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Investigation of Secondary School Students' Perceptions on the Concept of Health Through the Word Association Test

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The aim of this study is to examine the cognitive structures of the secondary school students towards the concept of health. The study was carried out using the descriptive survey model, which is a research approach that intends to describe a past or present situation as it is. The study group of the research was determined by maximum diversity sampling and consisted of 5th, 6th, 7th, 8th grade secondary school students studying in Bursa and Malatya in the 2021-2022 academic year. In this study, which attempts to examine the perceptions of secondary school students regarding the concept of health, WAT (Word Association Test) was used as a data collection tool. The word association test consists of two dimensions. While there are explanations about WAT (Word Association Test) and sample WAT (Word Association Test) study in the first dimension, there is the WAT worksheet for the concept of health in the second dimension. In the analysis of the data, the words obtained regarding the answers given by the students to the key concept of health were examined in detail in a table, the threshold point was determined by considering the repeated words, and concept networks were created in this direction. In the study, secondary school students produced different words for the concept of health. Those with four or fewer frequencies of these words were not included in the analysis. The most repeated word among the words included in the analysis was "doctor". Those which followed this word were "hospital", "vaccine" and "Covid-19". As a result of the research, no difference was observed in terms of the cities in which the study was conducted or regarding class level, and similar answers were obtained in all classes.

Introduction

When we look at Turkish education system, 12 years of the human life are spent in the school for the compulsory primary and secondary education process. During this 12-year period, the students spend most of their lives in school. The school is an institution that not

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only provides the students with cognitive, affective, and psychomotor skills, but also contributes to their acculturation process. When considering this situation, it can be said that the school period is effective for students in order to obtain information about health, to protect and improve health. The school is important in order to provide individuals with a healthy lifestyle and to create a healthy society. Education and health are inseparable. School-based programs and policies can be effective in solving many health problems (Vince-Whitman, Aldinger, Levinger & Birdhistle, 2000). Schools are effective institutions in terms of providing students with many educations such as health, nutrition, and physical activity after the family. Students not only participate in the socialization process at school, but also learn about their rights to health, acquire healthy eating habits and participate in physical activities (Vince-Whitman, Aldinger, Levinger, & Birdhistle, 2000; Wang, Gutin, Barbeau, Moore, Hanes, Johnson, Cavnar, Thornburg & Yin, 2008).

Families and schools, which provide students with a healthy lifestyle, offer important opportunities in order to create a healthy society. The basis of a happy and healthy society is to protect mental, physical, and social health (Centers for Disease Control and Prevention, 2016). It is getting common in Turkey as well as in the world where the solution of the problems related to the health problems of the students cannot be solved only with medical approaches, more permanent solutions can be produced with the joint studies of health and education experts (Kemn & Close, 1995; Lynagh, Knight, Schofield, Paras, 1999; Selekman, 2006). Education and training activities about healty given in schools do not only address students, but also the people or societies that those students can reach. Because it is possible to make the society healthier by transferring it to students, parents, and their close circles at schools (Selekman, 2006; Whitehead, 2006). The knowledge and experiences of students about health in schools affect health outcomes socially (Ma, Nolan & Smith 2018). In the relations between education and health, it is important for the school, teacher, and student to be in a relationship as a whole. Mahajan & Chunawala (1999) mention the importance of playing a constructive role in the communication between teachers and textbooks in this regard. According to researchers, creating a healthier and happier society and preventing the disease before it occurs are among the social, political, and economic policies of countries (Grossman, 2015; Kemn & Close, 1995; Selekman, 2006; Whitehead, 2006). In order to achieve these goals, it is necessary to create health awareness for students in schools. In schools which are named an educational environment, not only the subjects in the course are taught, but also positive health behaviors are given to the students. From a health perspective, they can affect their own family, close environment and even society when students attend education (Merten, Williams & Shiriver, 2009). It is estimated that the health habits acquired by the students during the academic years may contribute to the healthy behaviors of individuals throughout their lives. In this case, it shows that schools should not only provide students with academic knowledge and cognitive skills, but also learn the knowledge and skills that the individual will need throughout his life in order to create a healthy society (Bonell, Humphrey & Campbell, 2014).

Health is not only a field that concerns medical science, but also has social, cultural, economic, and political dimensions. In this regard, Cirhinlioğlu (2019) states that medicine is the last step, and the health of the individuals goes through many stages until they reach this stage although the subject of health is perceived as a subject of medicine. It is clear that the issue of health cannot be a phenomenon that can be resolved and improved only with the scope of medical science. Because health, first of all, is a social phenomenon. The fact that the society has knowledge, and a certain cultural background can be an indicator of improvement and development in related fields. Schools, which are the institutions where

fundamental rights and freedoms of individuals are taught formally, transfer these to students through relevant curricula. For example, in the social studies course, which aims to grow an active citizen, students are taught basic rights and freedoms and they are tried to gain skills on how to use them. One of the most fundamental rights of individuals is the right of health. The studies carried out have important problems in using the right of health, which is one of the most fundamental rights of individuals, and they remain silent on how they can be resolved as an individual.

Everything from the attitudes and behaviors of societies towards health, their individual and genetic characteristics, geographical conditions, to the structural patterns found in the cult of the society, concerns health. One of the ways to combat illness and health problems is to get to know the society and culture. For this purpose, it is considered that the thoughts about health of the students studying in schools that contribute to the socialization and acculturation process of individuals are important. For this purpose, it is aimed to reveal the cognitive structures of secondary school students towards the concept of health through word association test, based on the fact that it is necessary to conduct a study on what students understand from the concept of health.

The concept of health is not merely the absence of disease or infirmity, but a state of complete physical, social, and mental well-being (World Health Organization [WHO], 2017). They are comprehended as much as traits that individuals perceive based on their own experience. It can always be discussed whether the perceived features are exactly the same as the real ones (Başıbüyük, Doğan, Gürses & Yazıcı, 2004). The fact that the perceived features do not comply with the real features causes individuals to experience misconceptions. Misconceptions are ways of thinking that contradict scientific facts and are formed by individuals before teaching or during the teaching process and they are resistant to classical teaching techniques (Kabapınar, 2003). Tsai and Huang (2002) suggest that studies on students' cognitive structures can help teachers understand students' misconceptions. The reason for this is that cognitive structures provide information about what students know or not (Kurt, Ekici, Gökmen, Aktaş & Aksu, 2013). When teachers can learn about what students know and don't know, teachers will assess the extent to which students have mastered a particular subject and will be able to identify misconceptions. Guess-observe-explain, concept cartoons, drawings, structured grid, diagnostic branched tree, discussion about concepts and events, conceptual change approach, teaching sheets, meaning analysis chart, word association test are the main methods and techniques used to eliminate misconceptions. One of them is word association tests (Uzunkaya, 2007). The word association test is one of the oldest and most widely used techniques used to analyze the cognitive structure of individuals and the connections between concepts in this structure, and to determine whether the relations between the concepts in the memory of individuals are sufficient (Hovardas & Korfiatis, 2006; Kostova & Radoynovska, 2008; Shavelson, 1974).

Bahar, Johnstone, and Sutcliffe (1999) define the word association test as a technique that reveals the relationships between concepts in the cognitive structure of the student and helps to determine whether the relationships between concepts in long-term memory are sufficient or meaningful. Word Association Tests are used for different purposes in revealing students' perceptions, identifying misconceptions, determining students' readiness level, and establishing conceptual relationships.

When the literature is scanned, it is seen that various studies have been carried out with the word association test (Cachapuz & Maskill, 1987; Cardellini & Bahar, 2000; Çiftçi, 2009;

Deveci, Çengelci Köse & Gürdoğan Bayır, 2014; Ercan, Taşdere & Ercan, 2010; Işıklı, Taşdere & Göz, 2011; Johnstone & Moynihan, 1985; Karakuş, 2019; Şimşek, 2013; Tokcan & Yiter, 2017; Ürek & Dolu, 2020; Yel & Çetin, 2019). However, there is no similar study conducted with students on the concept of health, which is an important concept. With this research, it is expected to fill this gap. The aim of this research is to examine the cognitive structures of the secondary school students towards the concept of health by using the word association test. For this purpose, answers to the following questions were sought:

(1) How are the cognitive structures of secondary school 5th grade students regarding the concept of health?
(2) How are the cognitive structures of secondary school 6th grade students regarding the concept of health?
(3) How are the cognitive structures of secondary school 7th grade students regarding the concept of health?
(4) How are the cognitive structures of secondary school 8th grade students regarding the concept of health?

Method

Research Model

The survey model is a research approach that aims to describe a past or present situation as it is (Karasar, 2014). A descriptive survey model was used in this study, which aims to examine the cognitive structures of secondary school students regarding the concept of health. Descriptive studies describe a particular relationship situation as it exists. In survey models, researchers define the tendencies of the data instead of making precise explanations (Creswell, 2017). The word association test tries to describe the structure that exists in the minds of the students in terms of its structure as what the students have in their minds just now. Therefore, descriptive survey model is used in this study. In addition, when the relevant literature is examined, it is seen that word association studies are carried out in the type of descriptive scanning model (Sert, 2021; Şimşek, 2013; Tokcan & Yiter, 2017; Yavaş, 2021; Yılmaz, 2019). In this study, the current situation was tried to be determined by using the word association test since it was aimed to examine the perceptions of the secondary school students towards the concept of health.

Working Group

The study group of the research consisted of 202 secondary school students selected from secondary schools in the central districts of Bursa and Malatya. The data of the research were collected from 5th, 6th, 7th, 8th grade students in the fall semester of the 2021-2022 academic year. Of these students, 100 (48 Boys, 52 Girls) were from Malatya and 102 (49 Boys, 53 Girls) were from Bursa, 42 of them were from 5th grade, 70 of them from 6th grade, 45 of them were from 7th grade, 45 of them were 8th grade. Convenience/easily accessible sampling method, one of the purposive sampling methods, was used in the selection of the participants. The reason why the study group to take part in the research was preferred is that easy accessibility contributes to the implementation process of the research economically in terms of money, time, and space (Merriam, 2013; Yıldırım & Şimşek, 2018). The main reason why the research was chosen in accordance with the convenience/easily accessible sampling method can be explained by the fact that the researchers met with the teachers and

administrative staff working in the schools. This situation made the implementation of the research easier.

Data Collection Tools and Data Collection

The word association test (WAT) was used as a data collection tool in the research. In the data collection tool. There is a sample word association study which was created with a different concept and explanations about the WAT. Then, there is the word association worksheet for the concept of health in Table 1. Data collection tools were applied face to face by the researcher by giving necessary information before the application. Necessary information was given to the students about the data collection tool and one minute was given for each answer. The students were asked to write down the first answer concepts that came to mind regarding the key concept within this one-minute period.

At the stage of the development of the data collection tool by the researcher, two doctoral faculty members and an expert from the field of social studies education were consulted. In addition to expert opinions, a pilot study was conducted to test the suitability of data collection tools for the secondary school students. The data collection tools developed for this purpose were used in secondary schools 5th, 6th, 7th, 8th grade, which did not participate in the application. It was applied to grade students. The data obtained from 40 students participating in the pilot application were evaluated. The recommended time for each key concept of the word association test is stated in the relevant literature as 30 seconds for high school and the older individuals, and 45-60 seconds for individuals who are younger (Karaduman, 2016; Özcan & Tavukçuoğlu, 2018; Taşdere, Özsevgeç & Türkmen, 2014). However, during the pilot application, it was determined that the secondary school 5th, 6^{th,} 7th, 8th grade students had difficulties in writing the answer words in 45 seconds, and by consultation with the expert opinion, it was decided to consider this time to one minute (60 seconds) for the real application. The key concept of health was determined for the Word Association Test (WAT) used in the study. Two field experts were consulted during the selection of health concepts.

Health ……

Health ……

Health ……

Health ……

Health .....…….....

Before starting the application, explanations were made about the word association test and examples from different applications were given. The students were given one minute for each concept. During this time, the students wrote down the answer words related to the key concept that they thought. In order for the students to allocate equal time to each concept in the test, the next key concept was passed after the time given for each concept expired. Each key concept is written one under the other on a single page. This case was conducted to prevent the risk of writing a chain response word. Because, if the student does not return to the key concept every time he writes a word, instead of the key concept, he can write the words that come to his mind as an answer. This undermines the purpose of the test (Bahar & Özatlı, 2003).

Data Analysis

Before examining the data obtained from the research, the answer sheets of the secondary school students were numbered from 1 to 202. Then, in order to evaluate the word association test results, the answers given to the key concepts were carefully calculated and tabulated. The words obtained related to the concept of health were examined in detail in the form of a table. The threshold value was determined by considering the repeated words in the table. The threshold value of the answer words and their frequencies were examined by 3 experts in the field. and it is determined as 15 and above, 14-10, 9 and 5 with the threshold value technique by Bahar, Johnstone and Sutcliffe (2019). According to this technique developed by Bahar, Johnstone and Sutcliffe (1999), for any key concept in the word association test, the answer given the most is used as the threshold value a certain number of times below the word. The answers above this response frequency are written in the first part of the concept network. Then, threshold value is pulled down at certain intervals and the process continues until all keywords are released in the concept network. Each threshold value represents the answer words that so many respondents responded to the key concepts. Then, concept networks were created in line with the threshold value. In these concept networks, the words found at with the threshold value in relation to the grade level are included. With the threshold value of 5 and above determined in the research, the words with less than 5 answers are not included in the concept network and are indicated as an appendix the under the tables. In order to eliminate the confusion in the concept networks, each color indicates a different class level. The answers written by the students are also shown with the color of the related grade level. In this context, the colors of the link arrows for the class level are as follows.

- Red color for 5^{th} grade level
- Yellow color for 6^{th} grade level
- Green color for 7^{th} grade level
- Blue color for 8^{th} grade level

Validity and Reliability Studies

In the study, some strategies were applied to ensure reliability and validity in general. Precautions were taken in terms of credibility by asking people who have general knowledge about the research subject and who are specialized in scientific research and methods to examine the research in various dimensions. From the beginning of the study, during the development of data collection tools and especially during the analysis of the data, feedback was received from experts in the field and researchers who had previously conducted word association research, and their consistency was examined. The purpose of this is to reveal whether the researcher behaves consistently in all research activities by looking at the research from the outside (Yıldırım & Şimşek, 2018). The findings obtained as a result of data collection and analysis were reported in detail. In addition to these, the findings were described without interpretation and supported by visual elements.

Findings

Under this title, the data obtained as a result of the research are shown with the help of tables and concept networks. The words produced by secondary school students regarding the concept of health were first presented with a separate table for each grade level. Then, the concept networks where all grade levels were shown together were created according to the threshold values determined.

Table 1. The words which 5th grade students produced regarding the concept of health, and frequency values

Number	Response	f	Number	Response	f
1	Doctor	18	9	Corona	6
2	Hospital	11	10	Happiness	5
3	Vaccine	10	11	Injection	
4	Medicine	8	12	Covid-19	
5	Peace	7	13	Surgical mask	
6	Serum		14	Healing	
7	Nurse	6	15	Illness	
8	Healing		16	Others	99

80 different words were produced by the 5th graders for the concept of health. 65 of these words were not included in the table because they were outside the determined the threshold values, only their names were given under the table. In other words, the words which were repeated with 4 times or less frequencies were excluded from the analysis. These words were not included in the concept network created. When the words produced by the 5th graders were examined, it was seen that 15 words were included in the analysis and the most repeated word among them was "doctor" (f=18).

The answers with a frequency of four and less than four, among the words created by the students related to the concept of health, were grouped under the “other option” in the table. The answers in the other option are as follows; cleaning, nutrition, Sinovac, Biontech, health worker, ambulance, family, family doctor, vigor, meat, comfort, allergy, trust, flu, milk, beauty, kindness, pharmacy, calmness, youth, butter, taking a shower, treatment, cupping, Acıbadem, health center, cologne, bicycle, protein, vitamin c, drink water, stethoscope, snacks, health center, health officer, burn desert, sport, meal, EMR, exercise, surgery, walking, child, disinfect, cottonseed oil, molasses, waking up early, potatoes, food, protection, getting sick, LFH (life fits home) code, stabbing, green tea, cucumber, massage, vitamin, x-ray, bacteria, sick, virus, life, football, hygiene, honey.

Table 2. The words which 6th grade students produced regarding the concept of health, and frequency values

Number	Response	f	Number	Response	f
1	Doctor	52	16	Life	7
2	Hospital	36	17	Healing	6
3	Nurse	25	18	Fruit	6
4	Covid-19	20	19	Being healthy	6
5	Medicine	17	20	Water	6
6	Illness	17	21	Healing	5
7	Vaccine	17	22	Pain	5
8	Life	16	23	Sinovac	5
9	Nutrition	15	24	Peace	5
10	Cleaning	8	25	Ambulance	5
11	Red Crescent	8	26	Human	5
12	Injection	8	27	Virus	5
13	Serum	7	28	Heart	5
14	Happiness	7	29	Biontech	5
15	Corona	7	30	Other	266

186 different words were produced by 6th graders for the concept of health. 157 of these words are not included in the table because they fall outside the determined threshold values, only their names are given under the table. In other words, the words which were repeated

with 4 times or less frequencies were excluded from the analysis. These words were not included in the concept network created. When the words produced by the 6th graders were examine, it is seen that 29 words were included in the analysis and the most repeated word among them was "doctor" (f=52).

The answers with a frequency of four and less than four, among the words created by the students related to the concept of health, were grouped under the “other option” in the table. The answers in the other option are as follows: flu, surgery, WHO, citizen, society, sport, patient, vitamin, lung, health center, distance, mask, allergy, healthy teacher, growing in a healthy way, vegetables, recovery, healthcare worker, x-ray, school, cupping, being vigorous, germ, diet, exercise, neurosurgeon, pharmacy, state, public, family, food, pleasure, antibiotic, brushing tooth, the friend who cannot be bought with money, friend, treasure, being sick, sick room, health center, intensive care, protein, health protection, stretcher, power, Green Crescent, world, disinfectant, surgeon, prescription, test, Fahrettin Koca, toothache, institution, fresh air, white color, plague, shelter, our health, village life, Hello 182, vitamin B12, nuts, tea, leech, chicken meat, apricot, EKG, pandemic, Biruni, treatment, public health, headache, not getting sick, what keeps us going, sore throat, elders, blood clot, stay at home, child, die, garlic, medical teams, physiotherapist, professor, joy, Uğur Şahin, the sign ‘plus’, Ankara, bacteria, immune system, good care, live, syringe, health home, heart attack, trust, bleach, ministry of health, communication, stomachache, protection, fearless, solid, my sister, coat, scarf , hat, snow, winter eating healthily, be energetic, test, ENT, cancer, hygiene, hes code, old age, substance abuse, disaster, obesity, cigarette, hygiene, pill, omega 3, health at home, (Social Security Organization for Artisans and the Self-employed) BAĞKUR (Social Insurance Agency), well-being, comfort , alcohol, milk, calcium, walnuts, organ, fish, vessel, molasses, body, bloodletting, sculpture, strength, sleep, tension, cooperation, immunity, protection, being healthy, liver, physician, running, tired, being healthy, death, body, energy, chronic illness, being positive.

Table 3. The words which 7th grade students produced regarding the concept of health, and frequency values

Number	Response	f	Number	Response	f
1	Vaccine	14	11	Injection	6
2	Peace	12	12	Distance	6
3	Doctor	12	13	Cancer	5
4	Covid-19	10	14	Chemotherapy	5
5	Corona	8	15	Surgical mask	5
6	Medicine	7	16	Biontech	5
7	Healing	7	17	Serum	5
8	Sinovac	7	18	Water	5
9	Diet	6	19	Happiness	5
10	Personal care	6	20	Other	101

69 different words were produced by 6th graders for the concept of health. 50 of these words are not included in the table because they fall outside the determined threshold values, only their names are given under the table. In other words, the words which were repeated with 4 times or less frequencies were excluded from the analysis. These words were not included in the concept network created. When the words produced by the 7th graders were examine, it was seen that 19 words were included in the analysis and the most repeated word among them was "vaccine" (f=14).

The answers with a frequency of four and less than four, among the words created by the

students related to the concept of health, were grouped under the “other option” in the table. The answers in the ‘other option’ are as follows: parol, x-ray, fish, Uğur Şahin, Özlem Türeci, milk, lemon, sleep, analysis, CDAS (Central Doctor Appointment System), Fahrettin Koca, cholesterol, picnic, quality life, good nutrition, taekwondo, EMR, Ömer Özkan, Antibiotic, acupuncture, ginger, favicovir, LFH (Life fits at home), brushing teeth, honey, hospital, stream, test, vitamin C, exercise, baby, cleaning, healing, sun, painlessness, greenery, yoga, cupping, hygiene, Green Crescent, egg, cigarette, comfort, nutrition, vinegar , molasses, walking, iron, cycling.

Table 4. The words which 8th grade students produced regarding the concept of health, and frequency values

Number	Response	f	Number	Response	f
1	Vaccine	17	11	Swim	6
2	Peace	16	12	Serum	6
3	Corona	15	13	Injection	6
4	Sinovac	14	14	Protein	5
5	Doctor	11	15	Sport	5
6	Medicine	9	16	Health center	5
7	WHO	9	17	Love	5
8	Covid-19	8	18	Milk	5
9	Healing	7	19	Other	60
10	Distance	7			

45 different words were produced by 8th grades for the concept of health. 27 of these words are not included in the table because they fall outside the determined threshold values, only their names are given under the table. In other words, the words which were repeated with 4 times or less frequencies were excluded from the analysis. These words were not included in the concept network created. When the words produced by the 8th graders were examine, it was seen that 18 words were included in the analysis and the most repeated word among them was "vaccine" (f=17).

The answers with a frequency of four and less than four, among the words created by the students related to the concept of health, were grouped under the “other option” in the table. The answers in the ‘other option’ are as follows: analysis, Uğur Şahin, E-pulse, brushing teeth, olive oil, health, metabolism, healing, diet, garlic, fitness, obesity, vigor, happiness, Biontech, water, well-being, plates, running, orange, intensive care, genetics, vegetables , mask, fruit, molasses, exercise.

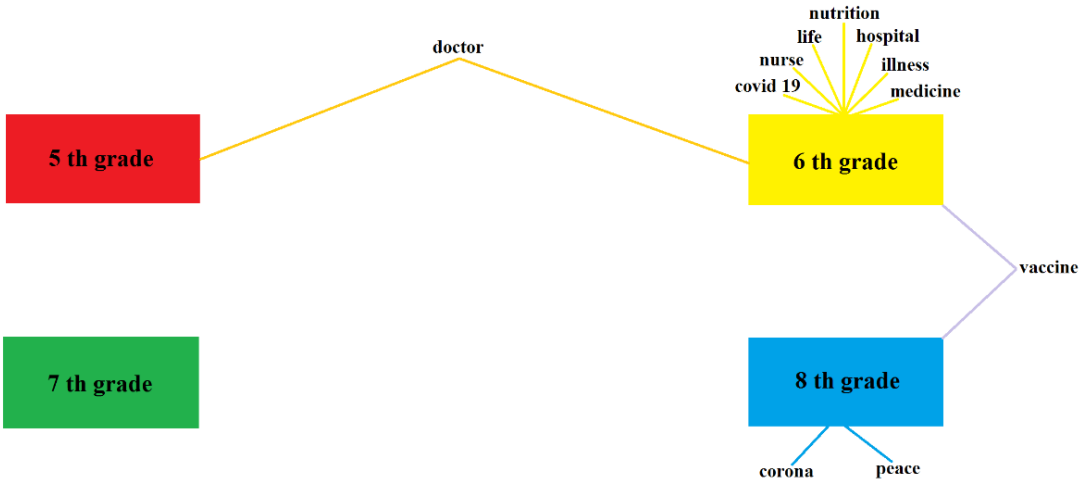

Figure 1. The concept network which was produced for threshold value 15 and above

Through figure 1, through which the concept network, revealing the class levels and words produced for the concept of health as a whole, is given, it is seen that there are 11 words (corona, peace, vaccine, doctor, Covid-19, nurse, life, nutrition, hospital, illness, medicine) in the concept network created with a threshold value of 15 and above. While one of these words is at the level of 5th and 6th grades, one of them is at the level of 6th and 8th grades, and 2 of them are at the level of 8th grades, seven words are expressed only by the 6th graders and were included in the threshold value of 15 and above. Considering the words that are mentioned at least 15 times in common at all grade levels, and also the words are given place the threshold value of 15 and above, it is noteworthy to state that there are no words produced jointly by all classes.

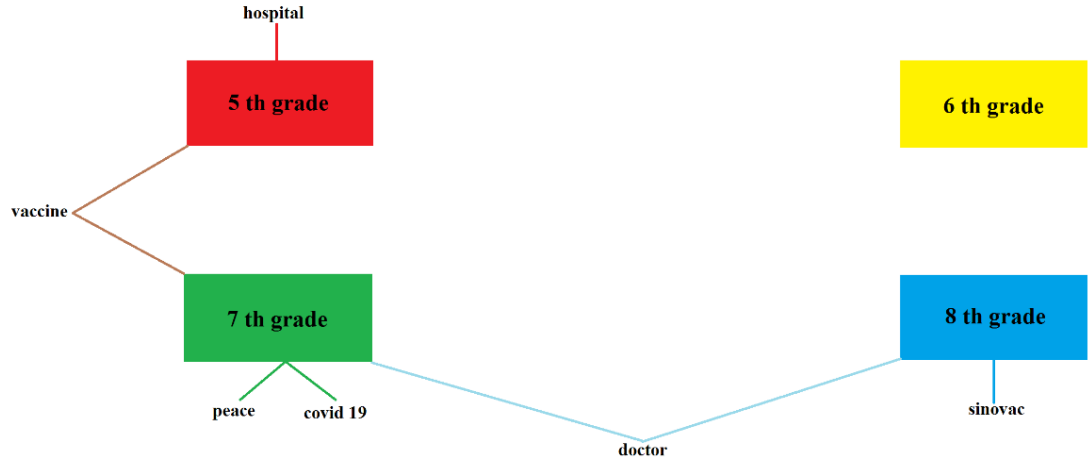

Figure 2. The concept network which was produced for threshold value of 10-14

When we look at figure 2, where the concept network, which reveals the class levels and words produced for the concept of health as a whole, is given, it is seen that there are 6 words in the concept network created with the threshold value of 10 and 14.While one of these words is jointly mentioned at the level of the 5th and 7th graders, and one of them is jointly mentioned at the level of the 7th and 8th graders, one of these words is mentioned at just only the level of the 5th graders and one of them is mentioned at just only the level of the 8th

graders. As the threshold value of 15 and above, no words are also expressed jointly by all classes in this concept network.

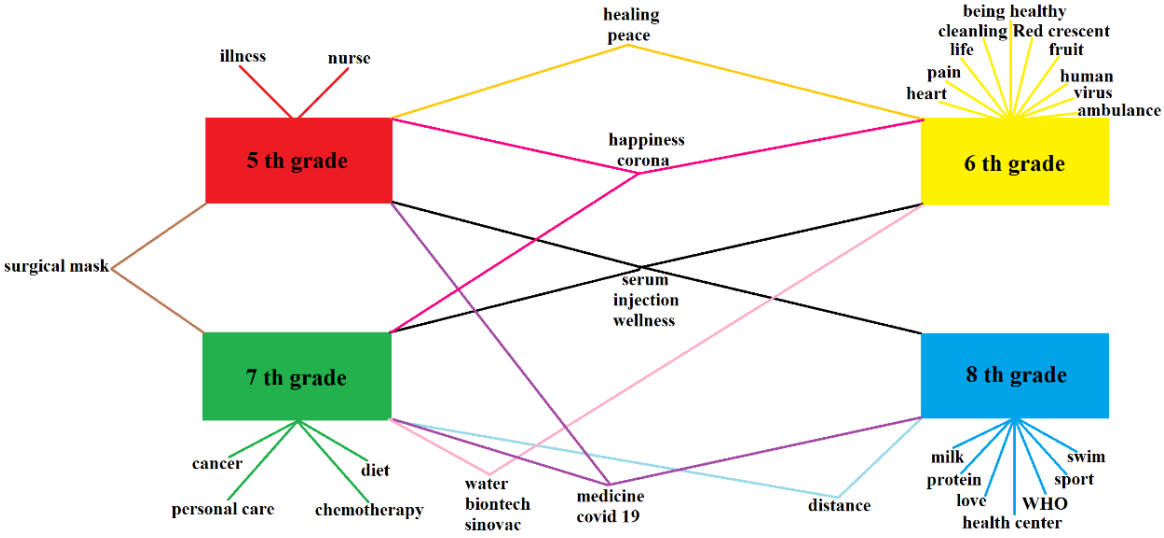

Figure 3. The concept network which was produced for threshold value of 5-9

When we look at figure 3, where the concept network, which reveals the class levels and words produced for the concept of health as a whole, is given, it is seen that there are 37 words (illness, nurse, surgical mask, cancer, personal care, chemotherapy, diet, water, Biontech, Sinovac, medicine, Covid-19, distance, milk, protein, love, health center, WHO (World Health Organization), sport, swim, serum, injection, wellness, happiness, corona, healing peace, heart, pain, life, cleaning, being healthy, Red Crescent, ruit, human, virus, ambulance) in the concept network created with the threshold value of 10 and 14. While 3 of these words, injection, serum and wellness, are expressed by all classes; happiness and corona were expressed by Grades 5th, 6th and 7th and shown in dark pink in Figure 3; 2 of the words, healing and peace, were voiced by Grades 5th and 6th and shown in yellow in Figure 3; one of them, surgical mask, was expressed by 5th and 7th graders and shown in brown in Figure 3; 3 of them, water, Biontech, Sinovac were expressed by 6th and 7th graders and shown in light pink in Figure 3; 2 of the words, medicine, Covid-19, were expressed by 5th, 7th and 8th classes and shown in purple in Figure 3; one of them, distance, was expressed by 7th and 8th graders and shown in light blue in Figure 3. Twenty-three are included at the level of one class grade in this threshold value. It is seen that seven of these words, which are mentioned only one grade level, are expressed at the level of 8th grade, four of them are expressed at the level of 7th grade, ten of them are expressed at the level of 6th grade, two of them are expressed at the level of 5th grade. It is seen that the words in the threshold value of the interval 5-9 are more specific words than the other threshold values. It is also seen that there are more words at the threshold value. It could be said that the reason of this situation is related to the low frequency of the words that take place.

Discussion and Conclusions

In the study, 253 different words were produced by secondary school students regarding the concept of health. 81 words were included in the analysis while 172 of these words were not included in the analysis as they had 4 or less frequencies. The most repeated word among the words included in the analysis was "doctor". The words following this word were "hospital", "vaccine" and "Covid-19". When examine on a class level, the results are as following. With the help of the data obtained from the 5th grades, it was seen that the most repeated words were "doctor", "hospital", "vaccine" and the least repeated word were "covid",

“illness. When we looked into the data obtained from 6th graders, the most repeated words were “doctor”, “hospital”, “nurse”, “Covid-19”, and at the least repeated words were “Biontech”, “Sinovac”, “vaccine”. When we looked into the data obtained from the 7th grades, the most repeated words were "vaccine", "peace", "doctor", "covid", the least repeated words were "happiness", "Biontech", "distance", "water". When we looked into the data obtained from 8th graders, the most repeated words were "vaccine", “peace”, "corona", and the least repeated words were "love", “health center”, “milk”.

Considering the findings obtained from the research, the concepts of doctor, hospital and nurse are mentioned at all grade levels. It can be said that this result is similar to the results of the study of Mouratidi, Bonoti and Leondari (2016). In the study conducted by Mouratidi, Bonoti and Leondari (2016), the data obtained by depicting the concepts of illness and health with the drawings of 5-11-year-old children were divided into categories in terms of biomedical, psychological and lifestyle. In this study, hospital, nurse, doctors, disease, human body, drugs were classified in the biomedical category; sadness, fear lying in bed, tears, happiness, playing, going for a walk were classified in the psychological category; gymnastics, running, swimming, brushing teeth, fruits, vegetables, dietary supplements and vitamins were classified in the lifestyle category.

In the research, it was seen that being “doctor” and “hospital”, the words which were the most repeated in the 5th and 6th grades, are focused on biological and physical problems related to health. It was determined that the most repeated word of 7th and 8th grades is "peace". Health is not just a biological phenomenon, it is defined as the state of being socially in peace and balance of individuals in that society (Lewis, 2001). The inner feelings and thoughts of 7th and 8th grade students differ in the early stages of the transition to adolescence. As the social and emotional needs of the students who start to step into adolescence in this period, that they expect to have self-respect, interest and tolerance, being alone and want to be peaceful reveals the psychological state of the students at the age of this level (Sayıl, Uçanok & Güre, 2002). Therefore, it can be said that the students at the 7th and 8th grade associate health with social and psychological dimensions. In a study conducted by Reeve and Bell (2009), it is seen that children at the age of 11 associate the concept of freedom with the concept of health. When the literature is examined, it is seen that diseases prevent their health for a short time and they tend to use concepts such as health, happiness, and sadness for this when children's thoughts about illness and health are compared, (Altman & Revenson, 1985; Campbell, 1975; Natapoff, 1978; Schmidt & Frohling, 2000). In addition, it is seen that 7th and 8th graders frequently use the word "vaccine". In this case, it can be said that the frequent use of the vaccines developed against the Covid-19 epidemic, which affects the whole world has affected the students in terms of the effects on the individual and society. In the research, when considering the difference between cities, there is no difference between regions as well as between the grade levels. According to the results of the research, when the cognitive structures of the students are examined, it is seen that they associate the Covid-19 virus, which affects the world globally, with the concepts such as corona, covid, vaccine, Biontech, Sinovac, which get involved in human life and are often on the agenda in daily life. These concepts show that the elements that emerged after the pandemic process are at the forefront. These concepts show that they have an important place in the students’ mental structures regarding the concept of health. It can be said that it is normal for a situation that has become a part of daily life to be in the cognitive structures of students. It is seen that people and institutions which are outside the threshold value take part such as Fahrettin Koca, Özlem Türeci, Uğur Şahin, World Health Organization, but frequently mentioned by the students. Apart from these results, students also have mental structures related to the concept of health,

in which is related to nutrition and sports.

This result of the research is consistent with the results of the article written by Reeve and Bell (2009) in which they discuss the health on the beliefs of children regarding the concepts of healthy and unhealthy. Reeve and Bell (2009) stated that children's practices such as nutrition (eating the yolk of the egg, apple, etc.), exercising, and eating fruit regularly emphasize the concept of healthy, however, computer games and watching TV excessively are associated with the concept of unhealthy as they negatively affect health. In addition to these, it has been reached that health and illness are not opposite ends of a continuum, but different overlapping concepts for children. In the research, children appear to make a wide variety of definitions of health, including principles of nutrition, plant growth, pleasant tastes and smells, the effect of gaining weight on health, germ-freeness, aesthetic integrity, and cleanliness. In this research, it has been used by the public in applications such as cupping, leech and cupping, which are alternative medicine applications.

According to these data obtained from the students, it is seen that the culture of the society in which they live is effective as the social determinant of health. Moscovici (1988) associates children's perceptions of illness and health with social and cultural context. In order to determine their social environment, people try to explain person, objects and behaviors by comparing each other by being shaped in the culture they live in. This situation also provides a framework in order to create the thinking and behavior of individuals. It is seen that the practices such as cupping, leech and bleeding by someone by cupping take place as a framework in the cultural thinking and behavior of the concepts acquired by the students from their immediate environment. Çetin, Özarslan, Işık and Eser (2012) collected the drawings of the students about the concept of health in different categories in their research, which aimed to determine the thoughts of 9th grade students about the concept of health by drawing and writing technique. When the categories are examined, the results obtained from the 9th grade students show similarities with the results obtained from this research. Çetin, Özarslan, Işık and Eser (2012) obtained the categories of being psychologically healthy, being physically healthy, being socially healthy, smiling face, physical strength, and human in the findings obtained from the definition of the concept of health. In this research, the expression of the concept of health with words such as peace, happiness, love, illness by the secondary school students shows that health is consistent with psychological and social health.

When we consider the other findings obtained from Çetin et al. (2012), high school students expressed their views on exercise, balanced diet, cleanliness, regular life, water, medicine and medical supplies, and clothing categories regarding the factors that protect health. In addition, the researchers obtained findings in the subcategories of disease, immunity, ill health, and vaccine in the drug category, and in subcategories such as fruit, vegetable, vitamin, breakfast, honey, egg, and milk in the nutrition category. These findings support the results of this study conducted with secondary school students. It is seen that secondary school students associate the words balanced nutrition, cleaning, water, medicine, fruit, vitamin, honey, milk and vaccine with the concept of health. In this respect, the results of both studies support each other.

The study conducted by Altman and Revenson (1985) examined beliefs about health and illness in a study group of 101 healthy children and young adolescents which were aged between 8 and 14 years. The data were collected by asking the participants to draw a picture of a sick person and with open-ended interview questions. It was seen that the younger children were more worried about catching childhood diseases such as chickenpox, while the

oldest children (13-14 years old) were more concerned about important diseases and disabilities. Younger children more frequently mentioned behavioral actions, such as not eating right, as causes of illness, while older children focused on viruses, microbes or diseases, including contact with sick people. Younger participants also seemed to be more likely to cite current feelings of unhealthy as signs that they will get sick. In the study, it was found that various dimensions of health and disease differ according to the age variable. Younger children appear to be more concerned about their health than adolescents, but the younger children tend to evaluate their health more positively than older participants. However, in this study conducted with secondary school students through the word association test, it is seen that students associate words such as virus, germ, and bacteria with the concept of health. But, when grade levels are evaluated, it is not said that there are many differences related age about to the concept of health in the data obtained through the word association test.

When the literature is examined, studies have been conducted with variables such as children's perceptions of illness and health, age, experience, gender, and mother's perception (Fernandes, Liamputtong & Wollersheim, 2015; Koopman, Baars, Chaplin & Zwinderman, 2004; Piko, 2007; Williams & Binnie, 2002; Zaloudikova, 2010). In addition, there are studies comparing children's thoughts about the concepts of health and illness (Myant & Williams, 2005; Piko & Bak, 2006; Schmidt & Frohling, 2000; Zaloudikova, 2010). Studies have shown that children perceive the disease mostly based on their biological and medical characteristics (Fernandes et al., 2015; Piko & Bak, 2006; Schmidt & Frophling, 2000; Zaloudikova, 2010). On the other hand, it is seen that children also understand the social and emotional aspects of the concept of illness that delays health for a short time. They express not being able to participate in social life in cases of illness with words such as unhappiness and sadness, as well as being healthy as free and happy. This indicates the psychosocial aspects of the concept of health and show that children perceive the social dimensions of illness and the role of environmental health (Piko & Bak, 2006). For example, Fernandes et al., (2015), Piko & Bak, (2006), Zaloudikova (2010) included the impact of environmental conditions such as atmospheric pollution in the definition of illness in children.

In this research, it was found that middle school 5^{th}, 6^{th}, 7^{th} grade students did not perceive the use of words such as Covid-19, distance, vaccine, Biontech, Sinovac, distance and cleanliness in students based only on biological and medical characteristics, and it shows the effect of environmental conditions and world agenda on individual life is effective in terms of social and psychological aspects.

In addition, this study conducted, it is seen that some students associate the health with concepts such as peace, happiness, well-being, vigor, light-well and comfort. This may indicate that health has psychological effects on the students both physically and mentally. When considering the analyses obtained from the study, it is seen that the concept of health is generally mentioned in the relationship between medicine and biology and its psychological dimensions, but the concepts related to its social, economic, and political dimensions are not expressed much.

Students' perceptions and thoughts about the concept of health can affect their behaviors, feelings, and attitudes towards health (Boruchovitch, Mednick, 2002; Çetin, Özarslan, Işık & Eser, 2012). In this study, the relationships between the concepts in the cognitive structure of students about health are revealed by using the word association test, it is important to reveal the mental structures of the students in terms of determining the emotions, thoughts, and

behaviors of the students regarding the concept of health and contributing to the development of health as a result of these determined frameworks. Therefore, it is necessary to raise awareness of the students about health and to protect people's health in order to ensure a healthy life and to create and develop a healthy society (Araz, Harlak & Meşe, 2007).

In the lights of the results obtained from the research, the following suggestions can be made:

- Studies can be conducted on the effects of health responsibility on individuals and the government, which focus the individual and social dimensions of the concept of health, such as the right to health and environmental health.
- With these studies, students can be informed about their health rights and responsibilities
- This research, which is done in the screening model and determines the situation, can be conducted in the form of pre-test-post-test, and the conceptual development can be followed.
- Studies, conferences and activities can be held in the schools to make the students aware of health issues. Therefore, health personnel can be invited to the school.

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