The Journal of Behavioral Science
2021, Vol. 16, Issue 3, 27-41


ISSN: 1906-4675 (Print), 2651-2246 (Online)

The Journal of Behavioral Science (TJBS)

Original Article

# Emotion Regulation Strategies, COVID-19 Induced Psychological Distress, and Psychological Well-being in Pakistan

Sahira Zaman[1*], Fatima Abid[2], and Yumna Bilal[2]

**Author Affiliation**

[1] Assistant Professor, Department of Gender Studies, Faculty of Behavioral Sciences, University of the Punjab Lahore, Pakistan

[2] BS final year candidates, Department of Gender Studies, Faculty of Behavioral Sciences, University of the Punjab Lahore, Pakistan

[*]Corresponding author e-mail: sahira_zb@hotmail.com

**Article Information**

***Received:*** *28.4.21*
***Revised:*** *18.6.21*
***Accepted:*** *22.6.21*

**Keywords**

Lockdown
Students
Mental health
Well-being
COVID-19
Social isolation

## Abstract

The world is not the same after the COVID-19 pandemic hit in December 2019. The present study investigated the role of emotion regulation (ER) strategies (expressive suppression and cognitive reappraisal) between COVID-19-induced psychological distress and psychological well-being among students during the lockdown. This study hypothesized that COVID-19-induced psychological distress reduces the student's psychological well-being, and ER strategies mediate this association. A quantitative survey research design was used for collecting data from 300 students in different departments of a public university in Pakistan. The results indicated that COVID-19-induced psychological distress significantly decrease students' psychological well-being ($b$= -.38, $t$ = -15.02, $p$ < .001) during the lockdown period in Pakistan. Both ER strategies found a complete statistically significant mediation between this distress and students' psychological well-being. Cognitive reappraisal had a slightly more positive indirect effect ($a*b$ = .08, Bootstrap $CI_{95}$ = .03 and .12) on COVID-19 induced psychological distress and psychological well-being than expressive suppression ($a*b$ = .07, Bootstrap $CI_{95}$ = .01 and .04). It is concluded that mental health can be better looked after by using better emotion regulation strategies. Thus, this study contributes to the behavioral sciences knowledge by iterating that emotional regulation improves the mental health of individuals in these difficult circumstances. The strength of using thought restructuring through cognitive reappraisal is a better strategy for dealing with distress in the pandemic. These findings contribute to behavioral science knowledge and understanding of emotion regulation in mitigating psychological distress and enhancing well-being during this pandemic and beyond.

The coronavirus (COVID-19) disease has changed the way of life (Isaac et al., 2021) and was declared a pandemic in March 2020 by World Health Organization [WHO]. Uncertainty, lockdowns, and changing demands of the environment have changed the approach of people to see and experience things in pre-COVID-19 periods (Sharma, 2020). Not everyone can likely get sick with the infection of COVID-19. However, indeed the mental health of individuals can get affect due to many co-occurring circumstances like fear of contraction of virus (Chirico & Magnavita, 2020), loss of livelihoods (Ghebreyesus, 2020), and restricted movements (Wang, Chudzicka-Czupała, et al., 2021). Isolation and physical distancing are the only protective measures accessible to cure and stopped the COVID-19 virus spread (Williamson et al., 2020). WHO (2019) introduced precautionary or protective measures for people to stay safe from the virus (Bjelajac & Filipović, 2020) like quarantine, physical distancing, self-isolation, and staying at home before the invention of the vaccine. However, it became the reason for mental health issues for individuals and young adults (Wang, Fardin, et al., 2021).

The general mental health instability due to COVID-19 was broadly detected by Wang, Chudzicka-Czupała et al. (2021) in their study of eight countries of three continents, including Pakistan. They have found that the perceived impact of pandemics increases the depression, anxiety, and stress among the multi-national population from the continents of North America, Asia, and Europe. Among the eight countries, Pakistan has scored highest on depression, anxiety, and stress. COVID-19 early stages studies conducted in China also reported higher levels of depression and anxiety among the sampled population (Wang, López-Núñez, et al., 2021). Shi et al. (2020) found that home or central quarantine was linked with higher depression, anxiety, and insomnia. Risk factors to impact mental health during quarantine also include younger individuals (Liu et al., 2020), which put the students in Pakistan at more significant risk who were also forced to stay at home after March 15, 2020 strict lockdown conditions throughout the country. Ma et al. (2020) found out that during quarantine, students in China have reported higher degrees of acute stress, depression, and anxiety during the pandemic and proposed better psychosocial support for students during these challenging times. It is evident that mental health is affected by COVID-19 induced distress, and many external environment support factors help to lower distress (Lee et al., 2021; Wang, Di, et al., 2021; Wang, Pan, et al., 2020), but the underlying factors to mediate these harmful effects are still to be known. Many studies have been conducted across the globe to assess the mental health impacts of COVID-19 (see. Chirico & Magnavita, 2020; Ma et al., 2020; Le et al., 2020; Lee et al., 2021; Liu et al., 2020; Ren et al., 2021; Shi et al., 2020; Soh et al., 2020; Tee et al., 2020; Tran, Vo, et al., 2020; Wang, Chudzicka-Czupała et al., 2021; Wang, Chudzicka-Czupała et al., 2020) but none of them addresses the role of individual's intrinsic factors that can mitigate the psychological impacts of this pandemic resulting a literature gap needed to be addressed in order to complete the picture of coping mechanism against adverse impacts of this pandemic.

Moreover, Ren et al. (2021) has found out that after reopening the educational institutions, higher classes students faced more anxiety, stress, and depression than younger students. Several theories can explain the mental health coping strategies during the pandemic. One theory is emotion regulation by Gross (2015). Emotion regulation sees the process of emotions during different experiences of individuals and explains the intrinsic regulation of emotions to cope with mental distress caused by situational or environmental factors. Therefore, this study aimed to determine the relationship between COVID-19-induced psychological distress and psychological well-being among university students during the pandemic. Moreover, it focuses on finding out the role of two types of emotion regulation strategies in mitigating the harmful impact of COVID-19 induced distress on mental well-being.

## Literature Review

This section explores the relevant literature for this study. Emotion regulation, psychological distress, and psychological well-being are discussed in the context of the COVID-19 pandemic.

### Emotion Regulation

Emotion regulation (ER) is an attuned and adapted psychosocial response to environmental circumstances by optimizing the available opportunities for the fully functioning of a person in that environment (Cherland, 2012). It involves organizing adaptive and appropriate emotional behaviors and responses linked with internal cues to external situations (Blair & Raver, 2012) by sending signals about inside or outside individual conditions (Jarymowicz & Imbir, 2015), failing which result in out of proportion, erroneous, and inappropriate response to the environmental stimulus resulting in deteriorating the overall well-being of individuals (Price & Hooven, 2018) and crucial to regulate for healthy functioning (Werner & Gross, 2010).

The current situation warrants an inquiry on the intrinsic regulations of emotions because it affects the conscious experiences of individuals, which help people regulate and control their feelings and behaviors (Webb et al., 2012). After all, no other study to date has focused on this area of research regarding COVID-19 and mental health issues. It is established that dysregulated emotions positively correlated with anxiety, depression, aggressive behaviors, and PTSD (Price & Hooven, 2018). ER is consisted of two powerful strategies; cognitive reappraisal and expressive suppression, which help handling depression and anxiety in risky situations

(Ford & Gross, 2019) and allow for achieving desirable goals through conscious efforts by maintaining an individual's well-being (Verzeletti et al., 2016) via evaluation of situation, attention, appraisal, and response (Ford & Gross, 2019).

Cognitive reappraisal is a form of cognitive change that interprets emotion in a way to change its impacts in different circumstances, while expressive suppression responses hide, suppress, and hold back or inhibit the current emotion expressive behaviors (Gross & John, 2003). Both strategies help to produce interpersonal skills for social interactions, consequently lead to control and change the direction of behavior. Cole et al. (2008) observed that cognitive appraisal and expressive suppression are significantly associated with depression and anxiety. Cognitive reappraisal can modify the emotional response to the situation and generate a more positive impact (Gross & John, 2003) and an expressive suppression strategy can help to hide, suppress the nonverbal expressions in distressed situations (Katana et al., 2019). Both strategies help modifies the intensity and duration of an emotional episode (Nezlek & Kuppens, 2008).

The positive reappraisal changes thinking patterns by directing towards more positive emotions. Negative reappraisal changes the thinking patterns to lessen the negative emotions, while expressive suppression of positive or negative emotions hides both feelings by not expressing them (Katana et al., 2019). Gross and John (2003) found out that cognitive appraisal more connected to the well-being and assist individual to grow physically and mentally by increasing interpersonal skills whereas expressive suppression is a result of negative emotions and sometimes is beneficial to deal with challenging conditions and circumstances (Katana et al., 2019; & Verzeletti et al., 2016) and it starts developing in the young age (Shipman & Zeman, 2001). Many studies have found that emotional regulation develops among adolescents and young adults; therefore, in the scenario of COVID-19 lockdown and under uncertain health conditions, the current research focused on investigating the role of emotional regulation strategies on the well-being of young adults (university students) if they suffer from COVID-19 induced psychological distress.

**Social and Cultural Interactions of Emotions**

Emotions are culturally displayed in a community because of an appraisal of a situational stimulus (in present context COVID-19 pandemic). People's physiological response, free or inhibited reaction to the situation are culturally acceptable representations (Bericat, 2016). Gordon (1990) has explained the sentiments (feelings and affects) are culturally and socially constructed patterns of sensations organized around the meanings of relationships in small and large groups. Gordan's explanation of the socially acceptable emotions helps regulate behaviors, including positive feelings (happiness, romance, and parental love) and negative feelings (fear, anguish, envy, and sorrow). Symbolic interactionism approaches relate multiple emotional displays with socio-cultural factors. Situational variables (like COVID-19 pandemic in this context) bring up different displays of emotions, and it varies from culture to culture and employs that societal influences are detrimental for emotional displays, not psychological antecedents. Control over emotions and expressing when required are all socially constructed phenomena (Hochschild, 1983). Most sociologists describe that overtly or covertly, the emotions lead to subsequent behaviors and are linked theoretically to social control. Emotions also act as intervening variables in the broader social process (Kamper et al., 2020) and strongly inhibit individuals from releasing their emotions and continuously re-evaluating them for better societal adjustment. Likewise, the current study focused on the events happening in the external environment, such as the COVID-19 pandemic, as an antecedent of social display of emotional regulation and psychological pressures that can affect students' psychological well-being.

**Psychological Well-Being**

Existing life situations, stability, or instability describe wellness. Positive thoughts, behavior including lifestyle, life satisfaction, positive attitude, and better personal and social interaction deeply connect to the person's physical health and stress level, personal experiences of association, relationships with life capacity, happiness overreaching to goals and aims at a younger age (Idris et al., 2019). Living to the most total capacity, having control, and positive association is indicative of this well-being (Bohlmeijer & Westerhof, 2021).

A positive mindset is known as general psychological well-being (Watters et al., 2021) and is influenced by many life circumstances. They range from positive and negative consequences in the domain of happiness and life satisfaction (Bohlmeijer & Westerhof, 2021) based on the self-actualization process (Maslow, 1968) and formulation of individuation (Jung, 2017) to maturity (Singh, 2014), given fully functioning person (Proctor et al., 2016). Self-acceptance is negatively connected with stress (Allahverdipour et al., 2021) and positively with wellness in different social (Khairani et al., 2019), economic and educational circumstances (Brüggen et al., 2017) for students. General psychological well-being is a cognitive and emotional assessment with life satisfaction for maximizing happiness, and happiness is a system of self-regulation (Ran & Deci, 2011). However, in the current situation of COVID-19, there is a need to rediscover the meaning of general psychological well-being that how people maintained their psychological well-being in different settings during this pandemic.

**Psychological Distress**

Psychological Distress is a state of emotional endurance usually characterized by symptoms of misery (e.g., losing interest, unhappiness, discouragement) and worry (e.g., nervousness and uneasiness) (Ryff, 2014). Psychological distress is a common perception of dysfunctional mental working within the face of distressing life events (Sledge et al., 2000). It is related to deficiency of eagerness, rest (difficulty in falling and staying asleep), sorrow and misery about the future, crying easily, feeling dull, and suicidal thoughts (Zhang et al., 2020). Losing interest in things, unhappy or troublesome situations of misery and uneasiness, pitiful discouragement, and misery are all indicators of psychological distress among students (Li et al., 2020). Distress mainly comprised of identifying incapability to manage or handle appropriately, alteration in psychological and emotional conditions due to physical health conditions (Martino et al., 2021), anxiety, enduring and hopelessness due to situational factors (Ford et al., 2018), uncomfortable conversation for expression of distress (Wang, Pan, et al., 2020). There are different causes of psychological distress (Ryff, 2014). The medical model illustrates the importance of pathology, which needs medication (Yu et al., 2020); however, the social interaction theory focused on the psychological challenges (Srivastava et al., 2021) and positive interpersonal aptitude can reduce maladaptive behavior and maladjustment in the distressed environment (Yu et al., 2020).

Mental health and emotion regulation are as important as physical health, and their importance increases many folds during this pandemic because they both help regulate our feelings inside out and many daily functions depend upon them. As the literature discussed above establishes that surrounding circumstances and environment greatly influence emotions, psychological well-being, and psychological distress, current research explores the emotion regulation strategies for psychological well-being and psychological distress in the COVID-19 situation. The current study identified the literature gap to elaborate on the role of emotional regulation and its relationship with psychological well-being during the COVID-19 pandemic. Emotional strategy contributed well to combat this distressing situation of hopelessness, restlessness, depressed or otherwise.

**Hypotheses**

The following hypotheses were proposed and tested in present study.

H1: The COVID-19 induced psychological distress has a negative relationship with general psychological well-being of university students.

$H2_a$: There is a positive relationship between emotion regulation strategies and the general psychological well-being of university students.

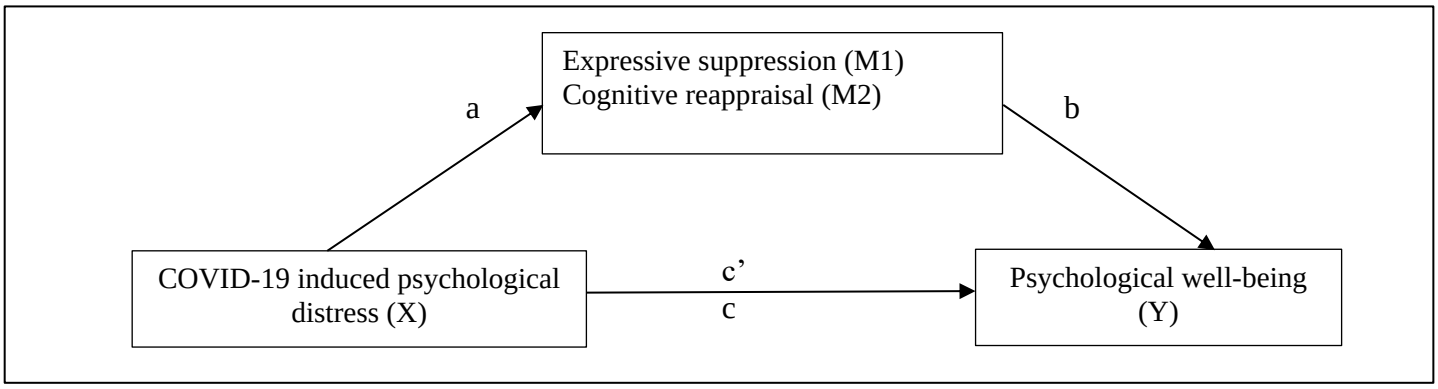
$H2_b$: There is a negative relationship between emotion regulation strategies and COVID-19 induced psychological distress.

H3: Cognitive reappraisal and expressive suppression mediate the association between COVID-19 induced psychological distress and students' psychological well-being.

The Figure 1 shows the hypothesized framework.

**Figure 1**

*The Theoretical and Predictive Model of the Current Research*




*Note*. This figure demonstrates the theoretical model of the research. COVID-19 induced psychological distress (X) and psychological well-being (Y). Expressive suppression is mediator one (M1), and cognitive reappraisal is mediator two (M2). The paths "ab" is total effect, c is direct effect and c' is the indirect effect for all study variables.

## Method

The purpose of the research was to investigate the association of emotional regulation strategies, psychological well-being, and psychological distress among students during COVID-19 through a quantitative self-reflective survey.

### Study Design

A quantitative cross-sectional survey research design was used to conduct this study. Data were collected at a single point in time between February 2021 to March 2021. Researchers contacted participants directly, and data were obtained in the face-to-face setting. It was a paper, pencil-type test. Structured quantitative questionnaires were distributed among participants and received back on the spot after completion.

### Participants

The study participants consisted of 300 university students (males & females) aged 18-27 years enrolled in 16 years of educational programs. Participants were included in the study through a non-probability convenience sampling technique from University of the Punjab Lahore Pakistan. Convenience sampling was used because of easy access to the population (Etikan et al., 2016) of interest in the single premises. The decision to choose this sampling technique was made on general conditions of COVID-19 health situation in the country. Only one university was included due to general restrictions of movement implemented during COVID-19 lockdown in the country. University of the Punjab was opened for two months after a closure of past 11 months and researchers utilized this small window of opportunity to collect face to face data from the participants. Participation in the research was voluntary. The demographic description of study participants is shown in the Table 1.

**Table 1**

*Descriptive Statistics of the Participants (n=300)*

| Demographic information | | Frequency | Percentage |
|---|---|---|---|
| Gender | | | |
| | Male | 150 | 50.0 |
| | Female | 150 | 50.0 |
| Age | | | |
| | 18-22 | 218 | 72.7 |
| | 23-27 | 82 | 27.3 |
| Education level | | | |
| | BS | 214 | 71.3 |
| | MSc | 86 | 28.7 |

### Measurement Instruments

This section elaborates the instruments of measurements utilized for data collection. This research had three variables for testing. Emotion regulation strategies as a mediator, COVID-19 induced psychological distress as an independent variable and psychological well-being as a dependent variable. Following instruments are

utilized for information collection.

The emotion regulation questionnaire developed by Gross and John (2003) consisted of 10 items. Six items for cognitive reappraisal (Sample item: *I want to feel more positive emotions such as joy or amusement during COVID-19 lockdown*) and four items for expressive suppression (Sample item: *I keep emotions to myself during COVID-19 lockdown*) rated on a five-point Likert type scale (1= none of the time to 5= all the time). The researchers modify the items according to the COVID-19 situation. By responding to the questionnaire, the participant reported how they control their emotions during the COVID-19 pandemic.

General psychological well-being is measured through the World Health Organization's well-being index (WHO-5). Each item was measured on a five-point Likert-type scale from a 1 to 5 rating scale where higher scores indicate higher general psychological well-being. This scale was adapted according to the COVID-19 pandemic situation (sample item: *During the covid-19 lockdown, I felt cheerful in a good spirit*).

Psychological distress was measured with Kessler's (2003) psychological distress scale (K-10), with ten items scored from 1 to 10. Participants answered that they felt distressed, nervous, hopeless, restless during covid-19 (sample item: *During covid-19 lockdown, I feel tired out for no reason*). Scale scored on 1 to 5 rating scale with high scores showed higher distress, and lower scores showed lower or no distress among students during COVID-19 lockdown.

**Procedure**

The researchers contacted participants during two months of face-to-face classes at the University of the Punjab Lahore, Pakistan. The timeline for data collection was February to March 2021. Participants filled the forms with a paper-pencil in an average of 10 to 15 minutes. The language of the questionnaires was simple and understood by the participants, no jargon included, and participants also reported no ambiguity during the completion of questionnaires. Data were analyzed through SPSS version 20 and mediation analysis was run through Process v3.5 (Hayes, 2017) in SPSS.

**Ethical Considerations**

APA 7th edition ethical guidelines were followed in the planning and executing of this research. Participation in the research was voluntary, informed consent was obtained from all respondents, and researchers ensured no potential risks or harm or loss of dignity in participating in this research. Confidentiality of responses ensured at all stages of conducting and reporting the data. The approval for this research was obtained from the Internal Institutional Review Board of the Department of Gender Studies, University of the Punjab Lahore, Pakistan. The certificate number is DGS/D-695, dated January 25, 2021.

**Statistical Analysis**

The data were analyzed through descriptive and inferential statistics. The proposed hypotheses were tested by inferential statistics. Pearson product moment correlation analysis was used for measuring relationship between study variables and mediation analysis by Hayes (2017) (Process Macro v3.5) in SPSS version 20 was utilized to test the mediation model of the study.

## Results

The following section elaborates the statistical analyses and findings of the current research. The mean (M) and standard deviation (SD) were used as descriptive statistics. To ensure the internal consistence of the questionnaires used in the study, Cronbach Alpha (α) coefficients of all scales are measured and reported in Table 2. Pearson product moment correlation was utilized as inferential statistics for measuring the relationship between COVID-19 induced psychological distress, psychological well-being, and both emotion regulation strategies mentioned in Table 2. Simple mediation analysis by Hayes (2017) was utilized as inferential statistics to test the proposed mediation model of the study reported in Table 3 and Table 4. The Figure 2 and 3 elaborate the unstandardized Regression Coefficients for association between COVID-19 induced psychological distress on psychological well-being as mediated by expressive suppression, and cognitive reappraisal.

Table 2 shows that COVID-19 induced psychological distress is significantly negatively correlated psychological well-being ($r$ = .63***, $p$ < .001), cognitive reappraisal ($r$ = -.64***, $p$ <.001) and expressive suppression ($r$ = -.60***, $p \leq .001$). Cronbach's Alpha coefficients for all study variables ranged from .75 to .90 showed satisfactory internal consistency of measurements.

**Table 2**

*Descriptive Statistics, Cronbach Alpha Coefficient, and Pearson Product-Moment Correlation Statistics of the Study Variables(n=300)*

| No | Variables | *M* | *SD* | A | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | PWB | 9.72 | 2.94 | .86 | 1 | -.63*** | .26*** | .21*** | .25*** |
| 2 | CPD | 28.95 | 6.12 | .93 | | 1 | -.64*** | -.60*** | -.65*** |
| 3 | CRA | 24.92 | 3.97 | .85 | | | 1 | .84*** | .97*** |
| 4 | ES | 16.58 | 2.91 | .75 | | | | 1 | .94*** |
| 5 | Total ER | 41.50 | 6.62 | .90 | | | | | 1 |

***$p \leq .001$

*Note*. *M*= Mean, *SD*= Standard deviation, α = Cronbach's Alpha, PWB= Psychological well-being, CPD= COVID-19 induced psychological distress, CRA= Cognitive reappraisal, ES= Expressive suppression, ER= Emotional regulation

**Table 3**

*Simple Mediation of the Effect of COVID-19 Induced Psychological Distress on Psychological Well-Being by Expressive Suppression (n=300)*

| Variables/Effects | *b* | *SE* | *t* | *p* | *95% Confidence Interval* | |
|---|---|---|---|---|---|---|
| | | | | | *LL* | *UL* |
| CPD → PWB | -.38 | .03 | -14.56 | <.001 | -.43 | -.33 |
| CPD → ES | -.29 | .02 | -12.95 | <.001 | -.33 | -.24 |
| CPD → ES → PWB | -.26 | .05 | -4.71 | <.001 | -.36 | -.15 |
| *Effects* | | | | | | |
| Direct | -.38 | .03 | -14.56 | <.001 | -.43 | -.33 |
| Indirect* | .07 | .02 | | | .01 | .04 |
| Total | -.30 | .02 | -14.18 | <.001 | -.35 | -.26 |

*Note*. b= Unstandardized coefficients; SE = Standard error; LL = Lower limit; UL = Upper limit; CPD = COVID-19 induced psychological distress; ES = Expressive suppression; PWB = Psychological well-being

*Based on 5000 bootstraps samples

A bootstrapping method was performed using Hayes (2017) SPSS Process Macro (v3.5) to examine if the expressive suppression mediated the relationship between COVID-19 induced psychological distress and psychological well-being. First, the results of the regression analysis show that the COVID-19 induced psychological distress (independent variable) was a significant predictor of expressive suppression (b = -.29, $t$ = -12.95, $p$ < .001). Next, while controlling for expressive suppression (mediator), the results of the second regression analysis show that COVID-19 induced psychological distress remains a significant predictor of psychological well-being (dependent variable) ($b$ = -.26, $t$ = -4.71, p < .001) but the strength of association visibly weakens. The results of the indirect effect based on 5000 bootstrap samples show a significant indirect relationship between COVID-19 induced distress and psychological well-being mediated by expressive suppression ($a*b$ = .07, Bootstrap $CI_{95}$ = .01 and .04). The mediator, expressive suppression, accounted for approximately 23% of the total effect on Psychological well-being [PM = (.07) / (-.30)]. The direct (c), indirect (c'), and total effects (a*b) paths are shown in the Figure 2.

**Figure 2**

*Unstandardized Regression Coefficients for Relationship COVID-19 Induced Psychological Distress on Psychological Well-Being as Mediated by Expressive Suppression.*

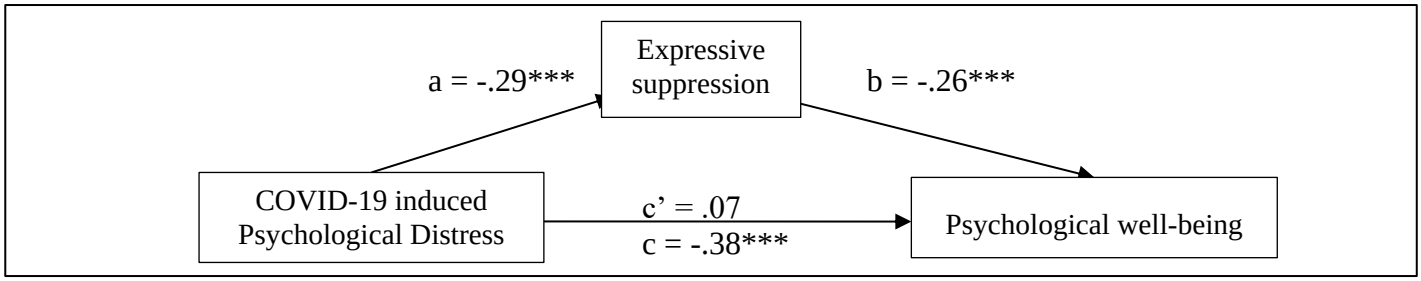



**Table 4**

*Simple Mediation of the Effect of COVID-19 Induced Psychological Distress on Psychological Well-Being by Cognitive Reappraisal (n=300)*

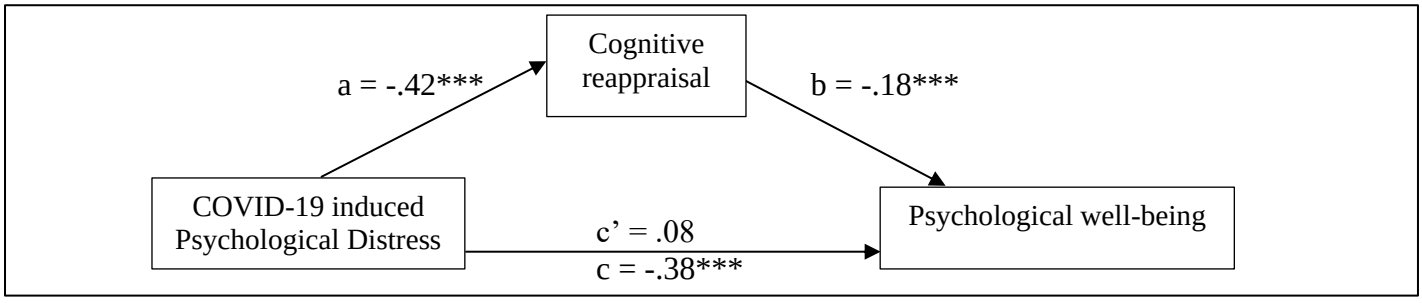
| Variables/Effects | *B* | *SE* | *t* | *p* | *95% Confidence Interval* | |
|---|---|---|---|---|---|---|
| | | | | | *LL* | *UL* |
| CPD ⟶ PWB | -.38 | .03 | 15.02 | <.001 | -.44 | -.33 |
| CPD ⟶ CRA | -.42 | .03 | -14.72 | <.001 | -.48 | -.36 |
| CPD ⟶ CRA ⟶ PWB | -.18 | .04 | -4.34 | <.001 | -.27 | -.10 |
| *Effects* | | | | | | |
| Direct | -.38 | .03 | -13.92 | <.001 | -.44 | -.33 |
| Indirect* | .08 | .01 | | | .03 | .12 |
| Total | -.30 | .02 | -14.18 | <.001 | -.35 | -.26 |

*Note.* b = Unstandardized coefficients; SE = Standard error; LL = Lower limit; UL = Upper limit; CPD = COVID-19 induced psychological distress; CR = Cognitive reappraisal; PWB = Psychological well-being. *Based on 5000 bootstraps samples

A bootstrapping method was performed using Hayes (2017) SPSS Process Macro (v3.5) to examine if cognitive reappraisal mediated the relationship between COVID-19 induced psychological distress and psychological well-being. First, the results of the regression analysis show that the COVID-19 induced psychological distress (independent variable) was a significant predictor of cognitive reappraisal ($b$ = -.42, $t$ = -14.72, $p$ < .001). Next, while controlling for cognitive reappraisal (mediator), the results of the second regression analysis show that COVID-19 induced psychological distress remains a significant predictor of psychological well-being (dependent variable) ($b$ = -.18, $t$ = -4.34, $p$ < .001) but the strength of association visibly weakens. The results of the indirect effect based on 5000 bootstrap samples show a significant indirect relationship between COVID-19 induced distress and psychological well-being mediated by cognitive reappraisal ($a*b$ = .08, Bootstrap $CI_{95}$ = .03 and .12). The mediator, cognitive reappraisal, accounted for approximately 27% of the total effect on Psychological well-being [PM = (.08) / (-.30)]. The direct (c), indirect (c'), and total effects (a*b) paths are shown in the Figure 3.

**Figure 3**

*Unstandardized Regression Coefficients for Relationship COVID-19 Induced Psychological Distress on Psychological Well-Being as Mediated by Cognitive Reappraisal.*



## Discussion

The findings of this study indicate that COVID-19 induced psychological distress has a significant negative correlation with psychological well-being of university students. This finding corroborates similar studies by (Le et al., 2020; Shi et al., 2020; Tran, Vo, et al., 2020) who reported lower well-being across multi-national samples during this Corona pandemic (Lee et al., 2021; & Wang, Tee, et al., 2021), with diverse ethnicities (Wang, Tripp, et al., 2020), and among college students (Ma et al., 2021). The results report a significant positive correlation between both emotion regulation strategies and psychological well-being. Both cognitive reappraisal and expressive suppression have a significant negative relationship with Covid-19 induced psychological distress. The emotion regulation can help people reduce and change distressing circumstances even if they are new to people and do not possess prior knowledge about them. These findings agreed with Asghar et al., (2020) which reported that controlling emotions under challenging situations yields evaluation-potency-activity (EPA) by putting meanings to setting, actors, and personal emotional attributes, which transient the sentiments resultantly mitigate the consequences of harmful circumstances. Positive thinking and reappraisal of situations lower psychological distress and increase psychological well-being when the meanings of emotional displays are culturally universal. Dealing with psychological health play a vital role in the daily functioning of individuals (Wang, Pan, et al., 2020), and COVID-19 changed the way of life for all people in the world. This research highlights that controlling emotions while at home all the time and maintain social distancing is helpful in maintain distress aroused from the COVID-19 pandemic.

The research by Wang, Chudzicka-Czupala, et al. (2021) in a chain mediation model also reported that respondents were distressed during the lockdown period and were not able to maintain their mental health and supports with the present findings. Moreover, the current study adds to the literature that those using emotional regulation strategies were likely to control their stressors and keep their mental well-being high because Carter and Fuller (2016) have already reported that emotions are personal and eloquently described as self-feelings, but their manifestation is linked to societal norms and values.

Nevertheless, both emotion regulation strategies successfully mediated the association between COVID-19 induced psychological stress and improved students' psychological well-being in the current sample. The cognitive reappraisal was slightly higher in combating the situation of distress in pandemic for study respondents. Soh et al., (2020) have mentioned that the reappraisal is linked with the cognitive re-evaluation of technical skills of cognitive behaviors that help the existing situation by assigning new meanings. That is why it can be well explained in this current pandemic situation as improving well-being in face of pandemic distress. Previous researches before the corona pandemic have also indicated that reappraisal benefits difficult situations (Affleck & Tennen, 1996), the bereaved (Davis et al., 1998) survivors of trauma (King & Miner, 2000) pre-operative clients (Cheung et al., 2003) because cognitive reappraisal decreases the intense emotional experience and reduces negative behavior and leave people mentally intact (Richards & Gross, 2000). Since cognitive reappraisal is helpful in changing the impacts of distress on well-being the remote psychological helps like internet based cognitive behaviors therapy can be most helpful to achieve this goal for students more distressed in this pandemic. Thus, this study concludes from the current findings that cognitive reappraisal of the situation gives a sense of control to the individuals helping to strategize better in COVID-19 pandemic.

In complex and unknown circumstances, expressive suppression is also helpful to lower the mental distress of students, and it also significantly mediated the association between students' psychological well-being in current data. Current research findings also corroborate the mentalized affectivity theory (Jurist, 2005), which considers the mental state in regulation where the modification or managing emotions depends upon mentalization, which is individual awareness about one's mental state or others. A complete mediation between COVID-19 induced psychological distress and students' psychological well-being elaborated that

emotions fit the regulation process and help regain meaning, consequently remaining intact under challenging situations. Emotion regulation requires a person's ability to consider self-thoughts and feelings, check individual mental state, and answer the factors that may affect emotions, such as the current situation or the environment. Cognitive reappraisal also helps to know own emotions and predict future events. Identification of emotions, processing and regulating emotion by time and intensity, and expressing emotions inside and outside with self or others help maintain a psychological balance. A new and unknown experience like the COVID-19 virus and similar situations interact with an individual's strength. Its appropriate expression can help learn interpersonal skills within new experiences (Watson & Greenbreg, 2017).

**Limitation and Recommendations**

The current study only collected self-reflections of the university students, so a margin of error for self-report exists. The COVID-19 pandemic was found to cause hemodynamic changes in the brain (Olszewska-Guizzo et al., 2021). This study mainly used self-reported questionnaires to measure symptoms and results in self-reporting bias. The gold standard for assessing depression and psychological stress involves functional neuroimaging (Husain, Yu, et al., 2020; Husain, Tang, et al., 2020; Ho et al., 2020). Simply university students participated in this research, so the recommendation is to extend the research with other vulnerable populations. People working from home and gender dimensions will bring more understanding to the phenomenon. Children from minor grades in schools and special populations should also be included in further investigations.

**Conclusion and Implications**

The current study highlighted the use of emotion regulation strategies during COVID-19-induced psychological distress and its impact on psychological well-being among students. It is concluded that an individual's emotional response to the existing COVID-19 lockdown situation can change its harmful psychological impacts. Healthy emotional regulation positively reduces the effect of distress and other psychological traumas. The cognitive reappraisal strategy is found more helpful in the present sample. Nevertheless, expressive suppression has also significantly positively mitigated harmful impacts of COVID-19 induced distress.

Thus, present results have practical and theoretical implications in the tertiary sector of services like education and health for mental well-being. Activities in universities that increased the level of psychological distress among students (Nicola et al., 2020; & Ma et al., 2021) can be re-planned according to the emotional needs of students, as found in this study. The theoretical implication of this study extends to the need of looking for emotion regulation theory under the various degrees of social isolation and physical distancing, lockdowns, halts from work or leisure activities for students, and closure of educational institutions for an indefinite time to interpersonal interactions in general. Risks, trust, uncertainty, fear (Bauman, 2016), and happiness all take a route to rediscover the meaning of existential threat to oneself by weakening social bonds (Ward et al., 2020, p. 83). Social capital (Putnam, 2000) and relationship networks (Manzano-García & Ayala, 2017) are linked with well-being. The role of "others" as a risk in the current situation has dire implications on the mental health of individuals in the future especially for young students. Present findings also call for future studies to investigate the process of individuation and collectiveness for young population in context of similar health emergencies.

The research further can be utilized as a guideline for students to manage their stress and psychological health by keeping emotions well regulated. These findings are beneficial for mental health professionals for devising intervention plans and for educational institutes to guide their students in uncertainty during the pandemic. The area of focus should be better management of students' emotional and psychological health for productivity and leading a better life. The findings of this study can be applied to other similar health emergencies. The role of social interactions, existential threat to life, uncertainty, and forced isolation all contribute to individuals' mental health and warrant further investigations in broader behavioral sciences context.

## References


Affleck, G., & Tennen, H. (1996). Construing benefits from adversity: Adaptational significance and dispositional underpinnings. *Journal of Personality, 64*(4), 899-922. https://doi.org/10.1111/j.1467-6494.1996.tb00948.x

Allahverdipour, H., Karimzadeh, Z., Alizadeh, N., Asghari Jafarabadi, M., & Javadivala, Z. (2021). Psychological well-being and happiness among middle-aged women: A cross-sectional study. *Health Care for Women International, 42*(1), 28-42. https://doi.org/10.1080/07399332.2019.1703990

Asghar, N., Kobyzev, I., Hoey, J., Poupart, P., & Sheikh, M. B. (2020). *Generating emotionally aligned responses in dialogues using affect control theory.* Cornell University. https://arxiv.org/abs/2003.03645

Bauman, N. J. (2016). The stigma of mental health in athletes: Are mental toughness and mental health seen as contradictory in elite sport? *British Journal of Sports Medicine, 50,* 135-136. http://dx.doi.org/10.1136/bjsports-2015-095570

Bericat, E. (2016). The sociology of emotions: Four decades of progress. *Current Sociology, 64*(3), 491-513. https://doi.org/10.1177%2F0011392115588355

Bjelajac, Ž., & Filipović, A. (2020). Lack of security culture in facing the COVID-19 pandemic. *The Culture of Polis, 17*(42), 383-399.

Blair, C., & Raver, C. C. (2012). Individual development and evolution: experiential canalization of self-regulation. *Developmental psychology, 48*(3), 647–657. https://doi.org/10.1037/a0026472

Bohlmeijer, E. T., & Westerhof, G. J. (2021). A new model for sustainable mental health: Integrating well-being into psychological treatment. In Kirby, J. N., & Gilbert, P. (Eds.), *Making an Impact on Mental Health: The Applications of Psychological Research* (pp. 153–188). Routledge/Taylor & Francis Group.

Brüggen, E. C., Hogreve, J., Holmlund, M., Kabadayi, S., & Löfgren, M. (2017). Financial well-being: A conceptualization and research agenda. *Journal of Business Research, 79,* 228-237. https://doi.org/10.1016/j.jbusres.2017.03.013

Carter, M. J., & Fuller, C. (2016). Symbols, meaning, and action: The past, present, and future of symbolic interactionism. *Current Sociology, 64*(6), 931-961. https://doi.org/10.1177/0011392116638396

Cole, P. M., Dennis, T. A., Martin, S. E., & Hall, S. E. (2008). Emotion Regulation and the Early Development of Psychopathology. In Vandekerckhove, M., von Scheve, C., Ismer, S., Jung, S., & Kronast, S. (Eds.), *Regulating Emotions*. https://doi.org/10.1002/9781444301786.ch7

Cherland, E. (2012). The polyvagal theory: Neurophysiological foundations of emotions, attachment, communication, self-regulation. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 21*(4), 313.

Cheung, L. H., Callaghan, P., & Chang, A. M. (2003). A controlled trial of psycho-educational interventions in preparing Chinese women for elective hysterectomy. *International Journal of Nursing Studies, 40*(2), 207-216. https://doi.org/10.1016/S0020-7489(02)00080-9

Chirico, F., & Magnavita, N. (2020). The crucial role of occupational health surveillance for health-care workers during the COVID-19 pandemic. *Workplace Health & Safety, 69*(1), 5-6. https://doi.org/10.1177/2165079920950161

Davis, C. G., Nolen-Hoeksema, S., & Larson, J. (1998). Making sense of loss and benefiting from the experience: Two construals of meaning. *Journal of Personality and Social Psychology, 75*(2), 561–574. https://doi.org/10.1037//0022-3514.75.2.561

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1-4. https://doi.org/10.11648/j.ajtas.20160501.11

Ford, B. Q., & Gross, J. J. (2019). Why beliefs about emotion matter: An emotion-regulation perspective. *Current Directions in Psychological Science, 28*(1), 74-81. https://doi.org/10.1177/0963721418806697

Ford, B. Q., Lwi, S. J., Gentzler, A. L., Hankin, B., & Mauss, I. B. (2018). The cost of believing emotions are uncontrollable: Youths' beliefs about emotion predict emotion regulation and depressive symptoms. *Journal of Experimental Psychology: General, 147*(8), 1170. https://psycnet.apa.org/doi/10.1037/xge0000396

Ghebreyesus, T. A. (2020). Safeguard research in the time of COVID-19. *Nature Medicine, 26*(4), 443. https://doi.org/10.1038/s41591-020-0852-1

Gordon, S. L. (1990). Social Structural Effects on Emotions. In Kemper, T. D. (Ed.), *Research Agendas in The Sociology of Emotions* (pp. 145–179). State University of New York Press.

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry, 26*(1), 1-26. https://doi.org/10.1038/s41591-020-0852-1

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*(2), 348-362. https://doi.org/10.1037/0022-3514.85.2.348

Hayes, A. F. (2017). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. Guilford Publications.

Ho, C. S., Lim, L. J., Lim, A. Q., Chan, N. H., Tan, R. S., Lee, S. H., & Ho, R. (2020). Diagnostic and predictive applications of functional near-infrared spectroscopy for major depressive disorder: A systematic review. *Frontiers in Psychiatry, 11*, 378. https://doi.org/10.3389/fpsyt.2020.00378

Hochschild, A. (1983). Comment on Kemper's "Social constructionist and positivist approaches to the sociology of emotions." *American Journal of Sociology, 89*(2), 432–434. https://doi.org/10.1086/227874

Husain, S. F., Tang, T., Yu, R., Tam, W. W., Tran, B., Quek, T. T., Hwang, S., Chang, C. W., Ho, C. S., & Ho, R. C. (2020). Cortical haemodynamic response measured by functional near infrared spectroscopy during a verbal fluency task in patients with major depression and borderline personality disorder. *EBioMedicine, 51*, 102586. https://doi.org/10.1016/j.ebiom.2019.11.047

Husain, S. F., Yu, R., Tang, T., Tam, W. W., Tran, B., Quek, T. T., Hwang, S., Chang, C. W., Ho, C. S., & Ho, R. C. (2020). Validating a functional near-infrared spectroscopy diagnostic paradigm for major depressive disorder. *Scientific Reports, 10*(1), 1-9. https://doi.org/10.1038/s41598-020-66784-2

Idris, I., Khairani, A. Z., & Shamsuddin, H. (2019). The influence of resilience on psychological well-being of Malaysian university undergraduates. *International Journal of Higher Education, 8*(4), 153-163.

Isaac, M. M., Weng, C., Chen, C.-Y., & Phuong Khanh, T.-N. (2021). Effects of an Online Community Intervention on Taiwanese Sugar Intake Behavior. *The Journal of Behavioral Science, 16*(2), 16-27. https://so06.tcithaijo.org/index.php/IJBS/article/view/249235

Jarymowicz, M. T., & Imbir, K. K. (2015). Toward a human emotions taxonomy (based on their automatic vs. reflective origin). *Emotion Review, 7*(2), 183–188. https://doi.org/10.1177/1754073914555923

Jung, C. G. (2017). *Mandala Symbolism:(From vol. 9 collected works)*. Princeton University Press.

Jurist, E. L. (2005). Mentalized affectivity. *Psychoanalytic Psychology, 22*(3), 426–444. https://doi.org/10.1037/0736-9735.22.3.426

Kamper-DeMarco, K. E., Shankman, J., Fearey, E., Lawrence, H. R., & Schwartz-Mette, R. A. (2020). Linking social skills and adjustment. In *Social Skills Across the Life Span* (pp. 47-66). Elsevier.

Katana, M., Röcke, C., Spain, S. M., & Allemand, M. (2019). Emotion regulation, subjective well-being, and perceived stress in daily life of geriatric nurses. *Frontiers in Psychology, 10*, 1097. https://doi.org/10.3389/fpsyg.2019.01097

Kessler, R. C. (2003). Epidemiology of women and depression. *Journal of Affective Disorders, 74*(1), 5-13. https://doi.org/10.1016/S0165-0327(02)00426-3

Khairani, A. Z., Shamsuddin, H., & Idris, I. (2019). Improving psychological well-being among undergraduates: How creativity in learning can contribute? *Jurnal Komunikasi: Malaysian Journal of Communication, 35*(2), 346-360. http://journalarticle.ukm.my/13208/

King, L. A., & Miner, K. N. (2000). Writing about the perceived benefits of traumatic events: Implications for physical health. *Personality and Social Psychology Bulletin, 26*(2), 220-230. https://doi.org/10.1177/0146167200264008

Le, H. T., Lai, A. J. X., Sun, J., Hoang, M. T., Vu Linh, G., Pham, H. Q., Nguyen, T. H., Tran, B. X., Latkin, C. A., Le Xuan, T. T., Nguyen, T. T., Pham, Q. T., Ta, N. T. K., Nguyen, Q. T., Ho, R. C. M., & Ho, C. S. H. (2020). Anxiety and depression among people under the nationwide partial lockdown in Vietnam.

*Frontiers in Public Health, 8*, 656. https://doi.org/10.3389/fpubh.2020.589359

Lee, Y., Lui, L. M., Chen-Li, D., Liao, Y., Mansur, R. B., Brietzke, E., Rosenblat, J. D., Ho, R., Rodrigues, N. B., & Lipsitz, O. (2021). Government response moderates the mental health impact of COVID-19: A systematic review and meta-analysis of depression outcomes across countries. *Journal of Affective Disorders, 290*, 364-377. https://doi.org/10.1016/j.jad.2021.04.050

Li, Y., Wang, Y., Jiang, J., Valdimarsdóttir, U. A., Fall, K., Fang, F., Song, H., Lu, D., & Zhang, W. (2020). Psychological distress among health professional students during the COVID-19 outbreak. *Psychological Medicine, 51*(11), 1960-1960. https://doi.org/10.1017/S0033291721000714

Liu, C. H., Zhang, E., Wong, G. T. F., & Hyun, S. (2020). Factors associated with depression, anxiety, and PTSD symptomatology during the COVID-19 pandemic: Clinical implications for US young adult mental health. *Psychiatry Research, 290*, Article 113172. https://doi.org/10.1016/j.psychres.2020.113172

Ma, Z., Zhao, J., Li, Y., Chen, D., Wang, T., Zhang, Z., Chen, Z., Yu, Q., Jiang, J., & Fan, F. (2020). Mental health problems and correlates among 746 217 college students during the coronavirus disease 2019 outbreak in china. *Epidemiology and Psychiatric Sciences, 29*, E181. http://doi.org/10.1017/S2045796020000931

Manzano-García, G., & Ayala, J. C. (2017). Relationship between psychological capital and psychological well-being of direct support staff of specialist autism services. The mediator role of burnout. *Frontiers in psychology, 8*, 2277. https://doi.org/10.3389/fpsyg.2017.02277

Martino, G., Caputo, A., Vicario, C. M., Feldt-Rasmussen, U., Watt, T., Quattropani, M. C., Benvenga, S., & Vita, R. (2021). Alexithymia, emotional distress, and perceived quality of life in patients with hashimoto's thyroiditis. *Frontiers in Psychology, 12*, 1295. https://doi.org/10.3389/fpsyg.2021.667237

Maslow, A. (1968). Some educational implications of the humanistic psychologies. *Harvard Educational Review*, *38*(4), 685-696. https://doi.org/10.17763/haer.38.4.j07288786v86w660

Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C., Agha, M., & Agha, R. (2020). The socio-economic implications of the coronavirus pandemic (COVID-19): A review. *International journal of surgery, 78*, 185-193. https://doi.org/10.1016/j.ijsu.2020.04.018

Nezlek, J. B., & Kuppens, P. (2008). Regulating positive and negative emotions in daily life. *Journal of Personality*, *76*(3), 561-580. https://doi.org/10.1111/j.1467-6494.2008.00496.x

Olszewska-Guizzo, A., Mukoyama, A., Naganawa, S., Dan, I., Husain, S. F., Ho, C. S., & Ho, R. (2021). Hemodynamic response to three types of urban spaces before and after lockdown during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health, 18*(11), 6118. https://doi.org/10.3390/ijerph18116118

Price, C. J., & Hooven, C. (2018). Interoceptive awareness skills for emotion regulation: Theory and approach of mindful awareness in body-oriented therapy (MABT). *Frontiers in Psychology, 9*, 798. https://doi.org/10.3389/fpsyg.2018.00798

Proctor, C., Tweed, R., & Morris, D. (2016). The Rogerian fully functioning person: A positive psychology perspective. *Journal of Humanistic Psychology*, *56*(5), 503-529. https://doi.org/10.1177%2F0022167815605936

Putnam, R. D. (2000). *Bowling Alone: The Collapse and Revival of American Community*. Simon and Schuster.

Ran, R. M., & Deci, E. L. (2011). A self-determination theory perspective on social, institutional, cultural, and economic supports for autonomy and their importance for well-being. *Human Autonomy in Cross-Cultural Context* (pp. 45-64). https://doi.org/10.1007/978-90-481-9667-8_3

Ren, Z., Xin, Y., Ge, J., Zhao, Z., Liu, D., Ho, R., & Ho, C. S. (2021). Psychological impact of COVID-19 on college students after school reopening: A cross-sectional study based on machine learning. *Frontiers in Psychology, 12*, 1346. https://doi.org/10.3389/fpsyg.2021.641806

Ryff, C. D. (2014). Psychological well-being revisited: Advances in the science and practice of eudaimonia. *Psychotherapy and*

*Psychosomatics, 83*(1), 10-28. https://doi.org/10.1159/000353263

Sharma, S. (2020). Life Adjustment During COVID-19. In S. Z. H. Zaidi, S. S. H. Kazmi, K. Hasan, & N. Sharma (Eds)., *COVID-19: Biopsychosocial Perspectives*. https://books.google.com.pk/books?id=0XbpDwAAQBAJ&lpg=PT248&ots=U9RpyYITNj&lr&pg=PT253#v=onepage&q&f=false

Shi, L., Lu, Z. A., Que, J. Y., Huang, X. L., Liu, L., Ran, M. S., Gong, Y., Yuan, K., Yan, W., Sun, Y., Shi, J., Bao, Y., & Lu, L. (2020). Prevalence of and risk factors associated with mental health symptoms among the general population in China during the coronavirus disease 2019 pandemic. *JAMA Network Open, 3*(7), http://doi.org10.1001/jamanetworkopen.2020.14053

Shipman, K. L., & Zeman, J. (2001). Socialization of children's emotion regulation in mother–child dyads: A developmental psychopathology perspective. *Development and Psychopathology, 13*(2), 317-336. https://doi.org/10.1017/S0954579401002073

Singh, G. (2014). Mental health of adolescents in relation to emotional maturity and parent child relationship. *Voice of Research, 3*(2), 4-6.

Sledge Jr, G. W., Hu, P., Falkson, G., Tormey, D., Abeloff, M., & Eastern Cooperative Oncology Group. (2000). Comparison of chemotherapy with chemohormonal therapy as first-line therapy for metastatic, hormone-sensitive breast cancer: An eastern cooperative oncology group study. *Journal of Clinical Oncology, 18*(2), 262. https://doi.org/10.1200/JCO.2000.18.2.262

Soh, H. L., Ho, R. C., Ho, C. S., & Tam, W. W. (2020). Efficacy of digital cognitive behavioural therapy for insomnia: A meta-analysis of randomised controlled trials. *Sleep Medicine, 75*, 315-325. https://doi.org/10.1016/j.sleep.2020.08.020

Srivastava, S., Purkayastha, N., Chaurasia, H., & Muhammad, T. (2021). Socioeconomic inequality in psychological distress among older adults in India: A decomposition analysis. *BMC Psychiatry, 21*(1), 1-15. https://doi.org/10.1186/s12888-021-03231-0

Tee, M., Wang, C., Tee, C., Pan, R., Reyes, P. W., Wan, X., Anlacan, J., Tan, Y., Xu, L., & Harijanto, C. (2020). Impact of the COVID-19 pandemic on physical and mental health in lower and upper middle-income Asian countries: A comparison between the Philippines and China. *Frontiers in Psychiatry, 11*, Article 568929. https://doi.org/10.3389/fpsyt.2020.568929

Tran, B. X., Nguyen, H. T., Le, H. T., Latkin, C. A., Pham, H. Q., Vu, L. G., Le, X. T. T., Nguyen, T. T., Pham, Q. T., & Ta, N. T. K. (2020). Impact of COVID-19 on economic well-being and quality of life of the Vietnamese during the national social distancing. *Frontiers in Psychology, 11*, Article 565153. https://doi.org/10.3389/fpsyg.2020.565153

Tran, B. X., Vo, L. H., Phan, H. T., Pham, H. Q., Vu, G. T., Le, H. T., Latkin, C. A., Ho, C. S., & Ho, R. C. (2020). Mobilizing medical students for COVID-19 responses: Experience of Vietnam. *Journal of Global Health, 10*(2), Article 020319. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7559422/

Verzeletti, C., Zammuner, V. L., Galli, C., & Agnoli, S. (2016). Emotion regulation strategies and psychosocial well being in adolescence. *Null, 3*(1), 1199294. https://doi.org/10.1080/23311908.2016.1199294

Wang, C., Chudzicka-Czupała, A., Grabowski, D., Pan, R., Adamus, K., Wan, X., Hetnał, M., Tan, Y., Olszewska-Guizzo, A., & Xu, L. (2020). The association between physical and mental health and face mask use during the COVID-19 pandemic: A comparison of two countries with different views and practices. *Frontiers in Psychiatry, 11*, Article 569981. https://doi.org/10.3389/fpsyt.2020.569981

Wang, C., Chudzicka-Czupała, A., Tee, M. L., Núñez, M. I. L., Tripp, C., Fardin, M. A., Habib, H. A., Tran, B. X., Adamus, K., & Anlacan, J. (2021). A chain mediation model on COVID-19 symptoms and mental health outcomes in Americans, Asians and Europeans. *Scientific Reports, 11*(1), 1-12. https://doi.org/10.1038/s41598-021-85943-7

Wang, C., Fardin, M. A., Shirazi, M., Pan, R., Wan, X., Tan, Y., Xu, L., McIntyre, R. S., Tran, B., & Quek, T. T. (2021). Mental health of the general population during the 2019 coronavirus disease (COVID-19) pandemic: A tale of two developing countries. *Psychiatry International, 2*(1), 71-84. https://doi.org/10.3390/psychiatryint2010006

Wang, C., López-Núñez, M. I., Pan, R., Wan, X., Tan, Y., Xu, L., Choo, F., Ho, R., Ho, C., & ME, A. G. (2021). The impact of 2019 coronavirus disease (COVID-19) pandemic on physical and mental health: A comparison between China and Spain. *JMIR Formative Research, 5*(5), e27818. https://doi.org/10.2196/27818

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health, 17*(5), 1729. https://doi.org/10.3390/ijerph17051729

Wang, C., Tee, M., Roy, A. E., Fardin, M. A., Srichokchatchawan, W., Habib, H. A., Tran, B. X., Hussain, S., Hoang, M. T., & Le, X. T. (2021). The impact of COVID-19 pandemic on physical and mental health of Asians: A study of seven middle-income countries in Asia. *PloS One, 16*(2), e0246824. https://doi.org/10.1371/journal.pone.0246824

Wang, C., Tripp, C., Sears, S. F., Xu, L., Tan, Y., Zhou, D., Ma, W., Xu, Z., Chan, N. A., & Ho, C. (2021). The impact of the COVID-19 pandemic on physical and mental health in the two largest economies in the world: A comparison between the united states and china. *Journal of Behavioral Medicine*. https://doi.org/10.1007/s10865-021-00237-7

Wang, Y., Di, Y., Ye, J., & Wei, W. (2021). Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China. *Psychology, Health & Medicine, 26*(1), 13-22. https://doi.org/10.1080/13548506.2020.1746817

Ward, C., Bochner, S., & Furnham, A. (2020). *The Psychology of Culture Shock*. Routledge.

Watson, J. C., & Greenberg, L. S. (2017). *Emotion-focused therapy for generalized anxiety*. American Psychological Association. https://doi.org/10.1037/0000018-000

Watters, E. R., Aloe, A. M., & Wojciak, A. S. (2021). Examining the associations between childhood trauma, resilience, and depression: A multivariate meta-analysis. *Trauma, Violence, & Abuse.* https://doi.org/10.1177/1524838021 1029397

Webb, T. L., Miles, E., & Sheeran, P. (2012). Dealing with feeling: a meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychological Bulletin, 138*(4), 775–808. https://doi.org/10.1037/a0027600

Werner, K., & Gross, J. J. (2010). Emotion regulation and psychopathology: A conceptual framework. In A. M. Kring & D. M. Sloan (Eds.), *Emotion regulation and psychopathology: A transdiagnostic approach to etiology and treatment* (pp. 13–37). The Guilford Press.

Williamson, E. J., Walker, A. J., Bhaskaran, K., Bacon, S., Bates, C., Morton, C. E., Curtis, H. J., Mehrkar, A., Evans, D., & Inglesby, P. (2020). Factors associated with COVID-19-related death using OpenSAFELY. *Nature, 584*(7821), 430-436. https://doi.org/10.1038/s41586-020-2521-4

World Health Organization [WHO]. (2019). *Advice for public.* https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

World Health Organization [WHO]. (1998). *The WHO-5 well-being index.* https://www.psykiatri-regionh.dk/who-5/Documents/WHO-5%20questionaire%20-%20English.pdf

Yu, H., Li, M., Li, Z., Xiang, W., Yuan, Y., Liu, Y., Li, Z., & Xiong, Z. (2020). Coping style, social support and psychological distress in the general Chinese population in the early stages of the COVID-19 epidemic. *BMC Psychiatry, 20*(1), 1-11. https://doi.org/10.1186/s12888-020-02826-3

Zhang, J., Lu, H., Zeng, H., Zhang, S., Du, Q., Jiang, T., & Du, B. (2020). The differential psychological distress of populations affected by the COVID-19 pandemic. *Brain, Behavior, and Immunity, 87*, 49-50. https://doi.org/10.1016/j.bbi.2020.04.031