# Moderating Role of Mindsets in the Relationship between Depression and Mental Well-being among Psychiatric Patients

**JeeWon Hong**    **Gyhye Sung**[†]

Department of Psychiatry, CHA Bundang Medical Center, CHA University, Seongnam, Korea

In implicit theory, a fixed mindset is a belief that an individual's characteristics are immutable, and a growth mindset is a belief that one's characteristics are changeable through effort. This study aimed to analyze the moderating effect of mindset on the relationship between depression and mental well-being. To this end, the self-report questionnaire responses of 1,107 psychiatric patients were used. Their depression, mental well-being, and mindset for anxiety, intelligence, emotion regulation, and personality were measured. Correlation analysis was performed on the subtypes of mindset, depression, and mental well-being. In addition, we verified whether each mindset subtype moderated the relationship between depression and mental well-being. The results showed that all subtypes of mindset had a significant moderating effect on depression and mental well-being. The importance of therapeutic interventions, such as maintaining a stable level of mental health using various interventions for growth and fixed mindsets according to the depression level of psychiatric patients, was discussed.

**Keywords:** mindsets, implicit theories, depression, well-being, mental health

## Introduction

Mindset, based on implicit theory, refers to the attitude toward the possibility of change in an individual's characteristics (Dweck, 1986). There is a fixed mindset and a growth mindset. A fixed mindset is a belief that one's characteristics are innate and unchangeable (Schroder et al., 2015). By contrast a growth mindset is a belief that one's intelligence or ability can be improved through various experiences and efforts (Tamir et al., 2007), and it is known as a factor that helps people cope with psychological problems more flexibly (Burnette et al., 2020).

Mindset research has been conducted in various fields including

education and social psychology. Previous studies, focused on the academic field, reported that students with a growth mindset showed better academic achievement and self-regulation than those with a fixed mindset (Dweck, 2008). A study on anxiety mindset found that a fixed mindset is related to higher stress levels and more maladaptive coping styles, whereas a growth mindset is related to worries, depression, and perfectionism (Schroder et al., 2015). In a study related to emotions, students with a fixed mindset of emotion regulation showed immature coping, low self-esteem, low life satisfaction, high stress levels, and high depression levels (Tamir et al., 2007). In a study regarding the mindset of personality, individuals with a fixed mindset showed higher stress levels, and lower positive expectations on achieving goals (Burnette et al., 2013), while, those with a growth mindset had lower anxiety and stress levels (Yeager et al., 2014).

Schroder et al. (2015) confirmed the relationship between the four subtypes of mindset and negative emotions, emotion control strategies, and therapeutic interventions. The study included intel-

[†]Correspondence to Gyhye Sung, Department of Psychiatry, CHA Bundang Medical Center, 59 Yatap-ro, Bundang-gu, Seongnam, Korea; E-mail: sunggh82@chamc.co.kr

ligence, anxiety, emotion regulation, and personality mindsets. All four subtypes of mindset had a significant relationship with an individual's ability, health level, the psychological response, and adaptation. A growth mindset is related to achievement, self-regulation abilities, self-esteem, and high health levels (Bashant, 2014), whereas a fixed mindset is related to high negative emotions, stress, and psychological maladjustment (Molden & Dweck, 2006; Sung et al., 2020). Moreover, a fixed mindset and growth mindset are known as factors that can be affected by optimism and pessimism, respectively (Dardick & Tuckwillber, 2019). As such, throughout the research, the scope of the mindset has been extended from the academic field to social psychology, and the positive effect of a growth mindset has been emphasized.

In the field of mental health, there is a two-dimensional category. Mental health and mental illness do not belong to the extremes of a single dimension, but exist as two separate dimensions (Maddux et al., 2004). Depression is a symptom that most patients experience, and it is accompanied by a decrease in mood and interest as well as cognitive and physiological symptoms (American Psychiatric Association, 2017). Depression has detrimental effects in various areas, such as life satisfaction and productivity. However, as in Keyes' theory (2002), which asserts that mental health is dualistic rather than monistic, a non-depressive state does not mean mental well-being. Rather, it is known that people who are not ill with mental disorders and who seek happiness, self-actualization, and social prosperity at the same time are in a state of well-being (Keyes, 2002).

Similarly, people's expectations today are shifting from treatment of diseases to health promotion, and the goal of treatment for psychiatric patients is also directed toward a state of mental health beyond the treatment of psychiatric disorders (Tennant et al., 2007). Since individuals' maladaptive beliefs can affect depression, if treatment is carried out according to the individuals' traits, its effectiveness can be further enhanced (Hong et al., 1999). Recently, a domestic study also examined whether the mindset of intelligence, anxiety, emotion regulation, and personality has intrinsic effects on suicide risk (Lee & Sung, 2019), but studies on mindsets are still lacking; it is unclear whether a growth mindset can positively influence the development of a healthy lifestyle even when experiencing uncontrollable stressful situations. In this context,

this study intends to reveal whether mental well-being can be improved according to the subtypes of mindset, even when faced with a specific situation such as depression. In this study, it was hypothesized that mindset for anxiety, intelligence, emotion regulation and personality would have a significant moderating effect on the relationship between depression and mental well-being. In addition, regardless of the level of depression in psychiatric patients, the higher the fixed mindset, the worse the mental health level would be.

## Methods

### Participants

Among the 1,707 patients receiving treatment at a university hospital located in Gyeonggi-do, patients with intellectual disabilities, neurocognitive disorders, and psychotic disorders were excluded, and 1,107 patients were included in the study. Among the participants, 682 were men (61.6%) and 425 were women (38.4%). The average age was 27.6 years for men ($SD = 11.6$) and 36.4 years for women ($SD = 13.3$). In addition, 437 (39.5%) participants were inpatients and 670 (60.5%) were outpatients at the time of evaluation. This study was approved by with the approval from the Institutional Review Board of CHA Bundang Medical Center, CHA University (Approval No. CHAMC 2021-09-053).

### Measurement Tools

#### Korean Beck Depression Inventory−II (BDI−II)

To measure depression, the 21-item of Korean-Beck's Depression Inventory-II was used (Kim et al., 2015). Each item is rated on a 3 point likert scale, with a score of 0–13 indicating normal range, 14–19 indicating mild depression, 20–28 indicating moderate depression, and 29–63 indicating severe depression.

#### Korean Version of Mental Health Continuum Short Form

To measure the level of mental well-being, the Korean version of the mental health scale was used (Lim et al., 2010). The scale consists of three items measuring emotional well-being, six items measuring psychological well-being, and five items measuring social well-being. Each item is rated on a six point likert scale. Higher scores indicate a higher degree of mental well-being.

Implicit Self Theory Scale

To measure the degree to which personal characteristics are changeable, a factor analysis scale was used to synthesize the scales of mindset for intelligence, anxiety, emotion regulation, and personality (Schroder et al., 2015). The scale consisted of four items measuring the level of intelligence mindset, four anxiety items, four emotion regulation items, and three personality items. Each item was rated on a six point likert scale. Higher scores indicate a fixed mindset, whereas lower scores indicate a growth mindset (Schroder et al., 2015).

**Table 1.** *Descriptive Statistics of the Sample*

| Variable | Value (%) |
|---|---|
| Sex % | |
|   Male | 682 (61.61) |
|   Female | 425 (38.39) |
| Age | |
|   *M* (*SD*) | 30.97 (13.01) |
| Hospitalization | |
|   Inpatients | 437 (39.48) |
|   Outpatients | 670 (60.52) |
| Diagnosis | |
|   Depressive Disorders | 515 (46.52) |
|   Bipolar and Related Disorders | 132 (11.92) |
|   Anxiety Disorders | 218 (19.69) |
|   Trauma- and Stressor-Related Disorders | 187 (16.89) |
|   Obsessive-Compulsive and Related Disorders | 6 (0.54) |
|   Somatic Symptom and Related Disorders | 4 (0.36) |
|   Substance-Related and Addictive Disorders | 10 (0.96) |
|   Attention-Deficit/Hyperactivity Disorder | 27 (2.44) |
|   Personality Disorders | 8 (0.72) |

*Note.* In the case of diagnosis, it is classified by disability including co-morbidities.

Data Analysis

IBM SPSS Statistics 21 was used for the data analysis. First, the mean and standard deviation (*SD*) of each mindset, along with depression and mental well-being, were calculated. Subsequently, the correlations between the major variables were measured. Following this, regression analysis was conducted to determine the moderating effect of mindset on the relationship between depression and mental well-being. In addition, to confirm the mode of the moderating effect, regression lines were plotted centered on 1 *SD* of the mindset variable.

## Results

In this study, the difference in the level of depression according to sex and hospitalization of the participants was not significant. The demographic characteristics are shown in Table 1. The descriptive statistics and correlations are presented in Table 2. Depression was negatively correlated with mental well-being and showed positively correlated with fixed mindsets of anxiety, intelligence, emotion regulation, and personality. Mental well-being was negatively correlated with all types of fixed mindsets. Each mindset had a positive correlation with the others.

To verify whether the anxiety mindset regulates the effects of depression on mental well-being, a moderating effect analysis was performed using regression analysis (Table 3). In the first step, it was found that depression had a significant effect on mental well-being (B = -.54, $t$ = -12.22, $p$ < .001). In step 2, the influence of the anxiety mindset was also significant (B = -.85, $t$ = -7.60, $p$ < .001). In step 3, the interaction variable of depression and anxiety mind-

**Table 2.** *Correlation coefficient and mean and standard deviation (N = 1,107)*

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. Depression | - | | | | | |
| 2. Mental well-being | -.55** | - | | | | |
| 3. Mindset (anxiety) | .62** | -.50** | - | | | |
| 4. Mindset (intelligence) | .43** | -.40** | .57** | - | | |
| 5. Mindset (emotion regulation) | .31** | -.38** | .40** | .46** | - | |
| 6. Mindset (personality) | .43** | -.38** | .55** | .53** | .43** | - |
| *M* | 28.51 | 26.98 | 16.09 | 12.74 | 12.19 | 11.88 |
| *SD* | 14.82 | 21.03 | 6.06 | 5.82 | 4.69 | 4.06 |

*Note.* A higher mindset score indicates a fixed mindset, believes that personal characteristics are immutable.
**$p$ < .01.

**Table 3.** *The Moderating Effect of Mindset on the Relationship Between Depression and Mental Well-being*

| Mindset | Step | Variable | B | SE | β | t | $R^2$ | F |
|---|---|---|---|---|---|---|---|---|
| Anxiety | 1 | Depression | -.77 | .04 | -.55 | -21.60*** | .30 | 466.60*** |
| | 2 | Depression | -.54 | .04 | -.38 | 12.06*** | .34 | 285.85*** |
| | | Mindset | -.94 | .11 | -.27 | -8.61*** | | |
| | 3 | Depression | -.54 | .04 | -.38 | -12.22*** | .35 | 194.87*** |
| | | Mindset | -.85 | .11 | -.25 | -7.60*** | | |
| | | Depression × Mindset | .08 | .01 | .08 | 2.97** | | |
| Intelligence | 1 | Depression | -.77 | .036 | -.55 | -21.60*** | .30 | 466.60*** |
| | 2 | Depression | -.65 | .039 | -.46 | -16.76*** | .33 | 272.67*** |
| | | Mindset | -.74 | .099 | -.20 | -7.46*** | | |
| | 3 | Depression | -.64 | .038 | -.45 | -16.51*** | .59 | 192.92*** |
| | | Mindset | -.78 | .098 | -.22 | -7.97*** | | |
| | | Depression × Mindset | .03 | .006 | .12 | 4.76*** | | |
| Emotion Regulation | 1 | Depression | -.77 | .04 | -.55 | -21.60*** | .30 | 466.60*** |
| | 2 | Depression | -.67 | .04 | -4.72 | -18.44*** | .35 | 292.20*** |
| | | Mindset | -1.05 | .12 | -.23 | -9.12*** | | |
| | 3 | Depression | -.66 | .04 | -.48 | -18.51*** | .37 | 212.62*** |
| | | Mindset | -1.18 | .12 | -.26 | -10.20*** | | |
| | | Depression × Mindset | .04 | .01 | .15 | 5.94*** | | |
| Personality | 1 | Depression | -.77 | .04 | -.55 | -21.60*** | .30 | 466.60*** |
| | 2 | Depression | -.66 | .04 | -.47 | -16.99*** | .32 | 263.70*** |
| | | Mindset | -.93 | .14 | .18 | -6.56*** | | |
| | 3 | Depression | -.66 | .04 | -.46 | -16.86*** | .33 | 178.09*** |
| | | Mindset | -.91 | .14 | -.18 | -6.38*** | | |
| | | Depression × Mindset | .02 | .01 | .06 | 2.23*** | | |

***$p < .001$, **$p < .01$.

set was found to explain an additional 0.5% (Δ=.005, ΔF=8.84, $p < .001$), and the effect was also significant, indicating a moderating effect (B=.08, t=2.97, $p < .01$).

Next, the moderating effect of the intelligence mindset on the relationship between depression and mental well-being was verified (Table 3). In the first step, depression significantly affected mental well-being (B=-.64, t=-16.51, $p < .001$), and in the second step, the influence of intelligence mindset was also significant (B=-.78, t=-7.97, $p < .001$). In step 3, it was found that the interaction variable of depression and intelligence mindset was additionally explained by 1.3% (Δ=.013, ΔF=22.69, $p < .001$), and the effect was also significant, indicating a moderating effect (B=.03, t=4.76, $p < .01$).

In addition, the moderating effect of emotion regulation mindset on the relationship between depression and mental well-being was verified (Table 3). In step 1, depression significantly affected mental well-being (t=-18.51, $p < .001$). In step 2, the influence of

the emotion regulation mindset was significant (B=-1.18, t=-10.20, $p < .001$). In step 3, the interaction variable of depression and emotion regulation mindset was explained by 2.0% (Δ=.02, ΔF=35.31, $p < .001$), and the effect was also significant, indicating a moderating effect (B=.04, t=5.94, $p < .01$).

Finally, we verified whether the personality mindset regulates the effect of depression on mental well-being (Table 3). In the first step, depression was found to have a significant effect on mental well-being (B=-.66, t=-16.86, $p < .001$). In step 2, the influence of the personality mindset was also significant (B=-.91, t=-6.38, $p < .001$). In step 3, it was found that the interaction variable of depression and personality mindset was additionally explained by 0.3% (Δ=.003, ΔF=4.98, $p < .05$), and the influence was also significant (B=.02, t=2.23, $p < .01$), showing a moderating effect. The moderating effect of each mindset on the relationship between depression and mental well-being is shown in Figure 1.
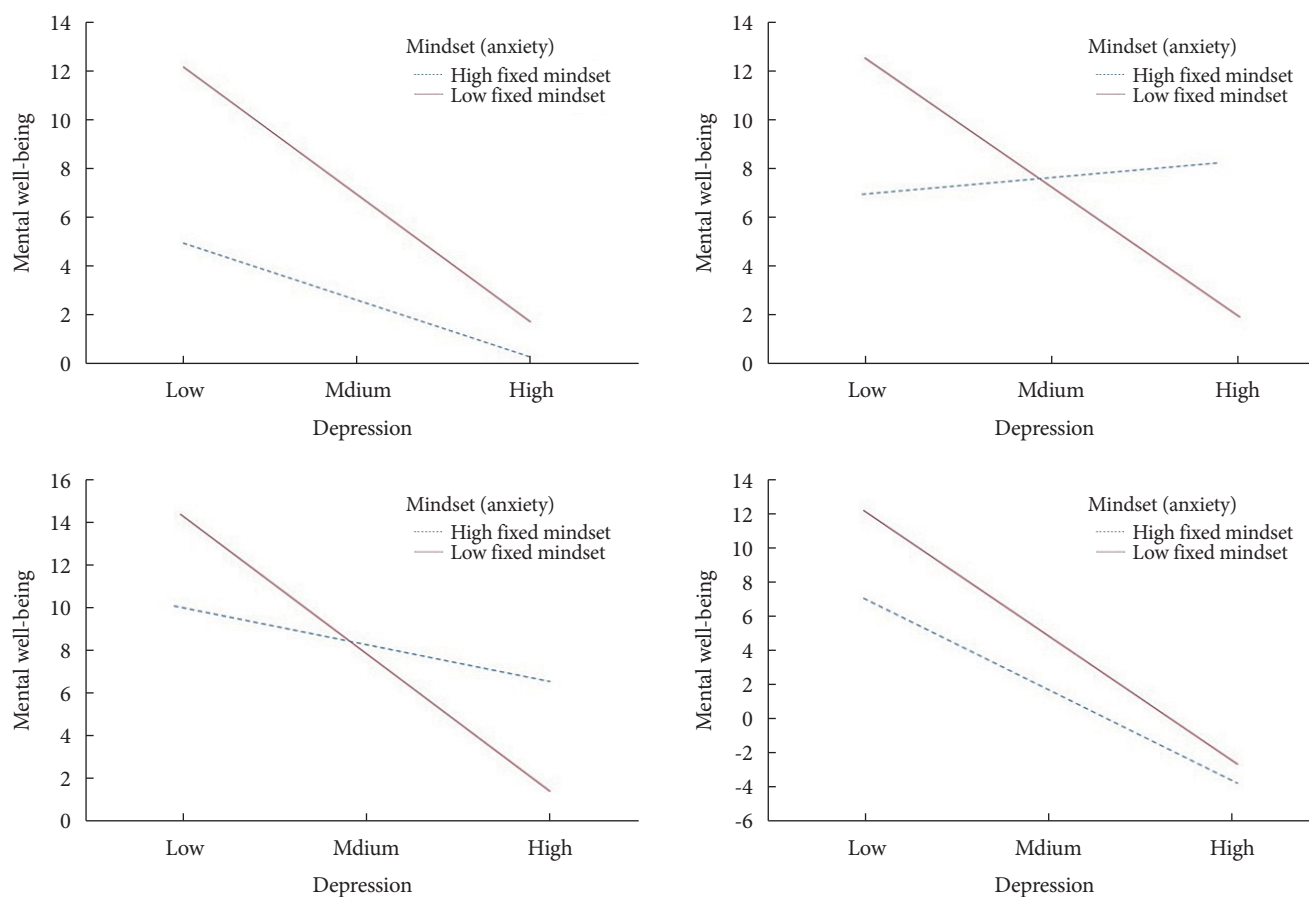
**Figure 1.** *The moderating effect of mindset on the relationship between depression and mental well-being.*

## Discussion

This study aimed to determine whether a mindset can control the effects of depression on mental well-being. It was hypothesized that psychiatric patients with high depression levels would have worse mental well-being if they had a fixed mindset of anxiety, emotion regulation, and personality. To this end, the moderating effect of mindset on the relationship between depression and mental well-being was verified through regression analysis. The results of this study can be summarized as follows.

First, depression was negatively correlated with mental well-being, and mental well-being was negatively correlated with fixed mindsets of anxiety, intelligence, emotion regulation, and personality. This finding supports the notion that fixed mindsets are related to psychological pain, as suggested in previous studies (Van Tongeren & Burnette, 2018). This is possibly because negative cog-

nition, which believes that individual traits are fixed, predicts psychopathology (Beck, 2002).

Second, regarding the relationship between depression and mental well-being, it was confirmed that each mindset had a significant moderating effect. This finding suggests that mindset is an important moderating variable in changing an individual's state of mind. In addition, the graph showed that the lower the fixed mindset, the sharper the mental well-being level according to the depressive state. The higher the fixed mindset, the higher the level of mental well-being is, regardless of the severity of the depressive symptoms. This differs from previous studies in that a growth mindset can lower the level of psychological maladjustment including depressive symptoms.

According to the diathesis-stress model, mental health can be negatively affected if there is an incongruity between environmental and personal aspects of control (Robins, 1995). It states that in-

dividuals with high autonomy could make a great deal of effort to gain control in a stressful situation, but at the same time, such an effort could be maladaptive and increase the risk of becoming vulnerable to depression (Evans et al., 1993). Similarly, a growth mindset, which indicates the belief that an individual's traits can change for the better, may help maintain mental well-being in conditions of low depression. However, in a highly depressive state, the sense of helplessness and separation from situations that do not change contrary to one's beliefs is further stimulated; there is a risk that one's level of mental health would deteriorate sharply. This study finds that the fixed mindset, that the present state will not change, could act as a protective factor for mental well-being in a depressed state.

Moreover, optimism and pessimism tend to directly affect growth and fixed mindsets, respectively (Dardick & Tuckwillber, 2019). The optimistic tendency, which inclines one to pay selective attention to positive stimuli, is related to the growth mindset and helps maintain a high level of mental well-being when not depressed. However, such optimism may reduce the level of mental well-being more sharply in a depressing situation, preventing individuals from seeking sufficient information about threats or objectively recognizing the possibility of real solutions due to tunnel vision (Jefferson et al., 2017). In addition, pessimism can be used to prepare for many outcomes, including worst-case scenarios. Such pessimism can act as a protective factor that prevents mental well-being from rapidly changing based on to the degree of depression for those with a high fixed mindset (Carver et al., 2010).

This study had several limitations. First, this was a cross-sectional study using a self-report questionnaire that measured all variables simultaneously. This implies a limit to revealing the causal relationships between the variables. Second, since the study was conducted on psychiatric patients that include various groups of mental disorders, each individual's treatment method, recurrence, treatment period, and symptoms were different. Nevertheless, targeting over a thousand psychiatric patients could also be considered an advantage of this study, because it identifies a new variable that can affect mental health in patients with underlying depression.

This study has several clinical implications. First, supplements the limitations of previous studies lacking in mindset studies; it

also reveals that various mindsets such as anxiety, intelligence, emotion regulation, and personality mindsets can regulate the relationship between depression and mental health significantly and consistently. In the past, only the development of a growth mindset was emphasized, but this study confirmed the protective function of a fixed mindset. Considering that mindset measures the belief that an individual's characteristics are changeable, a longitudinal study is needed in the future.

## Author contributions statement

Gyhye Sung, a certified clinical psychologist at the Department of Psychiatry, CHA Bundang Medical Center, and JeeWon Hong, Clinical Psychology Resident, conducted the study and drafted the manuscript. JeeWon Hong performed the statistical analyses. All the authors approved the final manuscript.

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