

Predictive Model of Coronavirus Anxiety Based on Type D Personality, Obsessive Beliefs, Illness Perception, and Emotional Self-Regulation among Traffic Users (Male and Female Drivers) Entering Quarantined Cities

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ABSTRACT

Purpose: The present study aimed to design a predictive model of coronavirus anxiety based on Type D personality, obsessive beliefs, illness perception, and emotional self-regulation among traffic users (male and female drivers) entering quarantined cities.

Methods and Materials: In terms of purpose, the study was applied research, and regarding methodology, it was a descriptive correlational study. The statistical population consisted of traffic users (male and female drivers) entering quarantined cities in Mazandaran Province during the spring and summer of 2021. Using a convenience sampling method, 800 questionnaires were distributed. Data collection instruments included the Type D Personality Scale developed by Denollet (2000), the Obsessive Beliefs Questionnaire (2003), the Illness Perception Questionnaire developed by Howard Broadbent and colleagues (2006), the Emotional Self-Regulation Questionnaire developed by Leslie Hoffman and Todd Kashdan (2010), and the Coronavirus Anxiety Scale (2019). Structural equation modeling was employed, and the data were analyzed using path analysis through SPSS and Smart PLS software.

Findings: Type D personality (path coefficient = 0.206, $t = 6.405$), obsessive beliefs (0.194, $t = 5.896$), and illness perception (-0.198, $t = 5.891$) predicted coronavirus anxiety. Type D personality (-0.225, $t = 6.824$), obsessive beliefs (-0.246, $t = 6.751$), and illness perception (0.189, $t = 5.638$) predicted emotional self-regulation, while emotional self-regulation (-0.241, $t = 7.759$) predicted coronavirus anxiety. Emotional self-regulation also played a mediating role in the relationship between Type D personality (0.054, $t = 5.071$), obsessive beliefs (0.059, $t = 5.131$), illness perception (-0.046, $t = 4.568$), and coronavirus anxiety.

Conclusion: Considering the predictive power of the independent and mediating variables in explaining coronavirus anxiety, implementing strategies aimed at improving illness perception and reducing obsessive beliefs appears necessary for decreasing anxiety.

Keywords: Spiritually oriented existential therapy, illness perception, personal sense of security, women, Post-Traumatic Stress Disorder, definitive singlehood.

1. Introduction

The outbreak of the coronavirus pandemic, as one of the most extensive public health crises of the twenty-first century, left profound psychological consequences worldwide and, in addition to threatening physical health, led to a significant increase in anxiety, stress, cognitive concerns, and emotional disturbances among individuals (Chen et al., 2025; Karadağ et al., 2025). Quarantine conditions, social restrictions, fear of infection and death, uncertainty about the future, and continuous exposure to threatening news created a context in which anxiety disorders became one of the most prevalent psychological consequences of the pandemic (Dost, 2025; Özgüç et al., 2024). Recent studies have demonstrated that coronavirus anxiety was observed not only among infected patients but also widely among ordinary individuals, healthcare workers, university students, and even drivers and traffic users (Silva et al., 2025; Tuman, 2022). Under such circumstances, identifying the factors associated with coronavirus anxiety and designing predictive models for it are of considerable importance because they can provide the foundation for targeted psychological interventions and supportive policymaking.

Coronavirus anxiety is considered a complex emotional response to the perceived threat caused by COVID-19 and is accompanied by excessive worry, cognitive preoccupation, physical symptoms, and feelings of insecurity (Karadağ et al., 2025; Özgüç et al., 2024). This type of anxiety can severely affect cognitive functioning, social relationships, mental health, and quality of life (He et al., 2024; Wisuda, 2024). Research findings have shown that high levels of coronavirus anxiety are associated with depression, loneliness, hopelessness, sleep disturbances, and reduced psychological resilience (Dost, 2025; Silva et al., 2025). Moreover, during the pandemic, many individuals, especially those exposed to frequent social interactions and high-risk environments, experienced higher levels of anxiety (Yu et al., 2021). Traffic users and drivers entering quarantined cities were among the vulnerable groups to coronavirus anxiety because of their repeated contact with different individuals, the increased likelihood of exposure to the virus, and the pressures resulting from travel restrictions.

Personality characteristics play a significant role in explaining coronavirus anxiety. One of the personality constructs that has attracted considerable attention in recent years is Type D personality, which is characterized by two components: negative affectivity and social inhibition

(Mousavi & Pakizeh, 2021; Tuman, 2022). Individuals with Type D personality tend to chronically experience negative emotions such as worry, sadness, and tension while simultaneously avoiding emotional expression and social interaction (Grassi et al., 2021). These characteristics make such individuals more vulnerable to anxiety and emotional disorders in threatening situations (Daraeifard & Ansarinejad, 2022; Norouzian & Piadeh Kouhsar, 2022). Research findings have demonstrated that Type D personality is significantly associated with anxiety, depression, low distress tolerance, and maladaptive coping styles (Grassi et al., 2021; Hedaei et al., 2021). During the COVID-19 pandemic, individuals with Type D personality experienced higher levels of fear, anxiety, and concern (Tuman, 2022). Therefore, Type D personality is expected to be an important predictor of coronavirus anxiety among traffic users.

In addition to personality characteristics, obsessive beliefs are among the cognitive factors influencing coronavirus anxiety. Obsessive beliefs refer to a set of maladaptive beliefs including excessive responsibility, threat overestimation, need for certainty, importance of thought control, and perfectionism (Sarlak et al., 2022; Trak & Mujgan, 2022). These beliefs cause individuals to evaluate threatening events in an exaggerated manner and exhibit greater sensitivity toward potential dangers (Wheaton et al., 2021). During the pandemic, such cognitive patterns could lead to excessive concerns regarding contamination, death, or disease transmission (Mazhari & Rahimian Boogar, 2021). Studies have indicated that individuals with high levels of obsessive beliefs experience greater coronavirus anxiety, fear of illness, and excessive safety behaviors (Janfada et al., 2022; Trak & Mujgan, 2022). Furthermore, obsessive thoughts and intolerance of uncertainty have been identified as major contributors to heightened coronavirus anxiety (Wheaton et al., 2021). From a cognitive perspective, obsessive beliefs may intensify anxiety by creating mental preoccupation and increasing selective attention to threatening stimuli.

Illness perception is another important variable in explaining individuals' emotional responses to infectious diseases. Illness perception refers to an individual's cognitive and emotional understanding of the nature, severity, consequences, controllability, and duration of an illness (Varli & Naile, 2022). According to Leventhal's self-regulation model, the way individuals perceive illness plays a determining role in their emotional and behavioral reactions. When a disease is perceived as uncontrollable,

chronic, and fatal, the likelihood of anxiety and psychological distress increases (Li et al., 2021). In contrast, individuals who have a more realistic and controllable perception of illness tend to experience better emotional adjustment (Varli & Naile, 2022). Studies conducted during the COVID-19 pandemic have shown that the perception of disease risk and severity is directly associated with coronavirus anxiety (Aghajani et al., 2021; Yu et al., 2021). Illness perception can also influence self-care behaviors, adherence to health protocols, and emotional regulation (Asghari et al., 2021). Therefore, examining the role of illness perception in predicting coronavirus anxiety appears essential.

Another fundamental variable in explaining psychological responses to health crises is emotional self-regulation. Emotional self-regulation refers to an individual's ability to manage, control, and modify emotions and is considered one of the most important factors in maintaining mental health (Munoz-Navarro et al., 2021). Individuals with stronger emotional self-regulation skills are more capable of controlling anxiety, worry, and negative emotional reactions when facing stressful situations (Ahmadi et al., 2021). Conversely, deficits in emotional regulation are associated with anxiety, depression, avoidance behaviors, and psychological disorders (Falsafi et al., 2021). During the COVID-19 pandemic, emotional regulation was identified as one of the most important protective factors against anxiety and psychological distress (Karbasiyan Varnamkhasti et al., 2021). Research findings have shown that maladaptive emotion regulation strategies such as avoidance, emotional suppression, and rumination are associated with higher levels of coronavirus anxiety (Ahmadi et al., 2021; Munoz-Navarro et al., 2021). Emotional self-regulation can also play a mediating role in the relationship between personality traits, cognitive beliefs, and anxiety (Falsafi et al., 2021).

Examining the relationships among Type D personality, obsessive beliefs, illness perception, and emotional self-regulation may provide a deeper understanding of the psychological mechanisms underlying coronavirus anxiety. Individuals with Type D personality usually experience greater difficulties in regulating emotions and tend to use maladaptive strategies more frequently (Daraeifard & Ansarinejad, 2022). Likewise, obsessive beliefs may disrupt emotional regulation processes by increasing worry and sensitivity to threats (Sarлак et al., 2022). In contrast, more positive and realistic perceptions of illness may enhance emotional control and reduce anxiety (Varli & Naile, 2022).

Consequently, emotional self-regulation may function as a mediating mechanism in the relationship between cognitive and personality factors and coronavirus anxiety.

Previous studies have mostly examined each of these variables separately, and few studies have attempted to design a comprehensive model explaining coronavirus anxiety based on the simultaneous interaction of these factors (Kara et al., 2025; Sabokzei & Nastizaei, 2023). Moreover, most existing studies have focused on groups such as students, patients, or healthcare workers, while traffic users and drivers have received comparatively less attention as a high-risk group (Silva et al., 2025; Tuman, 2022). This is despite the fact that drivers entering quarantined cities may experience different levels of anxiety, worry, and psychological pressure because of their unique occupational and environmental conditions. Understanding the factors associated with anxiety in this group can contribute to the development of educational, psychological, and preventive programs aimed at reducing psychological harm during health crises.

Given the importance of coronavirus anxiety in individuals' mental health, the potential roles of Type D personality, obsessive beliefs, and illness perception in the development of this anxiety, as well as the mediating role of emotional self-regulation, the present study aimed to design a predictive model of coronavirus anxiety based on Type D personality, obsessive beliefs, illness perception, and emotional self-regulation among traffic users (male and female drivers) entering quarantined cities.

2. Methods and Materials

2.1. Study Design and Participants

In terms of purpose, the present study was applied research, and regarding its nature, it was a descriptive correlational study. The statistical population consisted of traffic users (male and female drivers) entering quarantined cities in Mazandaran Province during the spring and summer of 2021. To determine the sample size, based on the recommendation of Hoyle and Kramer, 20 to 40 participants were considered for each predictor variable and its components; therefore, a sample size of 800 participants was selected for this study. Data collection instruments included the Type D Personality Questionnaire developed by Denollet, the Obsessive Beliefs Questionnaire, the Illness Perception Questionnaire developed by Howard Broadbent et al. (2006), the Emotional Self-Regulation Questionnaire

developed by Leslie Hoffman and Todd Kashdan (2010), and the Coronavirus Anxiety Scale.

2.2. Measures

Type D Personality Scale (DS-14): This questionnaire was developed by Denollet (2000) and assesses two general characteristics, namely negative affectivity and social inhibition. The questionnaire consists of 14 items in total, of which 7 items assess negative affectivity and the remaining 7 items assess social inhibition. Participants respond to each item on a 5-point Likert scale (true, relatively true, neither true nor false, relatively false, false). These responses are scored from 0 to 4, respectively, where “0” indicates “completely false for me” and “4” indicates “completely true for me”. Cronbach’s alpha coefficients for negative affectivity and social inhibition in the study by Alavi et al. (2020) were 0.83 and 0.70, respectively. In the study conducted by Azimi and Soleimani (2020), Cronbach’s alpha for the overall scale was reported as 0.91. Regarding validity, Lambertus et al. (2018) confirmed the two-factor structure of the questionnaire, while Ali Akbari Dehkordi et al. (2016) reported a concurrent validity coefficient of 0.63 between this questionnaire and the Type A Personality Questionnaire.

Obsessive Beliefs Questionnaire (OBQ-44): This questionnaire consists of 44 items derived from the original OBQ-87 form. Both forms were designed and developed by the Obsessive Compulsive Cognitions Working Group, which includes prominent researchers from around the world studying the role of cognitions in obsessive-compulsive disorder. The Obsessive Beliefs Questionnaire is scored on a 6-point Likert scale ranging from “strongly disagree” to “strongly agree” (Azimi Khatibani & Akbari, 2017). The original version of this instrument includes the subscales of responsibility for harm and injury, threat estimation, perfectionism and need for certainty, and importance and control of thoughts. Internationally, Diedrich et al. developed the German-language version based on the English version of the questionnaire. The reliability of the instrument was assessed on three occasions, with Cronbach’s alpha coefficients ranging from 0.92 to 0.93 (Diedrich, Scharpke, & Schwarz, 2016). In Iran, the reliability of the Persian version of the Obsessive Beliefs Questionnaire was calculated using Cronbach’s alpha, and a coefficient of 0.91 was reported for the total questionnaire score.

Illness Perception Questionnaire: This instrument consists of a 9-item questionnaire designed to assess the emotional and cognitive representation of illness. The items evaluate consequences, duration, personal control, treatment control, identity, concern, illness coherence, emotional response, and causes of illness, respectively. The score range for the first eight items is from 1 to 10. Item 9 examines the three primary perceived causes of illness; however, because the present study did not aim to investigate the causes of illness, this item was omitted (Tavakkoli, Faraji Khiavi, Salimi Joda, Majdi Nasab, & Haghighizadeh, 2016). Bazazian and Besharat (2010) reported a Cronbach’s alpha coefficient of 0.80 and a test–retest reliability coefficient over a 6-week interval of 0.75 for this questionnaire. In the study by Tavakkoli et al. (2016), reliability assessed using Cronbach’s alpha was reported as 0.84.

Emotional Self-Regulation Questionnaire developed by Hoffman and Kashdan (2010): This questionnaire consists of 20 items and measures three components: concealment, tolerance, and adjustment. The questionnaire is scored on a 5-point Likert scale ranging from “completely true about me” (5) to “not at all true about me” (1). After translation, the questionnaire was provided to psychology specialists to assess content validity, which was subsequently confirmed. Cronbach’s alpha coefficients for the concealment, adjustment, and tolerance subscales were reported as 0.70, 0.75, and 0.50, respectively, while the overall reliability coefficient was 0.81.

Coronavirus Anxiety Scale (CDAS): This instrument was developed and validated in Iran to measure anxiety caused by the spread of coronavirus. The final version consists of 18 items and 2 components (factors). Items 1 to 9 assess psychological symptoms, while items 10 to 18 assess physical symptoms. The instrument is scored on a 4-point Likert scale (never = 0, sometimes = 1, most of the time = 2, always = 3). Therefore, the total score ranges from 0 to 54, with higher scores indicating greater levels of anxiety. Reliability coefficients obtained through Cronbach’s alpha were 0.879 for the first factor, 0.861 for the second factor, and 0.919 for the total questionnaire. Additionally, Guttman’s lambda-2 coefficients were reported as 0.882 for the first factor, 0.864 for the second factor, and 0.922 for the total questionnaire. Criterion-related validity was assessed by correlating this instrument with the GHQ-28 questionnaire. The results demonstrated that the Coronavirus Anxiety Scale was correlated with the total GHQ-28 score and the subscales of anxiety, somatic symptoms, social dysfunction, and depression at coefficients

of 0.483, 0.507, 0.418, 0.333, and 0.269, respectively, all of which were significant at the 0.01 level.

2.3. Data Analysis

Considering the use of structural equation modeling, the validity of the research questionnaires was confirmed through construct validity, including convergent validity ranging from 0.376 to 0.571 and discriminant validity exceeding the correlation of each construct with other constructs. Reliability was confirmed using three methods: Cronbach's alpha coefficients (ranging from 0.807 to 0.938), factor loading coefficients (greater than 0.40), and composite reliability (ranging from 0.866 to 0.945). Data were analyzed using path analysis through SPSS and Smart PLS software.

3. Findings and Results

In the descriptive analysis of the study participants, 412 participants were men (51.50%) and 388 were women (48.50%); 227 participants were single (28.38%) and 573 were married (71.63%). Regarding age groups, 178 participants were 20 years old or younger (22.25%), 154 were between 21 and 30 years old (19.25%), 159 were between 31 and 40 years old (19.88%), 162 were between 41 and 50 years old (20.25%), and 147 were older than 50 years (18.38%). Regarding educational level, 235 participants had a diploma or lower education (41.88%), 93 had an associate degree (11.63%), 190 had a bachelor's degree (23.75%), and 182 had a master's degree or higher (22.75%). In terms of

occupation, 91 participants were school or university students (11.38%), 87 were workers (10.86%), 126 were employees (15.75%), 51 were farmers and livestock breeders (6.38%), 149 were homemakers (18.63%), 184 were self-employed (23.00%), and 112 were retired (14.00%). Regarding income level, 97 participants earned less than 7 million tomans (12.13%), 138 earned between 7 and 10 million tomans (17.25%), 392 earned between 10 and 15 million tomans (49.00%), and 173 earned more than 15 million tomans (21.62%).

After collecting data related to the research variables, the Kolmogorov-Smirnov test was performed. The findings showed that most variables in the model were non-normal; therefore, nonparametric tests were used to test the hypotheses. Inferential analysis using structural equation modeling with the partial least squares approach (PLS-SEM) was conducted in two main stages: "assessment of model fit" and then "testing the research hypotheses," which are examined below.

Reliability: According to Fornell and Larcker (1981), reliability in the PLS method is assessed using factor loading coefficients, Cronbach's alpha coefficients, and composite reliability (CR). Based on the results, all coefficients indicated the adequacy of this criterion.

Validity: In addition to examining the content validity of the questionnaire, convergent and discriminant validity were also assessed using the PLS structural equation model. Convergent validity refers to the principle that the indicators of each construct should have moderate correlations with one another.

Table 1

Convergent Validity and Composite Reliability in the Fit of Measurement Models

Model Components	Cronbach's Alpha Reliability Coefficient	Composite Reliability Coefficient (CR)	Average Variance Extracted (AVE)
Responsibility and threat/risk assessment	0.848	0.884	0.522
Illness perception	0.891	0.913	0.568
Coronavirus anxiety	0.902	0.916	0.376
Completion of tasks	0.807	0.866	0.565
Importance and control of thoughts	0.828	0.875	0.538
Social inhibition	0.855	0.889	0.534
Tolerance	0.811	0.869	0.570
Adjustment	0.871	0.901	0.564
Negative affectivity	0.844	0.882	0.516
Physical symptoms	0.865	0.893	0.481
Psychological symptoms	0.879	0.903	0.509
General	0.938	0.945	0.519
Concealment	0.893	0.914	0.571
Perfectionism and certainty	0.905	0.921	0.538

As observed, the model was at a very good level in terms of all three aforementioned criteria. Discriminant validity is the third criterion for assessing the fit of measurement models and covers two issues:

The assessment of discriminant validity by comparing the correlation of a construct with its indicators against the correlations of those indicators with other constructs (Fornell and Larcker method), the results of which are

presented in Table 2, indicated the confirmation of discriminant validity using the second method. The main diagonal of this matrix contains the square roots of the AVE values of the research constructs. According to Fornell and Larcker, if the square root of the AVE value of each construct is greater than the correlation of that construct with other constructs, the construct has discriminant validity.

Table 2

Correlation Matrix and Assessment of Discriminant Validity Using the Fornell and Larcker (1981) Method

Constructs	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	0.723													
2	-0.337	0.754												
3	0.353	-0.473	0.613											
4	0.398	-0.310	0.366	0.751										
5	0.435	-0.317	0.342	0.401	0.733									
6	0.254	-0.402	0.392	0.337	0.249	0.731								
7	-0.268	0.318	-0.414	-0.257	-0.272	-0.295	0.755							
8	-0.244	0.354	-0.402	-0.266	-0.268	-0.295	0.477	0.751						
9	0.260	-0.347	0.421	0.296	0.211	0.434	-0.290	-0.314	0.718					
10	0.312	-0.396	0.862	0.303	0.297	0.368	-0.339	-0.324	0.376	0.694				
11	0.304	-0.427	0.881	0.335	0.299	0.317	-0.382	-0.375	0.358	0.520	0.714			
12	0.455	-0.358	0.360	0.426	0.444	0.316	-0.274	-0.314	0.274	0.324	0.304	0.721		
13	-0.234	0.286	-0.365	-0.222	-0.258	-0.256	0.441	0.420	-0.254	-0.296	-0.339	-0.247	0.756	
14	0.440	-0.328	0.366	0.363	0.396	0.262	-0.248	-0.242	0.267	0.334	0.305	0.418	-0.222	0.734

1. Responsibility and threat/risk assessment; 2. Illness perception; 3. Coronavirus anxiety; 4. Completion of tasks; 5. Importance and control of thoughts; 6. Social inhibition; 7. Tolerance; 8. Adjustment; 9. Negative affectivity; 10. Physical symptoms; 11. Psychological symptoms; 12. General; 13. Concealment; 14. Perfectionism and certainty

This applied to all research constructs and indicated the confirmation of discriminant validity. In the overall assessment of the model, the standardized root mean square residual (SRMR), which is an approximate index of model goodness of fit, had an appropriate and acceptable value.

Structural model fit: After assessing the fit of the measurement models, the next step was to assess the fit of the structural model. Unlike the measurement model, the

structural model does not deal with items or observed variables; rather, it examines only latent variables and the relationships among them. Structural model fit based on T coefficients is assessed such that these coefficients must be greater than 1.96, or equivalently their corresponding p-values must be less than 0.05, in order to confirm their significance at the 95% confidence level.

Figure 1

Main research model in the standardized coefficient mode

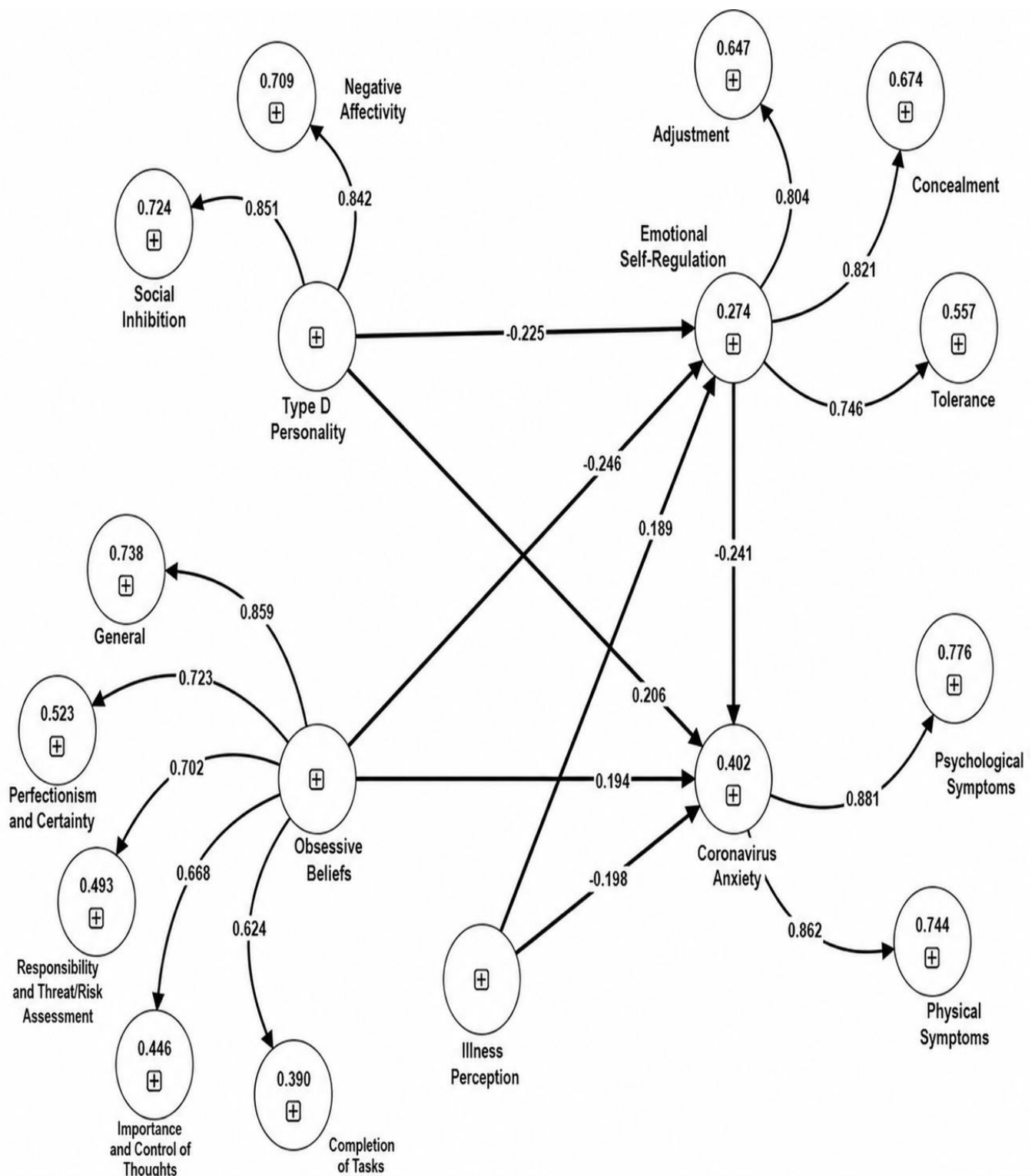
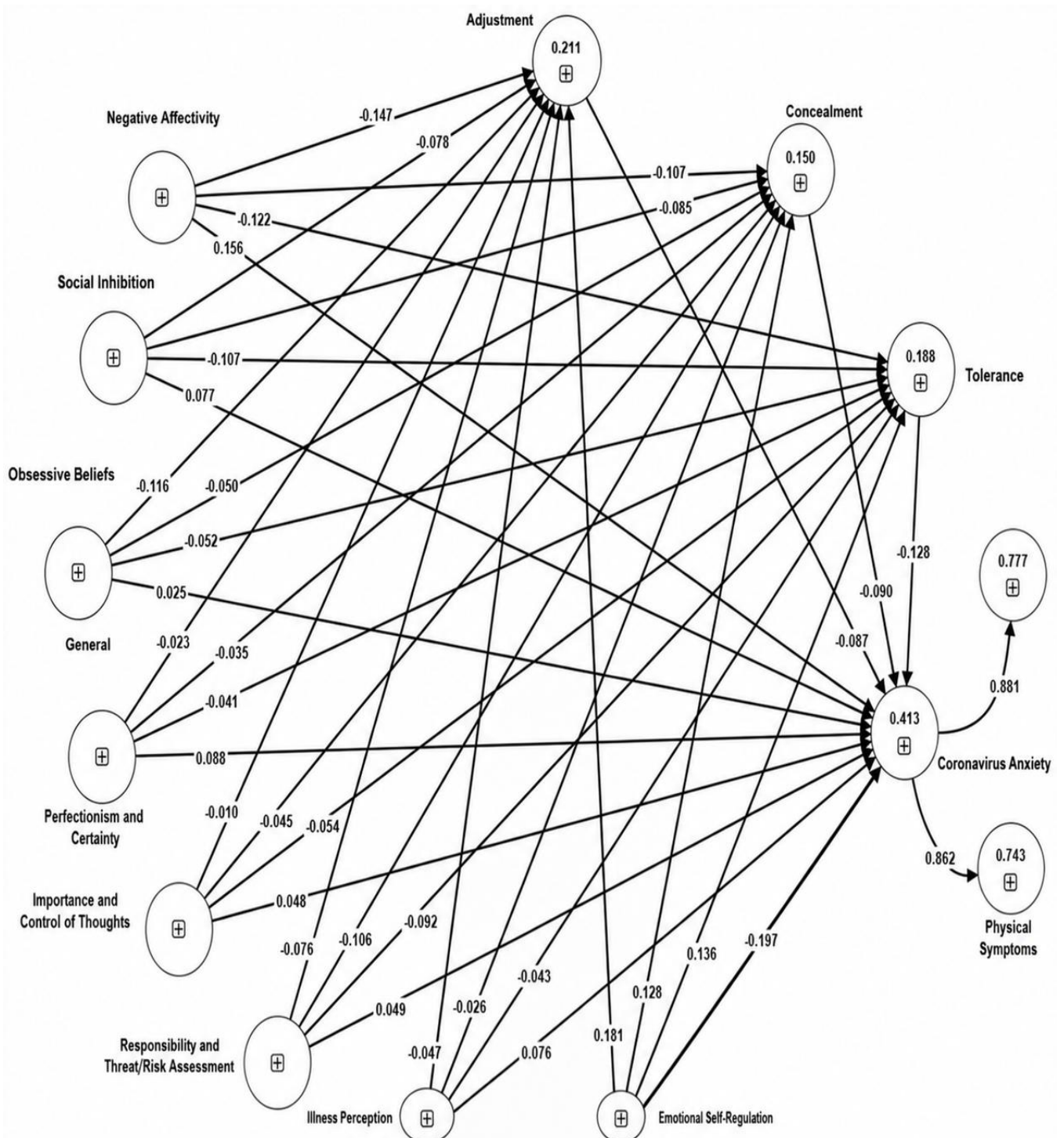


Figure 2

Specific research model in the standardized coefficient mode

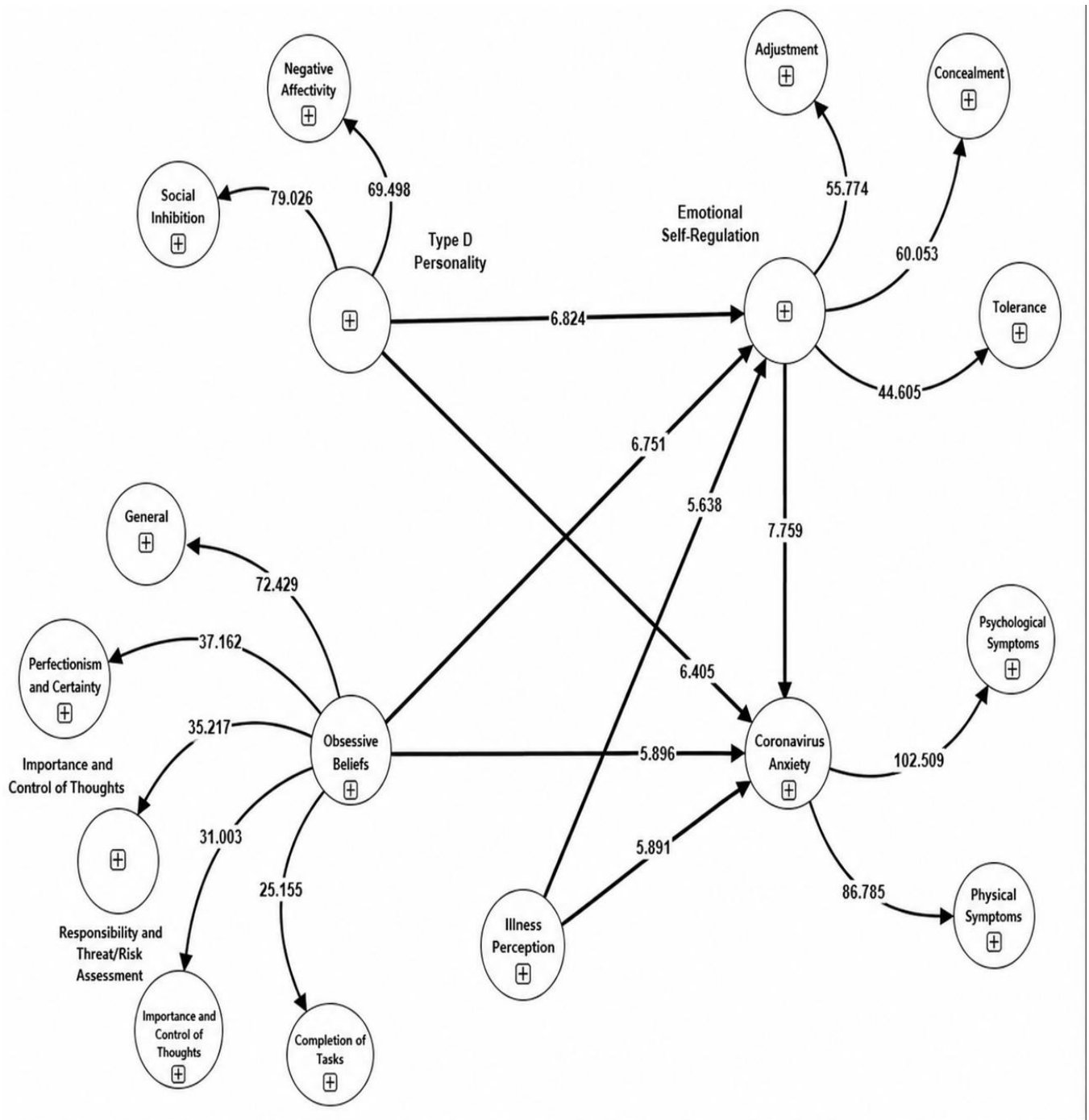


R² criterion: The second criterion for assessing the fit of the structural model in a study is the R² coefficients related to the endogenous latent variables of the model. This

criterion is displayed inside the circles related to the structural model of the study, and for the structural model of the present study, two endogenous latent variables existed.

Figure 3

Main research model in the significance coefficient mode



Overall model assessment: In the overall assessment of the model, the SRMR values, as the standardized root mean square residual and an approximate index of goodness of fit, were 0.072 and 0.05 for the main model and the specific model, respectively, indicating appropriate and acceptable

values. The data obtained from the field study were analyzed using SMART-PLS software, and the following results were obtained. Table 3 presents the path coefficients and significance values related to the relationships among the latent variables of the model.

Table 3
Path Coefficients and Significance Coefficients in Model Relationships

Path between Variables	Path Coefficient	T Statistic	P-Value	Result
Type D personality > Coronavirus anxiety	0.206	6.405	0.0009	Significant
Obsessive beliefs > Coronavirus anxiety	0.194	5.896	0.0009	Significant
Illness perception > Coronavirus anxiety	-0.198	5.891	0.0009	Significant
Type D personality > Emotional self-regulation	-0.225	6.824	0.0009	Significant
Obsessive beliefs > Emotional self-regulation	-0.246	6.751	0.0009	Significant
Illness perception > Emotional self-regulation	0.189	5.638	0.0009	Significant
Emotional self-regulation > Coronavirus anxiety	-0.241	7.759	0.0009	Significant
Type D personality > Emotional self-regulation > Coronavirus anxiety	0.054	5.071	0.0009	Significant
Obsessive beliefs > Emotional self-regulation > Coronavirus anxiety	0.059	5.131	0.0009	Significant
Illness perception > Emotional self-regulation > Coronavirus anxiety	-0.046	4.568	0.0009	Significant

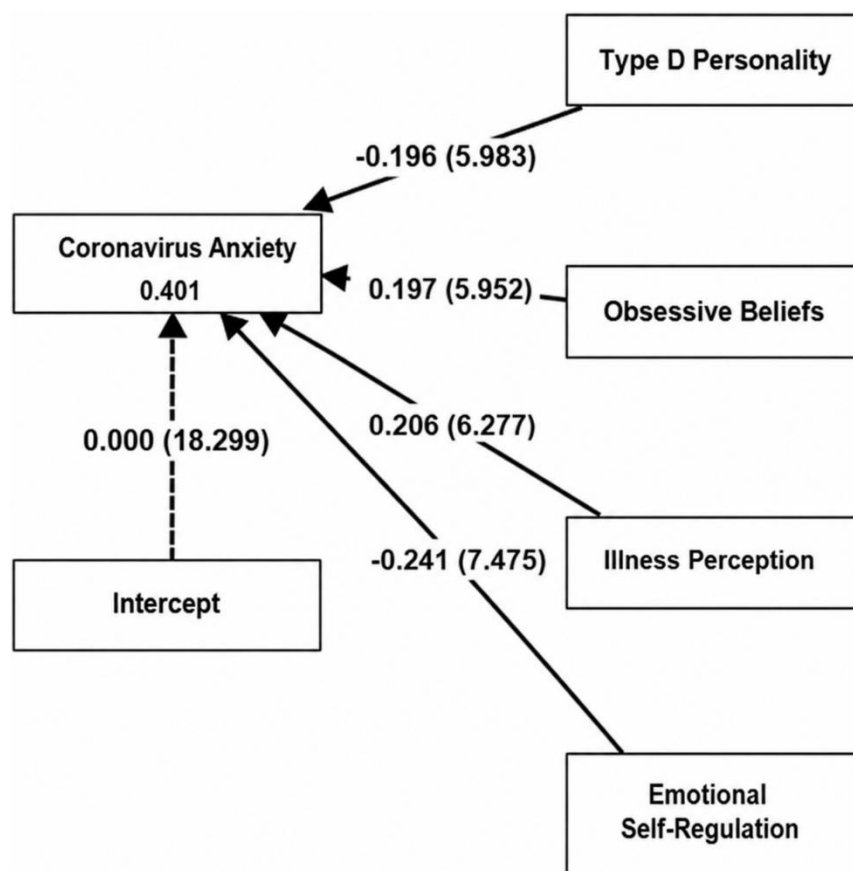
According to the results in Table 3, the path coefficient of Type D personality on coronavirus anxiety was 0.206, the t statistic was 6.405, and the p-value was less than 0.05. Therefore, Type D personality significantly and positively predicted anxiety caused by infection with COVID-19. The path coefficient of obsessive beliefs on coronavirus anxiety was 0.194, the t statistic was 5.896, and the p-value was less than 0.05. Therefore, obsessive beliefs significantly and positively predicted anxiety caused by infection with COVID-19. The path coefficient of illness perception on coronavirus anxiety was -0.198, the t statistic was 5.891, and the p-value was less than 0.05. Therefore, illness perception significantly and negatively predicted anxiety caused by infection with COVID-19. The path coefficient of Type D personality on emotional self-regulation was -0.225, the t statistic was 6.824, and the p-value was less than 0.05. Therefore, Type D personality significantly and negatively predicted emotional self-regulation. The path coefficient of obsessive beliefs on emotional self-regulation was -0.246, the t statistic was 6.751, and the p-value was less than 0.05. Therefore, obsessive beliefs significantly and negatively predicted emotional self-regulation. The path coefficient of illness perception on emotional self-regulation was 0.189, the t statistic was 5.638, and the p-value was less than 0.05. Therefore, illness perception significantly and positively predicted emotional self-regulation. The path coefficient of emotional self-regulation on coronavirus anxiety was -0.241, the t statistic was 7.759, and the p-value was less than 0.05. Therefore, emotional self-regulation significantly and negatively predicted anxiety caused by infection with

COVID-19. Considering the significance of the direct relationship between Type D personality and anxiety caused by infection with coronavirus, and given that the indirect path coefficient of Type D personality on coronavirus anxiety through emotional self-regulation was 0.054, the t statistic was 5.071, and the p-value was less than 0.05, emotional self-regulation played a partial mediating role in the relationship between Type D personality and coronavirus anxiety. Considering the significance of the direct relationship between obsessive beliefs and anxiety caused by infection with coronavirus, and given that the indirect path coefficient of obsessive beliefs on coronavirus anxiety through emotional self-regulation was 0.059, the t statistic was 5.131, and the p-value was less than 0.05, emotional self-regulation played a partial mediating role in the relationship between obsessive beliefs and coronavirus anxiety. Considering the significance of the direct relationship between illness perception and anxiety caused by infection with coronavirus, and given that the indirect path coefficient of illness perception on coronavirus anxiety through emotional self-regulation was -0.046, the t statistic was 4.568, and the p-value was less than 0.05, emotional self-regulation played a partial mediating role in the relationship between illness perception and coronavirus anxiety.

Assessment of predictive power through the multivariate regression model: In the following figure and table, multivariate regression is shown in the form of standardized regression coefficients and t values.

Figure 4

Multivariate regression in the form of standardized regression coefficients and t values


Table 4

Relationship between Predictor Variables and Coronavirus Anxiety

Variables	Dependent Variable	Coefficient of Determination R ²	Beta	Standardized Beta	T Statistic	Significance Value (Sig.)	VIF Value	Conclusion
Intercept	Coronavirus anxiety	0.398	63.353	—	18.299	0.0009	—	Significant
Obsessive beliefs			0.077	0.197	5.952	0.0009	1.429	Significant
Type D personality			-0.302	-0.196	5.983	0.0009	1.450	Significant
Illness perception			0.234	0.206	6.277	0.0009	1.428	Significant
Emotional self-regulation			-0.194	-0.241	7.475	0.0009	1.375	Significant

According to Table 4, obsessive beliefs, with a standardized regression coefficient of 0.197, a t value of 5.952, and a significance value of less than 0.05, had a significant relationship with coronavirus anxiety. Type D personality, with a standardized regression coefficient of -0.196, a t value of 5.983, and a significance value of less than 0.05, had a significant relationship with coronavirus anxiety. Illness perception, with a standardized regression coefficient of 0.206, a t value of 6.277, and a significance value of less

than 0.05, had a significant relationship with coronavirus anxiety. Emotional self-regulation, with a standardized regression coefficient of -0.241, a t value of 7.475, and a significance value of less than 0.05, had a significant relationship with coronavirus anxiety. The model coefficient of determination (R²) was 0.398, and the Durbin–Watson statistic was 1.933, indicating the absence of autocorrelation among the model residuals. The VIF values for all variables

were below 5, indicating the absence of high multicollinearity among the independent variables.

4. Discussion and Conclusion

The findings of the present study demonstrated that Type D personality significantly and positively predicted coronavirus anxiety among traffic users entering quarantined cities. This finding indicates that individuals characterized by chronic negative affectivity and social inhibition are more vulnerable to experiencing heightened anxiety in threatening situations such as the COVID-19 pandemic. Individuals with Type D personality typically interpret stressful events in a pessimistic and threat-oriented manner, and because of their tendency toward emotional suppression and social withdrawal, they are less likely to benefit from adaptive coping resources and social support. Consequently, exposure to a highly uncertain and threatening condition such as the coronavirus outbreak may intensify their emotional distress and anxiety responses. This finding is consistent with previous studies showing that Type D personality is associated with anxiety, emotional distress, fear of illness, and maladaptive coping styles (Grassi et al., 2021; Mousavi & Pakizeh, 2021; Tuman, 2022). Likewise, studies conducted during the COVID-19 pandemic reported that individuals with Type D personality experienced greater fear, emotional vulnerability, and psychological maladjustment (Daraeifard & Ansarinejad, 2022; Norouzian & Piadeh Kouhsar, 2022). The present finding may also be explained by the fact that traffic users entering quarantined cities were continuously exposed to environmental stressors, uncertainty regarding infection, and social pressure, which may have amplified the negative cognitive-emotional tendencies associated with Type D personality.

The results also revealed that obsessive beliefs significantly and positively predicted coronavirus anxiety. This finding suggests that maladaptive cognitive schemas such as excessive responsibility, threat overestimation, perfectionism, and the need for certainty increase vulnerability to coronavirus-related anxiety. Individuals with obsessive beliefs are more likely to interpret health threats catastrophically and to become mentally preoccupied with contamination, disease transmission, and safety concerns. During the pandemic, continuous exposure to health warnings and uncertainty about the virus may have reinforced obsessive cognitions and heightened anxiety symptoms. This finding is in line with previous studies demonstrating that obsessive beliefs and obsessive-

compulsive symptoms are associated with higher levels of coronavirus anxiety and psychological distress (Trak & Mujgan, 2022; Wheaton et al., 2021). Similarly, Janfada et al. reported that obsession and intolerance of ambiguity mediated the relationship between metacognitive beliefs and coronavirus anxiety (Janfada et al., 2022). Research has also shown that obsessive thinking patterns contribute to maladaptive emotional responses and excessive safety behaviors during infectious disease outbreaks (Mazhari & Rahimian Boogar, 2021; Sarlak et al., 2022). From a cognitive-behavioral perspective, obsessive beliefs may increase selective attention to threatening stimuli, intensify worry about contamination, and reduce tolerance for uncertainty, thereby increasing anxiety associated with COVID-19.

Another important finding of the study was that illness perception negatively predicted coronavirus anxiety. This finding indicates that individuals with more adaptive and realistic perceptions of illness experienced lower levels of coronavirus anxiety. Individuals who perceive illness as more understandable, controllable, and manageable are less likely to interpret the disease catastrophically and are therefore better able to regulate their emotional responses. Conversely, perceiving the disease as uncontrollable, highly threatening, and unpredictable may contribute to heightened anxiety and fear. This result is consistent with studies emphasizing the role of perceived risk and illness perception in shaping psychological responses to COVID-19 (Li et al., 2021; Varli & Naile, 2022). Aghajani et al. also demonstrated that risk perception and social isolation significantly predicted coronavirus anxiety among students (Aghajani et al., 2021). In addition, Yu et al. found that the perceived risk of COVID-19 was associated with post-traumatic stress symptoms and emotional distress (Yu et al., 2021). The present finding suggests that accurate health information and realistic disease understanding may function as protective factors against anxiety during public health crises.

The findings further showed that Type D personality significantly and negatively predicted emotional self-regulation. This result implies that individuals with higher levels of negative affectivity and social inhibition have greater difficulty regulating emotions effectively. Such individuals are more likely to suppress emotions, avoid emotional expression, and rely on maladaptive coping strategies, which weaken their emotional regulation capacities. This finding is consistent with previous studies indicating that Type D personality is associated with poor

emotional processing, reduced distress tolerance, and maladaptive emotion regulation strategies (Daraeifard & Ansarinejad, 2022; Hedaei et al., 2021). Individuals with Type D personality often experience persistent emotional tension and reduced psychological flexibility, making it difficult for them to manage anxiety-provoking situations such as the COVID-19 pandemic. Therefore, deficits in emotional self-regulation may partially explain why individuals with Type D personality are more vulnerable to coronavirus anxiety.

The study also demonstrated that obsessive beliefs significantly and negatively predicted emotional self-regulation. Individuals with obsessive cognitive styles frequently experience intrusive thoughts, excessive doubts, and rigid thinking patterns, which interfere with adaptive emotional management. The need for certainty and excessive responsibility may lead individuals to become trapped in cycles of worry and rumination, thereby reducing their ability to regulate emotions effectively. This finding aligns with previous studies indicating that maladaptive cognitive schemas and obsessive beliefs are associated with emotional dysregulation and anxiety disorders (Falsafi et al., 2021; Sarlak et al., 2022). Moreover, Trak and Mujgan found that obsessive beliefs indirectly contributed to COVID-19-related distress through obsessive-compulsive symptoms (Trak & Mujgan, 2022). These findings suggest that interventions targeting maladaptive beliefs and cognitive distortions may improve emotional self-regulation and reduce anxiety symptoms.

Another finding indicated that illness perception significantly and positively predicted emotional self-regulation. Individuals who possess more realistic and controllable perceptions of illness are likely to experience greater emotional stability and adaptive coping. When people perceive disease-related threats as understandable and manageable, they may experience less emotional overwhelm and demonstrate greater flexibility in responding to stress. This finding is consistent with previous studies showing that illness perception influences emotional adjustment and psychological coping during health crises (Varli & Naile, 2022). Furthermore, Asghari et al. found that emotion regulation and coronavirus anxiety were associated with self-care behaviors during the pandemic (Asghari et al., 2021). Adaptive illness perception may therefore strengthen emotional self-regulation by reducing catastrophic interpretations and promoting problem-focused coping strategies.

The findings additionally revealed that emotional self-regulation significantly and negatively predicted coronavirus anxiety. This result highlights the protective role of emotional self-regulation in reducing anxiety during stressful and uncertain situations. Individuals who are capable of effectively managing their emotional reactions are less likely to experience excessive worry, panic, and psychological distress in response to pandemic-related threats. This finding is consistent with prior research demonstrating that adaptive emotion regulation strategies reduce anxiety and improve psychological adjustment during the COVID-19 pandemic (Ahmadi et al., 2021; Munoz-Navarro et al., 2021). Conversely, maladaptive strategies such as emotional suppression, avoidance, and rumination have been associated with heightened anxiety and emotional distress (Karbasiyan Varnamkhasti et al., 2021). Emotional self-regulation may therefore serve as an important psychological resource that enables individuals to maintain emotional balance under conditions of uncertainty and perceived danger.

One of the most important findings of the present study was the mediating role of emotional self-regulation in the relationships between Type D personality, obsessive beliefs, illness perception, and coronavirus anxiety. This finding suggests that the influence of personality traits and cognitive beliefs on coronavirus anxiety operates partly through individuals' ability to regulate emotions. Individuals with maladaptive personality characteristics or dysfunctional cognitive beliefs may experience higher anxiety because these factors impair emotional self-regulation capacities. Conversely, stronger emotional self-regulation skills may buffer the negative effects of maladaptive cognitions and personality traits on anxiety. This finding is theoretically consistent with self-regulation and cognitive-behavioral frameworks emphasizing the central role of emotional regulation in psychological adjustment (Falsafi et al., 2021; Munoz-Navarro et al., 2021). It also supports previous studies showing that emotional regulation mediates the relationship between psychological vulnerabilities and anxiety-related outcomes during the pandemic (Ahmadi et al., 2021; Karbasiyan Varnamkhasti et al., 2021). Therefore, emotional self-regulation appears to be a central psychological mechanism through which individuals interpret and respond to pandemic-related stressors.

Overall, the findings of the present study indicate that coronavirus anxiety among traffic users entering quarantined cities is influenced by an interaction of personality, cognitive, and emotional factors. Type D

personality and obsessive beliefs increase vulnerability to anxiety, whereas adaptive illness perception and emotional self-regulation reduce psychological distress. Considering the stressful and uncertain nature of the COVID-19 pandemic, individuals with maladaptive cognitive-emotional patterns may have been especially susceptible to anxiety symptoms. The results underscore the importance of addressing cognitive distortions, maladaptive personality tendencies, and emotional regulation deficits in interventions designed to reduce coronavirus anxiety. These findings also expand the literature by focusing on traffic users and drivers as a psychologically vulnerable population during public health crises.

One limitation of the present study was the use of a correlational design, which restricts causal interpretation of the relationships among the variables. In addition, the data were collected using self-report questionnaires, which may have been influenced by response bias, social desirability, or inaccurate self-perceptions. The study was also limited to traffic users entering quarantined cities in one province, which may reduce the generalizability of the findings to other populations or cultural contexts. Furthermore, contextual variables such as previous mental health history, level of exposure to COVID-19, and family-related stressors were not controlled.

Future research is recommended to employ longitudinal and experimental designs in order to better examine causal relationships among Type D personality, obsessive beliefs, illness perception, emotional self-regulation, and coronavirus anxiety. Researchers are also encouraged to investigate additional mediating and moderating variables such as resilience, social support, coping styles, and psychological flexibility. Comparative studies across different occupational groups and cultural contexts may provide a broader understanding of the psychological consequences of pandemics. It is also suggested that future studies examine the long-term psychological effects of public health crises on vulnerable populations such as drivers and transportation workers.

From a practical perspective, the findings suggest the importance of developing psychological interventions aimed at improving emotional self-regulation and modifying maladaptive cognitive beliefs among individuals vulnerable to coronavirus anxiety. Educational and counseling programs focused on enhancing adaptive illness perception, reducing obsessive thinking patterns, and strengthening coping skills may help decrease anxiety levels during health crises. Mental health professionals and policymakers may

also benefit from designing preventive psychological services for traffic users and other high-risk occupational groups who are exposed to continuous stress and uncertainty during pandemics.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

References

- Aghajani, S., Parzour, P., & Ahmadi, S. (2021). The Role of Risk Perception and Social Isolation in Predicting COVID-19 Anxiety with the Mediation of Health Anxiety in Students. *Journal of Health and Care*, 23(1), 8-19.
- Ahmadi, R., Ghaderi, S., Mohammadzadeh, H., Amiri, S., & Foroughi, A. A. (2021). Predicting Coronavirus Anxiety Based on Experiential Avoidance and Difficulty in Emotion Regulation. *Rooyesh-e-Ravanshenasi*, 10(3), 1-10.
- Asghari, M., Dehghan, M., Shahinfar, S., & Azadmanjiri, A. (2021). The Role of Self-Concept, Emotion Regulation, and Coronavirus Anxiety in Predicting Self-Care Behaviors Related to COVID-19. *Research in Psychological Health*, 15(4), 39-50.

- Chen, S., Huang, W., Zhang, M., Song, Y., & Zhao, C. (2025). Dynamic changes and future trend predictions of the global burden of anxiety disorders: analysis of 204 countries and regions from 1990 to 2021 and the impact of the COVID-19 pandemic. *EClinical Medicine*, 79(5). <https://doi.org/10.1016/j.eclinm.2024.103014>
- Daraeifard, B., & Ansarinejad, N. (2022). Comparing the Dimensions of Emotional Processing and Self-Differentiation in Students with Type D and Type B Personality. *Counseling and Psychotherapy Excellence Quarterly*, 11, 74-85.
- Dost, G. (2025). Student well-being: the impact of belonging, COVID-19 pandemic related student stress, loneliness, and academic anxiety. *Frontiers in psychology*, 16, 1481328. <https://doi.org/10.3389/fpsyg.2025.1481328>
- Falsafi, H., Asgari, M., & Kordestani, D. (2021). Developing a Structural Model of Obsessive-Compulsive Disorder Based on Early Maladaptive Schemas, Attachment Styles, Defense Mechanisms, Emotional Self-Regulation, and Anxiety. *Journal of Mashhad University of Medical Sciences*, 64(3), 3208-3223.
- Grassi, L., Caruso, R., Murri, M. B., Fielding, R., Lam, W., Sabato, S., De Padova, S., Nanni, M. G., Bertelli, T., Palagini, L., & Zerbini, L. (2021). Association between Type-D Personality and Affective Symptoms and Maladaptive Coping in Breast Cancer Patients: A Longitudinal Study. *Clinical Practice and Epidemiology in Mental Health*, 17(1), 271. <https://doi.org/10.2174/1745017902117010271>
- He, Z.-Q., Wang, Q., Xu, C.-Y., Yang, J., & Huang, Y.-J. (2024). Depression and anxiety symptom network structure among patients with coronary heart disease and association with quality of life: protocol for a multicentre cross-sectional and prospective longitudinal study. *BMJ open*, 14(2), e079298. <https://doi.org/10.1136/bmjopen-2023-079298>
- Hedaei, N. A.-S., Ahadi, B., & Bijari, A. F. (2021). The Relationship of Personality Traits and Coping Styles with Distress Tolerance during the Coronavirus Outbreak. *Shenakht Journal of Psychology and Psychiatry*, 8(6), 37-49.
- Janfada, M., Khodabakhsh Pirkhani, R., Ranjbar, A., & Seddigh, S. (2022). Examining the Mediating Role of Obsession and Intolerance of Ambiguity in Predicting Coronavirus Anxiety Based on Individuals' Metacognitive Beliefs during the COVID-19 Outbreak. *Quarterly Journal of New Psychological Research*, 17(65), 32-41.
- Kara, B., Scharf, N., McCormack, K. M., Bhreathnach, L., Currie, C., & Symonds, J. (2025). Adolescent Anxiety During the COVID-19 Pandemic: A Qualitative Systematic Review of Risk and Protective Factors. *Journal of adolescence*. <https://doi.org/10.1002/jad.70038>
- Karadağ, S., Ergin, Ç., & Erden, S. (2025). Anxiety, depression and death anxiety in individuals with COVID-19. *OMEGA-Journal of Death and Dying*, 90(4), 1633-1649. <https://doi.org/10.1177/00302228221124981>
- Karbasian Varnamkhasti, E., Nikbakht, A., & Zarei, E. (2021). Presenting a Coronavirus Anxiety Model Based on Locus of Control, Emotion Regulation Strategies, Perceived Social Support, and Illness Anxiety with the Mediating Role of Cognitive-Behavioral Avoidance. 19(4), 648-661.
- Li, W., Li, L., Jiang, D., & Liu, S. (2021). Fate Control and Ingroup Bias in Donation for the Fight with the Coronavirus Pandemic: The Mediating Role of Risk Perception of COVID-19. *Personality and individual differences*, 1(1), 1-5. <https://doi.org/10.1016/j.paid.2020.110456>
- Mazhari, M. M., & Rahimian Boogar, E. (2021). Examining the Role of Coronavirus Anxiety (COVID-19) in Predicting Obsessive Symptoms in Students. *Journal of Culture and Health Promotion of the Academy of Medical Sciences*, 5(4), 469-477.
- Mousavi, S. Z., & Pakizeh, A. (2021). Predicting Mental Disorders Based on Type D Personality in Students. *Clinical Psychology Studies*, 11(43), 25-44.
- Munoz-Navarro, R., Malonda, E., Llorca-Mestre, A., Cano-Vindel, A., & Fernandez-Berrocal, P. (2021). Worry about COVID-19 Contagion and General Anxiety: Moderation and Mediation Effects of Cognitive Emotion Regulation. *Journal of psychiatric research*, 137, 311-318. <https://doi.org/10.1016/j.jpsychires.2021.03.004>
- Norouzian, K., & Piadeh Kouhsar, A. (2022). Predicting Death Anxiety Based on Personality Traits and God-Concept in Patients with COVID-19. *Journal of Behavioral Sciences Research*, 20(2), 204-219.
- Özgüç, S., Kaplan Serin, E., & Tanriverdi, D. (2024). Death anxiety associated with coronavirus (COVID-19) disease: A systematic review and meta-analysis. *OMEGA-Journal of Death and Dying*, 88(3), 823-856. <https://doi.org/10.1177/00302228211050503>
- Sabokzei, A., & Nastizaei, N. (2023). The relationship of meaning in life, spiritual well-being, and ego strength with coronavirus anxiety.
- Sarlak, M., Lotfi Kashani, F., & Mirhashemi, M. (2022). Structural Modeling for Explaining Obsessive Beliefs in High School Students Based on Stress, Anxiety and Depression Symptoms, Metacognitive Beliefs, and Self-Esteem: The Mediating Role of Inferential Confusion. *Shenakht Journal of Psychology and Psychiatry*, 9(2), 1-15.
- Silva, I., Meireles, A. L., Carolina Martins dos Santos, C., Cardoso, C. S., Oliveira, H. N. d., Freitas, E. D. d., Vidigal, F. d. C., Nobre, L. N., Silva, L. S. d., Paula, W. d., & Ferreira, L. G. (2025). Emotional Eating and Its Relationship With Symptoms of Anxiety, Depression, and Stress During the COVID-19 Pandemic: A Multicenter Study in College Students. *International journal of environmental research and public health*, 22(3), 354. <https://doi.org/10.3390/ijerph22030354>
- Trak, E., & Mujgan, I. (2022). Obsessive Beliefs Prospectively Predict Adherence to Safety Behaviours Related to COVID-19 through Obsessive-Compulsive Symptoms and COVID-19 Distress: A Serial Multiple Mediator Analysis. *International journal of psychology*, 57(5), 559-566. <https://doi.org/10.1002/ijop.12844>
- Tuman, T. C. (2022). The Effect of Type D Personality on Anxiety, Depression and Fear of COVID-19 Disease in Healthcare Workers. *Archives of Environmental & Occupational Health*, 77(3), 177-184. <https://doi.org/10.1080/19338244.2021.1952152>
- Varli, U., & Naile, A. (2022). Effect of Health Anxiety on Disease Perception and Treatment Compliance in Elderly Patients during the COVID-19 Pandemic in Turkey. *Archives of Psychiatric Nursing*, 40, 84-90. <https://doi.org/10.1016/j.apnu.2022.05.002>
- Wheaton, M. G., Messner, G. R., & Mark, J. B. (2021). Intolerance of Uncertainty as a Factor Linking Obsessive-Compulsive Symptoms, Health Anxiety and Concerns about the Spread of the Novel Coronavirus (COVID-19) in the United States. *Journal of Obsessive-Compulsive and Related Disorders*, 28, 100605. <https://doi.org/10.1016/j.jocrd.2020.100605>
- Wisuda, A. C. (2024). Islamic Spiritual Care With Muroltal for Reducing Anxiety and Depression in Coronary Heart Disease Patients: A Comprehensive Systematic Review. *Public Health of Indonesia*, 10(1), 61-72. <https://doi.org/10.36685/phi.v10i1.776>



- Yu, J., Lee, K., & Sunghyup, S. H. (2021). Understanding the Influence of the Perceived Risk of the Coronavirus Disease (COVID-19) on the Post-Traumatic Stress Disorder and Revisit Intention of Hotel Guests. *Journal of Hospitality and Tourism Management*, 46, 327-335.
<https://doi.org/10.1016/j.jhtm.2021.01.010>

