

## BELIEFS OF TURKISH UNIVERSITY STUDENTS IN COVID-19 CONSPIRACY THEORIES: THE ROLE OF FEAR OF COVID-19 AND POLITICAL ORIENTATION\*

### TÜRK ÜNİVERSİTE ÖĞRENCİLERİNİN COVID-19 KOMPLO TEORİLERİNE İNANÇLARI: COVID-19 KORKUSU VE POLİTİK EĞİLİMİN ROLÜ

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#### ABSTRACT

The main purpose of the study is to determine the level of Turkish university students' belief in the COVID-19 conspiracy theories. The study involves 676 university students from 52 cities in Turkey who are 18 to 36 years old ( $M = 22.21$  years,  $SD = 2.65$ ). The research is structured in two stages: Study 1 and Study 2. In Study 1, a valid and reliable measuring tool called the COVID-19 Conspiracy Theories Scale (CTCV-19S) is developed to determine the extent to which students believe in COVID-19 conspiracy theories. In Study 2, on the other hand, the level of Turkish university students' belief in COVID-19 conspiracy theories is examined using the CTCV-19S within the framework of the role of fear of COVID-19 fear and political orientation. As a result, it is found that Turkish university students believed in COVID-19 conspiracy theories at a higher rate than the general population, and there is a positive relationship between COVID-19 fear and COVID-19 conspiracy theories. It is also found that students with right-wing political views are more prone to believe in COVID-19 conspiracy theories.

**Keywords:** COVID-19 Conspiracy Theories, COVID-19 Fear, Political Orientation, University Students.

**JEL Classification Codes:** O47, O53, E13, R11.

#### ÖZ

Bu çalışma temel olarak Türk üniversite öğrencilerinin COVID-19 komplo teorilerine hangi düzeyde inandıklarını belirlemeyi amaçlamaktadır. Araştırmaya Türkiye'nin 52 şehirden yaşları 18 ile 36 yaşları arasında ( $ort = 22.21$  yaş,  $SS = 2.65$ ) olan 676 üniversite öğrencisi katıldı. Bu araştırma *Çalışma 1* ve *Çalışma 2* olmak üzere iki aşamada yapılandırıldı. *Çalışma 1*'de COVID-19 komplo teorilerine ne düzeyde inanıldığını belirlemeyi amaçlayan COVID-19 Komplo Teorileri Ölçeği (CV-19 KTÖ) adında geçerli ve güvenilir bir ölçme aracı geliştirildi. *Çalışma 2*'de ise geliştirilen CV-19 KTÖ ile Türk üniversite öğrencilerinin COVID-19 komplo teorilerine ne düzeyde inandıkları, COVID-19 korkusu ve politik eğilimin rolü çerçevesinde incelendi. Sonuç olarak Türk üniversite öğrencilerinin COVID-19 komplo teorilerine ortalamanın üzerinde inandıkları, COVID-19 korkusu ile COVID-19 komplo teorileri arasında pozitif ilişki tespit edildi. Ayrıca kendisini sağda konumlandıran öğrencilerin COVID-19 komplo teorilerine daha çok inandıkları bulundu.

**Anahtar Kelimeler:** COVID-19 Komplo Teorileri, COVID-19 Korkusu, Politik Eğilim, Üniversite Öğrencileri.

**JEL Sınıflandırma Kodları:** I18, I12, I31.

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## GENİŞLETİLMİŞ ÖZET

### Amaç ve Kapsam:

COVID-19 salgınının Mart 2020 itibarıyla tüm dünyayı sarmasıyla birlikte, Dünya Sağlık Örgütü harekete geçerek salgını, pandemi olarak duyurdu. Bu gelişmeye paralel bir biçimde pandemiyle ilgili yanlış bilgi salgını olarak kavramsallaştırılan infodemi ve komplo teorileri de arttı. Infodemi ve komplo teorileri, pandemiyle mücadelede ve pandeminin kontrol altına alınması konusunda önemli sorunlar meydana getirmektedir. Pandemiye karşı etkili politika geliştirilmesini zorlaştırmaktadır. Dolayısıyla Türkiye’de pandemiyle ilgili komplo teorilerine hangi ölçüde inanıldığının ve bu inancı etkileyen faktörlerin neler olduğunun incelenmesi önem taşımaktadır. Çalışmada komplo teorilerinin doğruluğunu yada yanlışlığını ölçmek yerine COVID-19 pandemisine ilişkin yaygın komplo teorilerine hangi düzeyde inanıldığı ve bunu etkileyen olası faktörlerin (yani COVID-19 korkusu, politik görüş) etkilerini inceliyoruz. Araştırma Çalışma 1 ve Çalışma 2 olmak üzere iki aşamada yapılandırıldı. Çalışma 1’de amacımız COVID-19 komplo teorilerine ne düzeyde inanıldığını belirlemeyi amaçlayan COVID-19 Komplo Teorileri Ölçeği (CV-19 KTÖ) adında geçerli ve güvenilir bir ölçme aracı geliştirmekti. Bu ölçeğin yapı geçerliğini test etmek üzere açımlayıcı faktör analizi (AFA) ardından doğrulayıcı faktör analizi (DFA) uygulandı. Çalışma 2’de ise geliştirilen CV-19 KTÖ ölçme aracı ile şu hipotezleri test etmek amaçlandı: Hipotez 1: COVID-19 korkusu ile COVID-19 komplo teorileri arasında anlamlı pozitif ilişki vardır. Hipotez 2: Sağ siyasi görüşe sahip olanlar COVID-19 komplo teorilerine daha çok inanmaktadırlar.

### Yöntem:

Araştırmada ilk olarak 685 katılımcıya ulaşıldı. Çalışma 1’de Türkiye’nin 52 şehrinden, 55 farklı üniversitede eğitim gören 676 katılımcı üzerinden analiz yapıldı. Katılımcıların demografik bilgileri ve ölçekler Google form aracılığıyla toplandı. Bu formda katılımcıların araştırmaya gönüllü olarak katıldıklarına dair onam formu, demografik bilgiler, COVID-19 komplo teorileri ile ilgili maddeler, COVID-19 korkusu içeren maddeler ve politik eğilimlerini belirleyen madde yer almaktaydı. Hazırlanan form 2021 yılı Nisan ayında üniversite öğrencilerinin bulunduğu sosyal medya (örn., Facebook, Twitter), WhatsApp grupları ve diğer online platformlarda paylaşıldı. Çalışmanın ikinci aşaması üniversite öğrencisi 676 katılımcı üzerinden analiz yapıldı. Katılımcıların politik görüşlerini belirlemek için 11 dereceli sol-sağ siyasi eğilim skalası kullanıldı (“0-4 = sol”, “5 = orta/merkez”, “6-10 = sağ”). Üniversite öğrencilerinin COVID-19 Komplo Teorilerine inanma düzeylerinin belirlenmesi için bu araştırmanın Çalışma 1 bölümünde geliştirilen COVID-19 Komplo Teorileri Ölçeği kullanıldı. 676 üniversite öğrencisinden oluşan örneklemin cronbach alpha katsayısı .92 olarak hesaplandı. Üniversite öğrencilerinin COVID-19 korku düzeylerinin belirlenmesi için orijinal versiyonu İngilizce olarak hazırlanmış COVID-19 Korkusu Ölçeğinin (Ahorsu vd., 2020) Türkçeye çevrilmiş (Bakioğlu vd., 2020) versiyonu kullanıldı.

### Bulgular:

Birinci aşamada Açımlayıcı faktör analizi (CV-19 KTÖ) için 338 katılımcı üzerinden analiz yapıldı. Ölçek maddeleri çoklu normallik varsayımlarını karşıladı (çarpıklık <3, basıklık <10; Weston ve Gore, 2006). AFA analizinde temel bileşenler analizi ve varimax döndürme kullanıldı. The Kaiser–Meyer–Olkin (KMO) değeri (.92) ve Bartlett’s küresellik testi  $\chi^2(78, N = 338) = 2903,525, p < .001$ , ölçeğin 13 maddeden oluşan halinin faktör analizi için uygun olduğunu gösterdi. Faktör belirleme sürecinde yamaç grafiği (scree plot) ve paralel analiz (PA; O’Connor, 2000) kullanıldı. Yapılan ilk analizde öz değeri 1’den büyük ve varyansın %65,98’ni açıklayan 2 faktörlü bir yapı ortaya çıktı. Faktör analizindeki ilk iki öz değer (7,01; 1,56), PA değerlerinden yüksekti (1,34; 1,25) ve bu durum CV-19 KTÖ iki faktörlü bir yapı olabileceğine dair ilk öneriyi sundu. Yol katsayıları 1. faktörde ,69 ile ,87, 2. faktöründe ,59 ile ,79 arasında değişmekteydi ve tümü anlamlıydı. Çalışmanın ikinci aşamasında COVID-19 korkusu ile COVID-19 komplo teorileri arasında anlamlı pozitif ilişki vardır (Hipotez 1) hipotezinin doğrulandığı görülmektedir. Ancak bu pozitif anlamlı ilişkinin düşük olduğu görülmektedir. Araştırmanın ikinci hipotezi olan sağ siyasi görüşe sahip olanlar COVID-19 komplo teorilerine daha fazla inanmaktadır (Hipotez 2) analizinde varyansların eşit olmadığı durumlar için kullanılan Brown-Forsythe testi kullanıldı. Katılımcılardan kendini sol, merkez ve sağda gören grupların komplo teorilerine inanma puan ortalamaları arasında anlamlı farklılık vardı. Komplo teorilerine en fazla inanan grup kendini sağda algılayanlardı. Bunu sırası ile kendini merkezde algılayanlar ve son olarak solda algılayan katılımcılar yer aldı. Bu sonuç, araştırmada kurulan Hipotez 2’nin doğrulandığını göstermektedir.

### Sonuç ve Tartışma:

Türk üniversite öğrencilerinin COVID-19 komplo teorilerine inanma düzeyini ölçmeyi amaçlayan CV-19 KTÖ adında geçerli, güvenilir bir ölçme aracı geliştirildi. Çalışma 2 aşamasında ilk olarak Türk üniversite öğrencilerinin hangi komplo teorilerine ne düzeyde inandıkları belirlendi. Tüm ölçeğin puan ortalaması 2,93 olarak tespit edildi. Katılımcıların en fazla inandıkları komplo teorisi “Koronavirüs (COVID-19), yapay olarak üretilmiş bir laboratuvar ürünü” olduğuna ilişkinken, bununla birlikte “Koronavirüs (COVID-19), yeni nesil cep telefonu teknolojisi olan 5G dalgalarıyla yayılmaktadır” komplo teorisi ise katılımcıların en az düzeyde inandıkları komplo teorisi olmuştur. Sonuç olarak araştırmamızın ilk hipotezi olan COVID-19 korkusu ile komplo teorilerine inanma arasında pozitif ilişkinin olmasıydı ve bu hipotezimiz desteklendi. Araştırmamızın ikinci hipotezi ise sağ siyasi görüşe sahip olanların COVID-19 komplo teorilerine daha fazla inanmalarıydı. Sağ siyasi görüşe sahip olan katılımcıların kendilerini merkez ve solda görenlere göre komplo teorilerine daha fazla inandıkları görülmüştür. Bu sonuç, ikinci hipotezimizin de doğrulandığını göstermektedir.

## 1. INTRODUCTION

COVID-19, which has engulfed the whole world, infodemic and conspiracy theories have been abundant about the pandemic (Duplaga, 2020). While conspiracy theories spread fast even before the digital age, it is no surprise that conspiracy theories concerning COVID-19 spread much faster now that social media is widely used (Andrade, 2020; Duplaga, 2020; Shahsavari et al., 2020). Some of these theories are not just false, but they can also be harmful and destructive (Sunstein & Vermeule, 2009). Anti-vaccination movement (Hornsey et al., 2020), links between AIDS and HIV (Ball, 2016; Ford et al., 2013; Hogg et al., 2017), and conspiracy theories about COVID-19 (Imhoff & Lamberty, 2020; Romer & Jamieson, 2020) poses serious risks to public health. For example, it is known that people believing in COVID-19 conspiracy theories are less compliant with rules such as paying attention to social distancing and wearing masks, which prevents taking scientifically proven measures to combat the pandemic (Romer & Jamieson, 2020). Bruder et al. (2013) stated in their research that belief in conspiracy theories in Turkey is higher than in Western countries (Germany, the UK/Ireland, the US). To prevent the spread of the pandemic and provide effective treatment against the disease, common understanding and actions need to be developed. Therefore, it is critical to examine the level of belief in conspiracy theories linked to the epidemic, as well as the variables influencing it, in the Turkish sample. As a result, it is thought that the findings of this study would contribute to both comprehending the conspiracy theories surrounding the epidemic and implementing possible precautions.

Although believing in conspiracy theories is typically viewed as unreasonable illogical (Melley, 2002), it is known that this tendency rises especially during times of uncertainty (Alper et al., 2020; Lewandowsky & Cook, 2020; Melley, 2002; van Prooijen & Acker, 2015), and when people feel powerless (Abalakina-Paap et al., 1999; Biddlestone et al., 2020; Melley, 2002; van Prooijen & Acker, 2015). Conspiracy theories often cover events that actually happened; but in explaining these events, they refer to powerful people who hide their roles and themselves until they reach their goal (Sunstein & Vermeule, 2009). According to Douglas et al. (2019), “conspiracy theories are attempts to explain the ultimate causes of significant social and political events and circumstances with claims of secret plots by two or more powerful actors” (p. 4). Goertzel (1994) explains this as part of the monological belief system of conspiracy belief, which forms the basis of conspiracy theories, and states that those with this thinking system use similar systems to explain ambiguous events. Common conspiracy theories found in the literature include the 9/11 Truth movement (Swami et al., 2010), and the death of Princess Diana (Douglas & Sutton, 2008). Although such conspiracy theories have political consequences, such as political disengagement (Jolley & Douglas, 2014); health-related conspiracy theories have more visible negative consequences (Hornsey et al., 2020). For example, treatment of HIV/AIDS have a discouraging effect on the delivery of preventive health services and participation in treatment programs (Bogart et al., 2010). Similarly, in Pakistan, there is a resistance to these treatments on the grounds that polio vaccine is made to sterilize Muslim men, (Andrade & Hussain, 2018), AIDS and sexual intercourse prevention measures are produced to reduce the population of black people (Ball, 2016; Bogart & Bird, 2003; Hogg et al., 2017), and that the HPV vaccine causes infertility (Craciun & Baban, 2012). Therefore, conspiracy theories about health prevent people from benefiting from health services and may even cause their deaths. The most popular conspiracy theory, which spread rapidly in countries all over the world with the pandemic, is the theory related to COVID-19. The COVID-19 conspiracy theory generally does not accept the existence of the pandemic (Imhoff & Lamberty, 2020). Other common conspiracy theories related to COVID-19 include that this virus was produced by China as a biological weapon (Andrade, 2020; Imhoff & Lamberty, 2020) and developed to disrupt the economic structures of some target countries by creating chaos (Duplaga, 2020). These beliefs about COVID-19 increase resistance to the vaccine, casting doubt on future vaccination, both for preventive behavior and to prevent the spread of the virus (Biddlestone et al., 2020; Duplaga, 2020; Imhoff & Lamberty, 2020; Romer & Jamieson, 2020).

Many factors influence believing in conspiracy theories. Studies have tried to determine who is more inclined to believe in conspiracy theories. These studies have shown that individuals who are male (Freeman & Bentall, 2017), have a low level of education (Alper et al., 2020; Duplaga, 2020; Freeman & Bentall, 2017; Goertzel, 1994; Uscinski & Parent, 2014; van Prooijen & Acker, 2015), a low economic level (Freeman & Bentall, 2017; Goertzel, 1994; Uscinski & Parent, 2014), a high level of paranoid ideation and are cognitively disorganized (Bruder et al., 2013), who have schizotypy, narcissism (Cichocka et al., 2016), and ethnic minorities (Freeman & Bentall, 2017; Goertzel, 1994) more tendency to believe in these theories. Another variable that affects believing in conspiracy theories is anxiety-inducing situations. Anxiety affects the social and political attitudes of individuals (Jost et al., 2007). Grzesiak-Feldman (2013) reported that state anxiety and trait anxiety were positively correlated with

conspiracy thinking about Jewish people, Germans, and Arabs. Existential threats and concerns about death experienced by individuals increase belief in conspiracy theories (Newheiser et al., 2011). Apart from existential concerns, situational anxiety also triggers this effect. Sullivan et al. (2010) state that even when there is no clear evidence in various situational threats, an enemy is created, and the effect of this enemy is exaggerated and thus control is attempted. Another important variable that forms the main axis of conspiracy theories is political views. Although some studies suggest that conservatism is more inclined to believe in conspiracy theories than liberalism (Hornsey et al., 2020; Miller et al., 2016; Romer & Jamieson, 2020), some other studies indicate that ideological polarization is more effective in believing in these theories (Oliver & Wood, 2014; Sutton & Douglas, 2020). Belief in conspiracy theories is stronger in both extremes of the political spectrum (Krouwel et al., 2017; Mancosu et al., 2017; van Prooijen et al., 2015). In this study, we defined those with right-wing orientations and those with left-wing orientations as groups with different orientations on similar political issues from each other like black and white as stated by Greenberg and Jonas (2003). Believing in conspiracy theories varies depending on how extreme these orientations are (i.e., extreme left or extreme right) rather than political orientation. In other words, although being on the extreme left and the extreme right increases the belief in conspiracies, it is seen that individuals on the extreme right have more belief in these theories (Alper et al., 2020; Jost et al., 2003; van Prooijen et al., 2015). In this context, unlike the linear spectrum, the "U-shaped" spectrum (Horseshoe spectrum, where extremes are close to each other) stands out. While it is not clear whether extremist attitudes are the result or cause of conspiracy theories, some studies suggest that conspiracy theories increase the trend towards political extremism (Barlett & Miller, 2010; Krouwel et al., 2017).

We are not saying that the conspiracy theories contained in this research are necessarily false. However, conspiracy theories often arise from the over-generalization of apparent incidental results and supporting them with scenarios that have no basis. In addition, instead of testing whether conspiracy theories are true, we examine the extent to which common conspiracy theories about the COVID-19 pandemic are believed and the possible factors affecting it (e.g., COVID-19 fear, political orientation).

Beliefs in conspiracy theories are known to have serious effects on society's reflexes. In this context, there is a limited number of studies on the extent to which conspiracy theories related to COVID-19, which affect the whole world, are accepted and the factors affecting it. Since conspiracy beliefs are not so easy to disprove (Uscinski et al., 2016), policies must be developed by learning more about this issue, and more efforts need to be made to control the spread of the highly contagious, mutated new coronavirus COVID-19, and to make the public adopt preventive behaviors and attitudes (Sanche et al., 2020; Van Bavel et al., 2020). In this way, the public can be better educated against the pandemic, and more concrete and persuasive strategies can be developed to break the resistance of the public who believe in these theories to stopping the pandemic.

## 2. THE PRESENT STUDY

This study was structured in two stages: Study 1 and Study 2. In Study 1, we aimed to develop a valid and reliable measuring tool called the COVID-19 Conspiracy Theories Scale (CTCV-19S) to determine the extent to which students believe in COVID-19 conspiracy theories. Exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA) was applied to test the structure validation of this scale. In Study 2, we aimed to test the following hypotheses with the developed CTCV-19S measuring tool:

Hypothesis 1: There is a significant positive relationship between COVID-19 fear and conspiracy theories related to COVID-19.

Hypothesis 2: Those with right-wing political orientation are more likely to believe in COVID-19 conspiracy theories.

## 3. STUDY I

### 3.1. Method

**Participants.** 685 participants were reached within the scope of the research, initially. 9 of these participants were excluded due to incomplete and incorrect information in the demographic information section. As a result, an analysis was made in Study 1 on 676 participants from 52 cities in Turkey who studied at 55 different universities. Participants ranged in age from 18 to 36 years old ( $M = 22.21$  years,  $SD = 2.65$ ), and 408 were girls (60%), and

268 were boys (40%). 59 (9%) of the participants had a chronic disease. 302 (48%) of the participants had one family member who survived COVID-19 and 154 (23%) had survived COVID-19. For EFA and CFA; we randomly divided the sample into two. The first half of the sample was between 18 and 36 years of age ( $M = 22.20$  years,  $SD = 2.74$ ), and EFA was used for a total of 338 individuals, 215 (64%) of who were girls, and 123 (36%) of whom were boys. The rest of the sample was between 18 and 36 years of age ( $M = 22.22$  years,  $SD = 2.57$ ), and CFA was used for a total of 338 individuals, 193 of whom were girls (57%), and 145 of whom were boys (43%).

**Procedure.** Ethical approval for the study was obtained from the XXXXXX University Research Ethics Committee (Ref: 27.05.2021, with the decision number: 10/24). Demographic characteristics of the participants and the scale data were collected through Google forms. This form included a consent form, stating that the individuals participated in the study voluntarily, demographic information, items related to COVID-19 conspiracy theories, items about fear of COVID-19, and items that determine their political orientation. Participants filled out the form in an average of 10 minutes. In April 2021, the prepared form was shared on social media (e.g., Facebook, Twitter), WhatsApp groups, and other online platforms that university students were actively using. In addition, the study authors asked colleagues working at different universities to share the research on similar social media platforms that students were using. According to the World Health Organization (WHO, 2021), Turkey was the country with the highest number of cases and mortality rates after India as of April 2021. As of April 2021, the number of daily cases ranged from 40,000 to 60,000 and the number of deaths ranged from 176 to 360 (Turkish Ministry of Health, 2021).

### 3.2. Development of the COVID-19 Conspiracy Theories Scale (CTCV-19S)

To determine what the conspiracy theories about the COVID-19 pandemic are, web pages where these conspiracy theories are shared, and social media platforms such as Twitter and Facebook were examined. Then, measurement tools aiming to measure different conspiracy theories in the literature, and in particular, the ones aiming to identify conspiracy theories about the COVID-19 were examined. Some of the scales were measuring the general tendency towards conspiracy thinking rather than a specific event (e.g., Brotherton et al., 2013; Bruder et al., 2013; Uscinski & Parent, 2014). The scales that made up a larger part of the literature were short self-report questionnaires about real-world events and situations. The ones measuring conspiratorial beliefs about specific real-world events or organizations, '9/11 Conspiracy Theories' (Swami et al., 2010), which measures 9/11 terrorist attacks, and Diana's death Likert-type scale (Douglas & Sutton, 2008), which measures the belief in conspiracy theories related to Princess Diana's death were among these studies. As a result of our literature review, we found two measuring tools developed directly to determine COVID-19 conspiracy theories. Duploga (2020) conducted a study using a scale called COVID-19-related Conspiracy Belief Scale (CCBS) with 1002 Polish. The study identified three common conspiracy theories related to COVID-19 (Items: "Coronavirus responsible for the COVID-19 pandemic is a result of genetic manipulations carried out by man", "The coronavirus news is made up to spread panic to achieve a political aim."). The answers ranged from "I decidedly do not agree" to "I decidedly agree" and were scored on a scale of "1" to "5" and the scores were summed up. Only internal reliability ( $\alpha = .73$ ) was used to assess the psychometric competence in the scale. Another study was conducted on 1088 adults in Turkey (Alper et al., 2020). In this study, the Belief in COVID-19 Conspiracy Theories Scale, consisting of the two items developed by the researchers (Item: "Coronavirus was developed and spread around the World by certain people for their own purposes") was used. Internal reliability (Cronbach's  $\alpha = .81$ ,  $M = 2.90$ ,  $SD = 1.73$ ) was used to assess psychometric competence in the scale, only. When other measurement tools developed related to the topic are evaluated in general, it is seen that most of them do not have analyses for basic psychometric competencies (i.e., Explanatory and Confirmatory factor analysis), but rather contain the analysis of Cronbach's alpha values (Brotherton et al., 2013). As a result of these reviews, 21 conspiracy theories were written in draft. The co-evaluation by an academic specialized in the development of measuring tools and researchers revealed that some of the items were identical or covered the other. Some of the items, on the other hand, contained very specific and little-known conspiracies (e.g., the virus was produced by Trump or Islamic extremist groups). As a result, the original application form consisting of 13 items was created. Participants reported the frequency of COVID-19 conspiracy theories on a 5-point Likert-type ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Higher total mean scores indicated a greater frequency of conspiracy theories related to COVID-19.

### 3.3. Results

**Exploratory Factor Analysis (CTCV-19S).** We conducted an EFA using SPSS 25 with data from half of the participants ( $n = 338$ ) drawn randomly by the SPSS program. Item distributions met recommendations for

univariate normality (skewness <3, kurtosis <10; Weston & Gore, 2006). The EFA was conducted with principal component analysis and varimax rotation. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy (.92) and statistically significant Bartlett’s test of sphericity  $\chi^2(78, N = 338) = 2903,525, p < .001$  indicated that the 13 items were suitable for factor analysis. The scree plot and parallel analysis were used in determining the factors (PA; O’Connor, 2000). The first analysis indicated two factors with Eigenvalues greater than 1 that explain 65.98% of the variance. The first two eigenvalues (i.e., 7.01, 1.56) in the factor analysis were higher than PA values (1.34, 1.25), and this offered the first suggestion that CTCV-19S could have a two-factor structure. For the whole CTCV-19S, Cronbach’s alpha reliability estimate was .93. The two-factor structure, factor loads, described variances, and Cronbach’s alpha values of the CTCV-19S were presented in Table 1:

**Table 1.** Result From the Factor Analysis of the COVID-19 Conspiracy Theories Scale (CTCV-19S)

| CTCV-19S Item  | Factor Loading |            |
|--|----------------|------------|
|  | 1              | 2          |
| <b>Factor 1</b>  |                |            |
| 2. Coronavirus (COVID-19) was produced as a biological weapon.   | <b>.89</b>     | .16        |
| 1. Coronavirus (COVID-19) is an artificially produced laboratory product.  | <b>.86</b>     | .12        |
| 4. Coronavirus (COVID-19) is a virus produced by global powers to plunge other countries' economies into crisis. | <b>.83</b>     | .29        |
| 3. Coronavirus (COVID-19) was developed by global powers to reduce the world's population.                       | <b>.82</b>     | .29        |
| 5. Coronavirus (COVID-19) is a virus that governments produce to achieve their anti-democratic goals.            | <b>.74</b>     | .31        |
| 6. Global powers want to create a new world order with coronavirus (COVID-19) by accelerating digitalization.    | <b>.63</b>     | .33        |
| 13. Coronavirus (COVID-19) is a project created by China to create a new world economy.                          | <b>.63</b>     | .33        |
| 10. Coronavirus (COVID-19) is a project aimed at rejuvenating the elderly population of developed countries.     | <b>.60</b>     | .42        |
| <b>Factor 2</b>  |                |            |
| 7. Coronavirus (COVID-19) is Bill Gates' project to implant chips in people and thus monitor them.               | .24            | <b>.80</b> |
| 12. Coronavirus (COVID-19) is an artificially produced virus to prevent pregnancy.                               | .31            | <b>.79</b> |
| 9. Coronavirus (COVID-19) is being spread by 5G waves, the next generation of mobile phone technology.           | .09            | <b>.79</b> |
| 11. The coronavirus (COVID-19) vaccine aims to change our genetic codes.   | .43            | <b>.72</b> |
| 8. Coronavirus (COVID-19) is a weapon developed by the United States to attack China.                            | .30            | <b>.68</b> |
| Eigenvalue   | 5.01           | 3.57       |
| % of variance  | 38.56          | 27.42      |
| Cronbach’s alpha ( $\alpha$ )  | .92            | .87        |

Note.  $N = 338$ . Main loadings are given in boldface.

**Confirmatory Factor Analysis.** We conducted CFA using AMOS 24 with data from the other half of the participants ( $n = 338$ ) drawn randomly by the SPSS program. Item distributions met recommendations for univariate normality (skewness <3, kurtosis <10; Weston & Gore, 2006). A second-order CFA was made to test the extent to which the latent structures of CTCV-19S consisting of 13 items and two factors predict belief in conspiracy theories. As a result of the analysis,  $\chi^2(62) = 162.694, p < .001, \chi^2/df = 2.624, SRMR = .051, CFI = .96, TLI = .95, IFI = .96,$  and  $RMSEA = .069$  indicate good fit statistic to the two-factor model (Hu & Bentler, 1999). All factor loadings were found to be significant ( $p < .001$ ). The path coefficients ranged from .69 to .87 in the first factor and from .59 and .79 in the second factor.

## 4. STUDY II

### 4.1. Method

**Participants.** Study 2 was analyzed with 676 participants who were university students. Participants ranged in age from 18 to 36 years of age ( $M = 22.21$  years,  $SD = 2.65$ ), and 408 were female (60%), and 268 were male (40%). 59 (9%) of the participants had a chronic disease. 302 (48%) of the participants had one family member recovering from COVID-19, and 154 participants (23%) recovered from COVID-19.

### 4.2. Measures

**Demographics.** This form includes information about the gender, age, city of residence, university of education, whether they or someone close to their family had COVID-19, and whether they had a chronic illness. The 11-point left-right-wing political orientation scale was used to determine the political orientations of the participants ("0-4 = *left-wing*", "5 = *center*", "6-10 = *right-wing*").

Conspiracy Theories related to COVID-19. The COVID-19 Conspiracy Theories Scale (CTCV-19S) developed in Study 1 of this research was used to determine the level of belief of university students in COVID-19 conspiracy theories. In the current sample, Cronbach's alpha reliability estimate was .92.

**Fear of COVID-19.** The Turkish-translated version (Bakioğlu et al., 2020) of the Fear of COVID-19 Scale (FCV-19S; Ahorsu et al., 2020), originally designed in English was used to determine the COVID-19 fear levels of university students. The scale translated into Turkish consisted of seven items, similar to the original version. Bakioğlu et al. (2020) supported the construct validity of the scale and FCV-19S was significantly and positively related to intolerance of uncertainty, depression, anxiety, and stress. Higher total mean scores indicated a greater frequency of fear of COVID-19. The Cronbach's alpha reliability estimate of one of the items "I am most afraid of coronavirus-19." in the original version was .72, while it was .88 in the version translated into Turkish. In the current sample, Cronbach's alpha reliability estimate was .89.

## 5. RESULTS

**Descriptive Data.** The extent to which the participants believed in each conspiracy theory item on the CTCV-19S scale is given in Table 2.

**Table 2.** Means and Standard Deviations of Responses to the Conspiracy Theory of COVID-19 Scale (CTCV-19S)

|   | Rating   |           |
|---|----------|-----------|
|   | <i>M</i> | <i>SD</i> |
| Coronavirus (COVID-19) is an artificially produced laboratory product.  | 3.58     | 1.18      |
| Coronavirus (COVID-19) was produced as a biological weapon.   | 3.54     | 1.23      |
| Coronavirus (COVID-19) is a virus produced by global powers to plunge other countries' economies into crisis. | 3.48     | 1.25      |
| Coronavirus (COVID-19) was developed by global powers to reduce the world's population.                       | 3.46     | 1.27      |
| Global powers want to create a new world order with coronavirus (COVID-19) by accelerating digitalization.    | 3.37     | 1.30      |
| Coronavirus (COVID-19) is a virus that governments produce to achieve their anti-democratic goals.            | 3.21     | 1.26      |
| Coronavirus (COVID-19) is a project created by China to create a new world economy.                           | 3.13     | 1.29      |
| Coronavirus (COVID-19) is a project aimed at rejuvenating the elderly population of developed countries.      | 2.90     | 1.34      |
| The coronavirus (COVID-19) vaccine aims to change our genetic codes.  | 2.62     | 1.32      |
| Coronavirus (COVID-19) is a weapon developed by the United States to attack China.                            | 2.50     | 1.24      |
| Coronavirus (COVID-19) is an artificially produced virus to prevent pregnancy.                                | 2.23     | 1.26      |
| Coronavirus (COVID-19) is bill gates' project to implant chips in people and thus monitor them.               | 2.18     | 1.24      |
| Coronavirus (COVID-19) is being spread by 5G waves, the next generation of mobile phone technology.           | 1.92     | 1.15      |

**Test of hypotheses.** When the data in Table 3 is examined, it is seen that there is a positive significant relationship between the fear of COVID-19 and COVID-19 conspiracy theories confirming Hypothesis 1 ( $r = 0.10, p < 0.05$ ). However, this positive significant relationship appears to be at a low level. In the analysis of Hypothesis 2 that those with right-wing political orientation are more likely to believe in COVID-19 conspiracy theories, Brown-Forsythe test and Dunnett's C posthoc tests were conducted in cases of equal variances not assumed. There was a significant difference between the average scores of believing in conspiracy theories of participants who perceived themselves on the left-wing, center, and right-wing  $F(2, 555) = 17.45, p < 0.01$ . The group that believed in conspiracy theories most were those who perceived themselves on the right-wing ( $M = 3.16, SD = .85$ ). This was followed by those who perceived themselves in the center ( $M = 2.88, SD = .86$ ) and finally participants who perceived themselves on the left-wing ( $M = 2.64, SD = .97$ ). This result indicates that Hypothesis 2 established in the research has been confirmed.

**Table 3.** Summary Data and Bivariate Correlations

| Variable                 | M     | SD   | 1      | 2    | 3     | 4    | 5 |
|--------------------------|-------|------|--------|------|-------|------|---|
| 1. Gender                | -     | -    | -      |      |       |      |   |
| 2. Age                   | 22.21 | 2.66 | .21**  | -    |       |      |   |
| 3. Political orientation | 5.43  | 2.37 | .11**  | -.01 | -     |      |   |
| 4. FCV-19S               | 2.36  | .99  | -.24** | -.03 | .07   | -    |   |
| 5. CTCV-19S              | 2.93  | .91  | -.04   | -.07 | .25** | .10* | - |

Note.  $N = 676$ . Gender (0 = female, 1 = male); FCV-19S = Fear of COVID-19 Scale; CTCV-19 Scale = COVID-19 Conspiracy Theories Scale; \* $p < .05$ , \*\* $p < .01$ .

## 6. DISCUSSION

Behavioral scientists continue to investigate the underlying mechanisms of conspiracy theories and what the possible consequences of these theories are. The fact that COVID-19 is an epidemic that is sweeping the world and experts state that mask, distance and hygiene are the most effective methods to protect against this pandemic, then expectations from vaccination and its failure to bring the desired level of results cause social events and uprisings in some countries. The experiences of people all over the world related to COVID-19 make them feel desperate and more afraid. This fear and desperation are two of the main emotions that feed conspiracy theories (van Prooijen & Acker, 2015). This leads to faster spread and general acceptance of conspiracy theories related to COVID-19. These theories are spreading at an incredible speed and extent through social media in today's internet age. This research was carried out in an environment where cases were rapidly increasing in many countries (e.g., Turkey, India) and an environment of fear and desperation of witnessing the deaths of many people. Therefore, this research aimed to determine to what extent conspiracy theories related to COVID-19 are believed, and how fear of COVID-19 and political orientation affects the belief in these theories.

In the first part of the research, a valid and reliable measuring tool titled CTCV-19S was developed, which aims to measure the level of Turkish university students' beliefs in this conspiracy theories. In the development of CTCV-19S, 13 items were prepared by examining existing scales related to conspiracy theories defined in the literature in general and specifically, the literature and social media platforms. These items were applied to different participating groups and their EFA and CFA analyses were performed and, as a result of these analyses, it was seen that the scale had structure validity. The CTCV-19S consisted of two dimensions: generally accepted conspiracy theories and specifically perceived conspiracy theories. Generally accepted conspiracy theories were theories that COVID-19 was artificially produced, that it was a biological weapon, that global powers used it to plunge countries' economies into crisis, which were widely trending on social media and expressed by many people. The second dimension of the scale included less common and limited-scale conspiracy theories, such as Bill Gates implanting chips in people and COVID-19 spreading through 5G mobile phone waves.

In Study 2, it was first determined to what extent Turkish university students believed in conspiracy theories. The average score of the entire scale was determined as 2.93. The conspiracy theories that the participants believed most are, respectively, as follows: "Coronavirus (COVID-19) is an artificially produced laboratory product ( $M = 3.58$ )", "Coronavirus (COVID-19) was produced as a biological weapon ( $M = 3.54$ )", and "Coronavirus (COVID-19) is a virus produced by global powers to plunge countries' economies into crisis ( $3.48$ )". Participants appear to

believe these conspiracy theories with a high average score. Additionally, it is seen that Turkish university students believe the following conspiracy theories less: "Coronavirus (COVID-19) is spread by 5G waves, the next generation of mobile phone technology ( $M = 1.92$ ), "Coronavirus (COVID-19) is Bill Gates's project to implant chips in people and thus monitor them ( $M = 2.18$ )", and "Coronavirus (COVID-19) is an artificially produced virus to prevent pregnancy ( $M = 2.23$ )". Participants find conspiracy theories with specific and technological purposes less credible, while they are more convinced that the virus is a laboratory-made biological weapon. In line with the research finding, Duploga (2020) stated that 46% of Polish adults believe that COVID-19 was a man-made virus. Our group of participants was university students who were considered to have a high level of education. The fact that education gives people a set of cognitive qualities increases their resistance to believing in conspiracy theories, and many studies indicate that those with high levels of education less inclined to believe these theories (Freeman & Bentall, 2017; Goertzel, 1994; Uscinski & Parent, 2014; van Prooijen & Acker, 2015). Similarly, Duploga (2020) states that believe in conspiracy theories related to COVID-19 low level of education. Again, the study conducted by Alper et al. (2020) in Turkey reports that those with a low level of education believe in conspiracy theories about COVID-19. Although there was no comparison in terms of education level in this study, our group of participants consisted of university students who were defined as having a high level of education. These students' average scores of conspiracy theories about COVID-19 were above our expectations. Previously studied conspiracy theories (e.g., 9/11 conspiracy theories, death of Princess Diana) are the kind that affects a part of society. However, the COVID-19 pandemic is a situation that has been affecting the whole world for a long time. Therefore, unlike previous conspiracy theories, COVID-19 conspiracy theories may have affected all individuals on a higher level than expected. The COVID-19 pandemic creates an extraordinary situation that causes individuals to experience serious health problems and even witness the deaths of people around them. "Scientific Advisory Board" has been established by the Ministry of Health to effectively manage the outbreak in Turkey. The Scientific Advisory Board advises the government's policies on the pandemic. However, since the beginning of 2021, criticism is rising in Turkey that there are some disagreements between the Scientific Advisory Board and the government, that the recommendations of the board are useless, and that the pandemic is getting worse. Turkish university students have been following the uncertainties and disagreements before the public via social media. These uncertainties and disagreements may have led university students who are more proficient in accessing information than other groups to believe more in conspiracy theories related to COVID-19. These findings show us that this theories spread throughout society, unlike previously known conspiracy theories, and after a while, these conspiracy theories became reality with social interaction. Considering that 14% of Turkey's population consists of university graduates (Turkish Statistical Institute [TSI], 2019), the remaining 86% are expected to believe in conspiracy theories related to COVID-19 more than university students who are our research group.

The first hypothesis of our research was that there was a positive relationship between fear of COVID-19 and believing in conspiracy theories, which was supported by our findings. Existential threats and concerns about death experienced by individuals increase the level of belief in conspiracy theories (Grzesiak-Feldman, 2013; Newheiser et al., 2011). Sullivan et al. (2010) state that various situational threats cause anxiety in the individual and, an enemy is created to cope with this anxiety even though there is no clear evidence. Many people in Turkey are witnessing people around them getting sick and losing their lives due to COVID-19. This may have caused many people to face the phenomenon of death and experience existential concerns. Therefore, a positive relationship between fear of COVID-19 and believing in conspiracy theories is expected. Although no strong relationship was found in our research, a positive significant relationship was found between these two variables.

The second hypothesis of our research was that those with a right-wing political orientation believed more in COVID-19 conspiracy theories. It was seen that participants with right-wing political orientation believed in conspiracy theories more than those who perceived themselves in the center and left-wing. This result indicates that our hypothesis has been confirmed. Studies indicate that conservatism are more inclined to believe in this theories (Hornsey et al., 2020; Miller et al., 2016; Romer & Jamieson, 2020). Similar to our research findings, Alper et al. (2020) stated in their study in Turkey that people with right-wing political orientation believed in COVID-19 conspiracy theories more. There are different opinions about the effect of political orientation on conspiracy theories. For example, some studies are emphasizing that believing in conspiracy theories varies depending on how extreme these orientations are rather than political orientation itself (Jost et al., 2003; van Prooijen et al., 2015). Some approaches describe the political orientations at the extremes in a "U-shaped" manner, in which the extremes converge to each other rather than being distant views at the linear spectrum. However, in

our research, those who perceived themselves as politically opposed in terms of believing in conspiracy theories were positioned far apart, as in the "linear spectrum". Although the generally accepted left-wing and right-wing expressions in the world are understood in a similar context in Turkey, these statements are understood in Turkey as a reflection of differentiation about piety and the place of religion in the public sphere, unlike Western democracies (Çarkoğlu, 2007). Those with left-wing views in Turkey generally represent a secular group with a high level of education (Çarkoğlu & Kalaycıoğlu, 2009). This group is critical of conspiracy theories because of their higher level of education. Besides, those who consider themselves on the right-wing in Turkey generally represent people with lower education levels and who perceive themselves as conservationists (Çarkoğlu, 2007). Identifying oneself on the right-wing or the left-wing in Turkey often expresses political orientations as different as black and white. Turkey has been governed by The Justice and Development Party (AKP) for the past 19 years. Although the current government was initially perceived by many as successful in managing the pandemic process, it has recently faced serious criticism. The AKP leaders, described as a right-wing conservative party, chose to explain the causes of many social events, starting with the Gezi Park Protests in 2013 until before the pandemic, with conspiracy charges (Nefes, 2017). For this reason, AKP has been trying to consolidate its voters in the form of "we" and "others" in an increasingly polarized society by creating a "conspiratorial climate" in the country for a long time (Karaosmanoğlu, 2021; Yılmaz, 2017). Given that ideological polarization is effective in believing conspiracy theories (Oliver & Wood, 2014; Sutton & Douglas, 2020), the political polarization climate in Turkey is associated with a "conspiratorial climate". As an extension of this climate, the AKP government has tried to lay its failure in managing the pandemic on "external powers" and "obscure actors". The rhetoric of "external powers" and "obscure actors" directly includes the definition of conspiracy theories (Douglas et al., 2019; Goertzel, 1994). On the other hand, Islamic communities on the far right in Turkey resisted the full government lockdown due to the pandemic during Ramadan [the holy month of fasting by Muslims] which began in April 2021, and say that they are using COVID-19 as an excuse for Muslims to stray away from Islam. These communities are also strongly critical of the government's use of the pandemic as an opportunity for its own anti-democratic practices (Ilkha, 2021).

Studies agree that health-related conspiracy theories have detrimental consequences (Ball, 2016; Ford et al., 2013; Hogg et al., 2017; Hornsey et al., 2020; Imhoff & Lamberty, 2020; Romer & Jamieson, 2020). Our study showed that university students, with high levels of education, believed in conspiracy theories related to COVID-19 at a level above average. People with low levels of education are more likely to believe in this theories (Bentall, 2017; Duplaga, 2020; Freeman & Goertzel, 1994; Uscinski & Parent, 2014; van Prooijen & Acker, 2015). Considering that approximately 70% of Turkey's population does not have a university degree, it can be said that most of the population believes in conspiracy theories related to COVID-19 at a high level. Since 1990, a majority of the Turkish voters have been ideologically on the right-wing (Çarkoğlu, 2020), which reinforces the possibility that a large part of the population believes in such conspiracy theories at a high level.

We believe that the findings from this research contribute to the literature. The first of these contributions is the development of a valid and reliable measuring tool to determine what the common conspiracy theories about COVID-19 are and to what extent they are believed. Since belief in conspiracy theories related to COVID-19 affects resistance to preventive behavior against the spread of the virus (Romer & Jamieson, 2020), it is critical to confront the knowledge about conspiracy theories. The findings of this research will contribute to taking the recommendations of health authorities seriously and supporting health workers who are fighting the pandemic one-on-one. The mainstream media needs to be more sensitive to the potential negative consequences of believing in conspiracy theories related to COVID-19. Political parties, which are effective in directing especially the people with right-wing orientation, should avoid rhetoric that explicitly or implicitly supports conspiracy theories about COVID-19. National leaders, taken as models, are known to be influential in preventing the spread of conspiracy theories (Andrade, 2020). Implying or implying that they believe in the theories in question by national leaders can lead to greater public focus on these theories.

## 7. LIMITATION AND FUTURE RESEARCH

As with any research, there are limitations to this research. In this study, the beliefs of Turkish university students in COVID-19 conspiracy theories were examined in the context of fear of COVID-19 and political orientation. Previous research on the subject has shown that conspiracy theories are dynamic and influenced by changing real-life events. We carried out this research in April 2021, when Turkey had had the highest number of pandemic-related cases and deaths since March 2020. This period coincided with a period of prolonged full lockdowns when

some of the population was opposed to full lockdowns due to economic problems. The findings that we obtained during the peak period of the pandemic in Turkey may have led to a higher level of belief in this theories related to COVID-19. We think that these levels will change at different times.

In our research, we found that people with a right-wing political orientation are more likely to believe in COVID-19 conspiracy theories. This finding was consistent with the literature (Hornsey et al., 2020; Miller et al., 2016; Romer & Jamieson, 2020). Since the right-wing political orientation in Turkey operates mostly within cultural disintegration through piety (Çarkoğlu & Toprak, 2006), we recommend that similar future research be carried out comparatively in countries with different political cultures. Bruder et al. (2013) stated in their research that belief in conspiracy theories in Turkey is higher than in Western countries (e.g., Germany, the UK/Ireland, the US). Comparative studies in different countries using CTCV-19S developed within the scope of the research will also be valuable to uncover the differences between countries. The items of the CTCV-19S scale were prepared to take into account the COVID-19 conspiracy theories previously mentioned in the literature, especially those on social media and related web platforms. However, the dynamic nature of conspiracy theories can lead to the emergence of new conspiracy theories. In addition, different conspiracy theories can emerge in different countries. We didn't include some of these conspiracy theories in our measuring tool because they weren't common. For future studies on the subject, we recommend that more comprehensive evaluations be made by including new conspiracy theories that will arise with the course of the pandemic.

Due to the limitations of the pandemic, we used a Google form to collect data from the participants instead of face-to-face interviews. In this way, we reached students from 55 different universities in 52 different cities of Turkey. Although this method allowed us to obtain more inclusive and generalizable data from many different parts of Turkey, we do not ignore the limitations of online applications. We think this should be evaluated within the limitations of our research.

## DECLARATION OF THE AUTHORS

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