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Original article

Examining the relationship between the thinking styles and the motivation aspects of the individuals working in the health sector in Turkey during the COVID-19 pandemic: The case of hospital staff

Examiner la relation entre les styles de pensée et les aspects de motivation des personnes travaillant dans le secteur de la santé en Turquie pendant la pandémie de COVID-19 : le cas du personnel hospitalier

İşıl Kıroğlu Arslan
Department of Health Management, Faculty of Health Sciences, Ardahan University, Ardahan, Turkey

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ABSTRACT

Aim. – The aim of this study is to evaluate the relationship between the thinking styles of hospital staff and their motivation tools during the pandemic in Turkey.

Materials and methods. – Top 100 hospitals in Turkey that have the highest number of examinations on the list, constitute the population and 1220 participants from all over Turkey took part in the study. The data set was analyzed with descriptive statistics, independent groups t-test, ANOVA and regression analysis.

Results. – Most of the sample were women (66.4%), undergraduate (49%), working in a medical position (72%) and nurses (50.6%). T-test conclusion was showed that intrinsic motivation values are higher than extrinsic motivation values. There was no significant difference between administrative/medical position status and the mean score of any of the scales. As the results of regression analysis, it was determined that thinking style significantly predicted motivation.

Conclusions. – The results of the present study suggest that hospital staff used the experiential thinking style more than rational thinking and behaved with intrinsic motivation more than extrinsic motivation during COVID-19 pandemic.

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RÉSUMÉ

Objectif. – L’objectif de cette étude est d’évaluer la relation entre les styles de pensée du personnel hospitalier et leurs outils de motivation pendant la pandémie en Turquie.

Matériels et méthodes. – Les 100 meilleurs hôpitaux en Turquie, qui ont le plus grand nombre d’examens sur la liste, constituent la population, et 1 220 participants de toute la Turquie ont participé à l’étude. L’ensemble de données a été analysé avec des statistiques descriptives, des groupes indépendants t-test, ANOVA et une analyse de régression.

Résultats. – L’échantillon était composé pour la plupart de femmes (66,4 %), de premier cycle (49 %), travaillant dans un poste médical (72 %) et des infirmières (50,6 %). La conclusion du test-T a montré que les valeurs de motivation intrinsèques sont plus élevées que les valeurs de motivation extrinsèques. Il n’y a pas de différence significative entre le statut du poste administratif/medical et le score moyen de l’une des échelles. Selon les résultats de l’analyse de régression, il a été déterminé que le style de pensée prédisait de manière significative la motivation.

Mots clés :
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E-mail addresses: isilkiroglu@ardahan.edu.tr, kiroglu.isil@gmail.com

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1. Introduction

Changing living conditions appear in the fields of work with the developments in the information age. Especially with the effect of the COVID 2019 pandemic, the conditions of many working areas have changed radically. Healthcare workers experience high levels of work stress even under normal conditions. The crisis of coronavirus disease 2019 (COVID-19) is putting additional pressure on healthcare personnel [1,2]. On the other hand, it is of great importance to determine which factors affect the professional attitudes of healthcare professionals in such events, so that hospitals can continue to function even in such difficult conditions [3]. The sudden outbreak of the pandemic has resulted in the need for urgent response measures to identify and diagnose patients, treat them, and combat contamination intensively. In this process, healthcare professionals who take the risk of infection for themselves and their relatives, were at the forefront of the fight against the disease [4]. Hence, there is a need for individuals (healthcare professionals) who can solve the problems they encounter in working environments, are open to change and development, support change, and make an effort for this.

The education system that trains healthcare professionals in line with the expectations and preferences of organizations in the information age, expects students to learn and use various ways of thinking, such as processing the information they receive, problem-solving, handling the problems creatively and critically, and having the ability to implement them effectively in the learning process [5]. However, the purpose of hospitals that carry out service activities is to transform unhealthy input into a healthy output. At this point, the most important task of managers should be carefully direct all attention of the staff to the human input process. Because the smallest mistake to be made has a high risk of adversely affecting human health and human life [6,7]. Moreover, healthcare services are becoming more complex and branched out to meet needs. Knowledge and technology in the medical field are expanding at an incredible rate, making it difficult for healthcare personnel to keep up with the developing knowledge. Patients’ needs are also changing. It is being switched from the diagnosis and treatment of a single acute problem to the long-term follow-up of multiple and related chronic conditions [8]. The basic condition for healthcare professionals serving human health to be able to offer this service in the best way is to be healthy. There are some basic conditions and possibilities of being physically and mentally healthy for them. Unless these conditions and opportunities, which can be summarized as regulating the working conditions of healthcare workers and gaining their democratic rights and thus improving their living conditions, are not provided, healthcare workers cannot be expected to provide satisfying health services [5]. As the main input is human and human life in hospitals, which have a complicated organizational structure, the quality of the output at each stage of the system is vital. Service execution that customers/patients will perceive as the quality is only possible with motivated and well-guided personnel. Hence, health institution managers must first motivate their internal customers, namely their employees, and increase their satisfaction to satisfy their external customers. Making conscious motivation management by using various material and nonpecuniary motivation tools and methods are the paths followed by systematic organizations [10]. In the context of motivation theories, various studies have been conducted from past to present in order to determine the factors that motivate individuals in organizations [11–18]. This study is based on the “intrinsic motivation” and “extrinsic motivation” offered in Self-Determination Theory [19]. Self-Determination Theory analyzes the natural developmental tendencies and innate psychological needs of people that are the basis for self-motivation and personality integration. The main difference between intrinsic and extrinsic motivation; while extrinsic incentives, pressures, and material rewards form the basis for people to act with extrinsic motivation, the intrinsic motivation enables the person to take action focused on fun or struggle [20]. Intrinsic motivation occurs naturally by doing things that one loves or that attracts one’s attention [21]. The behaviors of living beings that they perform with internal motivation rely on positive experiences based on exercising for self-improvement and increasing capacity rather than for a material gain [20].

Extrinsic motivation, contrary to intrinsic motivation, is associated with an end goal and belongs to many behaviors that are more than just for their own good. Being extrinsically motivated involves behaviors with the intention of achieving some distinguishable outcome, such as achieving a reward, getting rid of guilt, or gaining someone else’s approval [11]. Extrinsic motivation elements are performance-based incentives that fall to the share of employees out of the job itself. Although not as effective as intrinsic motivation, expectations for extrinsic rewards can provide positive changes in employees’ attitudes [11]. From a holistic view, determining the factors that motivate individuals in the work environment is important in terms of creating an organizational environment that will maximize the motivation of the employees.

In the business environment, as in all areas of life, people use their reasoning skills before they are motivated to take any action. According to Semerci [22,23], thinking people can produce, use, and evaluate knowledge. The most basic feature that distinguishes humans from other living beings is their cognition. Thinking is the activity of using existing information, combining information at necessary points, separating, classifying and evaluating new information, as well as learning new information [24,25]. According to Nickerson [26], thinking includes logical reasoning, critical thinking, creative thinking, problem-solving, and decision making.

If individuals exhibit different characteristics from each other in terms of their appearance, physical abilities, interests, tastes, and knowledge, they also differ in their mental development (mental schemas), learning, and thinking activities (styles). These differences result in people using their abilities in different ways, reacting differently to events, and making different choices [24,27]. The concept of “style”, one of the variables of the individual difference that educational psychologists have focused on in recent years, in general terms, “is a link between talent and personality; the individual’s combination of choice in using their abilities is how they choose to apply their knowledge and skills” [28]. The thinking styles, defined by the concept of style, show the works and preferences that the individual enjoys doing and indicate the power to benefit from intelligence rather than intelligence itself and maximizing intelligence [29]. Thinking styles, which can also be expressed as cognitive styles, are defined as “consistent individual differences in preferred methods to organize and to
process information and experiences” by Allinson and Hayes [30]. The intellectual development of an individual needs to discover and develop thinking styles in which creative thinking, decision making, problem-solving, evaluation, and reasoning skills are effective [31].

Looking at the studies on thinking styles, it is seen that three comprehensive approaches are frequently emphasized. These are (a) Cognitive-Experiential Self-Theory of Personality (CEST); (b) Myers-Briggs Type Indicator (Thinking Style Classifications); and (c) Theory of Mental Self-Government. At the same time, new approaches that try to explain the thinking and decision-making processes argue that emotion plays an important role in cognitive-based decisions. In fact, CEST is one of the approaches suggesting that logic/cognition-based explanations alone are not sufficient for decision making or information processing, and that includes processes based on emotion/intuition into the decision-making process [32,33]. According to CEST, there are two systems that do not depend on each other but operate in parallel in processing information. One of these, the logical/cognitive system, is an inferential system based on culturally transmitted rules of reasoning. It works consciously, partly slowly, analytically, mainly verbally and relatively emotion-free. The experiential system, on the other hand, is a learning system and belongs to the pre-conscious level rather than consciousness. It works fast, automatic, holistic, mostly non-verbal, and linked to emotions [34]. Cognitive and experiential systems work in parallel and interactively, and behavior toward finding solution is determined by the joint effect of these two systems. The system to be used more predominantly reflects an individual tendency [35].

The need for individuals, working in a service environment where workflows occur rapidly, to find a quick solution to a problem distinguishes these individuals from those working in other business environments (sectors). Since thinking is especially associated with learning and teaching activities, there are many studies specifically for the Education Sector. Dincer and Saracaloğlu [24] conducted a study to examine the thinking styles of teacher candidates in terms of various variables. According to the research findings; statistically significant differences were found between the thinking styles of the teachers candidates and the learning program, class, gender, age, graduated area, and the perception of socioeconomic level. Similarly, Berkant and Tüzter [22] conducted a study to explore the thinking styles of classroom teachers and to associate the styles with some demographic variables (gender, marital status, professional seniority, etc.). Çubuçu [31] focused on revealing the thinking styles that affect the learning of teacher candidates and also revealed that the styles are closely related to the individual situations (age, gender) and socio-economic status (features such as hobbies, leadership experience, work experience) of teacher candidates. Fer [28] examined whether the thinking styles of teacher candidates changed depending on the variables of gender, university resources and program resources and obtained significant findings that they did. Golan [36] did a research whether there is a difference in thinking styles between senior library managers working in the public and technical service fields in libraries with institutional memberships to the Association of Research Libraries (ARL). Also, a few studies are found to explore the styles of health personnel candidate students [5,37]. However, there is no such research has been found for those working in the Health Sector. Karadağ, Alparslan and İşeri [5] did a research on the critical thinking tendencies and learning styles of midwifery and nursing students. While there was a significant gender difference in some sub-dimensions of the California Critical Thinking Disposition Inventory, no significant difference was found according to the department and class. Zhang’s study [37] concerns the contingent nature of the relationships of student–teacher style match (or mismatch) to students’ academic achievement. Kanbay et al. [38] studied the critical thinking and problem solving skills of undergraduate nursing students and made comparisons between classes. Although there is a difference in critical thinking mean scores between classes, this difference is not statistically significant.

There are many studies related motivation applied on hospital staff, but any study is not found on the relationship of motivation and thinking styles. The aim of this study is to contribute to the literature by exploring the motivation factors and thinking styles of health personnel in Turkey and revealing the relationship between motivation factors and thinking styles during COVID-19 pandemic.

2. Material and method

2.1. Study design, setting and sample

The research focuses on defining the effects of thinking and decision-making styles of individuals working in hospitals, which are service-producing organizations of the health sector, on their motivational aspects (internal-external). The research unit is hospital staff who performs difficult tasks to solve the health problems of people.

In this study, descriptive (exploratory) research model is used. The purpose of the descriptive model is to define the research problem, the variables related to this problem and the relationships between the variables. Thus, it will be possible to make forward-looking predictions and to develop suggestions [39].

The hypotheses put forward for the purpose of the study are as follows:

- \( H_1 \): thinking/decision making has an effect on motivation;
- \( H_2 \): individuals with experiential thinking style are motivated by intrinsic motivation tools;
- \( H_3 \): individuals with experiential thinking style are motivated by extrinsic motivation tools;
- \( H_4 \): individuals with rational thinking style are motivated by intrinsic motivation tools;
- \( H_5 \): individuals with rational thinking style are motivated by extrinsic motivation tools.

The study was based on the “2017 Period Clinical Examination Numbers on the Basis of Hospitals” obtained from the 2017 January-October Period Polyclinic, Hospitalization, Intensive Care and Emergency Service Statistics report published by the Ministry of Health, General Directorate of Public Hospitals. There are top 100 hospitals that have the highest number of examinations in Turkey on the list and make up the population of the research. Hospitals were invited to participate in the research through official permission channels, and the principle of voluntary participation, which is accepted as one of the ethical principles in scientific research, was observed [40]. All hospitals with a positive response were visited until a sample enabling the representation of the population was obtained within the specified period, 25 of these 100 hospitals make up the sample of the hospital. Hospitals that accepted to participate in research (25 hospitals in 15 provinces), are seen showing a wide distribution in Turkey (Fig. 1).

It was planned to contact the hospital management units in order to ensure the participation of hospital personnel in the data collection process. In this direction, an application was made to the local health authority to which each hospital is affiliated, through institutional correspondence. In this process, the local health authority first consulted the hospital and received the approval that the research did not pose an obstacle for them. Afterwards, it was reported through official channels that the necessary
permissions were obtained if deemed appropriate by the directorate. Hospitals were visited on common dates set for hospital staff and researcher, and data were collected from administrative staff and medical units via a questionnaire.

2.2. Instruments

The Interview/Demographics Form, the Intrinsic/Extrinsic Motivation Tools Scale, and the Rational-Experiential Inventory were the data collection tools of this study. The interview form consisted of questions including sociodemographic characteristics of the hospital staff such as the age, gender, education level, marital status, department, job position, and information about their experiences in making decisions such as factors that led to a successful result.

Motivation questionnaire (the Intrinsic/Extrinsic Motivation Tools Scale) items were developed based on Mottaz [41], Brislin et al. [42], and Mahaney and Lederer’s [43] motivation works to measure the direction (intrinsic or extrinsic) of motivation of hospital staff [41–43]. It included 24 items containing two dimensions and was adapted to Turkish by Dündar, Öztuk and Taspinar in 2007 [12]. Intrinsic motivation was measured by 9 items and extrinsic motivation was measured by 15 items. Reliability of the scale created by Dündar, Öztuk and Taspinar [12] was determined using the “Cronbach alpha” criterion based on the “internal consistency” method. Cronbach alpha values of the scale of intrinsic and extrinsic motivation tools were calculated as 0.83 and 0.84, respectively. As the answer to the question “To what extent do the following situations about your job encourage and motivate you?”, there are five options such as “1 – does not encourage at all”, “2 – it encourages a little”, “3 – it encourages moderately”, “4 – it highly encourages”, “5 – it highly encourages”.

In order to determine the thinking style, the Rational-Experiential Inventory, which was developed by Pacini and Epstein [34] and adapted to Turkish by Türk [44], was preferred. A Likert type metric with five intervals was used for the answers of the expressions in the scales. The original form of the scale with 40 items consists of four subscales. These are rational ability, rational engagement, experiential ability, and experiential engagement. In the rational skill subscale, there are expressions indicating a high level skill in analytical-rational thinking; in the subscale of rational thinking engagement, it includes statements about having confidence in thinking in an analytical-rational way and enjoying it. The experiential skills subscale includes expressions reporting skills related to the individual’s intuitive perceptions, and the experiential engagement subscale includes expressions reporting trusting on emotions and intuitions while making decisions. The reliability of the original scale was found as 0.90 for rational thinking style and 0.87 for experiential thinking style. In this section, “Please mark the following expressions about your feelings, beliefs and behaviors by evaluating the option (between 1 and 5) appropriate for you. Try to reflect the first effect you have while answering,” directive and 5-point Likert type measurement graded between “absolutely wrong” and “absolutely true” were preferred.

2.3. Data Collection

Data were collected via hospital visits. Each hospital that declared that they would participate in the study was contacted and a common date was determined for the visit. All departments in the hospital were visited in company with a nurse or an officer determined by the hospital administration to assist the study. The employees in the departments were informed about the study and each employee who wanted to take part in the study was asked to fill in a questionnaire. After all departments were visited in this way, they returned to the starting section and the answered forms were collected by checking. If there were missing parts in the form, the participant was supported to complete it.

Data collection took approximately a year due to the responses to the acceptance of participation from hospitals where the task intensity is high and decision mechanisms are always urgent. Consequently, about 1,400 forms were collected from 20 hospitals, but 1,220 of them could be used in the research.

2.4. Ethical Considerations

Ethics report was received from Ardahan University Social and Human Sciences Ethics Committee (date: 8 July 2019) for “Ethics Committee Approval”. All participants were informed, and consents were obtained before data collection.

2.5. Data Analysis

Statistical analyses were carried out using SPSS 20.0 software. The number and percentage of participants in the categorical
variables were expressed as \((n)\), and \((\%\)) respectively, and as mean ± standard deviation \((X ± SD)\) for the numeric variables. The comparisons between scale mean and sample characteristics, data were evaluated via Independent Samples Test and analysis of variance. Relationships between scales/sub-scales were evaluated using linear regression analysis.

3. Results

3.1. Sample characteristics (Independent Samples Test, Analysis of Variance)

A total of 1,220 individuals, including 340 administrative and 880 medical staff, were included in the study. The mean (±SD) age of all participants was 33.70 ± 8.39 (range: 17–65) years, 810 of them were female (66.4%) and 830 of them were married (68%). Most of the participants were undergraduate (49%) and work in nursing staff (50.6%) (Table 1).

Mean scores of intrinsic motivation scale, extrinsic motivation scale, rational and experiential thinking styles and some characteristics of the participants (gender, education and administrative/medical position status) were compared with independent

Table 1

| Characteristics                      | n   | %     |
|--------------------------------------|-----|-------|
| Administrative                       | 340 | 27.9  |
| Medical                              | 880 | 72.1  |
| Gender                               |     |       |
| Female                               | 810 | 66.4  |
| Male                                 | 410 | 33.6  |
| Marital status                       |     |       |
| Single                               | 390 | 32.0  |
| Married                              | 830 | 68.0  |
| Education level                      |     |       |
| High school                          | 252 | 20.7  |
| Associate degree                     | 285 | 23.4  |
| Undergraduate                        | 598 | 49.0  |
| Graduate and above                   | 85  | 7.0   |
| Staff position                       |     |       |
| Administrative unit manager          | 26  | 2.1   |
| Biologist                            | 2   | 0.2   |
| Civil servant                        | 99  | 8.1   |
| Clinical support staff               | 9   | 0.7   |
| Computing/information system staff   | 6   | 0.5   |
| Data preparation and control operator| 82  | 6.7   |
| Deputy chief physician               | 4   | 0.3   |
| Elderly care                         | 1   | 0.1   |
| Engineer                             | 1   | 0.1   |
| First and emergency aid              | 15  | 1.2   |
| Health officer                       | 27  | 2.2   |
| Healthcare technician                | 22  | 1.8   |
| Hospital manager                     | 1   | 0.1   |
| Laboratory                           | 33  | 2.7   |
| Medical doctor                       | 51  | 4.2   |
| Medical secretary                    | 64  | 5.2   |
| Medical technician                   | 55  | 4.5   |
| Medical unit manager                 | 5   | 0.4   |
| Midwife                              | 33  | 2.7   |
| Nurse                                | 617 | 50.6  |
| Nutritionist                         | 6   | 0.5   |
| Occupational health and safety specialist | 6 | 0.5   |
| Patient admission/registration      | 22  | 1.8   |
| Pharmacist                           | 1   | 0.1   |
| Physiotherapist                      | 8   | 0.7   |
| Psychologist                         | 3   | 0.2   |
| Security guard                       | 1   | 0.1   |
| Social worker                        | 6   | 0.5   |
| Speech and language therapist        | 1   | 0.1   |
| Technician                           | 6   | 0.5   |
| Training officer                     | 7   | 0.6   |

Samples Test and ANOVA. T-test conclusion was showed (Table 2) that the intrinsic motivation scores of male staff (Mean = 4.05, SD = 0.73) were significantly \(t(1218) = 3.192, P = 0.001\) lower than female staff (Mean = 4.19, SD = 0.69). There was no statistically significant difference between mean scores of extrinsic motivation scale and gender (Table 3) \(t(1218) = 1.502, P = 0.133\), rational thinking style and gender (Table 4) \(t(1218) = 0.654, P = 0.513\) and experiential thinking style and gender (Table 5) \(t(1218) = 1.502, P = 0.133\). When the two tables (Tables 2 and 3) are examined together in terms of gender, it is noteworthy that intrinsic motivation values (Mean for females: 4.188, for males: 4.050) are higher than extrinsic motivation values (Mean for females: 3.175, for males: 3.133) in both males and females. Therefore, it can be concluded that hospital staff are more motivated with intrinsic motivation tools than extrinsic motivation tools.

Also, there was no significant difference between administrative/medical position status and the mean score of intrinsic \(t(1218) = −0.758, P = 0.449\) and extrinsic \(t(1218) = −1.196, P = 0.232\) motivation scales, rational \(t(577.8) = −1.089, P = 0.277\) and experiential \(t(1218) = −0.986, P = 0.324\) thinking styles (Tables 2–5, respectively).

A one-way ANOVA was performed among the participants to compare their high school, associate degree, undergraduate and graduate and above degree graduation levels whether the intrinsic and extrinsic motivation, and rational and experiential inventory rates had a different effect in terms of education level or not.
According to the homogeneity test of variances, it was observed that group variances were not homogenous for intrinsic motivation, rational and experiential thinking styles. In this case, Welch or Brown-Forsythe tests had to be performed, since the classical F test could not be performed. According to the level of education, the intrinsic motivation ($P = 0.176$), rational thinking style ($P = 0.790$) and experiential thinking style ($P = 0.256$) usage rates of the staff did not differ at the 5% significance level (Tables 6–8, respectively). Additionally, there was not a significant effect of education level differences on extrinsic motivation (Table 9) used at work at $P < 0.05$ [F (3, 1216) = 1.562, $P = 0.197$].

### 3.2. Regression Analysis

When the preferences of the participants regarding the sub-dimensions of motivation are examined, the average scores are $4.14 \pm 0.71$ for intrinsic motivation and $3.95 \pm 0.81$ for extrinsic motivation. The mean score of the experimental thinking style sub-dimension of the thinking styles is $3.16 \pm 0.46$ and the average score of the logical thinking style, the other sub-dimension, is $3.09 \pm 0.44$.

Correlation analysis was used to investigate whether there is a relationship between the variables. As a result of the Pearson Correlation Analysis conducted to determine the relationship between the scores obtained from the motivation sub-dimensions and the sub-dimensions of thinking styles, a statistically significant relationship was found between the scores at $P < 0.01$ level as seen in Table 10.

### Table 6
Results of variance analysis for intrinsic motivation.

| Group           | $n$ | Mean | SD  | Source       | SS  | df | MS  | F    | $P$  |
|-----------------|-----|------|-----|--------------|-----|----|-----|------|------|
| High sch.       | 252 | 4.194| 0.645| Between g.   | 2.134| 3  | 0.711| 1.405| 0.240|
| Associate deg.  | 285 | 4.108| 0.775| Within g.    | 615.947| 1216| 0.507|       |      |
| Undergraduate   | 598 | 4.121| 0.721| Total        | 618.081| 1219|     |       |      |
| Graduate and +  | 85  | 4.242| 0.599|             |     |    |     |      |      |

### Table 7
Results of variance analysis for rational thinking style.

| Group           | $n$ | Mean | SD  | Source       | SS  | df | MS  | F    | $P$  |
|-----------------|-----|------|-----|--------------|-----|----|-----|------|------|
| High sch.       | 252 | 3.130| 0.521| Between g.   | 1.393| 3  | 0.464| 2.396| 0.067|
| Associate deg.  | 285 | 3.049| 0.423| Within g.    | 235.867| 1216| 0.194|       |      |
| Undergraduate   | 598 | 3.107| 0.407| Total        | 237.080| 1219|     |       |      |
| Graduate and +  | 85  | 3.028| 0.456|             |     |    |     |      |      |

### Table 8
Results of variance analysis for experiential thinking style.

| Group           | $n$ | Mean | SD  | Source       | SS  | df | MS  | F    | $P$  |
|-----------------|-----|------|-----|--------------|-----|----|-----|------|------|
| High sch.       | 252 | 3.184| 0.539| Between g.   | 0.922| 3  | 0.307| 1.414| 0.237|
| Associate deg.  | 285 | 3.127| 0.471| Within g.    | 264.312| 1216| 0.217|       |      |
| Undergraduate   | 598 | 3.177| 0.426| Total        | 265.234| 1219|     |       |      |
| Graduate and +  | 85  | 3.100| 0.483|             |     |    |     |      |      |

### Table 9
Results of variance analysis for extrinsic motivation.

| Group           | $n$ | Mean | SD  | Source       | SS  | df | MS  | F    | $P$  |
|-----------------|-----|------|-----|--------------|-----|----|-----|------|------|
| High sch.       | 252 | 4.049| 0.768| Between g.   | 3.089| 3  | 1.030| 1.562| 0.197|
| Associate deg.  | 285 | 3.927| 0.840| Within g.    | 801.711| 1216| 0.659|       |      |
| Undergraduate   | 598 | 3.923| 0.819| Total        | 804.800| 1219|     |       |      |
| Graduate and +  | 85  | 3.936| 0.790|             |     |    |     |      |      |

### Table 10
Results of correlation analysis.

| Variables          | 1  | 2   | 3   | 4    |
|--------------------|----|-----|-----|------|
| 1. Experiential thinking style | 1  | 0.765* | 0.120* | 0.093* |
| 2. Rational thinking style       | 0.765* | 1  | 0.090* | 0.093* |
| 3. Intrinsic motivation           | 0.120* | 0.090* | 1  | 0.660* |
| 4. Extrinsic motivation           | 0.093* | 0.093* | 0.660* | 1    |

* Correlation is significant at the 0.01 level.
There was a weakly positive correlation between experiential thinking style and two sub-dimensions of motivation (intrinsic and extrinsic). Similarly a weakly positive correlation was found between rational thinking style and intrinsic and extrinsic motivation (Table 10).

Linear regression analysis was used to evaluate the predictive power of the thinking/decision making variable on the motivation variable. As a result of the analysis, it was determined that thinking/decision making significantly predicted motivation [F (1, 1218) = 15.552, \( P < 0.001 \)] and that thinking explained 1.3% of the variance of motivation variable. The findings showed that the independent variable explained only a small part of the variance in motivation. The predictive effect of the experimental thinking style on intrinsic motivation sub-dimension was tested by linear regression analysis, and it was found that the results were statistically significant [F (1, 1218) = 17.865, \( P < 0.001 \)] and it was seen that the experiential thinking style explained the variance of intrinsic motivation at the level of 1.4%. According to this, when the experiential thinking activities of health workers increase, their motivation in the dimension of internality increases. Besides, the predictive effect of experiential thinking style on extrinsic motivation was also tested, and it was found that the results were statistically significant [F (1, 1218) = 10.529, \( P < 0.01 \)] and experiential thinking style explained the variance of extrinsic motivation at 1% level. Findings show that experiential thinking style explains only a small part of the variance in extrinsic motivation.

The results of the linear regression analysis performed to evaluate the power of rational thinking sub-dimension level to predict intrinsic motivation were statistically significant [F (1, 1218) = 9.899, \( P < 0.01 \)] and it was determined that the rational thinking sub-dimension explained about 1% of the change in the intrinsic motivation level (Table 11). Accordingly, it was seen that the act of rational thinking explained very little of the variance in intrinsic motivation. The predictive power of rational thinking style on extrinsic motivation was also examined, and the results of the linear regression analysis performed were found to be statistically significant [F (1, 1218) = 10.547, \( P < 0.01 \)]. It was determined that the rational thinking sub-dimension explained 1% of the total variance of extrinsic motivation. The findings show that rational thinking explains a very low part of the variance in extrinsic motivation. Also, it can be said that the predictive power of the experiential thinking sub-dimension on intrinsic motivation is higher than the predictive power of the rational thinking sub-dimension.

### Table 11

| Independent Variable | B   | \( \beta \) | r   | P   | \( R^2 \) | F    |
|----------------------|-----|-------------|-----|-----|---------|------|
| 1. Thinking          | 0.188 | 0.112 | 3.944 | 0.000 | 0.013  | 15.552** |
| 2. Experiential thinking | 0.184 | 0.120 | 4.227 | 0.000 | 0.014  | 17.865** |
| 3. Experiential thinking | 0.161 | 0.093 | 3.245 | 0.001 | 0.009  | 10.529*  |
| 4. Rational thinking | 0.145 | 0.090 | 3.146 | 0.002 | 0.008  | 9.899** |
| 5. Rational thinking | 0.171 | 0.093 | 3.248 | 0.001 | 0.009  | 10.547*  |

Note 1: ** \( P < 0.01 \), * \( P < 0.001 \). Dependent Variable: 1. Motivation, 2. Intrinsic motivation, 3. Extrinsic motivation, 4. Intrinsic motivation, 5. Extrinsic motivation.

### 4. Discussion

The current study was conducted to evaluate the relationship between the motivational aspect of healthcare personnel and administrative personnel working in hospitals and their thinking styles. The most basic finding obtained is that there is a positive linear relationship between motivation and thinking, and thinking scores are significantly predicted motivation. The expected result before the study was in this direction and it was achieved. Although there are few studies [45–49] in the literature focusing on the relationship between thinking styles and motivation, they support our finding in this study. For example, in their studies Belousova and Mochalova [45] focused on measuring the relationship between thinking styles and motivational characteristics, starting from the idea that the motivational characteristics of managers determine their personal professional success and effectiveneness in organizational activities. According to the results of the research, it was suggested that the relationship between thinking style and need for achievement was characteristic for managers with different professional orientations. This confirmed that the need for achievement and motivation to achieve are one of the determinants of the thinking style of managers. In another study on thinking styles, psychological needs and motivation toward education of instructional psychology students, Doménech-Betoret and Gómez-Artiga [46] found that thinking styles have a significant and positive impact on student psychological need satisfaction. In turn, psychological need satisfaction has a significant and positive impact on student intrinsic motivation. In particular, such a study has not been found in the health sector. Also, the second main finding is that in general hospital staff, acting with intrinsic motivation tools is more intense than it is motivated by extrinsic motivation tools. Similar results have also been obtained in previous studies hold on healthcare personnel in Turkey on motivation supports the results of this study. In these studies [50–53] which focus more on discovering the motivational aspect and the relationship between the organizational motivation tools used and the job satisfaction of the staff, the importance of intrinsic motivation or Herzberg’s motivational tools for healthcare personnel is mentioned.

Besides, it was observed that females were more motivated with intrinsic motivation tools than the male group. There is no significant difference between the groups in terms of extrinsic motivation. It was observed that motivation tools did not make a significant difference between medical personnel and administrative personnel in terms of neither intrinsic motivation nor extrinsic motivation. In addition, when the education levels (high school, associate degree, undergraduate, graduate and above) are considered, no differences were found in motivation with intrinsic and extrinsic motivation tools.

As a result of the analysis, no meaningful finding was found that any of the logical and experiential thinking styles were used more by hospital staff, and it was found that the usage rates were close to each other. No significant difference was observed between both gender (male/female) and position (medical/administrative) groups on the basis of logical and experiential thinking styles. As a result of the ANOVA test, no statistically significant differences were found between education groups on the basis of logical and experiential thinking styles. Although it has been stated in previous studies that education has an effect on thinking style [24,31] there is a decision making process for practice in the workplace environment. Especially in the health sector, rapid decision making requires practical thinking. The difference in experience rather than education is likely to make a difference in thinking style. It is suggested that the difference in experience neglected in this study should be included in future studies.

The hypotheses of the study were tested by linear regression analysis. The expectation that “thinking/decision making has an effect on motivation” put forward by the first hypothesis was met (\( P < 0.001 \)). As stated in the study, the health sector includes critical processes in that the slightest mistake will lead to significant results. Therefore, it is necessary to act very carefully. Pre-motivational thinking/decision-making for implementation
has an exceptional importance in the health sector. The reality of this situation is supported in the first hypothesis. In other hypotheses, the relationships between the sub-dimensions of the variables were discussed. As well as the hypothesis “individuals with experiential thinking style are motivated by intrinsic motivation tools” is supported, the highest variance explained in all hypothesis tests emerged in this analysis (1.4%). It is expected that experiential thinking, which indicates the practical thinking gained by the experience of hospital staff, who is mostly motivated by intrinsic motivation tools, has a high relationship with intrinsic motivation [F (1.1218) = 17.865, P < 0.001]. The predictive power on “motivation of individuals with experiential thinking style with extrinsic motivation tools” expected by the third hypothesis was tested and accepted statistically [F (1.1218) = 10.529, P < 0.01].

On the other hand, the last two hypotheses are intended to test the predictive power of rational thinking. The fourth hypothesis questioned “individuals with rational thinking style being motivated by intrinsic motivation tools” and the fifth hypothesis questioned “individuals with rational thinking style being motivated by extrinsic motivation tools” were supported at P < 0.01 level as the results of linear regression analysis.

5. Conclusion and recommendations

All hypotheses were supported according to the findings of the study. The first hypothesis and the most basic finding was “thinking/decision making has an effect on motivation”. Employees in the health sector, which has a vital importance in the service sectors, take urgent and rapid decisions in an environment where they need to act rapidly, and the relationship between motivation sources while implementing these decisions is important. Motivation is the effort and determination of people to achieve a certain goal. The aim of hospital staff is to improve human health and even save lives. In line with this valuable purpose, it will create quality hospital services with the motivation and guidance of the hospital staff. The quality of services supply is also among the issues of importance in the public sphere. In order to solve the tools (internal/external) that employees are motivated to, revealing the ways of thinking and making decisions is an important factor. Because, as in every point of life, individuals use their reasoning skills before they are motivated to take any action in the business environment. The ways that people prefer while performing their daily activities or using their skills in the workplace are referred to as “thinking style”.

With the increase and diversification of health needs, the services offered in the health sector have also increased and created an intense competitive environment. One of the basic conditions for making a difference in service quality and patient satisfaction for the organizations in the sector is to increase the service delivery quality of the hospital staff. In this direction, in order to increase competitiveness, provide quality service and increase patient satisfaction; hospital staff working under intense workload and stress need quick thinking and high motivation [51,53–55]. Hospital management can take action to motivate their staff, especially by focusing her/his motivation style (intrinsic/extrinsic). Dündar, Öztoku and Taşpinar [12] suggested that managers can gain competitive advantage with higher individual and organizational performance levels by discovering the motivation tools that are more effective on the motivation of their staff. As internal motivation tools, employees should be given the opportunity to show their creativity in their work, the importance and dignity of the work should be adopted by the employees, and the employees should be made to feel that they are important. In order to provide motivation with external motivation tools, additional payments to be made depending on success, providing training and promotion opportunities, and establishing a good communication between management and employees can affect motivation positively.

The second main finding is that in most of the hospital staff, acting with intrinsic motivation tools is more likely to be motivated by extrinsic motivation tools. It is expected that healthcare workers, who show the highest self-sacrifice and act altruistically, especially during the COVID-19 period, are motivated by intrinsic motivation tools. Intrinsic motivation tools are defined as tools related to the content of the job (to achieve a job, a challenging job, to be independent at work, to be given responsibility in the workplace, personal and professional development, the importance of the contribution made by the employee, etc.) in Herzberg's Two Factor Theory [43]. Based on this, it can be concluded that healthcare professionals love their jobs and are committed to their duties. The importance of the individual contribution they make in the business environment motivates the employees. At this point, it is recommended that managers give their employees a chance to own their work and prove themselves, and finally to appreciate the employees. Another important point reached was on the relationships between the sub-dimensions of motivation (internal/external) and the sub-dimensions of thinking style (experiential/logical). The highest explained variance was between experiential thinking style and intrinsic motivation with a rate of 1.4% among sub-dimensions. This situation can be interpreted as “experiential thinking, which expresses the practical thinking gained from the experiences of the hospital staff, causes them to act with intrinsic motivation”. As Pacini and Epstein [34] pointed out, the experiential system is a non-conscious learning system. It works quickly, automatically and in connection with emotions.

The COVID-19 pandemic has put healthcare professionals around the world in an unprecedented situation, forcing them to make challenging decisions and work under extreme pressure. These decisions include how to allocate scarce resources to patients who are all equally in need, how to meet their own physical and mental health needs alongside those of patients, how to carry out their wishes and duties towards patients in harmony with family and friends, and how to provide care for all severely unwell patients with constrained or inadequate resources. This difficult and fast decision-making obligation can lead to moral injury or mental health problems in healthcare professionals [2]. Making health personnel feel safe during the pandemic is the most effective factor in their performing of their duties, and this effect occurs mostly when it comes from their organizations [3]. In addition, some motivational factors suggested in this process are getting support from colleagues, relatives and other segments of the society; to work and live with appreciation and gratitude; and to strengthen one’s ability to self-reflect especially on one’s will, potential, and courage [4].

It is important to apply similar studies on motivation and thinking styles to health personnel, where personal contribution is intense. With the results that will emerge, organizations and managers will have the opportunity to create motivation maps for their personnel. Besides, it is recommended that similar studies be repeated a while after the pandemic and comparisons should be made.

Informed Consent

All participants were informed on the questionnaire form and their consent was received. In addition, verbal information was given. Also, this study was approved by the Ardahan University Social and Human Sciences Ethics Committee (date: 8 July 2019)
I. Kıroglob Arslan

for “Ethics Committee Approval”, which is among the acceptance criteria of the Ministry of Health.

Disclosure of interest

The author declares that he has no competing interest.

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