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ARE GEERT HOFSTEDE'S CULTURAL DIMENSIONS CORRELATED WITH PANDEMIC STATISTICS WORLDWIDE?

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Research Article

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ABSTRACT

The COVID-19 pandemic, which started in China in 2019 and was seen in many parts of the world in a short time, has affected individuals and communities with quarantine and public health regimes. Like every event that has taken place at the global level, the COVID-19 pandemic has affected societies differently, and societies have different attitudes and reactions to the pandemic. Many historical, political, and economic factors can influence societies' attitudes and behaviors towards events. Culture is important, perhaps the most important variable in the context of the lives of societies and individuals, their attitudes towards social developments, and their behavior. The dimensions of culture, theorized by Geert Hofstede, compare societies in six dimensions, provide information about the lives of societies, and help to predict possible behavior. This study examines the relationship between the statistics of total cases, total deaths, new cases, new deaths, total cases per 100,000 people, total deaths per 100,000 people, new cases per 100,000 people and new deaths per 100,000 people from the pandemic statistics published continuously during the COVID-19 pandemic and the cultural dimensions determined by Hofstede. For this purpose, pandemic statistics of the 100 countries with the highest number of cases on 7 dates during the COVID-19 pandemic were taken as a sample and analyzed with Hofstede's culture dimension scores. At the end of the study, it was revealed that there was a significant inverse correlation between the power distance and long-term orientation scores of the countries and the COVID-19 statistics. In contrast, individualism and uncertainty avoidance scores correlated significantly positively with COVID-19 statistics. The findings related with high uncertainty avoidance may be explained by Extended Parallel Process Model. No significant correlation was found between countries' masculinity scores and COVID-19 scores. As a result of the study, it was revealed that there were significant relationships between the cultural dimension scores of the countries and the COVID-19 statistics.

Key Words: Geert Hofstede, Culture, Cultural Dimensions, Pandemic, COVID-19

GEERT HOFSTEDE'NİN KÜLTÜREL BOYUTLARI DÜNYA ÇAPINDA PANDEMİ İSTATİSTİKLERİ İLE İLİŞKİLİ OLABİLİR Mİ?

ÖZ

2019 yılında Çin'de başlayan ve kısa sürede Dünyanın birçok yerinde görülen COVID-19 pandemisi, karantina ve halk sağlığı çalışmaları ile bireyleri ve toplumları etkilemiştir. Küresel düzeyde gerçekleşen her olay gibi COVID-19 pandemisi de toplumları farklı şekilde etkilemiş ve toplumlar pandemiye farklı tutum ve tepkiler gerçekleştirmiştir. Toplumların olaylara yönelik

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tutum ve davranışlarındaki farklılıklar çeşitli tarihsel, siyasal, ekonomik birçok değişken tarafından etkilenebilir. Kültür, toplumların ve bireylerin yaşayışları, toplumsal gelişmelere yönelik tutumları, davranışları bağlamında önemli, belki de en önemli, değişken olarak yer almaktadır. Geert Hofstede tarafından kuramsallaştırılan ve toplumları altı boyutta karşılaştıran kültür boyutları toplumların yaşamları hakkında bilgiler vermekte ve olası davranışları tahmin etmeye yardımcı olmaktadır. Bu çalışma, COVID-19 pandemisi sırasında sürekli yayınlanan pandemi istatistiklerinden; toplam vaka, toplam ölüm, yeni vaka, yeni ölüm, 100.000 kişiye düşen toplam vaka, 100.000 kişiye düşen toplam ölüm, 100.000 kişiye düşen yeni vaka ve 100.000 kişiye düşen yeni ölüm istatistikleri ile Hofstede tarafından belirlenen kültürel boyutlar arasındaki ilişkiyi incelemektedir. Bu amaçla, COVID-19 pandemisi süresince belirlenen 7 tarihteki, vaka sayısı en yüksek olan 100 ülkenin pandemi istatistikleri örneklem olarak alınmış ve Hofstede'nin kültürün boyut skorlarına göre analiz edilmiştir. Çalışma sonunda, ülkelerin güç aralığı ve uzun dönem odaklılık skorları ile COVID-19 istatistikleri arasında anlamlı ters korelasyon bulunduğu ortaya konmuştur. Buna karşın, bireysellik ve belirsizlikten kaçınma davranışı skorları COVID-19 istatistikleri ile anlamlı doğru korelasyona sahiptir. Elde edilen belirsizlikten kaçınma boyutu bulguları, Genişletilmiş Paralel Süreç Modeli ile açıklanabilir. Ülkelerin erillik skorları ile COVID-19 skorları arasında anlamlı bir korealasyon bulunamamıştır. Sonuç olarak ülkelerin kültürel boyut skorları ile COVID-19 istatistikleri arasında anlamlı ilişkiler olduğu ortaya konmuştur.

Anahtar Kelimeler: Geert Hofstede, Kültür, Kültürel Boyutlar, Pandemi, COVID-19

INTRODUCTION

Aim of this paper is to reveal the relationships between Hofstede's cultural dimensions and COVID-19 statistics. Culture, as described as one of the most influential bases of social sciences and social life, shapes individuals and societies daily life. The description of culture is very broad and has many definitions. First of all, culture is described as the activity or phonemena of growing or tending to something; it is related to the first meaning of culture as agricultural work. Second, culture is described as a form of cultivation for the mind and citizen. The most broad and inclusive description of the culture is the way of livinglive. (Higmore, 2016) The culture and its dimensions are defined by two different scholars, Hofstede and Trompenaars. Geert Hofstede defines culture as collective programming of the mind. It manifests not only in values but also in symbols, heroes, and rituals (Hofstede, 2003). Hofstede defines six cultural dimensions. Hampden, Trompenaars and

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Trompenaars (1995) define culture in seven ways that show how countries become rich. These seven ways are underlined as universalism vs. particularism, analyzing vs integration, individualism vs communitarianism, inner directed vs outer directed orientation, time as sequence vs. time as synchronization, achieved status vs ascribed status, and equality vs hierarchy (Hampden, Trompenaars, & Trompenaars, 1995). As cultural dimensions and culture are defined and analyzed by Hofstede, Hampden, Trompenaars and Trompenaars; Schwartz argued that these explainations are not exhaustive and Hofstede's dimensions can not fully reflect national culture also his samples are not reprensatative of whole population in terms of education, technological and scientific backgorund and exposure to modernization. Cultural values also can be different at individuals level (Drogenjik, Slangen, 2006). Schwartz defines seven cultural dimensions of values in three pairs. These are: Embeddedness (Conservatism) versus Autonomy, autonomy divides into two sub groups; affective autonomy versus intelletual autonomy, mastery versus harmony and hieararcy versus egalitarianism (Schwartz, 1992). Schwartz's dimensions are positioned in two opposite polars. Therefore, cultural dimension studies can be regarded similar. In this paper, COVID-19 statistics are analyzed to discover relationships with Hofstede's cultural dimensions.

1) COVID -19

On December 31, 2019, the China World Health Organization country office reported COVID-19, also known as Coronavirus. On January 13, 2020, the Thai Ministry of Health reported the first case, and in a week, Japan and Korea reported the first cases. On the 9th of January, first deaths were reported in Whuan China (WHO, 2020). The United States reported the first COVID-19 case on the 20th of January. On January 24, France became the first European country to report cases (NewsSky.com, 2020). As cases are reported around the globe, World Health Organization declared spread of COVID-19 as a pandemic on March 11. Therefore, COVID-19 became a worldwide public health emergency (WHO, 2020). As a pandemic declared all around

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the world, people and governments began to think about how to cope with that pandemic. As there was no proven medicine or vaccine, there was a risk that many people get infected quickly and the health system in every country may be overwhelmed. To reduce the infection and containment by the virus, many countries have started quarantine regimes. China had already started quarantine on the 22nd of January in Wuhan. Also, many countries have adopted travel restrictions and mandatory quarantine for people who came from abroad. Quarantine regimes were not only used for infected patients but also curfews were declared and time that could be used for shopping was restricted. Quarantine regime and travel restrictions were not only significant measures to contain the virus; people were obliged to have face masks on public places, keep social distancing, and be more carefull to personal hygiene. Many companies and education institutes have begun distance work and education. As these measures were implemented worldwide, they had a big impact on peoples mental health and psychological well-being. Panic buying of food and hygiene products was the first sign of the fear caused by the virus. Distance working, loneliness, fear of getting infected, economical difficulties caused by quarantine regimes, lack of social support from family, and romantic partners caused anxiety, depression, and stress (Çelik, Karakebelioğlu, & Güloğlu, 2022).

Curfew is one of the strategies that could be used to deal with COVID-19 by reducing social interaction in order to keep cases under control until reaching herd immunity, also known as population immunity. Herd immunity could be reached in two ways. The first and less painful way for the society was vaccination. Another method was indirect protection by applying free spread of infection to gain immunity with infection. Infections could develop immune against the virus; however, how long that immune would last was unknown. The second way could cost many cases, suffering and lives, and it is scientifically problematic and unethical; therefore, WHO supported herd immunity by vaccination (WHO, 2020). Until the effective vaccines are developed and mass vaccination campaigns are achieved, restrictions had to be implemented.

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Government and non- government agencies have provided statistics to track the infection, predict the spread of the virus, and improve decision making for policy makers. Policy makers used the data to plan the health system, the production of required medicine and medical products, and to improve or loosen restrictions. The data shared by governments was not standardized and varied. Some countries report only cases or deaths, while some countries report critical cases and recovered cases. When vaccines were developed and mass vaccination was started, these data are also reported. The World Health Organization has been published theses datas and visualize the data according to country and continent. It also shares the public health and social measures severity index, which describes country policies related to COVID-19 measures. (WHO, 2022)

2) DIMENSIONS OF CULTURE

Culture is the most important and hard to examine topics of social sciences. Defining the culture is as hard as examining it. Culture is also defined in many ways that suggest just how broad it is. Culture is defined *as "(1) a body of intellectual work, (2) a process of spritiual and intellectual development, (3) the values, customs, beliefs, and symbolic practices by men and women, or (4) a whole way of life"* (Eagleton, 2016, p.1). Therefore, culture can be defined as everything between human beings and nature because every aspect of culture, values, and beliefs shape human interactions with nature and other societies. While defining culture is such a hard task, comparing the culture of different countries is also hard. Comparing cultures between countries does not imply a country is more civilized or developed than other. Comparing cultures use specific measures (value categories or dimensions) to define differences between countries. It gives insight about behavioral differences that can not be explained by any demographic or economic factor (Hofstede, 2003).

Cultural dimensions that are defined by the Dutch social scientist Geert Hofstede are extensively used by global researchers. Cultural dimensions are divided into six categories. Every country has a value related to a given dimension. Values for each country are updated yearly and published on the website (Hofstede-insights,

2023). These values can be used in many researches and countries can be compared online without a charge. The values can be different at individual levels. After long cross-country and cross-culture research, cultural dimensions are determined (Hofstede, 2011). Each country is valued relative to other countries. The six dimensions are as follows;

• *The many approaches to the fundamental issue of human inequality are tied to power distance.*

• *Despite an uncertain future, stress in society is linked to uncertainty avoidance.*

• *The integration of individuals into primary groups is related to individualism vs collectivism.*

• *Masculinity versus femininity is related with cultural gender.*

• *Long-term versus short-term orientation in relation to the decision of where to direct people's efforts: The future or the present and past.*

• *The dichotomy of indulgence vs restraint, which contrasts the satisfaction of basic human desires with their control in order to enjoy life.*

Cultural dimensions provide behavioral and cultural ideas about countries. Each dimension explains another aspect of culture and society. The first of six dimensions is power distance. Power distance defines equal distributions of power and less powerful members of organizations. In other words, power distance is conceptualizes as how much inequalities that exist between some (certain) groups in a society are perceived as normal, acceptable, or taken as granted. Accordingly, in high (large) power distance cultures, people accept these possible hierarchies or inequalities based on many things and do not try challenging them. Whereas in low (small) power distance cultures, people do not take any existing hierarchy or inequalities and try to challenge, reduce or eliminate them. Therefore, power distance is not related to how much inequality exists at a certain time point in a society but how much people in this society/culture tolerate inequalities. High power distance cultures can be said to

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tolerate existing inequalities, whereas low power distance cultures do not tolerate and try to either prevent or terminate them. Furthermore, in high power distance cultures, dependency, hierarchy, importance of social status, obedience, lower physical activity, less travel, and personal communication for decision making are higher compared with low power distance cultures. Usually, Asian, Latin, and African countries have higher power distances than European countries.

The second dimension of culture is uncertainty avoidance that defines society's intolerance for unstructed, novel, suprising, unknown and unusual situations, in other words uncertainties. In high uncertainty avoidance cultures, people do not like uncertainties and whenever, wherever, and however uncertainties exist, they immediately try to avoid, clarify, eliminate, or mitigate them, so such cultures can be considered 'control-loving'-on-everyting-cultures. On the other hand, low uncertainty avoidance cultures are quite tolerable, happy, and relaxed with uncertainties and they do not bother them, so, such cultures can be considered 'care-free'-on-everyting-cultures. The uncertainty avoidance dimension of Geert Hofstede is not related to how much uncertainty exists at a certain time point in a society but how much people in this society/culture tolerate uncertainties in it. Cultures with strong uncertainty avoidance tend to have higher stress, anxiety, emoniality, process orientation, unsatisfaction with life, fear of bacteria, cleaning, and respect to experts and academics compared with cultures with low uncertainty avoidance.

Another dimension of culture is individualism versus collectivism, which defines the degree to which people are integrated into groups. In individualistic cultures, people are responsible for or take care of either themselves or their immediate families, and personal (immediate family's) opinions, decisions, interests or benefits are favoured against any (other) group's opinions, interests or benefits. Whereas in collectivistic cultures, people belong to groups, and not individuals themselves but the groups they belong to take care of these individuals in return for loyalty, so in collectivistic cultures the group opinions, decisions, interests or benefits are favoured against individual opinions, decisions, interests or benefits and people in groups try not to put down the face of the group or its members. In individualistic cultures,

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individual performances are more favoured, thus they are more task-oriented cultures; however, in collectivistic cultures, group performance is favoured more, thus they are more relationship-oriented cultures. Individualistic cultures have higher identity, unique personality, independence, curiosity, variety, adventure, privacy, and explicit verbal communication than collectivistic cultures.

Another dimension of culture is masculinity versus feminity, which defines a culture's gender equality of males and females. Masculin cultured tends to be more success oriented, competitor, status seeker, role differentation, and dominance in social relationships. Competing, winning, hegemony or dominance over others, bigness, fasteners (fast-food), and showing off are favoured and losers are pitied in masculine cultures. Whereas in feminine cultures, caring for other people, negotiations (rather than dominance), modesty, smallness, and slowness (slow-food/slow city) are favoured and sympathy and empathy are felt for second comers (not losers). Therefore, masculinity vs. femininity can be considered cultural gender and they do not directly represent biological genders as according to research (Stedham & Yamamura, 2004). Women may have masculine and men may have feminine cultural gender or in other words personality or characteristics.

Another dimension of the culture is long term versus short-term orientation, which means if people focus on the future or to the past and present. The long-term dimension is developed lately than the above four dimensions mainly to distinguish Western cultures from Eastern cultures by geographical positions. So that with exceptions Eastern cultures are mostly (less or more) long-term oriented cultures, and Western cultures are mostly (less or more) short-term oriented cultures, so it is not surprising that many Middle-East cultures score on the middle in the long-term orientation scale as they are also in the middle of the classic world map but neither on the East nor on the West. In short-term oriented cultures, people tend to consider the future before acting now, if they foresee that a possible behavior will benefit them in the future, they choose to do it now, and if they choose not to do it provided they predict this behavior will harm them in the future, which can be considered living in the future. However, short-time oriented cultures can be said to live rather in the past

or in current time mostly, and as Nike's (an American and thus a short-time oriented culture's brand's) favorite slogan says, they "just do it" without considering the future consequences of things or their behaviors much. Long-term oriented countries tend to have higher literacy, written communication, pragmatism, self-reliance, higher price consciousness, and value consciousness compared to short-term oriented cultures (Calabrase, Capece, Costa, & Di Pillo, 2015).

Last but not least dimension of culture is indulgence versus restraint that includes the degree of happiness people have, control they have on their lives, and importance of leisure. In indulgent cultures, people tend to follow up, run after their wishes, desires, expectations, and seek gratification fulling their current or existing dreams, motivations, or goals, mostly instantly without delaying them, postponing them, or canceling them in time. On the other hand, in restraint cultures, oppositely, people tend to postpone, delay, or cancel the gratifications they might have fulling their desires, wishes, wants, or expectations either to a later time or perminantly thus they restrict themselves from having certain pleasures which they might have had if they had run after them. Usually indulgence is more likely to prevail in South and North America and West Europe; however, restraint is more common in Eastern Europe, Asia, and the Muslim World. Indulgence cultures tend to have more happines, higher freedom of speech, more people who do sports, and a perception of personal life control. Restraint cultures tend to have less happy people, less remembered positive emotions, and a perception of helplessness (de Mooij, 2021).

Cultural dimensions affect life in a society in many ways; daily life, economic development, political institutions, interpersonal relationships, peoples perceptions about themselves, and their health are affected by cultural dimensions. Their attitudes towards, advertising, communications and publicity are also affected by cultural dimensions (Sigurdsson, Mennon, Hallgrímsson, Larsen, & Fagerstrøm, 2018).

So far, the relationship between COVID-19 related situations or statistics and cultural dimensions of Geert Hofstede has been inquired in a few research (Atalay & Solmazer, 2021; Dheer, Egri, & Trevino, 2021; Gokmen, Baskici, & Ercil, 2021; Dang

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& Xiao, 2022; Duarte, Moro, & Da Silva, 2022; Kamp, Gibaja, San Martin, & Turiel, 2023; Koompai & Royer, 2022; Lajunen, Gaygısız, & Gaygısız, 2022; Nair, Selvaraj, & Nambudiri, 2022; Kaya & Güngör, 2022; Cheng, Ying, Ebrahimi, & Wong, 2023; Chang & Wu, 2023; Chen & Biswas, 2023).

Accordingly, Cheng, Ying, Ebrahimi, and Wong (2023), in a meta-analysis of 44 nations found that "in countries with higher levels of uncertainty avoidance, unexpected positive associations are found between the social support seeking style and anxiety symptoms." So in high uncertainty avoidance countries, people tend to seek more social support. However, as the authors argue; during the pandemic, the level of social support was highly limited owing to the restrictions. The authors continue to explain this finding as:

> "Although information support can still be obtained online in the digital age, the strong need for social support may not be fully gratified due to the prevalent problems of fake news and misinformation (e.g., Germani & Biller-Andorno, 2021; Siebenhaar et al., 2020), which in turn elicited greater psychological symptoms in the initial wave of the pandemic (e.g., Cheng et al., 2020; Rocha et al., 2021). Therefore, the positive association between the social support seeking style and anxiety symptoms obtained in countries with higher uncertainty avoidance may reflect the failure of gratifying the heightened need for social support among their residents in this highly uncertain period."

Lajunen, Gaygısız, and Gaygısız (2022) with correlation analyses of between 65 to 153 countries empirically identified that COVID-19 deaths per capita and excess mortality are significantly associated with (high) uncertainty avoidance in country-cultures and uncertainty avoidance is found to be the only cultural dimension that is significantly correlated with COVID-19 deaths.

Duarte, Moro, and Da Silva (2022), analyzing on 101 countries, found individualism to be one of the mostly (positively) correlated metrics with COVID-19 statistics. Furthermore, the authors found (high) power distance to be negatively correlated with new COVID-19 cases per million, intensive care unit COVID-19 patients per million, hospitalized patients per million, and new COVID-19 tests per

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thousand. Uncertainty avoidance is also found to be positively and at-low-level correlated with many COVID-19 statistics. Lastly, long term-orientation is found to be again positively correlated with many COVID-19 statistics, especially with intensive care unit COVID-19 patients per million, and hospitalized patients per million.

According to Nair, Selvaraj, and Nambudiri's (2022) meta-analytic inferences: "The cultural dimension of collectivism is positively related to higher engagement in COVID-19 protective behaviors such as mask wearing and social contact avoidance, compared to more individualistic cultures."They have also concluded that: "Adherence to health policy guidelines and government mandates and restrictions to curb the spread of COVID-19 is higher in high power distance countries than in low power distance countries." Furthermore, they have deducted that low uncertainty avoidance countries have a higher adoption tendency or tolerance to COVID-19 restriction measures which makes them advantageous in coping with COVID-19. Whatsmore, that have noted that, long-term oriented cultures would be more advantegous in coping with COVID-19 as they would apply protective behaviours towards COVID-19 more highly.

Kamp, Gibaja, San Martin, and Turiel (2023), considering 15 countries, identified individualism and power distance to have the most exploratory power on adoption of respective COVID-19 measures. Thus; in these countries, as the power distance increases complying with COVID-19 measures were found to increase as well, and as individualism increases complying with COVID-19 measures were found to decrease that again make high-power-distant and individualistic cultures more advantagous in coping with COVID-19. They also identified that long-term orientation was at low level, negatively correlated with adoption of COVID-19 protective behaviors.

Dang and Xiao (2022); covering 50 US states and 133 other countries/territories in their analysis also found by using objective mobility data generated by Google users all over the world between 1 March 2020 and 31 December

2021 that people in more collectivist regions decreased their use of and time spent in specific public spaces like parks throughout this research period.

Dheer, Egri, and Trevino (2021), in a longitudinal time series study covering 107 nations and focusing on the first 91 days of the pandemic identified that the increasing rate of COVID-19 instances is positively impacted by individualism and uncertainty avoidance, while negatively impacted by power distance and masculinity. Early government stringency slowed the spread of the pandemic, according to three-way interaction analyses between time, government strictness, and culture. This attenuation effect was more pronounced in collectivistic than in individualistic nations, as well as in high power distance nations.

Koompai and Royer (2022), in their study in 26 European countries during the COVID-19 pandemic between April 2020–March 2021 researched the relationship between cultural dimensions of Geert Hofstede and the perceptions of the quality of life of the respondents with a stepwise multiple regression analysis. It was discovered that, particularly in Eastern European and Latin American countries, countries with higher power distance and more uncertainty avoidance had lower quality of life during the COVID-19 pandemic.

Kaya and Güngör (2022), during the pandemic, in Isparta, Turkey, with totally 300 individuals over 18 chosen by convenience sampling has investigated the relationship between the two cultural dimensions of Geert Hofstede (collectivism/individualism and uncertainty avoidance) as independent variables and the 5 dimensions of compliance with pandemic measures (compliance with social distancing measures, compliance with official measures, compliance with vaccination policies, compliance with hygiene measures, avoiding public gatherings) as the dependent variables. Collectivism and uncertainty avoidance is especially meaningful for Turkey because Turkey is according to Hofstede (https://www.hofstede-insights.com/country-comparison-tool) a collectivistic country and also high in uncertainty avoidance. The authors found collectivism and uncertainty avoidance in Isparta, Turkey to be highly significantly related with (and effecting) the all 5

dimensions of compliance with pandemic measures. Furthermore, biological sex has been found to be effecting all these 5 dimensions of compliance with pandemic measures, women significantly complying more than men with these measures. What's more the women have been found to be significantly higher in uncertainty avoidance compared to men. However the women's collectivism level did not differ from the men.

Atalay and Solmazer (2021) also has conducted a global research on the effect of cultural values on the changes in mobility in 75 different countries. Rather than Hofstede's 6 cultural dimensions, the authors based the cultural value on the Schwartz's 7 cultural value dimensions (harmony, embeddedness, hierarchy, mastery, affective autonomy, intellectual autonomy, and egalitarianism). They gathered the same countries' mobility change data during the COVID-19 pandemic from Google's website. Then they did bivariate correlation and partial correlation analyses were conducted. For partial correlation analyses GDP and total cases were controlled. In the study, hierarchy was the primary factor that minimized mobility, such as staying at home and mobility in public places (marginally significant after controlling for the economy and severity of disease by the regression analyses). This research's methodology is similar to ours, the difference is we have based our cultural dimensions on Hofstede's rather than Schwartz's. However, Schwartz's "hierarchy" can be considered to have been conceptualized by Schwartz similar to the Hofstede's "power distance" conceptualization. So the finding in Atalay and Solmazer's (2021) study, from this perspective supports some of the other literature done about Hofstede's cultural dimensions that had found high power distance-countries' minimization of COVID-19 pandemic risks.

Chang and Wu (2023) recently published an article on the correlations between all 6 cultural dimensions of Geert Hofstede and COVID-19 pandemic data. One of the distinguishing parts of this research is they did this research in the early stage of COVID-19 pandemic period (from 22 February 2020 to 30 February 2021) so that the effects of the culture could better be observed mostly before the application of the COVID-19 vaccines to wide audiences because after the wide and common vaccination of the citizents, the COVID-19 pandemic statistics changed accordingly. Also again

similar to our research Chang and Wu's research (2023) collected eight items of global COVID-19 data [cumulative cases, cases cumulative total per 1 million population, cases newly reported in last 7 days, new cases (cases newly reported in last 24 h), cumulative deaths, deaths cumulative total per 1 million population, deaths newly reported in last 7 days, and new deaths (deaths newly reported in last 24 h) from the World Health Organization (WHO). Another distinguishing part of this study is, the authors did the analyses both in global level and also fort he six regions [Africa (AFRO), Europe (EURO), the Americas (AMRO), the Western Pacific (WPRO), South East Asia (SEARO), and the Eastern Mediterranean (EMRO)] divided by the WHO. The results show that, power distance was significantly and negatively correlated on 9 dates (out of 17 dates examined) with at least one COVID-19 pandemic statistic (especially cases cumulative total per 1 million population and deaths cumulative total per 1 million population). What's more the highest [mostly high-level correlations according to Pallant (2013)] negative correlations between power distance and COVID-19 statistics have been found to be in Africa. After Africa, secondly, the Eastern Mediterranean region had also negative correlations between power distance and COVID-19 statistics [especially for deaths newly reported in last 7 days, and new deaths (deaths newly reported in last 24 h)]. In the same study individualism has found to be positively and significantly correlated at global level at low-to-medium but mostly medium level (Pallant, 2013). Africa had the highest [mostly high-level correlations (Pallant (2013)] positive correlations between individualism and many COVID-19 statistics. The Americas was the next region that followed. Masculanity was not found to be significantly correlated with COVID-19 statistics that much at either global or region level. At global level only on 5 dates (out of 17 dates examined) masculanity was found to be positively at low level significantly ($p<0,05$) correlated with deaths newly reported in last 7 days, or new deaths (deaths newly reported in last 24 h). The highest possible positive significant correlations between masculanity and COVID-19 statistics were in the Western Pacific [high correlations (Pallant, 2013)] and then secondly in Africa [high correlations (Pallant, 2013)]. Uncertainty avoidance was significantly and positively correlated on 13 dates (out of 17 dates examined) at low-

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to-medium or medium level (Pallant, 2013) with cases cumulative total per 1 million population and deaths cumulative total per 1 million population in global level. In only 4 dates (out of 17 dates examined) in the Western Pacific and in only 3 dates (out of 17 dates examined) in Africa, there were significant and positive [high-level (Pallant, 2013)] correlations between uncertainty avoidance and some COVID-19 statistics. Long-term orientation is found to be significantly and positively correlated [at low level (Pallant, 2013) with especially cases cumulative total per 1 million population on 8 dates (out of 17 dates examined) at global level. In only 5 dates (out of 17 dates examined) in the Americas, there were significant and positive [high-level (Pallant, 2013)] correlations between long-term orientation and some COVID-19 statistics. Indulgence was not that much found to be significantly correlated with COVID-19 statistics at global level. Only in Europe, in only 5 dates (out of 17 dates examined), there were significant and positive [medium-level (Pallant, 2013)] correlations between indulgence and some COVID-19 statistics.

Chen and Biswas (2023) also conducted a similar research to ours about Hofstede's cultural dimensions' impact on the spread of COVID-19 considering 92 countries' confirmed COVID-19 cases and deaths upto September 2021. The COVID-19 statistics were included from the COVID-19 Data Repository by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University. The scores of cultural dimensionsof Geert Hofstede were (similar to our research) downloaded from hofstede-insights.com. Fort he findings; individualism, masculinity, and uncertainty avoidance have been found to significantly impact both the confirmed COVID-19 cases and total number of COVID-19 deaths.

Gokmen, Baskici, and Ercil (2021) covering European countries searched the impact of national culture on the increase of COVID-19. Geert Hofstede's cultural dimensions were taken as the independent variables and the increase rate of the total COVID-19 cases per million (IRTCCPM) was taken as the dependent variable in a cross-country stepwise multiple logarithmic regression analysis. As the results; power distance was found to have significant and negative effect on IRTCCPM, individualism

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was found to have significant and positive effect on IRTCCPM, and indulgence was found to have significant and positive effect on IRTCCPM.

Among the cultural attributes studied by Erman & Medeiros (2021), uncertainty avoidance had the second largest significant impact on test positivity in relation to cultural characteristics. As a result, societies with greater levels of discomfort with uncertainty experienced a small but statistically significant increase in COVID-19 test positivity. There was also an association between uncertainty avoidance and higher COVID-19 fatalities. Based on the two fatality outcomes, long-term normative orientation (vs. short-term) was found to have the largest and most consistent impact, followed by uncertainty avoidance.

3) RESEARCH

3.1) Subject and Scope: The COVID-19 pandemic has affected the world for almost 3 years. Pandemics effects and statistics occur differently in different countries at the beginning of the pandemic. Especially until efficient vaccines are developed, tested, and vaccination campaigns start; masking, social distancing, and hygiene measures have been the most common and effective precautions for all countries that struggle against COVID-19. When applying all those precautions across the country, country culture becomes the most relevant and inclusive concept because country culture has a huge potential to affect peoples behaviors and their ability to apply necessary precautions against COVID-19. Therefore, country culture affects people's ability to overcome adverse effects of infection. This research examines whether there is a relationship between eight COVID-19 statistics (New cases, Total cases, New deaths, Total deaths, Total deaths per 100.000 people, Total cases per 100.000 people, New cases per 100.000 people, New deaths per 100.000 people) and Geert Hoftstede's scores on six cultural dimensions at 7 dates in 2021 (27th of November 2020, 5th of December 2020, 27th of April 2021, 30th of April

2021, 22nd of May 2021, 25th of May 2021, 13th of August 21) during COVID-19 pandemic.

3.2) **Methods:** COVID-19 statistics are downloaded from the Website of World Health Organization (https://covid19.who.int/WHO-COVID-19-global-data.csv). Populations of Countries are taken from https://www.worldometers.info/ website. Geert Hoftstede's cultural dimensions scores are taken from its original website. According to World Health organizations statistics, the 100 countries with the highest COVID-19 cases are determined and statistics on 7 dates are taken as research samples. Eight given COVID-19 statistics on given dates and G. Hoftstede's cultural dimensions scores were analyzed with two-tailed Pearson correlation analyses. Six cultural dimensions are determined as independent variables of the research, and eight COVID-19 statistics are dependent variables. Pearson correlation coefficients and significances of these coefficients are examined. For confidence-level p= 0.05 is determined.

3.3) **Main Findings:** After two-tailed Pearson correlation analyses, the findings below are discovered. On most of the examined dates, power distance and total cases per 100.000 people are significantly inversely correlated [min. r=-0.227, p<0,05; max. r=-0.301, p<0,01; accordingly low-to-moderate relationships (Pallant, 2013)]. On all dates, individualism score is significantly correlated with total cases [min. r=0.290, p<0,01; max. r=0.329, p<0,01; accordingly mostly-moderate relationships (Pallant, 2013)], with total deaths [min. r=0.243, p<0,05; max. r=0.299, p<0,01; accordingly low-to-moderate relationships (Pallant, 2013)] and with total cases per 100.000 people [min. r=0.249, p<0,05; max. r=0.409, p<0,01; accordingly mostly-moderate relationships (Pallant, 2013)]. Individualism

score and total deaths per 100.000 people on some of the dates are significantly correlated [min. r=0.207, p<0,05; max. r=0.237, p<0,05; accordingly mostly-low relationships (Pallant, 2013)]. On the 27th of November 2020 and 5th of December 2020, individualism score is positively correlated with new cases [respectively; r=0.329, p<0,01; r=0.317, p<0,01; accordingly moderate relationships (Pallant, 2013)], with new deaths [respectively; r=0.385, p<0,01; r=0.397, p<0,01; accordingly moderate relationships (Pallant, 2013)], with new cases per 100.000 people [respectively; r=0.213, p<0,05; r=0.234, p<0,05; accordingly low relationships (Pallant, 2013)], and with new deaths per 100.000 people [respectively; r=0.214, p<0,05; r=0.221, p<0,05; accordingly low relationships (Pallant, 2013)]. Masculinity score is significantly inversely correlated with new cases per 100.000 people only on April 30, 2021, and May 22, 2021 [respectively; r=-0.299, p<0,01; r=-0.275, p<0,01; accordingly low-to-moderate relationships (Pallant, 2013)]. Uncertainty avoidance and total cases per 100.000 people [min. r=0.268, p<0,05; max. r=0.335, p<0,01; accordingly mostly-low-to-moderate relationships (Pallant, 2013)], total deaths per 100.000 people [min. r=0.287, p<0,01; max. r=0.350, p<0,01; accordingly mostly-moderate relationships (Pallant, 2013)] are significantly correlated. Uncertainty avoidance score is also significantly correlated with new deaths per 100.000 people on all dates except August 13, 2021 [min. r=0.311, p<0,01; max. r=0.388, p<0,01; accordingly moderate relationships (Pallant, 2013)]. Uncertainty avoidance score is positively correlated with new cases per 100.000 people on the dates of 27th of November [r=0,258, p<0,05; accordingly low-to-moderate relationship (Pallant, 2013)], 5th of December [r=0,210, p<0,05; accordingly low relationship (Pallant, 2013)] and 27th of April [r=0,267, p<0,05; accordingly low-to-moderate relationship (Pallant, 2013)]. Long-term orientation is positively correlated with total cases per 100.000 people on all dates except August 13 [min. r=0.245, p<0,05; max. r=0.289, p<0,01;

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accordingly low-to-moderate relationships (Pallant, 2013)]. In addition, long-term orientation is positively correlated with new cases per 100.000 people and new deaths per 100.000 people on the dates of November 27, 2020 and December 5, 2020 respectively for new cases per 100.000 people $r=0.276$, $p<0,05$; $r=0.287$, $p<0,05$; and for new deaths per 100.000 people $r=0.273$, $p<0,05$; $r=0.295$, $p<0,01$; accordingly low-to-moderate relationships (Pallant, 2013)]. A significant correlation between indulgence score and all eight COVID-19 statistics can not be found.

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Table 1: Bivariate Correlations Between Six Cultural Dimensions of Geert Hofstede and Eight COVID-19 Statistics

Pearson Correlation Coefficients (r)	Power Distance				Individualism				Masculinity				Uncertainty Avoidance				Long-Term Orientation				Indulgence			
Total Cases	Unsig.	Unsig.	Unsig.	Unsig.	**0.290****	**0.329****	**0.306****	**0.292****	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.
	Unsig.	Unsig.	Unsig.		**0.296****	**0.327****	**0.304****		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.	
Total Deaths	Unsig.	Unsig.	Unsig.	Unsig.	**0.265***	**0.299****	**0.283****	**0.243***	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig. (0.207)	Unsig.
	Unsig.	Unsig.	Unsig.		**0.273****	**0.297****	**0.281****		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		Unsig.	Unsig. (0.209)	Unsig. (0.205)	
New Cases	Unsig.	Unsig.	Unsig.	Unsig.	**0.329****	Unsig.	Unsig.	**0.293****	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.
	Unsig.	Unsig.	Unsig.		**0.317****	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.	
New Death	Unsig.	Unsig.	Unsig.	Unsig.	**0.385****	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.
	Unsig.	Unsig.	Unsig.		**0.397****	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.	
Total Cases per 100.000 People	Unsig.	**-0.227***	**-0.229***	**-0.301****	**0.249***	**0.374****	**0.373****	**0.409****	Unsig.	Unsig.	Unsig.	Unsig.	**0.332****	**0.277****	**0.268***	**0.270***	**0.245***	**0.289****	**0.269***	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.
	Unsig.	**-0.228***	**-0.230***		**0.258***	**0.375****	**0.371****		Unsig.	Unsig.	Unsig.		**0.335****	**0.278****	**0.269****		**0.262***	**0.289****	**0.265***		Unsig.	Unsig.	Unsig.	
Total Deaths per 100.000 People	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	**0.237***	**0.209***	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	**0.287****	**0.323****	**0.332****	**0.350****	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig. (0.211)	Unsig.	Unsig.
	Unsig.	Unsig.	Unsig.		Unsig.	**0.234***	**0.207***		Unsig.	Unsig.	Unsig.		**0.308****	**0.326****	**0.334****		Unsig.	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.	
New Cases per 100.000 People	Unsig.	Unsig. (-0.201)	Unsig. (-0.184)	Unsig.	**0.213***	**0.208***	Unsig.	Unsig.	Unsig.	Unsig.	**-0.275****	Unsig.	**0.258***	**0.267***	Unsig.	Unsig.	**0.276***	Unsig.	Unsig.	Unsig.	Unsig. (-0.218)	Unsig.	Unsig. (0.206)	Unsig.
	Unsig.	**0.258***	Unsig.		**0.234***	Unsig. (0.189)	Unsig.		Unsig.	**0.299****	Unsig.		**0.210***	Unsig. (0.200)	Unsig.		**0.287***	Unsig.	Unsig. (-0.216)		Unsig.	Unsig.	Unsig. (0.221)	
News Deaths per 100.000 People	Unsig.	Unsig.	Unsig.	Unsig.	**0.214***	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	Unsig.	**0.311****	**0.378****	**0.350****	Unsig.	**0.273***	Unsig.	Unsig.	Unsig. (-0.215)	Unsig.	Unsig.	Unsig.	Unsig.
	Unsig.	Unsig.	Unsig.		**0.221***	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.		**0.311****	**0.388****	**0.327****		**0.295****	Unsig.	Unsig.		Unsig.	Unsig.	Unsig.	

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27-November - 2020	(Power Distance N=90; Individualism N=90; Masculinity N=90; Uncertainty Avoidance N=90; Long Term Orientation N=78; Indulgence N=77)
05-December - 2020	(Power Distance N=90; Individualism N=90; Masculinity N=90; Uncertainty Avoidance N=90; Long Term Orientation N=78; Indulgence N=77)
27-April - 2021	(Power Distance N=91; Individualism N=91; Masculinity N=91; Uncertainty Avoidance N=91; Long Term Orientation N=79; Indulgence N=78)
30 -April - 2021	(Power Distance N=91; Individualism N=91; Masculinity N=91; Uncertainty Avoidance N=91; Long Term Orientation N=79; Indulgence N=78)
22-May-21	(Power Distance N=91; Individualism N=91; Masculinity N=91; Uncertainty Avoidance N=91; Long Term Orientation N=79; Indulgence N=78)
25-May-21	(Power Distance N=91; Individualism N=91; Masculinity N=91; Uncertainty Avoidance N=91; Long Term Orientation N=79; Indulgence N=78)
13-August-2021	(Power Distance N=89; Individualism N=89; Masculinity N=89; Uncertainty Avoidance N=89; Long Term Orientation N=77; Indulgence N=76)

* P< 0,05 (Two Tailed)

** P< 0,01 (Two Tailed)

Pearson Correlation Coefficients [r] (Pallant, 2013)	r	
	0.0-0.2	Weak Relationship
	0.3-0.4	Moderate Relationship
	0.5+ :	Strong Relationship

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4. DISCUSSION AND CONCLUSION

When it comes to the dates examined based on these findings, various pandemic statistics are related with countries, especially the level of individuality and uncertainty avoidance, as well as power distance, long-term and masculinity levels. Because the state is seen as a much more decisive and superior authority over citizens in societies with high power distance, it is plausible that citizens follow the rules set by the state more, and therefore, as the power distance increases, the analyzed pandemic statistics decrease. Our findings related with high power distance are consistent with Chang and Wu's (2023), Kamp et al.'s (2023), Duarte et al.'s (2022), Nair et al.'s (2022), Dheer et al.'s (2021), Gokmen, et al.'s (2021), and Atalay and Solmazer's (2021) researches but inconsistent with Koompai and Royer's (2022) research.

In societies with individual characteristics, it is still plausible to observe an increase in the pandemic statistics examined in countries with more individual cultures, as individual preferences will be more important than group or social preferences. It is important to comply with the measures and take the collective action to deal with the pandemic. Our findings related with individualism are consistent with Chang and Wu's (2023), Chen and Biswas's (2023), Kamp et al.'s (2023), Kaya and Güngör's (2022), Duarte et al.'s (2022), Nair et al.'s (2022), Dang and Xiao's (2022), Gokmen et al.'s (2021), and Dheer et al.'s (2021) researches.

The directly (positively) proportional relationship between the uncertainty avoidance and the analyzed pandemic statistics can perhaps be explained by the Extended Parallel Process Model. Considering the dates of November 27, 2020, December 05, 2020, and April 27, 2021 and before, the perceived threat from the pandemic was quite high, and the perceived solution was low (Because the effects of the vaccines have not yet been fully observed). In such a situation, according to the Extended Parallel Process Model, countries with high uncertainty avoidance perceive a much higher level of threat than others and because their perceived solution remains relatively low, they enter the process of fear control, that is, ignoring their fears, suppressing their fears and pretending there is nothing to be afraid of. As a result, they

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do not adequately take COVID-19 precautions, acting as if nothing to be afraid of is happening. This hypothetical explanation based on the Extended Parallel Process Model may explain the increase in various pandemic statistics examined as the uncertainty avoidance increases. Our findings and possible explanation related with high uncertainty avoidance is consistent with Cheng et al.'s (2023), and Kaya and Güngör's (2022) researches, and our results for high uncertainty avoidance countries are further supported by Chang and Wu's (2023), Chen and Biswas's (2023), Lajunen et al.'s (2022), Duarte et al.'s (2022), Nair et al.'s (2022), Koompai and Royer's (2022), Dheer et al.'s (2021), and Erman & Medeiros's (2021) researches.

Dealing with the pandemic is actually a process that requires mostly short-term effort, such as wearing a mask when entering social places shared with many people, maintaining social distance and washing hands immediately after contacts. Therefore, short-term attention and focus may be more important than individual long-term attention and focus in dealing with COVID-19 (Erman & Medeiros, 2021). The positive proportional relationship between the long-term and various statistics of the pandemic examined can be explained with such a reason. Our findings related with long-term orientation is consistent with Chang and Wu's (2023), Duarte et al.'s (2022), Kamp et al.'s (2023), and Erman & Medeiros's (2021) researches but inconsistent with Nair et al.'s (2022) research.

In masculine cultures, individuals try to be dominant over the ideas and behaviors of others with their own ideas and behaviors; they do not like to compromise relatively higher than feminine cultures, and therefore they may say no more to other ideas. People can more easily refuse requests from other people to ignore the measures if they believe that the measures are necessary. This may be partly because as the level of masculinity increased, the number of new daily cases per 100,000 people decreased only on April 30, 2021 and May 22, 2021. However, this finding is inconsistent with Chang and Wu's (2023) and Chen and Biswas's (2023) researches on the effect of masculinity on COVID-19 statistics.

As a result, when we think that culture closely affects the feelings, thoughts and behaviors of all people in a society, and when we add that dealing with COVID-

19 is very closely related to the behaviors of citizens of the country (observing the measures, etc.), in fact, as it was determined in the findings above, we can see that culture can closely guide our behavior in all areas, including coping with COVID-19. Thus, communication campaigns designed and implemented to affect pandemic-related awareness, attitudes, or behaviors of individuals in the society can be designed or implemented more successfully by considering the national strengths and weaknesses explained by the cultural dimensions of G. Hofstede.

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Yazarların çalışmaya katkı oranları eşittir.

Çalışma kapsamında herhangi bir kurum veya kişi ile çıkar çatışması bulunmamaktadır.