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Alexithymia, Cognitive Flexibility and Hardiness in Covid Positive Young Adults

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ABSTRACT

Background: Covid-19 outbreak has created a halt in everyone's life, especially in those who were infected by it. Its affectability of it can be accounted for not only at the individual level but also at the global level when WHO declared it a pandemic in March 2020. **Objective:** The present study seeks to find effective cognitive factors such as alexithymia, cognitive flexibility, and hardiness in covid-19 positives by using Pearson's correlation. It is hypothesized that a high hardiness level will be associated with high cognitive flexibility and low levels of Alexythemia concluding that people who were covid-19 positive had an impact on their cognitive functioning. **Methods:** The study used Pearson's Correlation method that calculated using SPSS 27(2021). **Results :** Consistent with hypothesis the result of the study indicates a positive correlation between cognitive flexibility and hardiness . Results also yielded a negative correlation between alexiythemia, Cognitive Flexibility and Hardiness indicating that presence of inability to describe and identify emotions contributes to lower flexibility as well as ability to withstand challenging situations. Conclusion: The study concludes that presence of cognitive flexibility was linked t greater psychological hardiness and lower alexiythemia

Keywords: Cognitive Flexibility, Alexythemia , Hardiness, Covid-19.

INTRODUCTION

The unprecedented increase in new coronavirus (COVID-19) cases around the world has been declared a pandemic (Dennison Himmelfarb and Baptiste 2020). The World Health Organization declared it a pandemic on March 11, 2020, due to its contagious nature (Saey 2020; Shahzad et al. 2020a, b). India is one of the worst-affected nations and had a financial and emotional impact on people (Yan et al. 2021) as well had a negative impact on the material and mental well-being of afflicted people and their families. People's health has suffered significantly due to the weak health system and a lack of fear of illness. Therefore, the current research aims to analyze the impact of the covid-19 outbreak on the emotional, behavioral, social, and psychological domains of individuals

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infected by the virus. People have experienced fear and worry as a result of the COVID-19 epidemic since it began, regardless of their level of awareness (CDC, 2020). Misinterpretation of reported physical changes and sensations causes health anxiety in normal conditions (Rajkumar, 2020). Infectious illness outbreaks, such as the COVID-19, however, can cause excessive health anxiety, especially if the information presented is overstated or erroneous. Individual anxiety reactions appear as maladaptive behaviours such as avoiding healthcare services, hoarding specific items, and seeking medical advice repeatedly, even for minor symptoms like heat-induced headaches. Confusion, disinformation, and the unpredictable nature of the disease increase anxiety in people, particularly those who are at high risk of catching the infection. According to Zandifar and Badrfam (2020), patients' fear of death is a common reaction to disease pandemics like COVID-19.

People's reactions to the COVID-19 outbreak have had a significant impact on their mental health, with some adopting self-destructive activities as a result. People's livelihoods and habits are disturbed as governments continue to impose stringent limits on movement, resulting to rising levels of sadness, loneliness, and the growth of dangerous alcohol and drug addiction, as well as self-harm. At both the individual and communal levels, the lack of social connections has resulted in excessive stress, sadness, panic, anxiety, mental instability, and an unwillingness to work (Brooks et al. 2020; Iqbal et al. 2020). Stress, anxiety, melancholy, grim economic, career, and social outlooks, and a constant feeling that everything would never be the same again are all common stress-related emotions among the public as a result of the epidemic. Although young people are less vulnerable to severe forms of the illness, with milder symptoms, lower morbidity, and a better prognosis than adults, they have also seen an increase in stress, which has resulted in loneliness, anxiety, and depression in many. COVID-19's impact on young people's mental health may be more harmful in the long term than the infection itself. According to epidemiological studies, some individuals may have these psychological issues during the early stages of trauma, putting a significant strain on families and communities as they struggle to restore their lives (Xie, Wu, & Shen, 2019; Zhou & Wu, 2019).

Alexithymia and Covid-19:

Deficits in emotional identification and expression, or alexithymia (Paivio & McCulloch, 2004; Zou et al., 2016), maybe a key issue in this progression. Alexithymia is a condition associated with three state-dependent emotional identification and expression deficiencies (Hendryx, Haviland, & Shaw, 1991): difficulty identifying feelings (DIF), difficulty describing feelings (DDF), and externally oriented thinking (Sifneos, 1991; Taylor, 1994). People with severe alexithymia have a decreased ability to symbolically fantasize and think, as well as a cognitive difficulty to understand and communicate their feelings (Taylor, 1984). These inadequacies lead to an inability to control emotions and accompanying responses, which can lead to both psychological and somatic symptoms. Previous research has revealed that trauma can predict emotional awareness and expression deficiencies (alexithymia) (Kench & Irwin, 2000), and alexithymia has been linked to a number of psychopathological symptoms (Aricak & Ozbay, 2016; Hendryx et al., 1991; Perry & Hayaki, 2014; Westwood, Kerr-Gaffney, Stahl, & Tchanturia, 2017).

Evidence suggests that alexithymia modulates cortisol levels in response to stress events (de Timary et al., 2008; Hua et al., 2014) and is a predictor of high levels of anxiety and depression (de Timary

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et al., 2008; Hua e (e.g., Honkalampi et al., 2000; Berardis et al., 2008; Fietz et al., 2018). Alexithymia has been discovered to play a mediator in the relationship between COVID-19 pandemic exposure and PTSD and depressive symptoms (Tang et al., 2020).

Cognitive Flexibility and Covid-19

Cognitive flexibility (CF) is defined as the capacity to change one's mind to adapt to changing circumstances (Dennis & Vander Wal, 2010). CF is the process of removing irrelevant data and focusing on resources that are more useful (Diamond, 2013). Cognitive flexibility, according to Martin and Rubin, is characterized as an individual's knowledge of the availability of options and alternatives, desire to adjust to the circumstance and self-efficacy in being flexible.Using multiple thinking processes and conceptual frames is linked to cognitive flexibility.

Individuals can re-evaluate unfavorable experiences, difficult events, or negative sensations when their point of view is changing, and they are less prone to harm (Cheng et al., 2014). Lower levels of CF, on the other hand, were linked to ruminating, sadness, and anxiety (Dennis & Vander Wal, 2010). According to additional research, people with lower psychological flexibility had more COVID-19-related depression, anxiety, or worry during the pandemic, whereas people with higher psychological flexibility had better mental well-being because it allows them to choose appropriate coping mechanisms to adapt to a new situation (Dawson & Golijani-Moghaddam, 2020; Pakenham et al., 2020). Previous research has consistently demonstrated how the COVID-19 pandemic presents a significant danger to mental health (Liu et al., 2020; Petzold et al., 2020). Johnco et al. compared anxiety and cognitive flexibility scores in clinical and non-clinical samples, finding that the clinical group had lower cognitive flexibility and higher anxiety. Yu et al. found that a low degree of cognitive flexibility was linked to a high level of anxiety in a recent study. Individuals with cognitive flexibility, according to Gülüm and Da (2012), may replace obsessive and maladaptive thinking with more harmonic and balanced thoughts, and these individuals view tough situations as manageable conditions. When considered in this light, cognitive flexibility is thought to be a term connected to psychological resilience, which is described as an individual's coping mechanisms in the face of adversity (Johnson, 2008).

Hardiness and Covid-19:

Resilience is a valuable resource that aids people in recovering from adversity and dealing with stress. We can define it as the ability to adapt positively in the face of adversity and danger. Individuals who have higher degrees of resilience have fewer emotional and behavioral issues, such as sadness, anxiety, and stress. Arnetz et al. suggested that resilience is related to a lower level of psychological distress and is a resource that should be considered during the assessment of risk and protective factors. Hardiness is a resilience feature that can protect one from the harmful impacts of adversity in life. Hardiness was first defined as a personality trait by Kobasa(1979), who defined it as "persons high in hardiness involve themselves in whatever they are doing (commitment), believe and act as if they can influence the events forming their lives (control), and consider a change to be not only normal but also a stimulus to development (challenge)."Several studies, according to Bartone, have shown that hardiness can protect against the harmful impacts of stress on health and performance. Bartone discovered a link between toughness and stress. Hardiness appears to be a protective factor against stress-related disorders, according to the findings of this study. Hardiness,

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in addition to having a predictive effect, appears to have a mediating function in stress and mental health, according to the findings of various studies.

As the COVID-19 pandemic spreads over the world, it is producing widespread concern, fear, and tension, all of which are legitimate and expected responses to the ever-changing and uncertain position in which everyone finds themselves. "The challenge facing each and every one of us is how we handle and react to the difficult scenario happening so swiftly in our lives and communities," says Dr. Kluge, WHO regional director for Europe. Here, we can call on the tremendous abilities of strength and cooperation that we, as humans, have. And that is what we must attempt to focus on as people, family and community members, friends and coworkers, to respond most effectively to this crisis." Wang et al. (Wang et al., 2020).

The rationale of the present study

The present study deemed to predict the importance of certain cognitive factors being associated with the stress response during covid by measuring the correlations between hardiness level i.e a sub factor of resilience or an attribute of coping used during the pandemic being positively associated with cognitive flexibility that is the ability to adapt and adjust to the changing situation with both being negatively correlated with Alexithymia i.e an inability to identify and describe emotions while having an externally oriented thinking.

Review of literature:

COVID-related limitations led individuals to stay at home, socially isolated and halted everyday activities for months in early 2020. Anxiety, stress, despair, frustration, irritability, sleeplessness, post-traumatic stress symptoms, and wrath were all aroused as a result of this stressful situation. According to studies from various countries, the incidence of these psychological problems is high everywhere: for example, surveys of Chinese respondents revealed that nearly 35% of respondents experienced psychological distress (Qiu et al., 2020), with 2.9 percent scoring above the clinical cut-off for post-traumatic stress disorder (PTSD) and 9% scoring at or above the clinical cut-off for depression (Tang et al., 2020). According to a meta-analysis published in July 2020 on the effects of the pandemic worldwide, the prevalence of stress was 29.6% (five studies, 9,074 participants), anxiety was 31.9 percent (17 studies, 63,439 participants), and depression was 33.7 percent (14 studies, 44,531 participants; Salari et al., 2020). Another systematic study found increased rates of anxiety, depression, post-traumatic stress disorder, and stress in the general population in China, Spain, Italy, Iran, the United States, Turkey, Nepal, and Denmark during the COVID-19 epidemic (Xiong et al., 2020). Individual variations in personality characteristics (Segerstrom and Smith, 2019), resilience and coping mechanisms (Serafini et al., 2020), and alexithymia are among the psychological aspects that modulate the association between stresses and mental health outcomes during lockdowns (Hua et al., 2014).

Alexithymia is a pathophysiologic condition that can occur in communities. Difficulty in recognizing feelings (DIF) and separating them from physical sensations of emotional arousal, difficulty in articulating feelings (DDF), and externally oriented thinking (EOT) with a concentration on actual external stimuli rather than interior emotions are all symptoms of alexithymia. DIF and DDF are regarded as affect-related since they refer to emotional awareness

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and expression. EOT refers to a certain inclination to avoid emotions and deal with superficial subjects. As a result, it can be classified as cognition-related to a higher extent.Research postulated Alexithymia which is described as an inability to identify and describe feelings (Sifneos, 1973) modulates cortisol levels leading to abnormally high levels of anxiety and depression (de Timary et al., 2008; Hua et al., 2014) (e.g., Honkalampi et al.,).

Dezaki-et-al (2021) postulated Alexithymia can develop in people who are depressed. In many of these situations, patients show a lack of cognitive flexibility, emotional awareness, and effective range, which, when combined with a lack of speech, might lead to high TAS scores. The dependence on self-reports or self-ratings for both alexithymia and negative emotional states increases the possibility that the observed connections are the result of a subjective, relativistic process, including a widespread response disposition. The emotional valence of alexithymia is negative. Non-alexithymic people are able to control and resolve bad emotions triggered by stressful or contradictory situations, whereas alexithymic persons are unable to do so, and the negative effect stays unmodulated, resulting in a prolonged, albeit undifferentiated dysphoria.

Relationships between (cognitive) alexithymia and deficits in inhibition, working memory, mental flexibility, and planning have been identified in non-clinical samples with varying amounts of alexithymic features(Koven and Thomas, 2010; Xiong-Zhao et al., 2006). Increased psychological inflexibility and poorer positive affect scores were linked to higher levels of alexithymia.(Edwards and Lowe, 2021). Experiential avoidance was demonstrated to be a major mediator of the relationship between alexithymia and psychosomatic and depressive symptoms in a clinical sample by Panayiotou et al. (2015). The authors hypothesized that difficulty defining and recognizing emotions is an effort (intentional or not) to avoid the uncomfortable effect and that this process predicts the development of mental and physical health issues. Researchers began looking for psychosocial features that might attenuate the stress-illness relationship soon after research demonstrated that psychological stress was linked to sickness (Dohrenwend & Dohrenwend, 1974). The concept of hardiness (Kobasa, 1979a, 1979b) was introduced as a result of this inquiry. Hardiness, according to Maddi and Kobasa (1984), is "a broad sense of satisfaction with the environment," which causes a person to approach issues with curiosity, excitement, or devotion. The researchers looked at the link between psychological toughness and alexithymia, as well as the severity of gastrointestinal symptoms in individuals with functional gastrointestinal disorders.The Pearson correlation test revealed substantial negative relationships between the hardiness total score and the components of control and commitment, as well as the hardiness total score and the components of control and challenge, with the severity of gastrointestinal symptoms(Mazehari,2015).

Ebrahimabad and mamizade (2022) conducted research explaining Psychological Well-Being in the Soldiers' Military Service Training Centers of the Semnan Air Defense Force and looked at the link between psychological flexibility and psychological hardiness. Soldiers' training facility in Semnan mission of air defense duty martyrs made up the study population. A total of 162 troops were chosen using a multistage cluster sampling process. The findings revealed a substantial association between psychological flexibility and psychological hardiness and well-being, as well as a strong relationship between psychological flexibility and psychological hardiness at 0/01. Furthermore, psychological

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toughness predicts 51% of psychological well-being. The findings show that cognitive flexibility plays an essential role in psychological well-being.Vaziri-et-al(2021) demonstrated through studies the link between psychological resilience and self-differentiation, as well as cognitive flexibility and self-regulation, and academic engagement. The random cluster sampling approach was used to pick 499 second-high school pupils in Tehran for the academic year 2019-2020. The statistical population consists of 490 students from Tehran who were chosen using a multistage cluster random sampling approach. There was a significant full-effect association between self-regulation and academic engagement, according to the data. There was a significant full impact between self-differentiation and cognitive flexibility, according to the findings. There was a significant full impact between self-regulation and academic engagement, according to the findings. Narimani-et-al(2020) looked into the influence of temperament and personality characteristics, fundamental psychological requirements, and cognitive flexibility on the psychological toughness of autistic children's moms. The research was done using a descriptive-correctional technique. All moms of children with autistic disorder in Ahvaz were included in the statistical population. The findings revealed a substantial and negative association between harm avoidance and reward-dependence and psychological hardiness, as well as a positive and significant relationship between other aspects of temperament and character, fundamental psychological requirements, and psychological flexibility. The perception of different solutions had the capacity to predict hardness using the cognitive flexibility components. As a result, boosting communication, novelty-seeking, self-transcendence, competence, and perception of alternative options may improve the psychological toughness and wellbeing of moms of children with autism. Another research studied the impact of occupational stress, coping flexibility, and hardiness on nursing burnout, as well as the factors that influence these interactions. Burnout and occupational stress were shown to be positively connected, but burnout and toughness were found to be negatively correlated. Occupational stress was shown to be the most relevant factor in determining nurse burnout, followed by toughness, total clinical career, religion, and working unit(ok-hee and Eun-et-al,2021).

Objective:

The present study deemed to predict the importance of certain cognitive factors being associated with the stress response during covid by measuring the correlations between hardiness level i.e a sub factor of resilience or an attribute of coping used during the pandemic being positively associated with a cognitive flexibility that is the ability to adapt and adjust to the changing situation with both being negatively correlated with Alexithymia i.e an inability to identify and describe emotions while having an externally oriented thinking.

Methodology:

Participants

All participants were aged between 18-30 years (M = 22.22). The participants are ethnically diverse and are in the age range of 18-30 years. The number of participants initially selected for the study was 150 but only 68 were retained for the final submission.

Sampling

The sample was selected using purposive and snowball sampling as people who were diagnosed with covid-19 during the course of 2 years were the participants.

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Socio demographic Data
Interviewer recorded the participants' age, gender, education level, religion, and primary psychiatric diagnoses, if any, on this form.

Table 1:

Details ***(N=68)***	***Range***
Age	M= 22.22
Gender	25 males, 43 females
Level of Education	Under graduation- Post graduation

- Table 1: Socio-Demographic Details

Tools Used:
Hardiness: It was assessed using a 12-item *Hardiness Personality Profile* by Suzanne Kobasa which measures the person's resilience against stress using 3 subscales i.e control, challenge, and commitment. It is a 4-point Likert scale ranging from (0 = Strongly disagree) to (3 = Strongly Agree).

Alexithymia: The *Toronto Alexithymia Scale* is a measure of deficiency in understanding, processing, or describing emotions. It was developed in 1986 and later revised, removing some of the items. The current version has twenty statements rated on a five-point Likert scale. It has 3 sub-scales:
a) Difficulty Identifying Emotions
b) Difficulty Describing Emotions
c) Externally oriented thinking.

The TAS-20 is a self-report scale that comprises 20 items. Items are rated using a 5-point Likert scale whereby 1 = strongly disagree and 5 = strongly agree. There are 5 items that are negatively keyed (items 4, 5, 10, 18, and 19). The total alexithymia score is the sum of responses to all 20 items, while the score for each subscale factor is the sum of the responses to that subscale. The TAS-20 uses cutoff scoring: equal to or less than 51 = non-alexithymia, equal to or greater than 61 = alexithymia. Scores of 52 to 60 = possible alexithymia.

Reliability: Demonstrates good internal consistency (Cronbach's alpha = .81) and test-retest reliability (.77, $p<.01$). Validity: Research using the TAS-20 demonstrates adequate levels of convergent and concurrent validity. The 3-factor structure was found to be theoretically congruent with the alexithymia construct. In addition, it has been found to be stable and replicable across clinical and non-clinical populations.

Cognitive Flexibility: *Cognitive Flexibility Scale (*CFS; Martin & Rubin, 1995): The CFS is a 12-item self-report scale that measures aspects of CF considered relevant for effective interactions and communication on a 6-point Likert scale (strongly disagree to strongly agree). Each item on the questionnaire consists of a statement dealing with beliefs and feelings about behavior. The CFS was developed in a student sample, and showed high internal consistency (α = .76-.77), good concurrent

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and construct validity with measures of interaction and communication flexibility, and high test-retest reliability (r = .83) over two weeks (Martin & Rubin, 1995).

Research Hypothesis:

H1: There will be a significant relationship between Hardiness and Cognitive Flexibility

H2: There will be a negative relationship between Cognitive Flexibility and Alexithymia

H3: There will be a negative relationship between Hardiness and Alexithymia

Procedure:

Participation in the study was voluntary, and participants did not receive any compensation to be enrolled in the study. All the participants gave their written informed consent to participate in the study. They were given the questionnaires for each variable (i.e. Rejection sensitivity, Appearance anxiety, and body dysmorphic disorder) both manually and in Google Docs Format. Informed consent was also attached to each questionnaire.

Results:

Data Analysis:

The data collection procedure proceeded until the number of participants exceeded the minimum required number, based on the analytical methodologies set during the study's design stage. The participants initially selected were 150 adults but only 68 were retained for the final procedure. Bivariate Pearson correlation analyses examined the relationship between the variables of the study. All statistical analyses were performed using IBM SPSS 27 (IBM Corp. 2020).

Results:

Correlations Analysis

The present study was conducted to find out the correlations between Hardiness, Alexthemyia, and Cognitive Flexibility in people infected with covid-19. The Pearson correlations between TAS-20, Hary Personality profile, and Cognitive Flexibility Scale questionnaire scores were calculated and presented in Table 2.

Results were analyzed using SPSS which was set at $p < 0.01$. Table 2 represents the correlations among the study variables. In the bivariate correlation analyses between the study variables, CFI scores had positive correlations with the Hardiness scores($r = 0.600$, $p<0.01$). TAS-20 scores had negative correlations between the Cognitive Flexibility($r = -0.533$, $p<0.01$) as well as Hardiness ($r = -0.363$, $p<0.01$).

Inferential Findings:

As stated in our hypothesis (H1) these results indicate that people with high levels of Cognitive Flexibility are also found to be high in hardiness indicating that high levels of ability to switch between thinking in order to adjust to the changing environment will indicate persons' ability to increase resistance to stressful situations and an unwillingness or inability to be flexible in adjusting to the environment (Cognitive Flexibility) as well being resistant to a stressful situation can be a predictor of an inability in describing and identifying feelings(H2 and H3).

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Table 2: Bivariate correlations between the study variables

Variables	n	M	SD
Hardiness	68	68.26	13.05
Alexithymia	68	52.00	6.39
Cognitive Flexibility	68	1.22	4.01

*The coefficient is significant at 0.01 sig level (two-tailed).

Discussion:

The current study findings clearly showed a correlation between Cognitive Flexibility and Hardiness (Hp-1). These findings support that people who are able to adjust to the changing environment without any hassle have good coping abilities of resilience when faced with stressful situations like the covid-19 outbreak. However, there is not much literature available depicting the association between both but studies do mediate that enhancing one's cognitive ability through psychotherapy also enhanced one's hardiness level. Studies show that cognitive flexibility has been linked negatively with alexithymia this is because of the fact that a person having good adaptability and adjustment to changing situations will possess an advantageous ability to identify and describe emotions as compared to one having low adjustment ability(H2 and H3). The outrageous findings reveal that person having the presence of alexithymia will have low hardiness which is very obvious to understand that difficulty in describing feelings, identifying feelings, and externally oriented thinking will have poor control, commitment, and challenging attitude when faced with adversity. Therefore, the findings of this study showed that cognitive flexibility is a key trait of resilient people. Resilient people, according to Southwick and Charney (2012), have a lot of flexibility in how they think about their problems and how they react to stress emotionally. In addition, this study indicated that cognitive flexibility negatively correlates with the inability to identify and describe feelings which is consistent with another research by Dezaki-et-al(2021)concluded that alexithymia sufferers have trouble communicating their demands and coping with interpersonal obstacles in social contexts. In other words, emotional insufficiency, which degrades a person's impression of life pleasure by disrupting cognitive information processing, also distorts a person's interpretations of life. We postulated that alexithymia was linked to a person's reluctance or incompetence to get in touch with internal experiences without seeking to avoid or control them. Research implies that an inability to recognize and separate emotions may impede one from taking a step back and viewing one's feelings objectively.(Duaret and Pinto-et-al,2017).

Conclusion:

In conclusion, those with greater degrees of alexithymia appear to have fewer happy feelings as a result of their regular behaviour.

1) Refusal to see one's thoughts and feelings as temporary, objective events in one's mind;
2) Unwillingness to be in contact with inner experiences without attempting to change their form or frequency;
3) Inability to experience affiliative-related emotions;
4) Failure to hold negative experiences with kindness, mindful awareness, and a sense of shared humanity.

Being able to adapt and adjust in challenging situation is not the same for people who have

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difficulties in above mentioned areas. Study is of some strength when it comes to studying relationship between hardiness and cognitive flexibility which is well backed up by results and also vast literature available. Another is that study clearly shows that lack of emotions will result in low cognitive flexibility as well ability to deal with and withstand challenging situation. While the study also has some limitations that is it lacks in giving a psychotherauptic model to treat the same and could have compared covid-19 positives as well non-positives which is also a future direction for the study when implicated.

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