

ASSOCIATIONS BETWEEN PERSONALITY TRAITS, PERCEPTION OF COVID-19  
AND QUALITY OF SLEEP DURING QUARANTINE IN TURKEY



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AND QUALITY OF SLEEP DURING QUARANTINE IN TURKEY

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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## ABSTRACT

Purpose of this study is to investigate associations between neuroticism, extraversion, psychoticism personality traits, quality of sleep and perception of COVID-19 in the quarantine period in Turkey. Sample of the study consist of 236 participants (176 female, 60 male) who spent the quarantine period in Turkey. Pittsburgh Sleep Quality Index (PSQI), Eysenck Personality Questionnaire Revised-Abbreviated (EPQR-A), Perception of COVID-19 (P-COVID-19), Perception of Causes of COVID-19 (PCa-COVID-19) and Avoidance Attitudes Towards COVID-19 (AA-COVID-19) were given to participants. Participants reported poor sleep quality during quarantine. Results show neuroticism trait is associated with worse sleep quality when compared to extraversion trait. Perceived dangerousness of COVID-19 is associated with neuroticism trait, supporting existing literature. Psychoticism trait scores are found to be negatively correlated with behavioral avoidance and perceived dangerousness. Despite previous research, no significant difference is found between genders in terms of perception and avoidance attitudes for COVID-19.

*Key words: COVID-19, personality, quality of sleep, perception of COVID, PSQI,*

*Pittsburgh Sleep Quality Index*

## ÖZET

Bu çalışmanın amacı nörotisizm, dışa dönüklük ve psikotisizm kişilik boyutları ile COVID-19 algısı ve uyku kalitesi arasında karantina dönemindeki ilişkileri araştırmaktır. Çalışmaya karantina sürecini Türkiye’de geçirmiş 236 katılımcı katıldı (176 kadın, 60 erkek). Katılımcılar Pittsburgh Uyku Kalite İndeksi (PUKİ), COVID-19 Hastalık Algısı Ölçeği (P-COVID-19), COVID-19’un Nedenleri Algısı Ölçeği (PCa-COVID-19) ve COVID-19’dan Kaçınma Tutumları Ölçeği’ni (AA-COVID-19) doldurdular. Katılımcılar karantina döneminde düşük uyku kalitesi raporladılar. Sonuçlar nörotisizm ve dışa dönüklük boyutları karşılaştırıldığında nörotisizm kişilik boyutu ile düşük uyku kalitesi arasında ilişki olduğunu göstermektedir. Algılanan COVID-19 tehlikesi nörotisizm kişilik boyutu ile ilişkili görünmektedir. Psikotisizm kişilik boyutu puanları ile algılanan tehlike ve davranışsal kaçınma arasında negatif korelasyon bulundu. Literatürde raporlanan sonuçlara karşın cinsiyetler arasında COVID-19 algısı ve kaçınma davranışları bakımından anlamlı bir fark bulunmadı

*Key words: COVID-19, kişilik, uyku kalitesi, COVID-19 algısı, Pittsburgh Uyku Kalite İndeksi, PUKİ*

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## 1. INTRODUCTION

December 2019 was the date when the very first case of COVID-19 virus emerged in Wuhan, the capital of Hubei Province in the People's Republic of China. By the spring of 2020, the virus has been spread to most of the countries all over the world and became the major global health crisis. As of April 2022, there were more than 500 million of COVID-19 cases which have been reported and more than 6 million people have lost their lives because of the virus (Worldometer, 2022). Governments applied various restrictive measures in order to slow down the spreading of the coronavirus. Those measures considered people having to stay away-from crowded places, apply social distancing measures and moreover apply curfew for certain time periods. In those terms, people were asked to stay at their homes, obliged to wear masks and comply with social distancing rules together with some other public health measures. Public places where people get together and dine such as bars, restaurants, cinemas, cafes, shopping centers were temporarily closed and most of the employees either continued working online without being present at their office or stopped working until the restrictive measures got lighter. Consequently, it shifted the daily routines into an alteration along with people began to spend more time at their homes, waiting for the transmission of the virus to slow down. Under those circumstances, it is seen that not everybody perceived the situation in the same way or behaved towards the pandemic in the same way. While there were individuals who comply with restrictive measures, careful about being distant with others or stayed home for long days/weeks; there were also individuals who did not take public health measures as seriously as others. What was the drive to those individual

differences remain as an important question. Especially, at the times of uncertainty and stress, personality traits play a key role on how to respond, react and behave in certain situations.

When SARS pandemic happened between the years of 2002 and 2004, it is reported that the prevalence of post-traumatic stress disorder (PTSD) and depressive symptoms have been increased (Hawryluck et al., 2004) as well as the feeling of fear, isolation, loneliness and insomnia (Digiovanni et al., 2004). Similarly, there are wide range of psychological outcomes that are mentioned in literature considering the COVID-19 pandemic. In terms of psychological reactions, quarantine periods were challenging times for individuals. Eating habits, sleeping habits and daily routines were all open to change during the quarantine period. In accordance with these stressors and instant major changes, prevalence of depression (Lee et al., 2020), anxiety, PTSD (Tang et al., 2020), insomnia (Li et al., 2020), sleep disturbances (Xiao et al., 2020) are reported to increase. It is found that variables such as fear of getting infected, uncertainty, feeling of insecurity and disappointment have been increased as well as economic concerns, lack of social support and unemployment during the period of quarantine and isolation (Brooks et al., 2020). In Turkey, the psychological consequences were reported accordingly (Aşkin, 2020) as well as disrupted sleep quality with the pandemic (Ekinci & Ekinci, 2021; Timurtaş et al., 2022.; Kaçan et al., 2021). The uncertainty about what is going to happen, anxiety about health of oneself or for their loved ones, changes in daily routines could become great stressor for individuals (Elli, 2020).

Aim of this study is to investigate the associations between certain personality traits, quality of sleep and the perception of COVID-19 in order to contribute to the

clarification of how personal differences play a role in perceptions and behaviors towards COVID-19 pandemic.



## 2. LITERATURE REVIEW

### 2.1. Personality Traits

Personality traits are theoretical concepts which are used for defining certain aspects of personality. They indicate relatively stable tendencies about personality which may elucidate individual differences (McCrae & Costa, 1995). Among mostly used personality models, there are three-factor model and five-factor model. Three-factor personality trait model is developed by Eysenck (1967); which consists of neuroticism, extraversion and psychoticism. In pursuit of that, there is five-factor model (Costa et al., 1987) which indicates neuroticism, extraversion, openness to experience, conscientiousness and agreeableness. Neuroticism defined as the opposite of emotional stability and extraversion indicates an opposition to introversion are common two traits in both models. In terms of personality traits and COVID-19, most of the studies use five-factor model (Rettew et al., 2021; Hintsanen et al., 2014; Ahmed et al., 2021; Abdelrahman, 2020) while there are studies that use three traits out of the five-factor model (Liu et al., 2021) or the HEXACO model (Garbe et al., 2020) to investigate relationship between personality traits and COVID-19 or the relationship between personality traits and quality of sleep with various specificities. All models provided significant results in studies. Even though the five-factor personality model is used more currently, Eysenck's three factor model has an advantage of having a biological basis for traits (Barnes, 2017). It is seen that this advantage is based on the relationships between neuroticism and the limbic system while extraversion relates with the reticulo-cortical system (Matthews & Gilliland, 1999). In order to investigate the relationship between

neuroticism, extraversion, psychoticism and sleep quality as well as the perception of COVID-19; this study use three-factor model.

### **2.1.1. Neuroticism**

As a term, neuroticism was firstly used in psychoanalytic theory by Freud but today it is used to describe an aspect of personality which is defined by certain psychometric indicators excluding the Freudian meaning of unconscious conflict (Lahey, 2009). Eysenck postulates neuroticism as arousability of the limbic pathway while arousability increases with higher neuroticism (Matthews & Gilliland, 1999). Likewise, proneness to experience negative affect and emotional instability is linked with neuroticism (Brickman et al., 1996) aspect of personality as well as the tendency to experience irritability, low self-esteem, anxiety, anger, sadness, worry and embarrassment (Costa & McCrae, 1987; Basım et al., 2021). People who score high in neuroticism are expected to be more self-critical and emotionally unstable. Neuroticism is also defined as negative emotionality or negative affectivity (Lahey, 2009). Costa & McCrae defined six sub-facets of neuroticism in the scale they developed, those were: anxiety, hostility, depression, self-consciousness, impulsiveness and vulnerability (1995). People scores high in neuroticism are likely to experience more negative emotions in the times of stressful life events as well as having more difficulty to cope with stress (Gubler et al., 2021) and regulate their emotions (Lahey, 2009). In the existing literature, it is indicated that there are associations between neuroticism trait and health anxiety, depressive symptoms (Nikčević et al., 2021), post-traumatic stress disorder (Kotov et al., 2010) and sleep disorders (Hintsanen et al., 2014).

### **2.1.2. Extraversion**

Extraversion is one of the personality traits in personality models which is generally defined as the proneness to experience positive affect (Jackson & Schneider, 2014). People who score high in extraversion tend to be assertive, talkative, warm and sociable (Hintsanen et al., 2014). From the biological perspective, Eysenck indicated that extraversion is linked with the reticulo-cortical pathway (Matthews & Gilliland, 1999). Excitement seeking and positive emotions are also associated with extraversion personality trait (Watson et al., 2019). Enjoy being with others rather than being alone is common for people high in extraversion (Carrigan, 1960). It is known that there is a relationship between extraversion and coping as well. Individuals who score high in extraversion are reported to seek and engage in social support easier (Amirkhan et al., 1995).

### **2.1.3. Psychoticism**

Psychoticism is another trait of personality that is suggested by Eysenck (1952) which includes a wide spectrum (Corr, 2010) from highly socialized pole to psychopathological pole (containing psychopathy or schizophrenia). Aggressive impulses, antisocial behaviors and lack of conformity are associated with psychoticism trait (Corr, 2010). Psychoticism is negatively correlated with agreeableness and conscientiousness which are commonly used in five factor personality trait models (Matthews & Gilliland, 1999). According to Eysenck et al. individuals high in psychoticism tend to be cold, aggressive and impulsive (1985). From a biological perspective, psychoticism is associated with lack of disinhibition. Zuckerman et al. suggested to name the trait Impulsive Unsocialized Sensation Seeking instead of

psychoticism (1988), emphasizing that high psychoticism, lack of restraint in social context and impulsivity is associated with this trait.

## **2.2. Personality Traits and Covid-19**

In accordance with the ongoing process of the pandemic; the relationship between personality traits and COVID-19 perceptions, responses and behaviors are still unable to comprehend a deeper understanding. Besides demographic variables such as sex, education and age that are reported as linked to pandemic related behavior (Bish & Michie, 2010; Kabeloğlu & Gül, 2021; Volk et al., 2021), personality traits remain as one of the elucidative variables that may contribute the knowledge on individual differences during the course of pandemic. In the presence of major environmental changes such as COVID-19 outbreak caused; or a situation of crisis and ambiguity, personality traits that drive individual differences become prominent (Caspi and Moffitt, 1993). It is possible to emphasize the uncertainty in the process of virus spread as one of the main stressors, notably for the people who are more sensitive to unpredictable stimuli. There is research on the relationship between personality traits and pandemic related perception and behavior. Existing literature shows that personality traits are associated with the perception of COVID-19 (Abdelrahman, 2020) and behaviors in concern with pandemic (Götz et al., 2021; Brouard et al., 2020; Garbe et al., 2020). On the other hand, Zajenhowski et al. suggest that since the COVID-19 outbreak is an extreme and extraordinary situation, personality traits might have less importance on predicting different behaviors in comparison to situational parameters (2020).

Previous studies indicated neuroticism as a vulnerability factor in presence of the COVID-19 pandemic (Lee et al., 2020); it is known that people with higher neuroticism tend to experience more negative experience in case of certain situations as well as having poor emotional regulation (Lahey, 2009). Therefore, neuroticism is associated with dysfunctional coping mechanisms such as rumination, worry or avoidance in terms of any crisis in comparison to individuals who score high in extraversion. Which are mostly associated with acceptance and problem solving (Gubler et al., 2021). Nikčević et al. indicated the mediating role of COVID-19 related psychological stress between personality traits and generalized anxiety, depressive symptom likewise stated that neuroticism is associated with psychological stress (2021), supporting the existing literature on how neuroticism associated with worry and affect (Kroencke et al., 2020). It is also known that individuals who score high in neuroticism complain more about their health along with reporting more medical symptoms (Lahey, 2009). Similarly, people high in neuroticism trait score are more likely to show symptoms which are medically unexplained (van Dijk et al., 2016).

Previous research has a consensus on how neuroticism makes it harder to cope with psychological outcomes of COVID-19 pandemic all around the world. Studies that take place in Israel, Germany and India found out that depression during the COVID-19 pandemic and neuroticism personality trait are positively correlated (Nudelman et al., 2021). In Germany, it is found that people who score high in neuroticism are more likely to have higher attention to COVID-19, more likely to worry about their health during the pandemic and have negative affect. (Kroencke et al., 2020). Amongst personality traits, neuroticism is the strongest trait that is associated with reduced well-being during the

pandemic as well as the feeling of loneliness (Gubler et al., 2021). Unsurprisingly, neuroticism trait is found to be associated with pessimism about COVID-19 crisis while extraversion trait is associated with optimism (Aschwanden et al., 2021).

Amongst university students in the United States, students who have lower scores in neuroticism and higher scores in extraversion are found to be more engaged in healthy activities and have improved mood (Rettew et al., 2021). Wjingaards et al. stated that extraversion is a protective factor against depression (2020) and extraverts did not affected from stringent measures of social distancing (Carvalho et al., 2020; Chan et al., 2021). In contrast, Gubler et al. indicate that there is no negative correlation between extraversion trait and feeling of loneliness whereas there is not any positive correlation between extraversion trait and psychological well-being (2021). Which indicates a meaning of that the protective effect of extraversion may not be present in the case of COVID-19 crisis. Similarly, there are contradictory results on how extraversion personality trait and COVID-19 are associated. While there is research that reports positive associations between the trait and applying preventive behaviors (Aschwanden et al., 2021; Modersitzki et al., 2021), there is also research suggesting association between extraversion and pandemic related behavior is vice-versa (Brouard et al., 2020a; L. de F. Carvalho et al., 2020).

Blagov reported that the people who higher have psychopathic trait scores tend to risk themselves and others more in terms of a risk of infection (2021). A study which was made amongst undergraduates in Italy stated that psychoticism trait is a risk factor for depression, anxiety and stress during the course of the COVID-19 pandemic (Biondi et al., 2021).

### **2.2.1. Personality Traits and Perception of Covid-19**

Perception of certain situations is open to interpretation accordingly with personality traits. Perceived threat is one of the findings that is associated with neuroticism across the personality traits (Nikčević & Spada, 2020). In the German sample, high neuroticism is strongly associated with fear of coronavirus and high perceived threat of Covid-19 (Lippold et al., 2020). Perceived dangerousness of COVID-19 is found to be predicted by health anxiety (Sica et al., 2021), which is another related aspect with neuroticism trait (Nikčević et al., 2021; Lahey, 2009).

There are lots of research that suggests neuroticism and extraversion traits have similar associations with the perception of COVID-19. Study in Germany indicated that higher scores on neuroticism and extraversion are related to more negative appraisals of the situation (Modersitzki et al., 2021). Likewise, Liu et al. found that people who score high in neuroticism and extraversion perceive more stress during the pandemic (2021). Study in Germany also emphasizes that both extraversion and neuroticism are inclined to perceive distancing measures as restrictive. Therefore, both traits are associated with negative appraisals of the situation (Modersitzki et al., 2021), such as Kroencke et al. indicating that people high in neuroticism are having more negative appraisal of their daily lives during the course of pandemic (2020). Besides, there are studies highlighting how neuroticism and extraversion differ from each other on the matter of perceiving COVID-19. In the study done by Bellintier et al., they have found no significant association between extraversion and perceived stress, while people high in neuroticism reported significantly higher stress (2021). The study which took place at the beginning

of the pandemic suggests that emotional stability is found to be positively correlated with perceived level of stress, whereas extraversion is found to be negatively correlated with perceived level of stress in Germany (Pilch et al., 2021).

In terms of age and gender, a study about the risk perception factors of SARS, MARS and H1N1 indicated that women and older people are found to have significantly higher risk perception about diseases (Tagini et al., 2021). In line with these findings, Perrotta et al. stated that perceived COVID-19 stress is significantly higher in women than men while younger people perceive lower threat of the virus in comparison to older people (Perrotta et al., 2021). Garbe et al. supported that older people tend to feel more threatened by COVID-19 while females perceive more threat than males (2020). Supporting these findings, study amongst university students in Turkey shows that women's perceived stress is significantly more than men (Karabela et al., 2021).

### **2.2.2. Personality Traits and Perceived Causes of Covid-19**

Regarding the relationship between personality traits and perceived causes of COVID-19, Somma et al. found that there is positive correlation between supernatural causal beliefs about COVID-19 pandemic and psychoticism personality trait scores (Somma, Gialdi, et al., 2020). On the other hand, Egorova et al. found that there is no relationship between conspiracy theories and personality traits (2020). It is seen that people who are more likely to have psychotic-like-experiences tend to use more pseudo-science preventions to avoid COVID-19 than scientifically recommended practices (Lazarević et al., 2021). This finding is supported by Ferreira et al. stating that there is positive correlation between psychotic experiences and beliefs of conspiracy theories as the cause of COVID-19. Egorova et al. found that the relationship between beliefs in

conspiracy theories about COVID-19 and denial of the danger caused of COVID-19 (2020). On the other hand, Georgio et al. suggested that there is no relationship between perceived level of stress and believing COVID-19 related conspiracy theories, yet higher levels of stress is associated with belief in conspiracy theories (2020). In Spain, a study on pseudoscientific beliefs about COVID-19 suggests that prolonged home confinement may increase magical thinking and affect perception (Escolà-Gascón et al., 2020) which may increase the beliefs in pseudoscientific or in conspiracy theories. This suggestion is supported by a study from the United States, stating that cognitive disorders and psychotic symptoms increased significantly during the quarantine period (Allé & Berntsen, 2021).

In terms of age and gender, it is found that there is no association between age or gender and beliefs in conspiracy theories (Ferreira et al., 2022). In Turkey, Kaçan et al. found that there are positive association between the causes of COVID-19 scale and the level of anxiety (2021). Increased level of anxiety and attributing the cause of pandemic to environmental, religious and conspiracy elements seemed to be related. A study with 1216 participants in Turkey found that conspiracy theories are at the top of the list as the perceived cause of the pandemic without any significant difference for gender (Karabela et al., 2021).

### **2.2.3. Personality Traits and Behaviors Towards Covid-19**

Pandemic related behavior is also showed great variety between countries and individuals. According to the study made in North America and Europe, perceived stress can be predicted by emotionality which indirectly affect pandemic related behaviors like stockpiling (Garbe et al., 2020). Study in Qatar shows that people who have higher

neuroticism score are more likely to practice social distancing to avoid getting infected (Abdelrahman, 2020). While Cowling's findings support the idea that higher anxiety levels are associated with social distancing, lower levels of anxiety are found to be associated with hygiene behaviors (Cowling et al., 2010). Despite a large number of studies in literature which have reports on how neuroticism and complying preventive measures are associated in a positive way, a very large-scale study regarding on the relationship between personality and COVID-19 responses suggests that the associations between neuroticism and complying preventive measures diminish whenever significant demographic variables are controlled (Rammstedt et al., 2022). There are also studies which show that people who score higher in neuroticism trait can practice health risking behaviors like low personal hygiene (Cowling et al., 2010) or unsafe sex (Trobst et al., 2002). Prentice et al. suggest that health risking behaviors can be comprehend as a way of coping with uncertainty and pessimism about a situation for the individuals high in neuroticism (2020). In line with the mentioned findings above, a study in France founds that neuroticism has negative association with complying health measures (Brouard et al., 2020), which is possible to be seen as surprising in comparison to the majority of the findings on neuroticism in the existing literature. Besides, there is a study by Krupic et al. in Croatia which they report no positive or negative associations between neuroticism and complying preventive measure (2021).

Regarding extraversion trait, a study that was made with participants from 31 countries shows that extraversion trait predicts mobility of people, which means not complying with social distancing measures (Chan et al., 2021). Supporting that finding, extraversion is found to be associated with practicing less social distancing behaviors in

Brazil (Carvalho et al., 2020) and in Croatia (Krupić et al., 2021). Another study with participants from 55 different countries shows that there is negative association between extraversion trait and staying at home during the course of quarantine, with extraversion being the only trait to be negatively associated while other traits show positive associations (Götz et al., 2021).

In terms of the attitudes towards COVID-19 concerning psychoticism trait, Blagov indicated that psychopathy traits are negatively associated with practicing social distancing and positively associated with risky behaviors when there is probability to spread the virus (Blagov, 2021).

Regarding compliance behaviors investigated in France, women are found to be more adaptive than men and change their behaviors (Brouard et al., 2020). Perrotta et al.'s study with 71,612 participants from seven European countries suggests women and people who are older than 45 years old wear mask significantly more than men and youngers (Perrotta et al., 2021). In Turkey it is found that there is positive correlation between age and applying safety measure like wearing mask and social distancing (Durak et al., 2021). As anxiety levels are related with the perception of COVID-19 and perception of the causes of COVID-19; avoidance behaviors are also found to be related with anxiety levels in Turkey (Kağan et al., 2021).

### **2.3. Quality of Sleep**

Quality of sleep plays an important role for quality of life, it is known that better sleep is associated with physical and psychological well-being (Pilcher et al., 1997). Accordingly, disrupted sleep is considered in association with serious health problems

such as cardiovascular diseases, diabetes and obesity as well as depression, mood disorders and cognitive problems (Chattu et al., 2019).

### **2.3.1. Components of Subjective Sleep Quality**

Buysse et al. defined seven sub-components of the variables that determine the quality of sleep; which are subjective sleep quality, sleep latency, sleep efficiency, habitual sleep efficiency, sleep disturbances, daytime dysfunction and sleep medications (1991). Three of them, subjective sleep quality, habitual sleep efficiency and total sleep quality index will be used for this study.

### **2.3.2. Subjective Sleep Quality**

Subjective sleep quality is determined by the individual's perception of his or her own sleep quality for the last month. With this qualification of this sub-component, it is possible to regard this as a distinctive sub-component which involves a self-report rating of the sleep quality among other objectively measured sub-scales. There is research which showed that sleep quality is getting worse with age (Buysse et al., 1991).

### **2.3.3. Habitual Sleep Efficiency**

Another sub-component is defined as habitual sleep efficiency that projects the ratio of the total time spent at the bed to sleeping hours (Reed & Sacco, 2016). It provides information about the percentage of sleeping time to total bedtime for the last month.

### **2.3.4. Personality Traits and Quality of Sleep**

There are numerous research on the associations between personality traits and sleep problems (Duggan et al., 2014; Kim et al., 2015; Stephan et al., 2018; Sutin et al., 2020), which are especially focused on the link between neuroticism and sleeping patterns. Mostly, studies point that higher neuroticism trait score is associated with less

sleep quality (Hintsanen et al., 2014; Duggan et al., 2014). On the other hand, Danielsson et al. suggest that having sleeping onset problems in adolescence is an important factor for neuroticism in the following years (Danielsson et al., 2010). Along with this, extraversion is found to be associated with better quality of sleep and consequently people who have higher extraversion trait scores are less likely to have sleeping problems (Hintsanen et al., 2014) although extraversion trait is found to be non-significant for sleep quality as well (Duggan et al., 2014). Whether there is a positive or negative association between extraversion trait and sleep quality is uncertain since there are studies which draw conclusions from both sides (Hintsanen et al., 2014).

In terms of sleep efficiency, a study in South Korea, with female participants report that there is no significant relation between neuroticism or extraversion personality traits and habitual sleep efficiency whereas extraversion trait is found to be positively associated with subjective sleep quality (Buysse et al., 1991). In the same study, neuroticism is found to be strongly associated with PSQI scores while extraversion is negatively associated with PSQI scores. Regarding subjective sleep quality, neuroticism trait is associated with worse self-report of sleep quality whereas extraversion is associated with better subjective sleep quality (Sutin et al., 2020). According to the limited research on the relationship between psychoticism trait and sleep patterns, no significant relationship reported between them (Somma, Marelli, et al., 2020). In addition to that, the psychopathy pole of psychoticism, show no significant association between psychopathy and sleep quality (Yaugher, 2013).

### 2.3.5. Quality of Sleep During Covid-19 Pandemic

Some research shows that prolonged home confinement is likely to cause sleeping problems (Altena et al., 2020; Cellini et al., 2020). Gupta et al. observed change in many of the parameters on the quality of sleep in India; such as less nighttime sleep, delayed sleeping times and delayed waking times are observed during the quarantine period (2020). In China, isolated individuals reported higher levels of anxiety and lower quality of sleep after Coronavirus outbreak (Xiao et al., 2020). Apart from psychological stressors, Gupta suggests that infection itself can also be the reason of sleeping disturbances because of the inflammation mediators lead by the virus (Gupta & Pandi-Perumal, 2020), which is possible to have a meaning that people who have coronavirus yet do not show any symptoms may have virus oriented sleep problems partially independent from the other variables (Köseoğlu, 2021). Poor sleep during the quarantine period is also found to be associated with more somatic symptoms and psychotic-like experiences (Simor et al., 2021). It is also known that lack of sleep can cause weak immunity (Chattu et al., 2019) which is able to increase the risk of getting infected by coronavirus.

There are many studies that suggested after coronavirus outbreak, the prevalence of insomnia has increased (Li et al., 2020; Gupta & Pandi-Perumal, 2020a; Altena et al., 2020). Such as the study which took place in China, found that the prevalence of insomnia is reported to be increased during COVID-19 pandemic period according to Insomnia Severity Index, because of the poor sleeping hygiene and pandemic related psychological reactions (Li et al., 2020). Studies from Europe (Altena et al., 2020), Italy (Cellini et al., 2020; Somma, Marelli, et al., 2020), China (J. Xiao et al., 2020) and India

(Gupta et al., 2020) are in accordance to each other which may possibly show the effect of pandemic on sleeping patterns could be considered as global. Accordingly, the term “COVID-somnia” was used to indicate COVID-19 pandemic-oriented sleeping problems (Gupta, 2020). Although there is research indicating the emotional disturbances and the change in sleeping patterns are associated during the pandemic, it is not clear which one causes the other (Gupta et al., 2020). Xiao et al. pointed out a bi-directional relationship between sleep quality and mental health conditions in China, by stating how poor sleep quality could have contributed to other major health problems during the pandemic (Xiao et al., 2020).

Research in Italy shows that there were significantly higher Pittsburgh Sleep Quality Index (PSQI) scores previous and in pursuit of the restriction period compared with each other and it shows that poor sleepers increase significantly as well. (Cellini et al., 2020). Once again in Italy, another study with similar methods compared pre-lockdown and lockdown sleeping scores of the participants and concluded that sleep latency, sleep efficiency, sleep disturbance and daytime dysfunction get poorer after the lockdown, leading subjective sleep quality to decrease (Somma, Marelli, et al., 2020). Another study with a participant group consisting of the university students in Italy also reported higher PSQI scores which means poorer sleep during pandemic. Additionally, they found that women have significantly higher scores in comparison to men (Marelli et al., 2021). These findings are supported by another study in Turkey, where Kabeoğlu and Gül report that higher PSQI scores for women during pandemic. Women are reported to be more likely to develop sleeping problems during pandemic (Altena et al., 2020; Marelli et al., 2021)

#### **2.4. Personality Traits and Quality of Sleep During Covid-19 Pandemic**

There is limited research which investigates personality traits and sleep quality with COVID-19 at once. One of them is done by Somma and Martinelli et al. in Italy, whose participants were university students (2020). Neuroticism (or negative affectivity as the study measured) reported as the only significant predictor of disrupted sleep quality amongst personality traits during the home confinement period (Somma, Marelli, et al., 2020). With 521 participants in Bangladesh, Ahmed et al. compared the latent profiles and found out that personality latent profiles are significantly different in terms of the perceived COVID-19 stress and sleep quality (2021). Although latent profiles were not separated by personality traits, maladaptive profiles found to be associated with higher levels of perceived stress and less quality of sleep. Maladaptive profiles reported as consisting of individuals who scored high in neuroticism and low in extraversion traits (Ahmed et al., 2021).

#### **2.5. Present Study**

The aim of this study is to investigate association between personality traits, perception of COVID-19 and quality of sleep during quarantine in Turkey. Hypotheses of the current study are as follows:

1. It is predicted that individuals who are high in neuroticism trait score perceive pandemic as more dangerous and perceive coronavirus more contagious than individuals higher in extraversion trait.
2. It is predicted that individuals who are high in neuroticism trait score practice avoidance attitudes more than individuals high in extraversion trait.

3. It is expected there will be negative correlation between psychoticism trait score and avoidance attitudes towards COVID-19.
4. It is predicted individuals who are high in neuroticism trait score have poorer sleep than individuals high in extraversion trait.
5. It is expected there will be a negative correlation between perception of COVID-19 scores and quality of sleep.

In addition to formulated hypotheses, demographic variables such as age, gender and covid history will also be investigated in relation with study variables.

### **3. METHOD**

#### **3.1. Participants**

Data of 261 participants was collected online via Google Forms. Among 261 participants 236 of them are included for analysis. 25 participants are excluded since they did not spend quarantine days in Turkey. 176 of 236 participants were female where 60 of them were male. Participants' ages ranged from 19 to 79 ( $M = 42.86$ ,  $SD = 13.625$ ). All participants spent their quarantine days in Turkey which was an inclusion criterion for the study. Participants who spent quarantine days in another country are excluded from the analysis. In terms of educational characteristics, most of the participants are university graduates (61.9%), 22.9% of the participants have masters or doctoral degree while 14% of the participants are high school graduates. Only 1.2 % of the participants are primary or secondary school graduates.

#### **3.2. Materials**

##### **3.2.1. Demographic Form**

Demographic form was created by the researcher. Information of gender, age, educational status, occupation and country of residence during quarantine were collected.

##### **3.2.2. COVID-19 Survey**

COVID-19 survey was designed by the researcher. The survey aims to collect information about i) whether participant has diagnosed for COVID-19, ii) whether one of the relatives of the participant has diagnosed for COVID-19, iii) whether someone who participant knows has died because of COVID-19, iv) whether participant thinks his/her sleep pattern has changed after COVID-19 outbreak with yes or no questions. In the last question, participant were asked to compare their ability to falling asleep at night, keeping

awake at night, getting up from bed in the morning, feeling energetic enough to do their daily routines before and after the COVID-19 outbreak. Three possible answers were i) it was harder before COVID-19 ii) it did not change with COVID-19 and iii) it was easier before the COVID-19 outbreak (See Appendix B).

### **3.2.3. Eysenck Personality Questionnaire Revised-Abbreviated (EPQR-A)**

The Turkish version of Eysenck Personality Questionnaire Revised-Abbreviated (EKA-GGK) was used to measure the personality sub-scores of participants. EKA-GGK is a self-report questionnaire with 24 items. Each item has a yes or no question. There are 6 items for each of the sub-groups which are neuroticism, extraversion, psychoticism and lie. Eysenck Personality Questionnaire Revised-Abbreviated was developed by Francis et al. (1992). Karancı et al. did the reliability and validity studies of the Turkish version of Eysenck Personality Questionnaire Revised-Abbreviated (EKA-GGK) (2007). EKA-GGK was found to be suitable for Turkish speaking participants with alpha coefficients of 0.78, 0.65, 0.42, and 0.64 respectively for neuroticism, extraversion, psychoticism and lie sub-scales, the test-retest reliability scores were 0.84, 0.82, 0.69 and 0.69 (See Appendix C).

### **3.2.4. Pittsburgh Sleep Quality Index (PSQI)**

The Pittsburgh Sleep Quality Index was developed by Buysse and Reynolds (1989). PSQI aims to measure participants' sleep quality by considering seven different components and a total PSQI score that equals the sum of seven component scores. Subjective sleep quality, habitual sleep efficiency and PSQI scores were calculated for all participants. PSQI score is between 0 and 21 and higher PSQI scores show poorer sleep quality. Ağargün et al. (1996) did the validity study for the Turkish version of Pittsburgh Sleep Quality Index (PSQI) (See Appendix D).

### **3.2.5. Perception of COVID-19 Questionnaire (P-COVID-19)**

Geniş et al. developed the Perception of COVID-19 Questionnaire (P-COVID-19). P-COVID-19 that consists of 7 items which are answered on a 5-point scale (1-Definitely Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree). Dangerousness and contagiousness are two subscales of P-COVID-19. Participants have dangerousness subscale score contagiousness sub-scale score and total P-COVID-19 score. Higher scores on P-COVID-19 shows higher perception of dangerousness and contagiousness of COVID-19 virus (See Appendix E).

### **3.2.6. Perception of Causes of COVID-19 Questionnaire (PCa-COVID-19)**

Geniş et al. developed Perception of Causes of COVID-19 Questionnaire (Pca-COVID-19). Pca-COVID-19 consists of 14 items which are answered on a 5-point scale (1-Definitely Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree). Conspiracy, environment and faith are three sub-scales of Pca-COVID-19. Participants have conspiracy subscale score, environment subscale score, faith sub-scale score and Pca-COVID-19 total score. Higher scores in certain sub-scale shows higher perception of cause of COVID-19 related sub-scale (See Appendix E).

### **3.2.7. Avoidance Attitudes from COVID-19 (AA-COVID-19)**

Geniş et al. developed Perception of Avoidance Attitudes from COVID-19 Questionnaire (AA-COVID-19). AA-COVID-19 consists of 10 items which are answered on a 5-point scale (1-Definitely Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree). Cognitive avoidance and behavioral avoidance are two sub-scales of AA-COVID-19. Participants have cognitive avoidance subscale score; behavioral avoidance subscale

score and total AA-COVID-19 score. Higher scores show higher avoidance attitudes towards COVID-19 (See Appendix E).

### **3.3. Procedure**

Data collection was made via online form which is prepared on Google Forms. Surveys take approximately 15 minutes to complete. Data is collected from the beginning of March 2021 to the end of April 2021. Participants were given demographic form, COVID survey, PSQI, EPQR-A and COVID questionnaires respectively. Participants were given informed consent before they were given the research materials. Debriefing form and contact information are shared with participants at the end of the survey. Afterwards, collected data is analyzed by researcher in SPSS Statistical analysis on SPSS, Version 22.0 (IBM Corp. Released 2013).

### **3.4. Statistical Analysis**

Descriptive quantities for P-COVID-19, PCA-COVID-19, AA-COVID-19 and PSQI are interpreted. For comparing personality trait groups in terms of COVID-19 scales and quality of sleep, participants were divided into 2 groups with higher neuroticism and extraversion trait scores. Since sample sizes of the groups are different and data does not meet requirements of normal distribution, non-parametric tests are used for the comparison of groups. Mann-Whitney U test is used to investigate significant differences between two groups across scale scores. Spearman's non-parametric correlation is used for investigating associations between psychoticism personality trait and scale scores. Correlations between the study variables are also calculated and interpreted.

**Table 1***Measurement Tools Used in Study*

| Scale        | Measure                           | Response                        | Number of Items | Sub-Scales                                                                                                                                          |
|--------------|-----------------------------------|---------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| EPQR-A       | Personality Traits                | Yes-No Questions                | 24              | Neuroticism, extraversion, psychoticism, lie                                                                                                        |
| PSQI         | Sleep Quality                     | Short Questions, 4-point Likert | 24              | subjective sleep quality, sleep latency, sleep efficiency, habitual sleep efficiency, sleep disturbances, daytime dysfunction and sleep medications |
| P-COVID-19   | Perception of COVID-19            | 5-point Likert                  | 7               | perception of dangerousness, perception of contagiousness                                                                                           |
| PCa-COVID-19 | Perception of Causes of COVID-19  | 5-point Likert                  | 14              | faith, environment, conspiracy                                                                                                                      |
| AA-COVID-19  | Avoidance Attitudes from COVID-19 | 5-point Likert                  | 10              | behavioral avoidance, cognitive avoidance                                                                                                           |

## 4. RESULTS

### 4.1. Participants

Answers of 236 participants were used for analysis. 25 participants were excluded since they did not spend quarantine in Turkey. Out of 236 individuals; 176 of them were female where 60 of them were male. The youngest participant's age is 19 where the oldest participant's age is 76 ( $M = 42.72$ ,  $SD = 13.398$ ).

9.7% of the participants stated that they have tested COVID-19 positive at least once while 90.3% percent have never been diagnosed for the coronavirus. 27.5% of the participants stated that at least one of their close relatives have diagnosed for coronavirus while 72.5% of the participants stated they have no close relatives who has ever been diagnosed for the coronavirus. 31.4% of the participants stated they know at least one person who died because of the coronavirus while 68.6% participants do not know anybody that died because of the coronavirus. In terms of perceived changes in sleeping patterns during COVID-19 pandemic, 47.5% of the participants think their sleeping patterns have changed after the coronavirus outbreak whereas 52.5% of the participants report no difference in their sleeping patterns after the pandemic.

### 4.2. Personality Traits

236 participants are divided into 2 groups for the analysis which are neuroticism and extraversion groups. Neuroticism group consist of participants who have their highest personality score from neuroticism trait in EPQR-A. Extraversion group consist of participants who have their highest personality trait score from extraversion in EPQR-A. Participants who have equal score for both traits were randomly assigned to the groups,

equally in number. Neuroticism group consists of 74 participants while extraversion group consists of 145 participants. 17 participants are in neither of the groups since their both neuroticism and extraversion scores in EPQR-A were 3 or less. Mean of the neuroticism trait score for neuroticism group is 4.81 out of 6 while mean of the extraversion trait score for extraversion trait group 5.17 out of 6. Mean of the personality trait scores for groups can be seen at Table 2.

**Table 2**

*Mean Scores for Personality Trait Groups*

|                          | Neuroticism Group | Extraversion Group | Total |
|--------------------------|-------------------|--------------------|-------|
|                          | N=74              | N=145              | N=236 |
| Neuroticism Trait Score  | 4.81              | 2.1                | 2.89  |
| Extraversion Trait Score | 2.8               | 5.17               | 4.11  |
| Psychoticism Trait Score | 1.11              | 1.53               | 1.34  |

There is no significant difference between the groups in terms of gender and education level. Detailed information about participant groups and demographic characteristics can be seen at Table 3.

**Table 3***Demographic Characteristics, Covid History and Sleep Perception of Participants*

|                                        | Total<br>N=236 | Neuroticism<br>N=74 | Extraversion<br>N=145 | Others<br>N=17 |
|----------------------------------------|----------------|---------------------|-----------------------|----------------|
| Mean Age (SD)                          | 42.72 (13.398) | 40 (13.95)          | 43,99(12.85)          | 43.71(14.58)   |
| Gender (%)                             |                |                     |                       |                |
| Female                                 | 176 (74.6%)    | 58 (78.4%)          | 108 (74.5%)           | 10 (58.8%)     |
| Male                                   | 60 (25.4%)     | 16 (21.6%)          | 37 (25.5%)            | 7 (41.2%)      |
| Education (%)                          |                |                     |                       |                |
| Primary or Secondary School            | 3 (1.2%)       | 0                   | 3 (2.1%)              | 0              |
| High School                            | 33 (14%)       | 12 (16.2%)          | 20 (13.8%)            | 1 (5.9%)       |
| University                             | 146 (61.9%)    | 48 (64.9%)          | 85 (58.6%)            | 13 (76.5%)     |
| Master's Degree or more                | 54 (22.9%)     | 14 (18.9%)          | 37 (25.6%)            | 3 (17.6%)      |
| Covid History (%)                      |                |                     |                       |                |
| Diagnosed for COVID-19                 | 23 (9.7%)      | 6 (8.1%)            | 16 (11%)              | 1 (5.9%)       |
| Relative Diagnosed for COVID-19        | 65 (27.5%)     | 25 (33.8%)          | 36 (24.8%)            | 4 (23.5%)      |
| Knows Someone died because of COVID-19 | 74 (31.4%)     | 23 (31.1%)          | 49 (33.8%)            | 2 (11.8%)      |
| Perception of Sleep (Last 1 Month) (%) |                |                     |                       |                |
| Report sleep pattern change            | 112 (47.5%)    | 46 (62.2%)          | 62 (42.8%)            | 4 (23.5%)      |
| Report no change                       | 124 (52.5%)    | 28 (37.8%)          | 83 (57.3%)            | 13 (76.5%)     |

### 4.3. Quality of Sleep

Participants' PSQI scores range from 2 to 17. Maximum score for PSQI is 21. Mean of the PSQI score is 6.74 ( $SD=2.43$ ) while mean of subjective quality of sleep is 1.65 out of 3 ( $SD=0.61$ ) and mean of habitual sleep efficiency is 0.40 out of 3 ( $SD=0.81$ ). 85.6% of the participants' PSQI scores are 5 or above. Only 14.4% of the participants have lower than 5 as the PSQI score. Mann Whitney U test is conducted to investigate associations between genders, PSQI score is slightly but significantly higher for women than men ( $U=4412.5$ ,  $p=.05$ ) while there is no significant difference between genders for habitual sleep efficiency ( $U=4665.5$ ,  $p=.092$ ) and subjective sleep quality ( $U=4770$ ,  $p=.206$ ).

112 participants out of 236 report they think their sleeping patterns have changed during COVID-19. Who reported a change in their sleeping pattern have significantly higher PSQI  $U=4208.5$   $p<.01$  and habitual sleep efficiency scores ( $U=5856$ ,  $p=.009$ ) than the participants who did not report any change in their sleeping pattern.

Participants who were diagnosed with COVID-19 before have significantly higher PSQI scores when compared to participants who did not ( $U=1768$ ,  $p=.027$ ). History of COVID-19 shows no significant difference between habitual sleep efficiency ( $U=2348$ ,  $p=.703$ ) and subjective sleep quality ( $U=1949$ ,  $p=.068$ ). Participants who report their relatives diagnosed for COVID-19 have significantly higher PSQI scores ( $U=3966.5$ ,  $p<.01$ ) and subjective sleep quality ( $U=4675$ ,  $p=.033$ ) scores while there is no significant difference for habitual sleep quality scores ( $U=4854.5$ ,  $p=.060$ ). On the other hand, none of the PSQI, subjective sleep quality and habitual sleep efficiency showed significant

difference between participants who know someone died because of coronavirus and participants who do not know anyone died because of the coronavirus.

#### **4.4. Perception of COVID-19**

Participants who had been diagnosed for coronavirus previously have significantly higher scores on cognitive avoidance subscale of AA-COVID-19 ( $p=.025$ ). In terms of COVID-19 history, there is no significant difference for P-COVID-19 ( $p=.929$ ) and PCa-COVID-19 ( $p=.739$ ) or their sub-scales. Participants whose relatives diagnosed for COVID-19 also have significantly higher AA-COVID-19 scores ( $U=4571.5$ ,  $p=.035$ ) while the same criterion shows no significant difference between P-COVID-19 and PCa-COVID-19 or their sub-scales. Knowing someone who died because of the coronavirus or not does not show significant difference on COVID-19 scales.

In terms of gender differences, there is significant difference for PCa-COVID-19. Women report significantly higher scores for both general PCa-COVID-19 score ( $U=3883$ ,  $p=.005$ ) and conspiracy sub-scale of PCa-COVID-19 ( $U=3893$ ,  $p=.005$ ). There is no significant difference between genders for P-COVID-19 ( $p=.895$ ) and AA-COVID-19 ( $p=.429$ ) or any of their sub-scales.

#### **4.5. Personality Traits and Perception of Covid**

Mann Whitney U test was conducted to analyze significant differences between neuroticism and extraversion group. Among P-COVID-19, PCa-COVID-19 and AA-COVID-19; only general scores of PCa-COVID-19 were significantly different between two groups. Participants who have higher neuroticism score on EPQR-A get significantly higher scores from PCa-COVID-19 ( $U=4142$ ,  $p=.006$ ). Individuals with higher neuroticism trait score and higher extraversion trait score had also significantly different

scores from PCa-COV-19 conspiracy sub-scale. Participants with higher extraversion trait score got higher scores from conspiracy sub-scale ( $U=4281,5$ ,  $p=.014$ ). Although individuals higher in neuroticism and higher in extraversion show no significant difference on scores of P-COVID-19  $U=4507,5$  ( $p=.053$ ) and AA-COVID-19 ( $U=5139.5$ ,  $p=.610$ ), there was significant difference on P-COVID-19 dangerousness sub scale. Participants who got higher scores in neuroticism trait got significantly higher scores from dangerousness sub-scale ( $U=4281.5$ ,  $p=.014$ ). Details of Mann Whitney U Tests can be seen at Table 4.

#### **4.6. Personality Traits and Quality of Sleep**

Mann Whitney U test was conducted to test if there is significant difference between neuroticism and extraversion trait groups in terms of quality of sleep. Participants higher in neuroticism trait score had significantly higher habitual sleep efficiency ( $U= 4382$ ,  $p=.006$ ) score and total PSQI score ( $U= 3632$ ,  $p<.01$ ). Participants who are higher in extraversion trait score had significantly higher subjective sleep quality score ( $U=4016.5$ ,  $p<.01$ ) (Table 5).

#### **4.7. Correlational Findings**

Non-parametric correlations between study variables can be seen in Table 6. P-COVID-19 and AA-COVID-19 scores are found to be negatively correlated with psychoticism where the spearman correlation coefficient is  $r_s=-.154$ ,  $p=.018$ ,  $N=236$  and  $r_s=-.158$   $p=.015$ ,  $N=236$  respectively. There is also significant positive correlation between psychoticism and PCa-COVID-19 scores  $r_s=-.129$   $p=.048$ ,  $N=236$ . Extraversion is negatively correlated with P-COVID-19 scores with spearman correlation coefficient  $r_s=-.144$ ,  $p=.027$ ,  $N=236$  and positively correlated with PCa-COVID-19  $r_s=.194$   $p=.003$ ,

**Table 4***Mann Whitney-U Test Results, Personality traits and Perception of Covid*

|                                                    |              | <i>N</i> | Mean Rank | <i>M</i> | <i>U</i> | <i>p</i> |
|----------------------------------------------------|--------------|----------|-----------|----------|----------|----------|
| Perception of Covid-19<br>(P-COVID-19)             | Neuroticism  | 74       | 121.59    | 7,92     | 4507.5   | .053     |
|                                                    | Extraversion | 145      | 104.09    | 5,58     |          |          |
| (P-COVID-19)<br>Dangerousness                      | Neuroticism  | 74       | 124.64    | 4,12     | 4281.5   | .014*    |
|                                                    | Extraversion | 145      | 102.53    | 3,79     |          |          |
| (P-COVID-19)<br>Contagiousness                     | Neuroticism  | 74       | 109.23    | 3,81     | 5308     | .897     |
|                                                    | Extraversion | 145      | 110.39    | 3,79     |          |          |
| Perception of Causes of Covid-19<br>(PCa-COVID-19) | Neuroticism  | 74       | 93.47     | 6,61     | 4142     | .006*    |
|                                                    | Extraversion | 145      | 118.43    | 7,32     |          |          |
| (PCa-COVID-19)<br>Conspiracy                       | Neuroticism  | 74       | 95.36     | 2,47     | 4281.5   | .014*    |
|                                                    | Extraversion | 145      | 117.47    | 2,88     |          |          |
| (PCa-COVID-19)<br>Environment                      | Neuroticism  | 74       | 102.59    | 2,63     | 4817     | .215     |
|                                                    | Extraversion | 145      | 113.78    | 2,78     |          |          |
| (PCa-COVID-19)<br>Faith                            | Neuroticism  | 74       | 102.86    | 1,50     | 4837     | .199     |
|                                                    | Extraversion | 145      | 113.64    | 1,66     |          |          |
| Avoidance Attitudes From COVID-19<br>(AA-COVID-19) | Neuroticism  | 74       | 113.05    | 6,29     | 5139.5   | .610     |
|                                                    | Extraversion | 145      | 108.44    | 6,23     |          |          |
| (AA-COVID-19)<br>Cognitive Avoidance               | Neuroticism  | 74       | 109.66    | 2,27     | 5340     | .954     |
|                                                    | Extraversion | 145      | 110.17    | 2,34     |          |          |
| (AA-COVID-19)<br>Behavioral Avoidance              | Neuroticism  | 74       | 113.05    | 4,02     | 5139.5   | .608     |
|                                                    | Extraversion | 145      | 108.44    | 3,89     |          |          |

$N=236$ . There is no significant correlation between neuroticism trait score and the P-COVID-19 scores.

In terms of correlational findings, between personality traits and quality of sleep, neuroticism trait is negatively correlated with subjective sleep quality where spearman correlation coefficient is  $r_s = -.275$   $p < .01$ ,  $N=236$  and positively correlated with habitual sleep efficiency  $r_s = .140$   $p = .032$ ,  $N=236$  and PSQI  $r_s = .309$   $p < .01$ ,  $N=236$ . On the other hand, there is positive significant correlation between psychoticism trait and subjective sleep quality  $r_s = .167$   $p = .010$  and negative significant correlation between psychoticism and habitual sleep efficiency  $r_s = -.218$   $p < .01$ ,  $N=236$ . There is no significant correlation between extraversion trait and subjective sleep quality, habitual sleep efficiency or PSQI. Age is found to be positively correlated with habitual sleep efficiency where spearman correlation coefficient is  $r_s = .220$   $p < .01$ ,  $N=236$ . Between quality of sleep scores and perception of covid scores, there is only one significant positive correlation between P-COVID-19 and PSQI  $r_s = .132$   $p = .042$ ,  $N=236$ .

**Table 5**

*Mann Whitney U Test Results Between Perceived Sleep Quality, Habitual Sleep Efficiency, PSQI and Personality Traits*

|                         | Subjective Sleep Quality |          |          |          | Habitual Sleep Efficiency |          |          |          | PSQI      |          |          |          |
|-------------------------|--------------------------|----------|----------|----------|---------------------------|----------|----------|----------|-----------|----------|----------|----------|
|                         | Mean Rank                | <i>M</i> | <i>U</i> | <i>p</i> | Mean Rank                 | <i>M</i> | <i>U</i> | <i>p</i> | Mean Rank | <i>M</i> | <i>U</i> | <i>p</i> |
| Neuroticism<br>(N=74)   | 91.78                    | 1,45     | 4016.5   | .001*    | 121.97                    | 0,60     | 4382     | .006*    | 133.42    | 7,66     | 3632     | .000*    |
| Extraversion<br>(N=174) | 119.30                   | 1,74     |          |          | 103.22                    | 0,28     |          |          | 98.05     | 6,31     |          |          |

\*p<.05; \*\*p<.01

**Table 6**

Nonparametric Spearman Correlations between Study Variables

|                 | 1       | 2       | 3      | 4       | 5       | 6      | 7      | 8       | 9      | 10    |
|-----------------|---------|---------|--------|---------|---------|--------|--------|---------|--------|-------|
| 1.Age           | 1,000   |         |        |         |         |        |        |         |        |       |
| 2.Neuroticism   | -,237** | 1,000   |        |         |         |        |        |         |        |       |
| 3.Extraversion  | -0,006  | -,196** | 1,000  |         |         |        |        |         |        |       |
| 4. Psychoticism | -,193** | -0,047  | ,206** | 1,000   |         |        |        |         |        |       |
| 5. P-COVID-19   | 0,056   | 0,057   | -,147* | -,156*  | 1,000   |        |        |         |        |       |
| 6. PCa-COVID-19 | 0,044   | -0,060  | ,183** | ,129*   | -,247** | 1,000  |        |         |        |       |
| 7. AA-COVID-19  | 0,031   | -0,067  | -0,030 | -,156*  | 0,026   | 0,129* | 1,000  |         |        |       |
| 8. SSQ          | 0,009   | -,275** | 0,103  | ,167*   | -0,075  | 0,054  | -0,070 | 1,000   |        |       |
| 9. HSE          | ,220**  | ,140*   | -0,123 | -,218** | 0,023   | 0,077  | -0,008 | -,347** | 1,000  |       |
| 10.PSQI         | 0,117   | ,309**  | -0,051 | -0,110  | ,134*   | 0,018  | -0,055 | -,540** | ,570** | 1,000 |

\* $p < .05$ ; \*\* $p < .01$ ; SSQ: *Subjective Sleep Quality*, HSE: *Habitual Sleep Efficiency*,  $N=236$

## 5. DISCUSSION

### 5.1. Perception of COVID-19

Two personality trait groups that are neuroticism and extraversion show no significant difference for P-COV-19 and AA-COVID-19. Two of the hypotheses (1 & 2) of the study was that the neuroticism trait group would show higher P-COVID-19 and AA-COVID-19 scores. Although results failed to support that hypothesis, scores of dangerousness sub-scale of P-COVID-19 are significantly higher for neuroticism group which is in line with the previous findings and partially supporting the hypothesis. Neuroticism is associated with higher perceived dangerousness of the virus, but not for perceived contagiousness. Results supporting existing literature regarding perceived dangerousness, people high in neuroticism trait have the tendency to appraise situations more negatively and perceive more threat (Modersitzki et al., 2021). The question of why there is no significant difference for P-COVID-19 and AA-COVID may be answered in line with Zajenhowski et al.'s study which emphasizes that the situational factors are more important than dispositional ones in the times of crisis such as pandemic (2020). Although neuroticism and extraversion traits use different defense mechanisms, which is reported to make neuroticism trait more vulnerable with COVID-19 related problems (Lee et al., 2020), trait-oriented differences seem to be diminished regarding perceived contagiousness of the virus and avoidance attitudes. It is also indicated perceived contagiousness is associated with avoiding strategies (Herek & Capitanio, 1998). In this perspective, perceived contagiousness may be the source of motivation for avoiding strategies. In this sample, both contagiousness and avoiding attitudes show no significant difference between two groups. In terms of psychoticism trait scores, the higher the

psychoticism trait score is, participants report less perceived dangerousness and less behavioral avoidance, supporting hypothesis (3). This result is not surprising since impulsivity is one of the defining qualities of psychoticism trait.

Regarding gender differences, studies of Karabela et al. (2021) and Salali & Uysal (2020) have different outcomes in the Turkish sample for perceived causes of COVID-19. While Salali et al. stated that men have significantly higher belief tendencies of natural causes for pandemic in comparison to women (2020), Karabela reported no significant difference between genders for PCa-COVID-19 conspiracy sub-scale (2021). Results of this study are in line with Salali et al.'s findings in Turkey as well as Ferreira et al.'s (2021), since women have significantly higher scores for PCa-COVID-19 conspiracy sub-scale. In terms of gender differences, no significant difference was found on AA-COV-19 scores. Although studies in Qatar (Abdelrahman, 2020), France (Brouard et al., 2020b) and Europe (Perrotta et al., 2021) emphasize differences between genders on behavioral attitudes, this is not supported with this study in Turkish sample.

P-COVID-19, PCa-COVID-19 and AA-COVID-19 are used to investigate participants' perception of COVID-19. Whether participants who are diagnosed for COVID-19 previously is associated with higher scores from cognitive avoidance subscale of AA-COVID-19, when individuals have COVID-19 history, there is no association with behavioral avoidance and diagnosis of coronavirus. Past COVID-19 diagnosis of participants or their relatives is not associated with behavioral avoidance. Although their cognitive avoidance behaviors such as changing the subject when pandemic is being talked about, not paying attention to the news or switching their focus to something else are reported, behavioral avoidance attitudes such as social distancing, not kissing or

handshaking with people are not reported by participants. These findings show that although pandemic is recognized, participants are avoidant at cognitive level but far from applying advised behavioral preventive measures. Moreover, COVID-19 history is not associated with perceived dangerousness and perceived contagiousness, supporting previous study in Turkish sample (Kaçan et al, 2021). Regarding perceived cause and history of COVID, although Karabela et al. stated that those who had coronavirus or those whose relatives had coronavirus significantly report more faith factors as the cause of the pandemic (2021), there is no association with covid history of participants or their relatives', as well as knowing someone died from coronavirus. Experiencing loss because of the coronavirus is not associated with significant difference between any of the study variables, although diagnosis of COVID-19 is associated with significant difference between study variables. Karabela et al. also report no association with experience of loss (2021). Why diagnosis of COVID-19 matters but experiencing loss does not matter remains as a question. Yet, it is possible to speculate this may be due to the denial defense mechanism in the face of a great danger of global health crisis.

## **5.2. Quality of Sleep**

PSQI is a measurement tool to differentiate good sleepers from poor sleepers (Buysse et al., 1991). From the participants of this study, 85.6% of the sample have PSQI score above 5. This means that only 14.4% of the participants can be considered as good sleepers. Although previous studies pointed how the pandemic has negative effect on sleep quality, (Sülün et al., 2021; Alp et al., 2020; Karaköse et al., 2022) the percentage of poor sleepers are higher than Timurtaş who reported in Turkish sample (2022). There is also a study of Kabeoloğlu et al. who reported 69.5% of their sample were poor

sleepers (2021). Taking the data collection duration into consideration; quarantine period without attending school or work may explain significant increase in numbers of poor sleepers for this study. Similar studies point out that during the lockdown, more usage of digital tools and change in daily habits make sleep quality poorer (Köseoğlu, 2021). Likewise, Alp et al. reported all of the participants as poor sleepers during the pandemic and high number of poor sleepers is a risk factor for depression, anxiety and chronic illnesses considering the relationship between life quality and sleep quality (2020). Those risk factors are reported to be higher for women (Kabeloğlu & Gül, 2021). In accordance with many studies stating women have poorer sleep when compared to men during pandemic (Karaköse et al., 2022; Kaçan et al., 2021b). Similarly, PSQI scores of women are significantly higher than men, in support of many studies.

Having diagnosed positive for COVID-19 significantly associated with higher PSQI scores. Although being associated with total PSQI score, being diagnosed positive for COVID-19 has no significant association with habitual sleep efficiency and subjective quality of sleep. These findings suggest that being diagnosed for coronavirus can be associated with other sub-components of PSQI which are sleep latency, sleep disturbances, daytime dysfunction and sleep medication. Participants whose relatives have been diagnosed for COVID-19 have significantly higher PSQI score and subjective sleep quality. Subjective sleep quality has association with having a relative being COVID-19 positive, but not individually themselves. Participants who reported being diagnosed for COVID-19 have no significant change in subjective sleep quality, although their PSQI scores significantly increase.

Interestingly, knowing someone who died from COVID-19 has no significant association with any of the sleeping measures despite the fact that their relative was diagnosed positive for COVID-19. Like perception of COVID-19 results, experiencing loss seemed to have no association with quality of sleep. It can be concluded that experiencing loss because of COVID-19 is ignored in the Turkish sample.

When two groups compared in terms of quality of the sleep, neuroticism trait group showed higher PSQI scores. Neuroticism trait group showed significantly higher habitual sleep efficiency score which means poorer sleep efficiency. One of the hypotheses of this study (4) was that the neuroticism group would have poor sleep compared to the extraversion group. Results support that hypothesis, supporting the previous studies on the relationship of neuroticism and sleep quality (Duggan et al., 2014; Marelli et al., 2021).

Non-parametric correlation is used to investigate associations between psychoticism trait and quality of sleep. The higher the psychoticism trait score, participants report higher subjective sleep quality and lower habitual sleep efficiency. Considering subjective sleep quality, despite having better quality of sleep, the extraversion trait group report poorer subjective sleep quality than the neuroticism trait group. There seems to be dissonance between perceived sleep quality and calculated sleep quality. Although the neuroticism trait group is associated with poor sleep quality, in terms of quantity of sleep there are studies stating neuroticism is associated with both less and more sleep (Hintsanen et al., 2014). Participants may report their quality of sleep in terms of hours they sleep which may lead to dissonance. Because they tend to sleep

more, it is possible that neuroticism group perceived their sleep quality better than actually it was.

Perception of COVID-19 scores and PSQI scores are positively correlated which support hypothesis (5) that expects negative correlation between sleep quality and perception of COVID scores. It is possible to conclude that independent of personality traits, perception of COVID-19 is associated with sleep quality since neuroticism group and extraversion group have not significantly different P-COVID-19 scores, but P-COVID-19 scores are correlated with PSQI scores. Accordingly, in support of studies between COVID-19 and quality of sleep (Altena et al., 2020; Gupta et al., 2020; Gupta & Pandi-Perumal, 2020c; Köseoğlu, 2021; Kabeloğlu & Gül, 2021; Li et al., 2020; Marelli et al., 2021). Perception of COVID-19 seems to be a stressor independent from extraversion and neuroticism traits.

### **5.3. Limitations**

There are certain limitations of the study. Regarding the duration of data collection, timing was in acute the period of the pandemic, when uncertainty and panic peaks which may affect how people perceive pandemic and their quality of sleep in comparison to further weeks. There are numerous factors that is associated with quality of sleep which were not collected from participants such as previous diagnosis of sleep disorders and usage of medications that may influence sleep.

Another limitation of the timing is about vaccination. In the times where data is collected, vaccines were not eligible for most of the Turkish population which may affect the perception of COVID-19. Perceptions may have changed as the eligibility of populations to vaccines increased. Since data is collected online, at which level

participants represent the Turkish sample remain as a question. It is seen that the educational level of the participants are high and all of them have the accessibility to the Internet. Additionally, all data is collected based on the self-reports of participants.

Regarding EPQR-A, the scale has a lie sub-scale which measures individual's responses. The lie sub-scale is not used in this study. Lie scale is a sub-scale for measuring social desirability of the reported answers. Since lie subscale is related with norms of society (Karancı et al., 2007) which exceeds limits of this study, it is not used for analysis.

It is important to note that measurement tools do not contain mood scale for this study. Associations between personality, perception of COVID and quality of sleep is investigated without taking mood into consideration.

#### **5.4. Further Research**

Perception is associated with personality traits. Having more studies on personal differences about the perception of COVID-19 may contribute to our knowledge on how different individuals with different traits perceive and respond to situations. This is important to develop necessary measures for psychological and social healthcare. In this study, sleep quality is selected for the investigation but there is a long way to go to comprehend how the global crisis of COVID-19 affect individuals. To have a more comprehensive perspective, personality, quality of sleep, perception of COVID and mood can be investigated for further research.

Results may suggest that denial of the Turkish sample for pandemic is high, since experiencing loss is not associated with any perception scores. Moreover, conspiracy theories as perceived cause of the pandemic are higher than other causes perceived. More

research on personality traits and perception of COVID-19 is needed for a deeper understanding of how Turkish sample experience the COVID-19 pandemic period.



## 6. CONCLUSION

Present study aims to investigate association between personality traits, perception of COVID and quality of sleep in Turkish sample who spent their quarantine days in Turkey. During quarantine, results show poor sleep quality of participants, worse sleep quality for neuroticism trait group than extraversion trait group. Neuroticism trait is found to be associated with poor sleep quality and more perceived dangerousness of coronavirus. Although extraversion trait group reported better sleep quality than neuroticism group, their subjective sleep quality is poorer than neuroticism group. Psychoticism trait is found to be associated with less behavioral avoidance and perceiving less dangerousness for COVID-19 pandemic. Despite previous research on literature, no significant difference is found between genders for perception and avoidance attitudes for COVID-19.

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## APPENDICES

### Appendix A: List of Symbols / Abbreviations

- AA-COVID-19 Avoidance Attitudes from COVID-19
- HSE – Habitual Sleep Efficiency
- P-COVID-19 – Perception of COVID-19
- PCa-COVID-19 – Perception of Causes of COVID-19
- PSQI – Pittsburg Sleep Quality Index
- SSQ – Subjective Sleep Quality

## Appendix B: COVID Survey

1) Kovid-19 salgını süresince vaktinizin çoğunu nerede geçirdiniz?

- Türkiye'de
- Başka bir ülkede

2) Yaşınız

3) Cinsiyetiniz

- Kadın
- Erkek
- Diğer (Belirtiniz)

4) Eğitim Durumunuz

- İlkokul
- Ortaokul
- Lise
- Üniversite
- Yüksek Lisans
- Doktora

5) Mesleğiniz

6) Bugün ya da geçmişte Kovid-19 tanısı aldınız mı?

- a. Evet
- b. Hayır

7) Birinci dereceden bir yakınınıza Kovid-19 tanısı konuldu mu?

8) Bir tanıdığınızı Kovid-19 sebebiyle kaybettiniz mi?

9) Uyku düzeninizin Kovid-19 salgınıyla birlikte değiştiğini düşünüyor musunuz?

10) Kovid-19 salgını öncesiyle karşılaştırdığınızda aşağıdaki seçeneklerden size uygun olanı işaretleyiniz.

|                                                | Salgından önce daha kolaydı<br>oldu | Salgınla birlikte bir değişiklik olmadı | Salgından sonra daha zor |
|------------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------|
| Geceleri uykuya dalmak                         |                                     |                                         |                          |
| Geceleri uyanık kalmak                         |                                     |                                         |                          |
| Sabahları yataktan kalkmak                     |                                     |                                         |                          |
| Günlük işlerinizi yapacak kadar dinç hissetmek |                                     |                                         |                          |

### Appendix C: Eysenck Personality Questionnaire Revised-Abbreviated (EPQR-A)

Yönerge: Lütfen aşağıdaki her bir soruyu, ‘Evet’ ya da ‘Hayır’ı yuvarlak içine alarak cevaplayınız. Doğru veya yanlış cevap ve çeldirici soru yoktur. Hızlı cevaplayınız ve soruların tam anlamları ile ilgili çok uzun düşünmeyiniz.

|                                                                                               |      |       |
|-----------------------------------------------------------------------------------------------|------|-------|
| 1. Duygu durumunuz sıklıkla mutlulukla mutsuzluk arasında değişir mi?                         | Evet | Hayır |
| 2. Konuşkan bir kişi misiniz?                                                                 | Evet | Hayır |
| 3. Borçlu olmak sizi endişelendirir mi?                                                       | Evet | Hayır |
| 4. Oldukça canlı bir kişi misiniz?                                                            | Evet | Hayır |
| 5. Hiç sizin payınıza düşenden fazlasını alarak açgözlülük yaptığınız oldu mu?                | Evet | Hayır |
| 6. Garip yada tehlikeli etkileri olabilecek ilaçları kullanır mısınız?                        | Evet | Hayır |
| 7. Aslında kendi hatanız olduğunu bildiğiniz birşeyi yapmakla hiç başka birini suçladınız mı? | Evet | Hayır |
| 8. Kurallara uymak yerine kendi bildiğiniz yolda gitmeyi mi tercih edersiniz?                 | Evet | Hayır |
| 9. Sıklıkla kendinizi her şeyden bıkmış hisseder misiniz?                                     | Evet | Hayır |
| 10. Hiç başkasına ait olan bir şeyi (toplu iğne veya düğme bile olsa) aldınız mı?             | Evet | Hayır |
| 11. Kendinizi sinirli bir kişi olarak tanımlar mısınız?                                       | Evet | Hayır |
| 12. Evliliğin modası geçmiş ve kaldırılması gereken bir şey olduğunu düşünüyor musunuz?       | Evet | Hayır |
| 13. Oldukça sıkıcı bir partiye kolaylıkla canlılık getirebilir misiniz?                       | Evet | Hayır |
| 14. Kaygılı bir kişi misiniz?                                                                 | Evet | Hayır |
| 15. Sosyal ortamlarda geri planda kalma eğiliminiz var mıdır?                                 | Evet | Hayır |
| 16. Yaptığınız bir işte hatalar olduğunu bilmeniz sizi endişelendirir mi?                     | Evet | Hayır |
| 17. Herhangi bir oyunda hiç hile yaptınız mı?                                                 | Evet | Hayır |
| 18. Sinirlerinizden şikayetçi misiniz?                                                        | Evet | Hayır |
| 19. Hiç başka birini kendi yararınıza kullandınız mı?                                         | Evet | Hayır |
| 20. Başkalarıyla birlikte iken çoğunlukla sessiz misinizdir?                                  | Evet | Hayır |
| 21. Sık sık kendinizi yalnız hisseder misiniz?                                                | Evet | Hayır |

- |                                                                           |      |       |
|---------------------------------------------------------------------------|------|-------|
| 22. Toplum kurallarına uymak, kendi bildiđinizi yapmaktan daha mı iyidir? | Evet | Hayır |
| 23. Diđer insanlar sizi çok canlı biri olarak düşünürler mi?              | Evet | Hayır |
| 24. Başkasına önerdiğiniz şeyleri kendiniz her zaman uygular mısınız?     | Evet | Hayır |



## Appendix D: Pittsburg Sleep Quality Index (PSQI)

Aşağıdaki soruları cevaplanırken son 1 ayınızı göz önünde bulundurun. Lütfen her soruyu cevaplandırın.

1. Geçen ay geceleri genellikle ne zaman yattınız?

.....genel yatış saati

2. Geçen ay geceleri uykuya dalmanız genellikle ne kadar zaman (dakika) aldı?

.....dakika

3. Geçen ay sabahları genellikle ne zaman kalktınız?

.....genel kalkış saati

4. Geçen ay geceleri kaç saat uyudunuz (bu süre yatakta geçirdiğiniz süreden farklı olabilir)

.....saat (bir gecede ki uyku süresi)

Aşağıdaki soruların her biri için uygun cevabı seçiniz.

5. Geçen ay aşağıdaki durumlarda belirtilen uyku problemlerini ne sıklıkla yaşadınız?

(a) 30 dakika içinde uykuya dalamadınız

- ☐ Geçen ay boyunca hiç
- ☐ Ayda 1'den az
- ☐ Ayda 1 veya 2 kez
- ☐ Ayda 3 veya daha fazla

(b) Gece yarısı veya sabah erkenden uyandınız

- ☐ Geçen ay boyunca hiç
- ☐ Ayda 1'den az
- ☐ Ayda 1 veya 2 kez
- ☐ Ayda 3 veya daha fazla

(c) Banyo yapmak üzere kalkmak zorunda kaldınız

- ☐ Geçen ay boyunca hiç
- ☐ Ayda 1'den az

- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(d) Rahat bir şekilde nefes alıp veremediniz

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(e) Öksürdünüz veya gürültülü bir şekilde horladınız

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(f) Aşırı derecede üşüdünüz

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(g) Aşırı derecede sıcaklık hissettiniz

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(h) Kötü rüyalar gördünüz

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(i) Ağrı duydunuz

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(j) Diğer nedenler lütfen belirtiniz .....

Geçen ay diğer nedenlerden dolayı ne kadar sıklıkla uyku problemi yaşadınız

- ☐ Geçen ay boyunca hiç
- ☐ Ayda 1'den az
- ☐ Ayda 1 veya 2 kez
- ☐ Ayda 3 veya daha fazla

6. Geçen ay uyku kalitenizi bütünü ile nasıl değerlendirirsiniz.

- ☐ Çok iyi
- ☐ Oldukça iyi
- ☐ Oldukça kötü
- ☐ Çok kötü

7. Geçen ay uyumanıza yardımcı olması için ne kadar sıklıkla uyku ilacı (reçeteli veya reçetesiz) aldınız?

- ☐ Geçen ay boyunca hiç
- ☐ Ayda 1'den az
- ☐ Ayda 1 veya 2 kez
- ☐ Ayda 3 veya daha fazla

8. Geçen ay araba sürerken, yemek yerken veya sosyal bir aktivite esnasında ne kadar

sıklıkla uyanık kalmak için zorlandınız?

- ☐ Geçen ay boyunca hiç
- ☐ Ayda 1'den az
- ☐ Ayda 1 veya 2 kez
- ☐ Ayda 3 veya daha fazla

9. Geçen ay bu durum işlerinizi yeteri kadar istekle yapmanızda ne derecede problem oluşturdu?

- ☐ Hiç problem oluşturmadı
- ☐ Yalnızca çok az bir problem oluşturdu
- ☐ Bir dereceye kadar problem oluşturdu
- ☐ Çok büyük bir problem oluşturdu

10. Bir yatak partneriniz var mı?

- ☐ Bir yatak partneri veya oda arkadaşı yok
- ☐ Diğer odada bir partneri veya oda arkadaşı var

- Partneri aynı odada fakat aynı yatakta değil
- Partner aynı yatakta

11. Eğer bir oda arkadaşı veya yatak partneriniz varsa ona aşağıdaki durumları ne kadar sıklıkta yaşadığınızı sorun.

(a) Gürültülü horlama

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(b)Uykuda iken nefes alıp verme arasında uzun aralıklar

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(c)Uyurken bacaklarda seğirme veya sıçrama

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(d)Uyku esnasında uyumsuzluk veya şaşkınlık

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

(e)Uyurken olan diğer huzursuzluklarınız; lütfen belirtiniz.....

- Geçen ay boyunca hiç
- Ayda 1'den az
- Ayda 1 veya 2 kez
- Ayda 3 veya daha fazla

## Appendix E: COVID-19 Scales

Aşağıdaki cümlelerden 1’den 5’e kadar “Kesinlikle katılmıyorum (1)”, “Katılmıyorum (2)”, “Kararsızım (3)”, “Katılıyorum (4)”, “Kesinlikle katılıyorum (5)” şeklinde değerlendiriniz.

### COVID-19 Hastalık Algısı Ölçeği (Perception of COVID-19 [**P-COVID-19**])

1. Bu hastalık söylendiği kadar tehlikeli değil.
2. Medya salgını abartıyor.
3. Virüs ölümcül bir hastalığa neden olmaktadır.
4. Bu hastalık herkese bulaşabilir.
5. Kolayca bulaşan bir hastalıktır.
6. Hastalığın kadınlara ve erkeklere bulaşma olasılığı benzerdir.
7. Virüs kargo veya alışveriş ürünlerinden bulaşabilir.

### COVID-19’un Nedenleri Algısı Ölçeği (Perception of Causes of COVID-19 [**PCa-COVID-19**])

1. Bu hastalık gelişmiş ülkelerin ortaya koyduğu politik bir oyundur.
2. Bu salgının nedeni gelişmiş ülkelerin ilaç ve aşı satma çabasıdır.
3. Bu virüs ekonomik sisteme katkı sağlamak için bilinçli olarak yayıldı
4. Bu hastalık biyolojik bir silah olarak üretildi.
5. Bu salgın büyük bir deneyin parçasıdır.
6. Bu hastalığın nedeni ekonomik krizdir.
7. Çevre kirliliği hastalığın önemli nedenlerinden biridir
8. Salgının nedenlerinden biri su kaynaklarının kirlenmesidir
9. Bu hastalık sağlıklı yaşam tarzının bir sonucudur.
10. Küresel ısınma salgının nedenlerinden bir tanesidir.
11. Bu tür salgınlar tabiatın dengesini kurması çabasıdır.

12. Bu tür salgınlar toplumun dinden uzaklaşmasına karşı Tanrının verdiği bir cezadır.
13. Bu salgın toplumsal bozulmaya karşı Tanrının bir gazabıdır.
14. Bu salgın kaderimizde var.

**COVID-19'dan Kaçınma Tutumları Ölçeği (Avoidance Attitudes from COVID-19 [AA-COVID-19])**

1. Hastalıkla ilgili haberlere maruz kaldığınızda dikkatinizi başka yere çevirmek
2. Hastalıkla ilgili konulardan söz edilirken başka şeyler düşünmek
3. Salgınla ilgili haberleri okumamak
4. TV'de hastalıkla ilgili haberler çıktığında kanalı değiştirmek
5. Hastalıkla ilgili konuşmaları sonlandırmak için konuyu değiştirmek
6. Hasta olmamak için sosyal etkinliklere katılmamak (sinema, tiyatro vs.)
7. Hasta olmamak için toplu taşıma araçlarına binmemek
8. Hasta olmamak için tanıdığınız insanlarla selamlaşırken onları öpmemek
9. Hasta olmamak için tanıdığınız insanlarla selamlaşırken ellerini sıkmamak
10. Hasta olmamak için umumi tuvaletleri kullanmamak