Wehr E, Pilz S, Boehm B, März W, Obermayer-Pietsch B. Association of vitamin D status with serum androgen levels in men. Clin Endocrinol. 2010;73(2):243-8. https://doi.org/ 10.1111/j.1365-2265.2009.03777.x PMid:20050857
- 36. Carson DS, Garner JP, Hyde SA, et al. Arginine vasopressin is a blood-based biomarker of social functioning in children with autism. PLoS One. 2015;10(7):e0132224. https://doi.org/10.1371/journal.pone.0132224 PMid: 26200852 PMCid:PMC4511760
- 37. Newsome J. Vasopressin: Deficiency, excess and the syndrome of inappropriate antidiuretic hormone secretion. Nephron. 1979;23:125-9. https://doi.org/10.1159/000181621 PMid:108606
- Joo K, Jeon U, Kim G-H, et al. Antidiuretic action of oxytocin is associated with increased urinary excretion of aquaporin-2. Nephrol Dial Transplant. 2004;19(10):2480-6. https://doi.org/10.1093/ndt/gfh413 PMid:15280526
- 39. Li C, Wang W, Summer SN, et al. Molecular mechanisms of antidiuretic effect of oxytocin. J Am Soc Nephrol. 2008; 19(2):225-32. https://doi.org/10.1681/ASN.2007010029 PMid:18057218 PMCid:PMC2396735
- 40. Armstrong LE. Caffeine, body fluid-electrolyte balance, and exercise performance. Int J Sport Nutr Exerc Metab. 2002;12:189-206. https://doi.org/10.1123/ijsnem.12.2.189 PMid:12187618
- 41. Armstrong LE, Pumerantz AC, Roti MW, et al. Fluid, electrolyte, and renal indices of hydration during 11 days of controlled caffeine consumption. Int J Sport Nutr Exerc Metab. 2005;15(3):252-65. https://doi.org/10.1123/ijsnem. 15.3.252 PMid:16131696

- 42. Grandjean AC, Reimers KJ, Bannick KE, Haven MC. The effect of caffeinated, non-caffeinated, caloric and non-caloric beverages on hydration. J Am Coll Nutr. 2000;19(5): 591-600. https://doi.org/10.1080/07315724.2000.10718956 PMid:11022872
- 43. Parlesak A, Pohl C, Bode J, Bode C. Water metabolism in rats subjected to chronic alcohol administration. Nephron Physiol. 2004;97(1):9-15. https://doi.org/10.1159/000077597 PMid:15153746
- 44. Di Renzo G, Giardina I, Clerici G, Brillo E, Gerli S. Progesterone in normal and pathological pregnacy. Horm Mol Biol Clin Invest. 2016;27(1):35-48. https://doi.org/10. 1515/hmbci-2016-0038 PMid:27662646
- 45. Gotter A. Low progesterone: Complications, causes, and more. Available at: https://www.healthline.com/health/ womens-health/low-progesterone (Accessed: 26 November 2023).
- 46. Targonskaya A. Low progesterone symptoms, causes, and what you can do about it. Available at: https://flo.health/ menstrual-cycle/health/symptoms-and-diseases/lowprogesterone-symptoms (Accessed: 26 November 2023).
- 47. Brighten DJ. 9 ways to improve low progesterone & boost fertility. drbrighten.com; 2016.
- 48. Egwurugwu JN, Ifedi CU, Uchefuna RC, Ezeokafor EN, Alagwu EA. Effects of zinc on male sex hormones and semen quality in rats. Niger J Physiol Sci. 2013;28(1):17-22.
- 49. Mayo JL. A Natural approach to menopause. Appl Nutr Sci Rep. 1997;5(7).
- 50. Berg JM, Tymoczkio JL. Biochemistry. New York (NY): W H Freeman; 2002.
- 51. Voet D, Voet J. Biochemistry. New York (NY): Wiley; 2010.
- 52. NIDDK. Hypoglycaemia. National Insitute of Health; 2008. Available at: https://www.niddk.nih.gov/health-informa tion/diabetes/overview/preventing-problems/low-bloodglucose-hypoglycemia (Accessed: 26 November 2023).
- 53. Galan N. What to know about blood sugar spikes. Available at: https://www.medicalnewstoday.com/articles/317215 (Accessed: 26 November 2023).
- 54. Gray JR, Thompson PM. Neurobiology of intelligence: science and ethics. Nat Rev Neurosci. 2004;5:471-82. https://doi.org/10.1038/nrn1405 PMid:15152197
- 55. Lenroot RK, Giedd JN. The changing impact of genes and environment on brain development during childhood and adolescence: Initial findings from a neuroimaging study of pediatric twins. Dev Psychopathol. 2008;20(4):1161-75. https://10.1017/S0954579408000552 PMid:18838036 PMCid:PMC2892674
- 56. Baker LA. The biology of relationships: What behavioral genetics tells us about interactions among family members. De Paul Law Rev. 2007;56(3):837-46.
- 57. Depue RA. Neurobiological factors in personality and depression. Eur J Pers. 1995;9:413-39. https://doi.org/10. 1177/070674370805300103 PMid:18286867
- 58. McEwen BS. Hormones and behavior and the integration of brain-body science. Horm Behav. 2020;119:104619. https://doi.org/10.1016/j.yhbeh.2019.104619 PMid: 31790663

- 59. Farhud DD. Impacy of lifestyle on health. Iran J Public Health. 2015;44(11):1442-4.
- 60. Dietrich C. Decision making: Factors that influence decision making, heuristics used, and decision outcomes. Inq J. 2010;2(2).
- 61. Milkman KL, Chugh D, Bazerman MH. How can decision making be improved? Perspect Psychol Sci. 2009;4(4). https://doi.org/10.1111/j.1745-6924.2009.0114 PMid: 26158985
- 62. Basten U, Biele G, Heekeren H, Fiebach C. How the brain integrates costs and benefits during decision making. PNAS. 2010;107(50):21767-72. https://doi.org/10.1073/ pnas.0908104107 PMid:21118983 PMCid:PMC3003102
- Rorie A, Newsome W. A general mechanism for decisionmaking in the human brain? Trends Cogn Sci. 2005;9(2):41-3. https://doi.org/10.1016/j.tics.2004.12.007 PMid:15668095
- 64. de Martino B, Kumaran D, Seymour B, Dolan R. Frames, biases, and rational decision-making in the human brain. Sci. 2006;313(5787):684-7. https://doi.org/10.1126/ science.1128356 PMid:16888142 PMCid:PMC2631940
- 65. Derntl B, Pintzinger N, Kryspin-Exner I, Schöpf V. The impact of sex hormone concentrations on decision-making in females and males. Front Neirosci. 2014;8. https://doi.org/10.3389/fnins.2014.00352 PMid:25414632 PMCid:PMC4220662
- 66. Carney D, Mason M. Decision making and testosterone: When the ends justify the means. J Exp Soc Psychol. 2010; 46(4):668-71. https://doi.org/10.1016/j.jesp.2010.02.003
- 67. Blakemore S-J, Robbins T. Decision-making in the adolescent brain. Nat Neurosci. 2012;15:1184-91. https://doi.org/10.1038/nn.3177 PMid:22929913
- 68. de Vesser L, van der Knaap L, van de Loo A, van der Weerd C, Ohl F, van den Bos R. Trait anxiety affects decisionmaking differently in healthy men and women: Towards gender-specific endophenotypes of anxiety. Neuropsychologia. 2010;48(6):1598-1606. https://doi.org/ 10.1016/j.neuropsychologia.2010.01.027 PMid:20138896
- 69. Kable J, Glimcher P. The neurobiology of decision: Consensus and controversy. Neuron. 2009;63(6):733-45. https://doi.org/10.1016/j.neuron.2009.09.003 PMid: 19778504 PMCid:PMC2765926
- Blaskova M, Bizik M, Jankal R. Model of decision making in motivating employees and managers. Eng Econ. 2015; 26(5):517-29. https://doi.org/10.5755/j01.ee.26.5.8727
- 71. Laube C, van den Bos W. Hormones and affect in adolescent decision making. Rec Dev Neurosci Res Human Motiv. 2016;19:259-81. https://doi.org/10.1108/S0749-742320160000019013
- 72. Bera P. How colors in business dashboards affect users' decision making. Commun ACM. 2016;59(4):50-7. https://doi.org/10.1145/2818993
- 73. Henderson J, Nutt P. The influence of decision style on decision making behavior. Manag Sci. 1980;26(4):371-86. https://doi.org/10.1287/mnsc.26.4.371

- 74. Gréhaigne J-F, Godbout P, Bouthie D. The teaching and learning of decision making in team sports. Quest. 2001;53(1):59-76. https://doi.org/10.1080/00336297.2001. 10491730
- 75. Gladwell M. Blink: The power of thinking without thinking. UK: Penguin Books Ltd.; 2006.
- 76. Tremblay S, Shakira K, Platt M. Social decision-making and the brain: A comparative perspective. Trends Cogn Sci. 2017;21(4):265-76. https://doi.org/10.1016/j.tics.2017.01. 007 PMid:28214131 PMCid:PMC5800770
- 77. Reyna V, Farley F. Risk and rationality in adolescent decision making: Implications for theory, practice, and public policy. Psychol Sci Public Interest. 2006;7(1):1-44. https://doi.org/10.1111/j.1529-1006.2006.00026.x PMid: 26158695
- 78. Brehmer B, Hagafors R. Use of experts in complex decision making: A paradigm for the study of staff work. Organ Behav Hum Decis Process. 1986;38(2):181-95. https://doi.org/10.1016/0749-5978(86)90015-4
- 79. Newell B, Shanks D. Unconscious influences on decision making: A critical review. Behav Brain Sci. 2014;37(1):1-19. https://doi.org/10.1017/S0140525X12003214 PMid: 24461214
- 80. Lee D. Game theory and neural basis of social decision making. Nat Neurosci. 2008;11:404-9. https://doi.org/10. 1038/nn2065 PMid:18368047 PMCid:PMC2413175
- Coricelli G, Dolan R, Sirigu A. Brain, emotion and decision making: The paradigmatic example of regret. Trends Cogn Sci. 2007;11(6):258-65. https://doi.org/10.1016/j.tics.2007. 04.003 PMid:17475537
- 82. Bear MF, Connors BW, Paradiso MA. Neuroscience: Exploring the brain. Philadelphia (PA): Lippincott Williams & Wilkins; 2007.
- 83. Lovaglia M, Houser J. Emotional reactions and status in groups. Am Soc Assoc. 1996;61(5):867-83. https://doi.org/ 10.2307/2096458
- 84. Porath C, Pearson C. Emotional and behavioral responses to workplace incivility and the impact of hierarchical status. J Appl Soc Psychol. 2012;42(S1):E326-57. https://doi.org/10.1111/j.1559-1816.2012.01020.x

- 85. Chatterjee K, Cheng S, Clark B, et al. Commuting and wellbeing: A critical overview of the literature with implications for policy and future research. Transp Rev. 2020;40(1):5-34. https://doi.org/10.1080/01441647.2019. 1649317
- 86. Lorenz O. Does commuting matter to subjective wellbeing? J Transp Geogr. 2018;66:180-99. https://doi.org/10. 1016/j.jtrangeo.2017.11.019
- 87. American Diabetes Associations. Diabetes and employment. Diabetes Care. 2011;34(1):S82-6. https://doi.org/10.2337/dc14-S112 PMid:24357206
- 88. Strasser P, Wood F, Jacobson S. Educating supervisors of employees with diabetes. AAOHN J. 2008;56(6):262-7. https://doi.org/10.3928/08910162-20080601-01 PMid: 18604922
- 89. Mazzola J, Moore J, Alexander K. Is work keeping us from acting healthy? How workplace barriers and facilitators impact nutrition and exercise behaviors. Stress Health. 2017;33(5):479-89. https://doi.org/10.1002/smi.2731 PMid:27891758
- 90. Whati L, Senekal M, Steyn N, Nel J, Lombard C, Norris S. Development of a reliable and valid nutritional knowledge questionnaire for urban South African adolescents. Nutr. 2005;21(1):76-85. https://doi.org/10.1016/j.nut.2004.09. 011 PMid:15661481
- 91. Taber KI. The use of Cronbach's alpha when developing and reporting research instruments in science education. Res Sci Educ. 2018;48:1273-96. https://doi.org/10.1007/ s11165-016-9602-2
- 92. Ursachi G, Horodnic I, Zait A. How reliable are measurement scales? External factors with indirect influence on reliability estimators. Procedia Econ Financ. 2015;20:679-86. https://doi.org/10.1016/S2212-5671(15) 00123-9
- 93. Icer Arif M, Gezmen Karadag M. Evaluation of nutrition label reading habits and knowledge levels among Turkish consumers: Implications for healthier food choices. Eur J Environ Public Health. 2023;7(4):em0144. https://doi.org/ 10.29333/ejeph/13392
- 94. Ray J, Pijanowski J, Lasater K. The self-care practices of school principals. J Educ Admin. 2020;58(4):435-51. https://doi.org/10.1108/JEA-04-2019-0073