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Compelling evidence proved that coronavirus disease (COVID-19) disproportionately affects minorities. The goal of the present study was to explore the effects of intersected discrimination and discrimination types on COVID-19, mental health, and cognition. A sample of 542 Iraqis, 55.7% females, age ranged from 18 to 73, with ($M = 31.16$, $SD = 9.77$). 48.7% were Muslims, and 51.3% were Christians ($N = 278$). We used measures for COVID-19 stressors, executive functions, intersected discrimination (gender discrimination, social groups-based discrimination, sexual orientation discrimination, and genocidal discrimination), posttraumatic stress disorder (PTSD), depression, anxiety, status and death, existential anxieties, and health. We conducted independent samples t test between Muslims and Christians. We conducted hierarchical regression analyses using the Christian minority subsample to see if intersected discrimination is predictive of COVID-19 hospitalization. We conducted two-path analyses, one with intersected discrimination as an independent variable and the second with the different discrimination types as independent variables. Intersected discrimination predicted COVID-19 hospitalization. The primary discrimination type for Christians was genocidal discrimination. Christians had higher existential anxiety about status and death than Muslims. Intersected discrimination and discrimination types had a significant association with mental health, health, and cognition variables, with intersected discrimination, had a higher impact than each. Existential anxiety about the person's social and economic status was the critical outcome of intersected discrimination that trickles down to other variables. COVID-19 stressors had significant effects on depression, PTSD, generalized anxiety, and Status existential annihilation anxiety (EAA). COVID-19 hospitalization and stressors are associated with inhibition and working memory deficits. We discussed the conceptual and clinical implications of the results.

Public Policy Relevance Statement

The current found empirical evidence that intersected discrimination is a significant predictor of coronavirus disease (COVID-19) hospitalization in Iraqi Christians and underlies the disproportionate impact of COVID-19 on discrimination victims. Intersected discrimination triggered the existential anxiety about the person's social and economic status (status EAA) that trickled down to adverse health, mental health, and cognitive outcomes. The primary discrimination type for Iraqi Christians exposed to Islamic State of Iraq and Syria (ISIS) was genocidal discrimination, one of the worst discrimination types.

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COVID-19 stressors had significant effects on higher status EAA and adverse effects on mental health and cognition. The present study results highlighted the primacy of addressing intersected discrimination and the advocacy for social justice and support for victims of discrimination.

While there are multiple factors that determine infection and mortality from coronavirus disease (COVID-19), compelling evidence emerged that COVID-19 infection and stressors disproportionately affect minorities and those victims of discrimination and social-structural oppression. The rates of infection and death from COVID-19 of blacks and minorities are much higher than their representation in the community (Farquharson & Thornton, 2020; Kirby, 2020; Platt & Warwick, 2020; Yancy, 2020), and victims of genocide and the holocaust (Cohn-Schwartz et al., 2020). This may imply that racism, discrimination, oppression, and social inequality had contributed to the increased risk of infection and death from COVID-19 among ethnic minorities and victims of oppression.

Further, while various factors contribute to severe mental illness and criminality, there is an overrepresentation of people of color and individuals with serious mental illnesses across all levels in the criminal legal system in the USA. Social and economic forces, including systemic racism, may contribute to this overrepresentation of minorities in the criminal justice system (Cunneen, 2006). The overrepresentation of minorities in COVID-19 infection and mortality and criminal justice system gave us a clear message: "Changing the social hierarchies in our societies and institutions to be more equitable is more than a matter of life and death. Social status within the social hierarchy can critically contribute to health and disease" (Kira, Shuwiekh, et al., 2021, p. 1) and the level of criminality.

COVID-19, a prolonged global and shared trauma and its disproportionate impact on minorities, brought to the center of stress and trauma discourse the importance of understanding and addressing the continuous prolonged traumas of discrimination, intersected discrimination, and COVID-19. The discourse questioned the basic assumptions of current dominant stressors and trauma paradigms and the current formulation of posttraumatic stress disorder (PTSD) criterion "A" (Horesh & Brown, 2020; Kira, 2021a).

Intersected discrimination (i.e., various forms of discrimination that target the same individual's various personal and social identities that interact with one another, intensifying their cumulative effects on physical and mental health and cognition) was long ignored in PTSD literature. Intersected discrimination is continuous and chronic traumatic stressors and sustained threats to life and status across the life span. The continuous traumatic stress or the type III trauma model is also applicable to COVID-19 (Kira, 2021a; Maric et al., 2021).

Continuous and chronic stressors trigger a stress response that includes an increase in catecholamine and glucocorticoid "stress" hormones along with a sustained increase in activity of the sympathetic nervous system. Dysregulation of stress hormones can lead to over and underactive glucocorticoid systems, further impacting several biological systems, including the immune system (e.g., Marin et al., 2011; Mariotti, 2015). These disruptions can lead to several physiological effects and impaired brain function, including dysfunction of the hippocampus and prefrontal cortex and increased growth of parts of the amygdala that is directly linked with anxiety. On the neurocircuits level, chronic and continuous stress is associated with shortening telomere length, associated with deterioration in functioning (e.g., Oliveira et al., 2016). Consequently, chronic or continuous stressors have been linked with worse mental health (depression, anxiety disorders, PTSD, and substance abuse) and physical health problems regardless of the source. Given all of this, it is crucial to recognize that the prolonged continuous traumatic stressors in intersected discrimination and during the COVID-19 pandemic may lead to a long-term elevation in both physical and mental health adverse sequelae.

Additionally, the severity of the chronic stressors with existential threats to personal and social identity, as in genocidal and backlash discriminations, will make such continuous stressors more impactful. Also, because there are potential gender differences in response to discrimination (e.g., Vargas et al., 2021), it is crucial to see how both genders respond to such continuous prolonged intersected stressors. Are the differences between genders related to an added discrimination type (i.e., gender discrimination; GD) that males do not endure? Alternatively, there are no gender differences when we consider all the intersected discrimination, including GD.

It is crucial to have a measurable operational definition of interested discrimination and its major component to identify their mechanisms of action. The clarity of the construct of discrimination and the dynamics that potentially underlie its traumatic impact need precise articulation and accurate measurement. Discrimination is type III traumatic stress (Kira, 2001, 2021a). Type III is continuous, chronic, with different time scales, and may not stop. There is empirical evidence that type III trauma is the most severe concerning its mental health and cognitive impact than types I and II traumas (Kira, 2021b). The structure and function of discrimination as type III continuous complex trauma include micro- and macro-aggressions. While micro-aggressions are conducted interpersonally and systemic through different media platforms, macro-aggression such as hate crimes, torture, and police brutality can be primary or transmitted through secondary and tertiary dynamics to reach and traumatize (terrorize) the individuals who belong to the same group. In addition to their direct impact on the victims, macro-aggressions have a severe role in triggering secondary traumatization dynamics terrorizing the whole group and through the tertiary cross-generation dynamics that transmit macro-aggression that traumatize group members cross-generationally.

In studying discrimination, its real-time effects are lost when targeting only one kind of discrimination. While intersected discrimination has been conceptually proposed, and the research on intersected discrimination has intensified recently, this area of research is still regarded as insufficiently understood or investigated. Most studies did not measure comprehensively intersected discrimination in real-time and in different social contexts other than in Western countries.

The common core underlying the diverse discrimination types is the targeted personal and social identities and statuses that lower them within the social and economic hierarchies ladder. The extreme lowering of status in the hierarchy can yield vicious dynamics that prevent the person from achieving his/her potential. Examples of such mechanisms are lower self-esteem and self-efficacy, internalized inferiority, stereotype threat, and lower will to live and survive. All affect the person's physical and mental health and his/her cognitive functioning. Kira, Shuweikh, Al-Huwailiah, et al. (2020), studying the effects of different traumas on executive functions, found direct effects of severe discrimination on executive functions, in addition to its indirect effects, via its impact on PTSD (and other mental health conditions).

The status of self and identity is salient and underlies discriminative acts' dynamics (Kira, 2019; Kira, Shuweikh, Al-Huwailah, et al., 2019; Kira, Shuwiekh, Kucharska, & Al-Huwailah, 2019). Existential anxieties about the person and group statuses that may be the core-specific anxiety in various discrimination types were rarely studied (Kira, Shuweikh, Al-Huwailah, et al., 2019; Kira, Shuwiekh, Kucharska, & Al-Huwailah, 2019; Kira, Shuwiekh, Kurcharska, Abu-Ras, & Bujold-Bugeaud, 2020).

There is an array of different types of discrimination with different potential intensities and time scales; for example, binary GD, sexual preference discrimination, group-based discrimination (such as discrimination for color, race, religion, or national origin), and backlash and genocidal discrimination, added to them the social-structural systemic violence of poverty and caste systems. As part of our attempt to operationally define the construct, we will briefly discuss the state of our knowledge on each of intersected discrimination components.

Binary Gender Discrimination

GD is associated with systemic traumatization by families and social systems that may perpetuate it. For females, GD comprises micro-aggressions (e.g., implicit and explicit insults to identity status and exclusion) and macro-aggressions such as intimate partner violence, sex trafficking, honor killing, rape, and gender-hate crimes. Such macro-aggressions are primary traumas for directly targeted females and secondary or vicariously for other females not directly targeted.

However, GD affects both males and females negatively, with females tend to develop internalizing disorders such as depression and anxiety; and males are more likely to exhibit externalizing disorders, antisocial behavior, and substance abuse and addiction (e.g., Kim & Noh, 2014; Kira, Shuweikh, Kurcharska, & Bujold-Bugeaud, 2021; Rosenfield & Mouzon, 2013). GD has been found in different studies to account for a significant variance for the gender differences in mental health (Kira, Lewandowski, et al., 2010; Kira, Smith, et al., 2010; Kira, Omidy, et al., 2015; Kira, Shuwiekh, & Bujold-Bugeaud, 2015; Kira et al., 2017; Klonoff et al., 2000; Kucharska, 2018). GD has a direct and indirect negative impact on executive function via its adverse effects on mental health (Kira, Shuwiekh, Kucharska, Abu-Ras, & Bujold-Bugeaud , 2020).

Sexual Orientation-Based Discrimination

Lesbians, gay men, bisexuals, and queer (LGBQ) individuals face various interpersonal and systemic discrimination, ranging from slurs to legal exclusion and work discrimination to homophobic hate crimes. Minority stress theory (Meyer, 2003) proposes that discrimination and stigma related to sexual orientation can explain the inequality in mental health between sexual minority and heterosexual individuals. Studies have found an increased risk of mental disorder symptoms, suicide, self-injurious thoughts and behavior, and substance abuse in lesbian, gay and bisexual (LGB) adults and adolescents than their heterosexual counterparts (for meta-analyses see, e.g., Dürrbaum & Sattler, 2020).

Group-Based Discrimination (Such as Discrimination for Color, Race, Religion, or National Origin)

Discrimination based on skin color, cultural groups, race, ethnicity, religion, national origin, or against minority groups, in general, is relatively well studied in the USA and Western societies. More than 30% in the USA report having experienced lifetime discrimination (Kessler et al., 1999). Perceived group-based discrimination was associated with poor physical and psychological health (e.g., Pascoe & Smart Richman, 2009; Williams & Mohammed, 2009). It was associated with hypertension (Dolezsar et al., 2014), inflammation (e.g., Lewis et al., 2010; Zahodne et al., 2019), cardiovascular events (Everson-Rose et al., 2015), and mortality (Barnes et al., 2008). It was associated with depression, anxiety, and reduced well-being (Schmitt et al., 2014). Perceived ethnic discrimination, in particular, has been a salient risk factor to explain the increased risk for psychotic disorders (Bardol et al., 2020). Racial/ethnic disparities in cognition in different age groups are well documented (e.g., Díaz-Venegas et al., 2016; Zahodne et al., 2020). Cognitive disparities included differences in episodic memory, language, executive functioning, working memory, processing speed, vocabulary, and visuospatial functioning (e.g., Zahodne et al., 2021).

Backlash and Genocidal Discrimination/Persecution/Oppression

Genocidal discrimination and backlash against minorities start with perceiving a particular minority as the enemy or associated with an enemy, which is more severe than discrimination to gain a socioeconomic advantage over such a minority. In such cases, discrimination may develop into persecution and oppression. Such perception happened when Germany perceived Jews as enemies, and the backlash against them led to the holocaust (e.g., Kellermann, 2009); with a much lesser degree is the case of Japanese Americans during the Second World War against Japan and the internment of Japanese Americans (McClain & McClain, 2013). Another example is the backlash against Muslim Americans after September 11 and the Islamophobia (Abu-Ras et al., 2018; Kira et al., 2014). Such public perception of a particular minority can develop under a leader or a dominant group that holds a right-wing extremist ideology into different trajectories, including genocide.

The literature studying the physical and mental health effects of the Jewish holocaust found severe consequences (for meta-analysis, see Barel et al., 2010). Also, research on the American Indian holocaust (e.g., Brave Heart & DeBruyn, 1998) found severe physical and mental health outcomes. Studies of the backlash against Muslim Americans found severe physical and mental health effects (e.g., Abu-Ras & Abu-Bader, 2009; Kira, Lewandowski, et al., 2010; Kira, Smith, et al., 2010). The impacts of backlash on cognition were less examined.

Intersectionality and Intersected Discrimination Types

Intersected discrimination is the cumulative (additive/interactive) impact of exposure of some or all of these different types of discrimination in a person or a group. Intersected discrimination was long ignored in PTSD literature. The intersectional framework accounts for the synergistic interactions among multiple identities (McClendon et al., 2021; Seng et al., 2012; for meta-analysis of the mental health impact of intersected discrimination, see Vargas et al., 2020). The noncriterion "A" stressors that include intersected discrimination and oppression explained over sixfold of the criterion "A" stressors and fully mediated their effects on PTSD symptoms (Kira et al., 2018).

Discrimination and its health, mental health, and cognitive impact had been extensively studied in American and Western culture. It is essential to measure the intersected discrimination in real time and real life in Western and non-Western cultures and on both genders. The effects of discrimination were rarely examined in non-Western cultures, with few exceptions (e.g., Kira & Shuwiekh, 2021). In the present study, we will focus on the impact of intersected discrimination and different discrimination types on the Christian minority in Iraq as a case example from a non-Western country.

The Christian Minority in Iraq

A territorial and historical-based identity connected Christians in Iraq to the ancient Mesopotamian past. The Chaldeans Christians make up more than two percent, followed by the Syriacs and the Assyrian Christians. All make about 3% of the Iraqi population (Hanish, 2009, 2015). Discrimination of Christians and religious minorities in Iraq existed even before the emergence of the Islamic state (e.g., Sevdeen & Schmidinger, 2019). Sociological and political research found that societal and religious discrimination increased substantially in Arab Uprising states compared to other Muslim-majority states (Akbaba & Jonathan, 2019). However, the level of discrimination toward Christians is much less in Iraqi Kurdistan. Unlike the case in Iraqi Kurdistan, the Christians were exposed in the other areas of Iraq to severe discrimination (Belz, 2017). During the 2014 Northern Iraq offensive, the Islamic State of Iraq issued a decree in July that all Christians in its territories (mostly Assyrian) are subject to a special tax of approximately $470 per family (an excessive amount considering the average income in Iraq at the time), convert to Islam, or be murdered. However, at a later date, Islamic State of Iraq and Syria (ISIS) announced that all Christians would need to leave or be killed. Islamic state exacted the most severe genocidal discrimination types against minorities in Iraq (e.g., Husein Kokha, 2019). Hundreds of their children were kidnapped and faced human trafficking. What Christians faced amounted to genocide (Abdel-Razek & Puttick, 2016; Belz, 2017; Schmidinger, 2019). On March 17, 2016, the United States State Department declared that Islamic State attacks on minorities, including Yazidis, Christians, and Shiite Muslims constitute genocide. (https://www.npr.org/2016/03/17/470861310/state-department-declares-isis-attacks-on-christians-constitute-genocide). Christians and religious minorities in ISIS areas escaped to Iraqi Kurdistan and mostly lived in refugee camps.

The present study explores the impact of intersected discrimination and COVID-19 on the Christian minority in Iraq. We aim to unpack the link between intersected discrimination and COVID-19 and measure their mental health and cognitive impact on the Christian minority in Iraq. Additionally, we aim to test if the models of the impact of intersected discrimination and discrimination types, including GD, are invariant across gender.

Hypotheses

Hypothesis 1: Intersected discrimination predicts COVID-19 hospitalization accounting for the COVID-19 disproportionate impact on minorities. Intersected discrimination is significantly associated with higher COVID-19 stressors.

Hypothesis 2: The primary discrimination type for Iraqi Christians' discrimination profile is genocidal discrimination. Iraqi Christians have higher existential anxiety about status and death than Iraqi Muslims.

Hypothesis 3: Intersected discrimination had a higher association with all mental health, health, and cognition variables compared to the impact of only one discrimination type; intersected discriminations and each discrimination type are significantly associated with higher status existential annihilation anxiety (EAA), poor health status, depression, generalized anxiety PTSD, and executive function deficits.

Hypothesis 4: Existential anxiety about the person's social and economic status directly impacts intersected discrimination that trickles down to adverse mental, cognitive, and health outcomes.

Hypothesis 5: COVID-19 stressors had significant effects on depression, PTSD, generalized anxiety, and Status EAA. COVID-19 hospitalization and stressors are associated with inhibition and working memory deficits.

Hypothesis 6: The models of the effects of intersected discrimination and discrimination types on mental health, cognition, and COVID-19 hospitalization are invariant across binary gender.

Method

Participants

The main sample included 542 participants split in some analyses into two subsamples (278 Christians subsample and 264 Muslims subsample). Table 1 provides the detailed demographics of the two subsamples (Christian and Muslims) and the main sample.

Procedure

In this study, two field-research teams conducted the field study in two sites. The first site was in the city of Bagdad, and the research team consisted of three graduate students trained and supervised by their advisor. The second site was in Northern Iraq, in Diyala and Sulaymaniyah governorate. In the second site, the research team consisted of four volunteers and employees in international organizations working in the humanitarian sector that assist the Iraqi internally displaced. The field-research team was provided a 1-day training and supervised by a university professor. We targeted internally displaced in the area who lived in refugees camps. They belong to different religions and sects such as Islam–Christianity–Shabak–Yazidis, and Baha'is. However, the majority of them were from Christians whom ISIS had oppressed. The sampled internally displaced lived in Qorah Tu and Taza Dei camps in Diyala governorate; and Ashti, Arbat, and Barika camps in

Table 1

The Demographics of the Two Subsamples and the Main Sample

Variable	The Christian subsample ($N = 278$, 51.3%)	The Muslim subsample ($N = 264$, 48.7%)	The total sample ($N = 542$)
Age	Age ranged from 18 to 50, $M = 29.28$, $SD = 6.32$,	Age ranged from 18 to 73, $M = 33.17$, $SD = 12.05$	Age ranged between 18 and 73, $M = 31.16$, $SD = 9.77$
Gender	62.2% females	48.9% females	55.7% females
Education	25.5% reading and writing level, 40.6% middle to the high school level, 28.4 college level, and 5.4% graduate studies level	7.6% reading and writing level, 9.8% middle to the high school level, 53% college level, and 29.5% graduate studies level	16.8% reading and writing level, 25.6% middle to the high school level, 40.4% college level, and 17.2% graduate studies level
Marital status	28.8% single 61.2% married, 7.6% widowed, 2.5% divorced,	44.3% single, 50.4% married, 3.4% widowed, 1.9% divorced.	36.4% single 55.9% married, 2.2% widowed, 5.5% divorced.
Employment	10.4% work with the government, 25.9% Students, 39.6% private business, 2.9% retired, and 21.2% unemployed	37.5% work with the government, 35.2% Students, 15.9% private business, 2.7% retired, and 8.7% unemployed.	23.6% work with the government, 30.6% Students, 28% private business, 2.8% retired, and 15.% unemployed
SES	9.4% very low, 34.9% low, 45.7% in the middle, 10.1% high, 1.2% very high	1.9% very low, 9.8% low, 75.4% in the middle, 12.1% high, .08% very high	5.7% very low, 22.4% low, 60.6% in the middle, 11.1% high, .2% very high

Sulaymaniyah governorate. Inclusion criteria included being 18 or more, reading and writing Arabic, and being willing to participate. There were no direct financial incentives provided.

The groups targeted in the two sites were all exposed to war and conflict with ISIS and its negative psychological and economic impact with added COVID-19 infection and stressors rampant in the areas of displacement. The research teams administered the questionnaires to participants from October 2020 to March of 2021 in Iraq. We must note that while the response to the religion item did not specify Sunni or Shiites, most Muslims in the sample were observed by the research team to be Shiites. Shiites were severely subjected to persecution by ISIS and previously by the Saddam regime. However, the vast majority of ISIS victims and subjects were also Sunni Muslims. Christians mainly were recruited from the refugee (internally displaced) camps who fled ISIS persecution.

The research team utilized direct contacts through the camps and international organizations officials to recruit participants. Additionally, the teams used chain networking to recruit participants (snowballing). In chain recruiting, each participant was asked to fill the questionnaire online and forward it to his/her contacts to fill it, with a request to forward it to his/her contacts with the same plea. We used Google Drive and developed a survey link. Once the participant completed the survey, it was sent anonymously to Gmail then downloaded to the Excel file. All questionnaires were administered individually to participants. Participation was voluntary. Each participant was informed about the goals of the study and signed virtual informed consent to participate. The entire questionnaire took between 20 and 30 min to complete. All questionnaire measures were previously translated to Arabic and used in previous studies. The Institutional review Board (IRB) of the University Fayoum, Egypt, approved the research protocol as part of a cross-cultural study of the impact of COVID-19.

Measures

COVID-19 Traumatic Stressors Scale (Kira, Shuwiekh, Rice, Ashby, et al., 2021; Kira, Shuwiekh, Ashby, Rice, et al., 2021).

COVID-19 traumatic stress scale is a 12-item scale including three subscales (a) "threat/fear of the COVID-19 infection and death" (5 items), (b) "economic stressors" (4 items), and (c) "lockdown stressors" (3 items). Items are scored on 5 points scale, with (1) indicating *not at all* and (5) *very*

much. Examples of items include, "How concerned are you that you will be infected with the coronavirus?" "The Coronavirus (COVID-19) has impacted me negatively from a financial point of view." "Over the past two weeks, I have felt socially isolated as a result of the coronavirus." The scale showed good construct convergent–divergent and predictive validity in Arabic populations (Kira, Özcan, Shuwiekh, Kucharska, Al-Huwailah, et al., 2020). In the present study, the scale had an alpha of .93. Its three subscales had alphas of .91, .83, and .88, respectively.

The Adult Executive Functioning Inventory (ADEXI; Holst & Thorell, 2018) was used to investigate executive functioning deficits. The ADEXI is a 14-item scale that measures working memory deficits (9 items; e.g., "I have difficulty remembering lengthy instructions") and inhibition deficits (5 items; e.g., "I tend to do things without first thinking about what could happen"). The participant is asked to rate the statement on a scale from 1 to 5, with "1" indicating that it is *definitely not true*, and "5" indicating it is *definitely true*. A higher score indicates higher deficits and a lower score indicates lower deficits. The ADEXI was explicitly developed to investigate deficits in working memory and inhibition and address the limitations of other rating instruments of executive functioning that often include items overlapped with attention deficits hyperactivity disorder (ADHD) symptom levels. This instrument has proven to discriminate well between adults with ADHD and controls (Holst & Thorell, 2018). The measure was previously translated to Arabic and found to have good psychometrics in several previous studies (e.g., Kira, Alpay, et al., 2021). Alpha for the total scale in current data is .87 and .80 for working memory and .70 for inhibition.

Cumulative Stressors and Traumas Scale (CTS-S-36 Items; Kira et al., 2008).

Cumulative stressors and trauma short form (CST-S) is based on the development-based trauma framework (DBTF; e.g., Kira, 2001, 2019, 2021a, 2021b; Kira et al., 2018; Kira, Shuwiekh, Al-Huwailah, et al., 2019; Kira, Shuwiekh, Kucharska, & Al-Huwailah, 2019). The scale is designed to measure seven types of stressors/traumas. Additionally, it includes three items that measure chronic and significant life stressors. The seven types of stressors/traumas include collective identity traumas (e.g., discrimination and oppression). They include personal identity trauma (e.g., early childhood traumas such as child neglect and abuse). They include status identity/achievement trauma (e.g., failed business, fired, and drop out of school, noncriterion A

traumas). They also include survival trauma (e.g., getting involved in combat, car accidents, and natural disasters). They include attachment trauma (e.g., abandonment by parents), secondary trauma (i.e., indirect trauma impact on others), and GD. Additionally, the intersected discrimination subscale (derived from collective identity trauma) includes five items that measure GD by parents and society, social groups-based discrimination, sexual orientation discrimination, and genocidal discrimination. The CST-S evaluates cumulative stressors and traumas concerning its mere occurrence, frequency, type, negative and positive appraisals, and age of happening. However, in this short survey study, we used only frequency and occurrence questions. To answer each question on the scale, contributors were asked to specify their experience with an event on a 5-point Likert-type scale (0 = *never*; 4 = *many times*). The CST-S includes two overall measures for cumulative stressors and traumas' dose: Occurrence and frequency. Investigators can compute subscales for each of the stressor/trauma types. The CST-S has shown adequate internal consistency ($\alpha = .85$), test–retest stability (.95 in 4 weeks), predictive, convergent, and divergent validity in different studies (e.g., Kira, Barger, et al., 2019; Kira, Barger, et al., 2020; Kira et al., 2013; Kira, Shuwiekh, Al-Huwailah, et al., 2019; Kira, Shuwiekh, Kucharska, & Al-Huwailah, 2019; Kira et al., 2018). The measure has been translated and validated into different languages, including Arabic, Polish, Spanish, Turkish, Korean, Burmese, and Yoruba. In the present analysis, we used the cumulative occurrence subscale. The current alpha of cumulative traumas occurrence is .95, and .82 for the intersected discrimination subscale.

Posttraumatic Stress Disorder Checklist for The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; Blevins et al., 2015).

Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-V) is a 20-item self-report measure. Each item is scored on a 5-point scale with "0," indicating *not at all* and "4" indicating *extremely*. Initial research suggests that a PCL-5 cut-off score between 31 and 33 is indicative of PTSD. A provisional PTSD diagnosis can be made by treating each item rated as 2 = *Moderately* or higher as a symptom endorsed, then following the The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) diagnostic rule, which requires at least: 1 B item (questions 1–5, reexperiencing), 1 C item (questions 6–7, avoidance), 2 D items (questions 8–14, Negative alterations in cognitions and mood), 2 E items (questions 15–20, hyperarousal). The Arabic version of PCL-V has been previously validated in Arabic samples (Ibrahim et al., 2018). Cronbach's alpha reliability of the scale in the present study was .95.

Generalized Anxiety Disorder-7 (Spitzer et al., 2006).

Generalized Anxiety Disorder-7 (GAD-7) is a seven-item self-report questionnaire that assesses general anxiety. An example of the item is "Feeling nervous, anxious, or on edge." Items are scored on a 4-point scale with (0) indicating *does not exist*, and (3) indicating *nearly every day*. The scores range between 0 and 21, with a cut-off point of 15, indicating severe GAD. The GAD-7 has a sensitivity of 89% and a specificity of 82%. Increasing scores on the scale have been strongly associated with multiple domains of functional impairment (Spitzer et al., 2006). The Arabic version of GAD-7 was previously validated in Arabic samples (Sawaya et al., 2016). Cronbach's alpha reliability for the scale in the present study was .91.

Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001) is a nine-item self-report questionnaire that objectifies the degree of depression severity. An example of the items is "Thoughts that you would be better off dead, or of hurting yourself." Items are scored on a 4-point scale with (0) indicating *does not exist*, and (3) indicating *nearly every day*. The scores range between 0 and 27, with a cut-off range of 15–19 indicating moderately severe depression and 20 and above indicating severe depression. The Arabic version of PhQ-9 was previously validated in Arabic samples (Sawaya et al., 2016). Cronbach's alpha reliability for the instrument in the present study was .88.

Existential Anxieties Related to Status and Physical Identity.

We used two subscales of the existential annihilation measure (Kira, Shuwiekh, Kucharska, & Al-Huwailah, 2019; Kira, Shuwiekh, Kucharska, Abu-Ras, & Bujold-Bugeaud, 2020). One subscale measures existential annihilation anxiety related to identity status (4 items), and the second subscale measures existential anxiety related to death (3 items). Items scored on a 4-point scale, with "0" indicating *completely disagree* and "3" indicating *completely agree*. The measure and its subscales were validated in different languages, including Arabic (e.g., Kira, Özcan, Shuwiekh, Kucharska, Amthal, et al., 2020). In current data, alphas for Status Existential Annihilation Anxiety and death Existential Annihilation Anxiety subscales were .843 and .834.

Self-reported health was measured by a single item asking the person to evaluate his/her health on a scale from 1 to 4, with 1 means *very good health*, and 4 means *very poor health*.

Statistical Analysis

We used Cohen (1992, p. 158) criteria and recommendations to confirm the sample size necessary to detect a medium population effect size at power = .80 for $\alpha = .05$ for the study's number of variables. Further, a sufficient sample size to conduct path analysis is essential to obtain unbiased estimates of standard errors. Also, the sample size should be large enough to achieve sufficient power for significance tests, overall fit, and likelihood ratio tests. Though even the 10:1 ratio for each parameter is often considered safe, simulation work by Nevitt and Hancock (2004) suggests that there are some conditions when this is not sufficient. Several scholars recommended that the sample size should be above 250, regardless of the number of the parameters (e.g., Park & Yu, 2018). Accordingly, we set our sample (and subsamples) to be above 250.

The data were analyzed utilizing IBM-SPSS and AMOS 22. There were no missing data reported. The survey was set up as it was not possible to proceed without entering a response. We conducted initial descriptive analyses. We conducted a two samples *t* test between Muslims and Christians in the main sample in all the main variables to explore the differences between them in discrimination and mental and physical health. Using the Christian subsample ($N = 278$), we conducted a zero-order correlation between the main variables. To check our hypothesis that Intersected discrimination predicts COVID-19 hospitalization, we conducted two hierarchical regression analyses on the Christian sample. In the first analysis, we entered in the first step the demographics (gender, age, marital status, income, and education); in the second step, we entered intersected discrimination. In the second analysis, we entered in the second steps the five discrimination types to see which one is more predictive of COVID-19 hospitalization. We conducted path analysis to test two

models. In the first model, the different discrimination types (gender, group-based, genocidal-based, sexual preference-based discrimination) were the independent variables, and the other mental health and cognitive variables were the outcome variables. In the second model, intersected discrimination was the independent variable. We reported direct, indirect, and total effects as standardized regression coefficients. We used Byrne (2012) recommendations for the acceptable fit criteria. The criteria for good model fit were a nonsignificant chi-square (χ^2), chi-square/degrees of freedom ($\chi^2/df > 5$), comparative fit index (CFI) values > 0.90, and root-mean-square error of approximation (RMSEA) values < 0.08. We used a bootstrapping procedure with 10,000 bootstrap samples to examine the significance of direct, indirect (mediated effects), total effects, and 95% bias-corrected confidence intervals (95% CI) for each trauma.

We conducted a multigroup invariance analysis to assess whether the two path models were invariant across genders. We sequentially tested four nested structural models: A configural invariance model, metric invariance models, scalar invariance models, and strict invariance models. The parameters were all freely estimated across groups in the configural model (i.e., equal form). In the metric model (i.e., partial invariance), the parameters were constrained to be identical across groups. In the scalar model or "strong invariance," variables and path variances were set to be equal across groups. Lastly, the strict model "strict invariance" additionally constrained the residuals to be the same across groups. According to Chen (2007), the null hypothesis of invariance should not be rejected when changes in CFI are less than or equal to 0.01 and if RMSEA is less than or equal to 0.015. Because we conducted a host of independent samples t test, with relatively small to medium-sized samples, which may increase type I error, we conducted the multiple test correction of Benjamini–Hochberg procedure to reduce the probability of type I error.

Results

Descriptive Results

Among Christian participants, 39.6% reported genocidal discrimination ($M = .40$, $SD = .49$, 17.4% of Muslims reported genocidal discrimination), 49.6% reported group-based discrimination ($M = .50$, $SD = .50$), 34.5% reported GD by society ($M = .35$, $SD = .48$), 37.1 reported GD by family ($M = .35$, $SD = .48$), 37.4% reported discrimination due to sexual orientation ($M = .37$, $SD = .49$). For intersected discrimination ($M = 2.00$, $SD = 1.85$), 4.4% have the five types of intersected discrimination. In comparison, 12.6% have four types of intersected discrimination, 11.2% have three types of intersected discrimination,14.7% have two intersected types of discrimination (42.9% reported having between 2 and 5 discrimination types), and 22.9% have only one type of discrimination, while 34.2% did not report discrimination. For uprootedness ($M = .56$, $SD = .50$), 55.8% reported being uprooted from places where they used to live. For sexual abuse ($M = .70$, $SD = 1.10$), 49.9% reported being sexually abused or raped. For physical abuse ($M = .71$, $SD = .80$), 49.9% reported being physically abused. For torture ($M = .30$, $SD = .46$), 29.9% reported being tortured.

Independent Samples *t*-Test Results

An independent samples t test was conducted to compare the Christians and Muslims. There was a significant difference in the scores for intersected discrimination between Muslims ($M = 1.07$, $SD = 1.46$) and Christians, $M = 1.98$, $SD = 1.85$, $t(540) = −6.69$, $p \leq .001$. These results suggest that Christians are exposed to much higher intersected discriminations. Specifically, they were exposed more to genocidal discrimination, Muslims: $M = .22$, $SD = .41$, Christians: $M = .50$, $SD = .50$; $t(540) = −7.10$, $p \leq .001$, more GD by society, Muslims: $M = .23$, $SD = .24$, Christians: $M = 35$, $SD=.48$; $t(540) = −7.13$, $p \leq .002$, more GD by parents, Muslims: $M = .17$, $SD=.38$, Christians: $M = 37$, $SD = .48$; $t(540) = −5.38$, $p \leq .001$, more sexual preference discrimination, Muslims: $M = .12$, $SD = .33$, Christians: $M = .37$, $SD = .49$; $t(540) = −7.08$, $p \leq .001$. However, the difference in group-based discrimination (discrimination due to race, color, culture or another group of belonging) was higher, but did not reach significance, Muslims: $M = .33$, $SD = .47$, Christians: $M = 40$, $SD = .49$; $t(540) = −7.10$, $p \leq .110$.

There was a significant difference in the scores for personal identity traumas, sexual abuse, physical abuse, collective identity traumas, poverty, torture, achievement traumas, nontraumatic chronic stressors, community violence, and birthing traumas, with Christians, have a significantly higher occurrence of these trauma and stressors types. While Christians had much higher cumulative stressors and trauma types' occurrences, the differences in frequency of these trauma types were not significant. On the cognitive level, there was a significant difference in the scores of working memory and inhibition deficits with Christian minority participants having higher working memory and inhibition deficits compared to Muslims.

For COVID-19 stressors, there were no significant differences between Christians' and Muslims' scores on COVID-19 fears, or COVID-economic stressors, and the differences in COVID-19 lockdown stressors were not significant after correction by Benjamini–Hochberg procedure.

Christians scored significantly higher on the existential status and existential death anxieties than Muslims. However, the differences in the scores of PTSD, depression, and generalized anxiety were not significant. Tables S1 and S1-a, in the Supplemental Materials, details these results, as well as the Benjamini–Hochberg procedure correction results.

Correlation Results

Intersected discrimination in Iraqi Christians was highly associated with status EAA ($.47 < p = .001$, the highest association), followed by PTSD ($.42 < p = .001$), depression ($.38 < p = .001$), death EAA ($.36 < p = .001$), generalized anxiety ($.35 < p = .001$), working memory deficits ($.30 < p = .001$) self-reported poor health ($.22 < p = .001$), inhibition deficits ($.22 < p = .001$), and COVID-19 cumulative stressors ($.15 < p = .01$). *Status EAA* was highly associated with death EAA ($.59 < p = .001$) and PTSD ($.54 < p = .001$, its highest associations). *Death EAA* had its highest association with PTSD ($.46 < p = .001$) and generalized anxiety ($.44 < p = .001$) and COVID-19 cumulative stressors. Existential anxiety about the person's social and economic status seems to be a direct critical outcome of intersected discrimination that trickles down to death EAA and mental, cognitive, and adverse health outcomes with significant association with higher COVID-19 stressors. Table 2 details these correlations.

For the association of intersected discrimination and discrimination five types with other stressors (including COVID-19 stressors),

Table 2

Zero-Order Correlation Between Intersected Discrimination and Main Variables

Variables	1	2	3	4	5	6	7	8	9	10
1. Intersected discriminations	—									
2. Health status	.22***	—								
3. Working memory deficits	.30***	.26***	—							
4. Inhibition deficits	.22***	.11	.43***	—						
5. PTSD	.42***	.13*	.31***	.26***	—					
6. Depression	.38***	.23***	.22***	.28***	.63***	—				
7. Anxiety	.35***	.18***	.30***	.33***	.58***	.63***	—			
8. Status EAA	.47***	.18***	.24***	.22***	.54***	.48***	.54***	—		
9. Death EAA	.36***	.10	.27***	.21***	.46***	.38***	.44***	.59***	—	
10. COVID Stressors	.15**	.05	.20***	.24***	.46***	.37***	.26***	.30***	.27**	—

Note. COVID = coronavirus disease; PTSD = posttraumatic stress disorder; EAA = existential annihilation anxiety.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Intersected discrimination had the highest association with status EAA (.47 $p = .001$), followed by PTSD (.42 $< p = .001$), depression (.38 $< p = .001$), death anxiety (.36) and anxiety (.35 $< p = .001$), working memory deficits (.30 $< p = .001$), inhibition deficits (.22 $< p = .001$) poor health status (.22 $< p = .001$), and COVID-19 stressors (.15 $< p = .01$).

The highest association with *group-based discrimination* was also with status EAA (.40 $< p = .001$), followed by PTSD (.37 $< p = .001$), depression (.33 $< p = .001$), death anxiety (.30 $< p = .001$), anxiety. (29 $< p = .001$), working memory (.26 $< p = .001$), Covid fear (.25 $< p = .001$), poor health status (.19 $< p = .001$), COVID-19 lockdown (.18 $< p = .001$), and inhibition deficits (.16 $< p = .01$). The highest associations between *genocidal discrimination* and other variables was with status EAA (.40 $< p = .001$), followed by death anxiety (.33 $< p = .001$), PTSD (.32 $< p = .001$), depression (.27 $< p = .001$), anxiety (.25 $< p = .001$), poor health status. (.22 $< p = .001$), working memory (.22 $< p = .001$), inhibition deficits (.18 $< p = .001$), and COVID-19 fears (.14 $< p = .05$). *GD by society* had the highest associations with PTSD (.35 $< p = .001$), Status EAA (.33 $< p = .001$), followed by depression (.26 $< p = .001$), anxiety (.22 $< p = .001$), death anxiety (.20 $< p = .001$), inhibition deficits (.13 $< p = .05$), and working memory deficits (.13 $< p = .05$). *GD by*

parents had its highest association with Status EAA (.25 $< p = .001$) and PTSD (.25 $< p = .001$), followed by depression (.23 $< p = .001$), working memory deficits (.22 $< p = .001$), poor health status (.20 $< p = .001$), death EAA (.18 $< p = .001$), anxiety (.17 $< p = .001$), and inhibition deficits (.12 $< p = .05$). *Sexual preference-based discrimination* had the highest association with anxiety (.41 $< p = .001$), status anxiety (.38 $< p = .001$), and depression (.38 $< p = .001$) followed by death EAA (.35 $< p = .001$), PTSD (.33 $< p = .001$), working memory deficits (.31 $< p = .001$), inhibition deficits (.25 $< p = .001$), poor health status (.16 $< p = .01$), and COVID-19 lockdown stressors (.12 $< p = .05$). Table 3 presents these results.

From these results, we note that intersected discrimination was significantly associated with COVID-19 lockdown and COVID-19 fears. Group-based discriminations had a significant association with COVID-19 lockdown and COVID-19 fears. Genocidal discrimination had a significant association with COVID-19 fears. Sexual preference-based discrimination was significantly associated with lockdown stressors. GD by family and society was not associated with COVID-19 stressors. However, the degree of association seems small to moderate but significant. We may also note the centrality of status existential anxiety in intersected discrimination and most discrimination types.

Table 3

Zero-Order Correlations Between Different Discrimination Types and Main Variables

Variables	Intersected discriminations	Group discrimination	Genocidal discrimination	Gender discrimination by society	Gender discrimination by family	Sexual preference discrimination
COVID-19 fears stressors	.15*	.25***	.14*	.04	.04	.09
COVID-19 economic stressors	.08	.12	.02	.08	.05	.04
COVID-19 lockdown stressors	.15**	.18***	.09	.11	.08	.12*
COVID-19 cumulative stressors	.15**	.22***	.10	.09	.06	.10
health status	.22***	.19***	.22***	.07	.20***	.16**
Working memory deficits	.30***	.26***	.22***	.13*	.22***	.31***
Inhibition deficits	.22***	.16**	.18***	.13*	.12*	.25***
PTSD	.42***	.37***	.32***	.35***	.25***	.33***
Depression	.38***	.33***	.27***	.26***	.23***	.38***
Anxiety	.35***	.29***	.25***	.22***	.17***	.41***
Status EAA	.47***	.40***	.40***	.33***	.25***	.38***
Death EAA	.36***	.30***	.33***	.20***	.18***	.35***

Note. COVID-19 = coronavirus disease; PTSD = posttraumatic stress disorder; EAA = existential annihilation anxiety.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Hierarchical Multiple Regression Results

In the first analysis, intersected discrimination predicted COVID-19 hospitalization. The effect size ($\beta = .11 < p < .01$.) was small but significant. Yearly income had comparable results. In the second analysis, Oppression/genocidal discrimination was the significant predictor of COVID-19 hospitalization in the sample ($\beta = .12 < p = .01$). Both models accounted for small but significant variances. Table 4 details the two analyses results. Figure 1 illustrates the partial regression plot between COVID-19 hospitalization and intersected discrimination.

Path Analysis Results. In the path analysis, we tested two models. In the first model, the intersected discrimination was the independent variable. In the second model, the discrimination types were the independent variables. The first model fitted well with data ($\chi^2 = 9.499$, $df = 14$, $p = .798$, CFI = 1.000, RMSEA = .000). PTSD accounted for the highest variance in the model ($R^2 = .549$). In the model, intersected discriminations had direct effects on health status and COVID-19 stressors, direct and indirect effects on status EAA, depression, PTSD, and working memory. It had indirect effects on generalized anxiety and inhibition deficits. Its direct effects on Status EAA accounted for 70.2% of its total effects. Its direct effects on depression accounted for 75.5% of its total effects. Its direct effects on working memory deficits accounted for 50% of its total effects. Its direct effects on PTSD accounted for 31% of its total effects. Its highest total effects were on Status EAA, followed by PTSD and depression.

Self-reported health status had direct effects on depression, direct and indirect effects on working memory deficits, and indirect effects on generalized anxiety, inhibition deficits, PTSD, and status EAA. Its direct effects on working memory accounted for 90.5% of its total effects. Its highest total effects were on working memory deficits followed by depression.

COVID-19 stressors had direct effects on depression, direct and indirect effects on PTSD and inhibition deficits, and indirect effects on generalized anxiety, Status EAA, and working memory. Its direct effects on PTSD accounted for 56.1% of its total effects. Its direct effects accounted for 63.2% of its total effects on inhibition deficits. Its highest total effects were on PTSD, followed by depression.

Depression had direct effects on status EAA, direct and indirect effects on generalized anxiety and PTSD, and indirect effects on inhibition deficits and working memory deficits. Its direct effect on generalized anxiety accounted for 83% of its total effects. Its direct effect on PTSD accounted for 63% of its total effects. Its highest total effects were on anxiety, followed by PTSD.
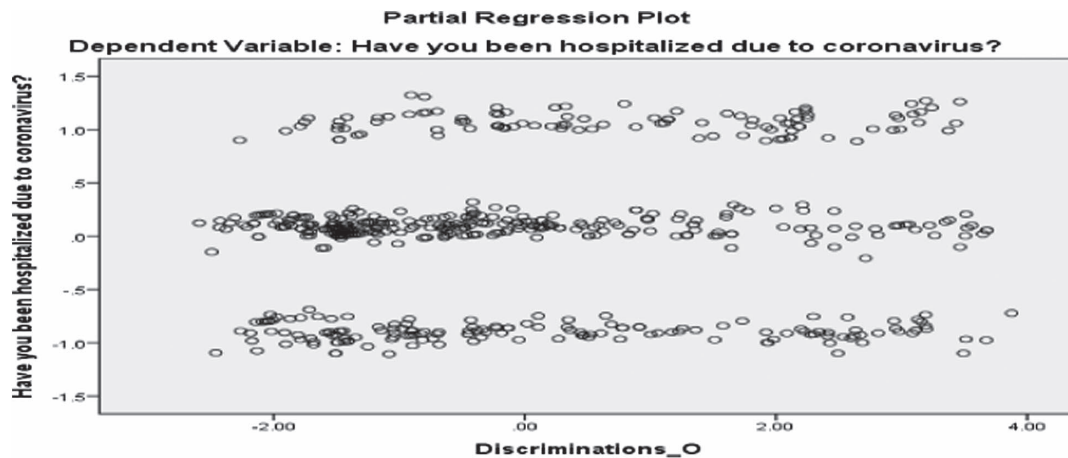
Status EAA had direct effects on generalized anxiety, direct and indirect effects on PTSD, and indirect effects on working memory deficits and inhibition deficits. Its direct effect on PTSD accounted for 74% of its total effects. Its highest total effects were on generalized anxiety, followed by PTSD. *Generalized anxiety* had direct effects on PTSD, direct and indirect effects on inhibition deficits, and indirect effects on working memory deficits. Its highest total effects were on inhibition deficits followed by PTSD. PTSD had direct effects on working memory deficits and indirect effects on inhibition deficits. Its highest total effects were on working memory deficits. Working memory deficits had direct effects on inhibition deficits. Table 5 details the direct, indirect, and total effects and their 95% confidence intervals of each variable in the model while Figure 2 illustrates the direct effects of each variable in the model.

Table 4

Hierarchical Multiple Regressions for the Effects of Intersected Discrimination and Discrimination Types on COVID-19 Hospitalization in Christian Subsample

Predictor	Step 1				Step 2			
	B (SE)	t	β	VIF	B (SE)	t	β	VIF
1. The effects of intersected discrimination on COVID-hospitalization								
Gender	.06 (.06)	1.04	.05	1.011	.07 (.06)	1.11	.05	1.01
Age	−.00 (.00)	− 1.03	−.05	1.317	−.00 (.00)	−.60	−.03	1.34
Marital status	.00 (.05)	.03	.00	1.180	−.01 (.05)	−.19	−.01	1.19
Yearly income	.11 (.04)	2.44	.12**	1.234	.11 (.04)	2.38	.11**	1.24
Education	−.01 (.04)	−.26	−.01	1.442	.01 (.04)	.150	.01	1.49
Intersected discrimination					.04 (.02)	2.40	.11**	1.09
R^2	.016				.028			
R^2 change	.016				.012			
F for R^2 change	1.73				5.746**			
2. The effects of discrimination types on COVID-hospitalization								
Gender	.06 (.06)	1.04	.05	1.011	.07 (.06)	1.23	.05	1.011
Age	−.00 (.00)	− 1.03	−.05	1.317	−.00 (.00)	−.82	−.04	1.317
Marital status	.00 (.05)	.03	.00	1.180	−.01 (.05)	−.151	−.01	1.180
Yearly income	.11 (.04)	2.44	.12**	1.234	.09 (.05)	1.99	.10*	1.234
Education	−.01 (.04)	−.26	−.01	1.442	.02 (.04)	.48	.03	1.442
Group-based discrimination					−.04 (.07)	−.474	−.03	1.100
Genocidal discrimination					.17 (.08)	2.08	.12**	1.211
Gender discrimination					.08 (.05)	1.58	.09	1.180
Sexual preference-based discrimination					−.09 (.09)	− 1.11	−.06	1.011
R^2	.016				.036			
R^2 change	.016				.020			
F for R^2 change	1.73				. 2.19*			

Note. VIF = variance inflation factors; COVID-19 = coronavirus disease.
* $p < .05$. ** $p < .01$.

Figure 1

Partial Regression Plot for the Relationship Between COVID-19 Hospitalization and Intersected Discrimination

Note.   COVID-19 = coronavirus disease.

The second model had an excellent fit with the data ($\chi^2 = 25.638$, d$f = 36$, $p = .900$, CFI = 1.000, RMSEA=.000). PTSD accounted for the highest variance in the model ($R^2 = .552$), followed by status EAA ($R^2 = .428$). In the model, *GD* had direct effects on depression, direct and indirect effects on PTSD, and indirect effects on Status EAA, working memory deficits, and inhibition deficits. Its direct effects on PTSD accounted for 68% of its total effects. It had its highest effects on PTSD, followed by status EAA.

Genocidal discrimination had direct effects on Status EAA and self-reported health status and indirect effects on depression, generalized anxiety, PTSD, working memory deficits, and inhibition deficits. It had its highest effects on PTSD on self-reported health, followed by status EAA.

Group-based discrimination had direct effects on COVID-19 stressors, direct and indirect effects on status EAA, and indirect effects on PTSD, depression, generalized anxiety, working memory deficits, and inhibition deficits. Its direct effects on Status EAA accounted for 71% of its total effects. It had its highest effects on COVID-19 stresses, followed by status EAA.

Sexual preference-based discrimination had direct effects on depression, direct and indirect effects on generalized anxiety and working memory deficits, and indirect effects on PTSD, inhibition deficits, and status EAA. Its direct effects on working memory accounted for 84% of its total effects. Its direct effects on generalized anxiety accounted for 63.3% of its total effects. It had its highest effects on anxiety, followed by depression and working memory deficits.

COVID-19 stressors had direct effects on depression, direct and indirect effects on PTSD, status EAA, and inhibition deficits. It had indirect effects on generalized anxiety and working memory. Its direct effects on PTSD accounted for 57.5% of its total effects. Its direct effects on inhibition deficits accounted for 66.7% of its total effects. Its direct effects on status EAA accounted for 68.2% of its total effects. It had its highest effects on PTSD, followed by depression.

Self-reported health status had direct effects on depression, direct and indirect effects on working memory deficits, and indirect effects on inhibition deficits, PTSD, generalized anxiety, and status EAA. Its direct effects on working memory accounted for 91.3% of its total

effects. It had its highest effects on working memory deficits, followed by depression.

Depression had direct effects on generalized anxiety, direct and indirect effects on PTSD, and indirect effects on status EAA, inhibition deficits, and working memory deficits. Its direct effects on PTSD accounted for 64.4% of its total effects. It had its highest effects on generalized anxiety, followed by PTSD.

Generalized anxiety had direct effects on status EAA, direct and indirect effects on PTSD, and inhibition deficits. Its direct effects on PTSD accounted for 75% of its total effects. Its direct effects on inhibition deficits accounted for 90.9% of its total effects. It had its highest effects on status EAA, followed by PTSD and inhibition deficits.

Status EAA had direct effects on PTSD and indirect effects on working memory and inhibition deficits. Its highest effects were on PTSD. PTSD had direct effects on working memory and indirect effects on inhibition deficits. Its total effects on working memory were the highest. *Working memory deficits* had direct effects on inhibition deficits. Table 2-S, in Supplemental Materials, details the direct, indirect, and total effects and their 95% confidence intervals of each variable in the model while Figure 1-S in the Supplemental Materials illustrates the direct effects of each variable in the model.

Multigroup Invariance Across Binary Genders (Male/Female)

Multigroup structural invariance for the two path models for the effects of different discrimination types, and the effects of intersected discrimination indicated that the two models were strictly invariant between genders (males and females). Table 6 includes the structural fit indexes (for each model) on the four levels (configural, metric, scalar, and strict), which did not significantly differ from each other according to the criteria previously discussed.

Discussion

The novelty of the current investigation is that it is one of the first that empirically assessed discrimination and intersected

Table 5

The Direct, Indirect, and Total Effects and Their 95% Confidence Intervals of the Effects of Intersected Discrimination and Each Variable in the Model

Causal variables	Health status	COVID stressors	Depression	Status EAA	Anxiety	PTSD	Working memory D	Inhibition deficits
				Endogenous variables				
Intersected discriminations								
Direct effects	.22** (.12/.33)	.15** (.05/.24)	.31** (.20/.40)	.33** (.21/.43)	—	.13* (.02/.24)	.15** (.03/.27)	—
Indirect effects	—	—	.08*** (.05/.15)	.14** (.08/.22)	.33** (.26/.40)	.29** (.22/.34)	.15*** (.09/.25)	.18** (.12/.23)
Total effects	.22** (.12/.33)	.15** (.05/.24)	.39* (.28/.50)	.47** (.36/.53)	.33** (.26/.40)	.42** (.32/.52)	.30** (.18/.39)	.18** (.12/.23)
Reported health status								
Direct effects			.15* (.04/.25)	—	—	—	.19** (.08/.28)	—
Indirect effects			—	.05** (.02/.09)	.09** (.03/.16)	.07** (.02/.12)	.02** (.01/.04)	.09** (.04/.14)
Total effects			.15* (.04/.25)	.05** (.02/.09)	.09** (.03/.16)	.07** (.02/.12)	.21** (.09/.31)	.09** (.04/.14)
COVID-19 stressors								
Direct effects			.32** (.19/.44)	.14+ (−.00/.26)	—	.23** (.11/.33)	—	.12* (.03/.21)
Indirect effects			—	.10** (.05/.18)	.23** (.16/.32)	.18** (.12/.25)	.09** (.04/.17)	.07*** (.05/.14)
Total effects			.32** (.19/.44)	.24* (.10/.33)	.23** (.16/.32)	.41** (.29/.53)	.09** (.04/.17)	.19** (.11/.28)
Depression								
Direct effects				.30** (.18/.43)	.48** (.37/.62)	.29** (.19/.40)	—	—
Indirect effects				—	.10*** (.05/.15)	.17*** (.12/.24)	—	—
Total effects				.30** (.18/.43)	.58** (.47/.70)	.46** (.37/.57)	—	—
Status EAA								
Direct effects					.30** (.19/.42)	.17** (.07/.28)	.07** (.04/.14)	.08** (.04/.15)
Indirect effects					—	.06*** (.03/.11)	—	—
Total effects					.30** (.19/.42)	.23** (.13/.36)	.07** (.04/.14)	.08** (.04/.15)
Anxiety								
Direct effects						.21** (.11/.31)	.14+ (−.01/.25)	.19* (.05/.28)
Indirect effects						—	.03* (.00/.06)	.06** (.02/.12)
Total effects						.21** (.11/.31)	.17* (.03/.28)	.25** (.13/.36)
PTSD								
Direct effects							.14** (.07/.28)	.05* (.01/.11)
Indirect effects							—	—
Total effects							.14** (.07/.28)	.05* (.01/.11)
Working memory deficits								
Direct effects							—	.35** (.26/.50)
Indirect effects							—	—
Total effects							—	.35** (.26/.50)
Squared R	.049	.022	.266	.341	.468	.549	.178	.235

Note. EAA = existential annihilation anxiety; COVID-19 = coronavirus disease; PTSD = posttraumatic stress disorder.
* $p < .05.$ ** $p < .01.$ *** $p < .001.$

Figure 2

The Direct Paths of the Effects of Intersected Discrimination on Mental Health and Executive Functions
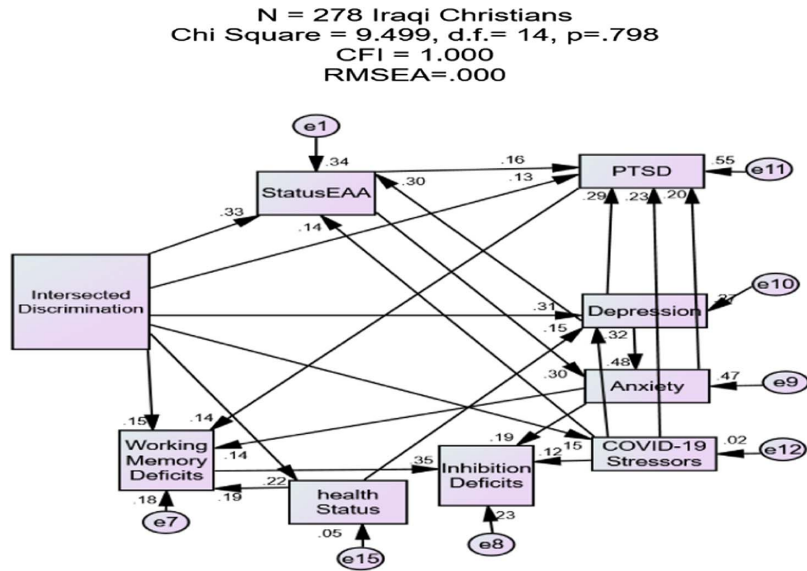
Note. EAA = existential annihilation anxiety; COVID-19 = coronavirus disease; PTSD = posttraumatic stress disorder. See the online article for the color version of this figure.

discrimination profiles and its link to COVID-19 infection and stressors in Iraqi Christians. Additionally, the present study used comprehensive measurement strategies for intersected discrimination and COVID-19 stressors with robust psychometrics.

The study provided empirical evidence for the missing link between intersectional discrimination and COVID-19 infection and hospitalization. While there were no significant differences between Christians and Muslims in group-based discrimination, Christians had significantly higher genocidal discrimination. Group-based discrimination was more of the focus in Western and American studies. Iraqi Christians have higher existential anxieties around status and death but not higher PTSD, depression, or anxiety than Muslims. Existential anxiety with its different types is mostly an ignored variable in the mainstream clinical sciences (Kira, Shuwiekh, Al-Huwailah, et al., 2019; Kira, Shuwiekh, Kucharska, & Al-Huwailah, 2019; Kira, Özcan, Shuwiekh, Kucharska, Amthal, et al., 2020).

The present study validated intersected discrimination's significant contribution, and especially the genocide discrimination to

COVID-19 infection in Iraqi Christians who suffered genocidal discrimination. This study is one of the first studies, if not the first one, that provided empirical evidence that intersected discrimination was a significant predictor of COVID-19 hospitalization. In an American study, being an African American predicted higher infection rates (Jehi et al., 2020). The intersected discrimination had a higher association with all mental health, health, and cognition variables than the impact of each discrimination type alone, which reflected the cumulative dynamics of all types of discrimination. This finding is consistent with the intersectionality model (Cho et al., 2013). However, the degree of association seems small to moderate, which means that other additional important preexisting health, mental health, social/behavioral factors, and cumulative traumatization of other trauma types contribute to vulnerability to infection (e.g., Wang et al., 2021). For example, population density, percentage of people aged > 70 years, the prevalence of comorbidities, and urbanity were essential in predicting COVID-19 occurrences (e.g., Khavarian-Garmsir et al., 2021; Mehta et al., 2020;

Table 6

Multigroup Invariance Between Binary Genders (Male/Female) in the Two Tested Models

Gender (male/female)	x^2	df	p	x^2/df	CFI	RMSEA	IFI	TLI
Multigroup invariance between genders model 1: The effects of different discrimination types								
Unconstrained (configural)	84.777	76	.230	1.115	.992	.020	.992	.986
Structural weights (metric)	118.317	98	.080	1.207	.981	.027	.982	.976
Structural means (scalar)	125.111	108	.125	1.158	.984	.024	.984	.980
Structural residuals (strict invariance)	128.957	116	.194	1.112	.988	.020	.988	.986
Multigroup invariance between genders model 2: The effects of intersected discriminations								
Unconstrained (configural)	25.154	28	.619	.898	1.000	.000	1.004	1.010
Structural weights (metric)	49.965	50	.475	.999	1.000	.000	1.000	1.000
Structural means (scalar)	50.014	51	.513	.981	1.000	.000	1.001	1.002
Unconstrained (configural)	58.958	59	.477	.999	1.000	.000	1.000	1.000

Note. CFI = comparative fit index; IFI = Incremental fit index; TLI = Tucker–Lewis index; RMSEA = root-mean-square error of approximation.

Shuwiekh et al., 2020). Additionally, there are other hosts of specific variables, for example, vaccine hesitancy (correlated with lower education), discrimination in the hospital system, less likely to have insurance, more exposure through occupations (e.g., public-facing service jobs), that may contribute to higher infection and hospitalization. Future research can evaluate their comparative contribution to COVID-19 infection.

Intersected discriminations, and most of the discrimination types, were significantly associated with status EAA, health status and COVID-19 stressors, depression, PTSD, and working memory deficits. Its highest total effects were on status EAA. All discrimination types were highly associated with the status EAA. Status EAA was significantly associated with PTSD, working memory, and inhibition deficits. Existential anxiety about the person's social and economic status seems to be a direct critical outcome of intersected discrimination that trickles down to death EAA, mental health and cognitive dysfunction, and adverse health outcomes with significant association with higher COVID-19 stressors (Kira, Shuweikh, Kucharska, Abu-Ras, & Bujold-Bugeaud, 2020). Existential anxiety was suggested to erupt with COVID-19 (Peteet, 2020; Tomaszek & Muchacka-Cymerman, 2020).

All discrimination types were significantly associated with COVID-19 stressors, PTSD, depression, generalized anxiety, working memory, and inhibition deficits. A Recent study found that intersected discrimination contributes significantly to COVID-19 infection and severity (Kira, Ibrahim, et al., 2021). Group-based discrimination had the highest association and effects on COVID-19 stressors and PTSD. The results underscored the association of group-based discrimination like racism and COVID-19 different stressors and infection (e.g., Khazanchi et al., 2020). They replicated a rich literature on the mental health effects of racism (e.g., Williams et al., 2021). They confirmed and expanded on previous studies that found that experiencing even subtle racial discrimination had adverse cognitive effects (Ozier et al., 2019; Zahodne et al., 2016).

Sexual preference-based discrimination had the highest association with working memory and inhibition deficits. Results replicated previous research on the severe impact of these discrimination types on mental health (e.g., Bostwick et al., 2014; for review, see Plöderl & Tremblay, 2015). They confirmed and expanded on previous observations on the elevated risk of cognitive impairment among older sexual minorities (Hsieh et al., 2021).

GD had its highest effects on PTSD. Results emphasized that GD underlies a significant proportion of the gender differences in mental health (Kira, Lewandowski, et al., 2010; Kira, Smith, et al., 2010; Kira, Ashby, et al., 2015; Kira, Omidy, et al., 2015; Kira, Shuwiekh, & Bujold-Bugeaud, 2015; Kira et al., 2017; Klonoff et al., 2000; Kucharska, 2018). Genocidal discrimination, the strongest predictor of COVID-19 infection in our sample, was found to have a profound mental health impact (for meta-analysis, see Musanabaganwa et al., 2020). Their effects on physical health were assumed but rarely investigated (Munyandamutsa et al., 2012). The current results expanded on previous findings on the effects of genocide on cognition (Blanchette et al., 2019).

COVID-19 stressors had significant effects on depression, PTSD, generalized anxiety, and status EAA. The results replicated previous studies that found similar results (for reviews and meta-analyses see: Vindegaard & Benros, 2020; and Salehi et al., 2021; see also Liu et al., 2020 for its effects in the USA). COVID-19 hospitalization and stressors were associated with inhibition, working memory

deficits replicating previous findings (for the effects COVID-19 infection on cognition, see, e.g., Jaywant et al., 2021; for the effects of COVID-19 stressors on cognition, see Kira, Alpay, et al., 2021).

The study results had significant conceptual and clinical implications. Conceptually, it indicates the presence of persistent posttype III or postcontinuous traumatic stressors syndromes (postintersected discrimination and post-COVID-19 syndromes) beyond the single diagnosis of PTSD. The syndromes include comorbidity of depression, status EAA, death EAA, generalized anxiety, PTSD, executive function deficits (Kira, Shuwiekh, Rice, et al., 2021). As noticed before, status EAA was prominent in the postintersected discrimination syndrome. Identifying these posttype III trauma syndromes are clinically significant to address the whole syndrome in therapy instead of targeting one diagnosis or the other, which may be the wrong approach. Such posttype III (continuous) trauma syndromes were observed in the different poly-victimized populations such as foster care children and adults aged out of foster care (e.g., Finkelhor et al., 2007). Type III traumas (continuous) have different subtypes; type III-a is the social identity continuous traumas, Type III-b traumas are early childhood that can continue with the person, such as prolonged foster care and sex trafficking traumas. Type III-c traumas include ongoing intergroup conflicts such as the Israeli–Palestinian conflict and the Syrian civil war; Type III-d traumas include community violence. Type III-f trauma includes uncontrolled physical health conditions such as COVID-19. Type III trauma subtypes can intersect with amplifying dynamics (Kira, 2021a, 2021b). In our study, we can see the intersection of at least two Type III subtypes: Intersected discrimination (Type III-a trauma) and COVID-19 (Type III-f), amplifying each other to produce such posttype III syndrome. This syndrome is strictly invariant between genders. With GD included in the model, gender differences disappeared, and the model became invariant. That may give credence to the assumption that gender differences in response to stressors are primarily a function of the added GD for females compared to males.

Postcumulative trauma disorders were previously suggested in the literature (Kira, 2010; Kira et al., 2012). The syndrome includes comorbid PTSD, depression, anxiety and somatization, executive and control deficits, dissociation and psychoticism, and suicidality. The present study did not test for dissociation and psychotic symptoms; however, there is strong empirical evidence that ethnic minority position and migrant status are risk factors for psychotic symptoms (for review and meta-analysis see, Leaune et al., 2019). There is empirical evidence of the higher suicidality in immigrants/refugees (for meta-analysis, see Amiri, 2020) and lesbian, gay, bisexual, transgender, and queer [LGBTQ] (for meta-analysis, see Williams et al., 2021).

The current findings have important clinical implications. As discussed earlier, treatment needs to address this complex posttype III trauma syndrome and not only one diagnostic category, using probably a mix of transdiagnostic and continuous trauma-focused interventions. Posttype III trauma syndrome-focused intervention should conduct a thorough evaluation of all the comorbidities and cognitive deficits. Clinically, the study underscored some of the critical variables essential to be addressed in treatment, that is, status EAA, intersected discrimination, and executive functions. Further, the study highlighted the urgent need for innovations in prevention and intervention with the

intersected type III traumas beyond current evidence-based single trauma-focused interventions.

There is a need for new ways to expand the efficacy of current evidence-based interventions and provide innovations that may have added benefits. A multisystemic perspective may be appropriate to deal with such complex syndromes (e.g., Bell et al., 2021; Kira, 2002). Some suggested augmenting the cognitive and exposure approaches by adding precognitive metamotivational factors such as stimulating the "will-to exist-live and survive" (WTELS; Kira, Arıcı Özcan, et al., 2020; Kira, Özcan, et al., 2021; Kira, Shuwiekh, Kucharska, Al-Huwailah, & Moustafa, 2020; Kira, Ayna, et al., 2021; Kira, Shuwiekh, Kurchaska, Bujold-Bugeaud, 2021; Kira, Shuwiekh, Ashby, et al., 2021; Kira, Shuwiekh, Rice, et al., 2021; Kira et al., 2022). Others recommended addressing identity factors (e.g., Kira & Tummala-Narra, 2014; Kira &Wroble, 2016; Kira, Ashby, et al., 2015; Kira, Omidy, et al., 2015; Kira, Shuwiekh, & Bujold-Bugeaud, 2015). Identity, personal and collective, is essential and relevant, especially for victims of intersected discrimination.

The present study indicated that any treatment program for victims of intersected discrimination and intersected type III traumas should include a cognitive training component considering the significant effects of intersected discrimination and most discrimination types and higher trauma load on executive function deficits. Research into cognitive functions across psychological disorders suggests that multiple disorders may present cognitive deficiencies, potentially pointing to a transdiagnostic phenomenon (Abramovitch et al., 2021). Treatment of PTSD was associated with longitudinal changes in brain regions that support executive functioning (Garrett et al., 2021), which underscores the utility of directly addressing executive functions. Cognitive training to enhance executive functions can be one of the keys to their mental health (e.g., Dias et al., 2017). Varieties of cognitive training protocols were effective (for meta-analysis, Webb et al., 2018; see also; Jahn et al., 2021; Karbach & Verhaeghen, 2014; Nguyen et al., 2019; Scionti et al., 2020; Takacs & Kassai, 2019; Walk et al., 2018). Working memory updating training was found to lower repetitive negative thinking (Roberts et al., 2021). Goal management training was found to improve executive functions (Stamenova & Levine, 2019).

The present study had various limitations. The study was conducted in a convenient sample that was skewed toward females. Another limitation is that the study utilized a cross-sectional design. Cross-sectional design can report an association with no conclusions on cause and effects that only longitudinal design can achieve. Further, the measures used are based on participants' self-reports. Self-reports are subject to under-or overreporting due to social desirability. We used a self-report measure, not a performance measure, to test for executive functions. However, previous research has demonstrated that task-based and self-report measures of EF capture complementary yet distinct components of cognitive control (Snyder et al., 2020). Further, when discussing direct and indirect effects, we must caution that statistical probabilistic stochastic terms used in path analysis do not mean the same thing in deterministic sciences of cause and effect. Additionally, the Christian sample size ($N = 278$) was relatively small considering the number of analyses conducted; accordingly, the effect sizes for subgroups may be overestimated. For this reason, caution should be exercised when interpreting the effect sizes with less than .01. Collecting data from this area and the population is challenging to get larger samples. There is a paucity of data on this topic and population, and the difficulties of getting data from the population limited our ability to recruit a larger sample. Regardless, the study provided initial evidence that demonstrated the dynamics of intersected discrimination on COVID-19 infection and stressors in minorities.

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