A Review on Single Session Mindset Interventions on Major Depressive Disorders in Adolescents

He Ren
The Experimental High School Attached to Beijing Normal University, Beijing, China

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Abstract: Innovative approaches to major depressive disorders (MDD) prevention are in great need, and there have been many attempts to alleviate the pain of MDD prevalence for adolescents. The present study analyzes single-session mindset intervention by deconstructing its mechanism and examining its effectiveness. Studies demonstrate significant positive correlations between a growth mindset, self-acceptance, and interpersonal interaction abilities, which are crucial for coping with external stress and preventing MDD. Based on the findings of previous studies, single-session mindset interventions are cost-effective, time-efficient, and equally approachable for all adolescents. By offering adolescents a thirty-minute lecture on growth mindset and their capacity to evolve and change, adolescents exhibited a significant decrease in MDD-related symptoms and a general increase in mental health status. By diving into the experiments done in this area, this essay aims to provide a better overall understanding of growth mindset intervention on MDD occurrence and provide insight for future research or practical implementations.

1 INTRODUCTION

Major depressive disorder (MDD), diagnosed when a person undergoes persistently debilitating low moods (DSM-5), ranked third in terms of disease burden in 2018 according to the WHO and is predicted to rank first by 2030 (American Psychiatric Association, 2013, Malhi & Mann, 2018).

It is also the most prevalent mental illness, affecting more than 280 million people worldwide (Baxter et al., 2013). More worryingly, MDD is also taking its toll on the young generation, the prevalence of major depressive episodes among adolescent females is 29.2% and 11.5% for males (National Institute of Mental Health, 2023). Society has the responsibility to protect and shelter the young, but the conventional methods for MDD intervention are clearly not enough for the job, novel approaches should be taken to alleviate the pain and burden of MDD among adolescents.

This article proposes a single-session mindset intervention as a potential remedy for lowering the occurrence rate of MDD and the average severity of MDD among adolescents. It intends to offer an applicable, effective, cost-efficient, and time-efficient method for adolescent MDD intervention.

Mindsets are core beliefs about the malleability of people's traits (Schleider & Weisz, 2016). When comparing growth and fixed mindset, scientists agree in unison about the positive effects the growth mindset has on mental health. Improvements in growth mindsets can help prevent internalizing problems and are linked with faster stress recovery (Schleider & Weisz, 2016). Adolescents' minds and personalities are still developing, leaving immense possibility for mindset intervention, and present findings are consistent with evidence suggesting that brief growth mindset interventions can promote positive emotional outcomes in youth (Yeager et al., 2014). Accordingly, many studies and experiments in recent years display positive outcomes for single-session mindset intervention in preventing MDD and promoting mental health (Schleider & Weisz, 2016).

This essay will elaborate on the mechanism behind the growth mindset's positive effect on MDD prevention and treatment. It will then dive into specific experiments surrounding single-session mindset interventions to analyze the methods and actions taken and the results these studies display, hoping to offer future optimization for such sessions.

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2 THE MECHANISM OF GROWTH MINDSET'S EFFECT ON MDD INTERVENTION

In general, people with a growth mindset believe in a higher malleability of their traits, and their behaviors can be especially different regarding challenging and stressful circumstances (Dweck & Molden, 2005). MDD is exactly the manifestation of the interplay in the human brain upon stressful events. In other words, our understanding, response, and reactions, which are all important aspects of mindsets, in the face of an emotional challenge, have a say in whether or not individuals develop MDD and the potential severity if a person unfortunately does. For example, studies have concluded that impaired emotional regulation can, directly and indirectly, lead to clinical depression; low levels of self-acceptance and self-esteem can exacerbate the severity and durability of MDD disorders; low levels of interpersonal interaction ability can lead to MDD (Zetsche et al., 2023, Yavari et al., 2023, wang et al., 2024).

In the context of current society, the external stress and challenges added upon people are subjective to most of us, but our reactions to these external triggers are different, and it is these reactions that cause our distress. These emotional abilities that lead to MDD are also crucial components of different mindsets–the alteration of mindsets is the alteration and improvements of such traits in general so that our emotional response to the next stressful event can be handled more healthily. This is the mechanism of mindset alteration and growth mindset's effect on MDD intervention. Studies in recent years have confirmed the correlations between a growth mindset and these crucial cognitive factors, such as self-acceptance ability and interpersonal interaction ability.

In 2020, Yuan & Wang directed a study aiming to reveal the relationship between a growth mindset and the level of self-acceptance, and the effect of family status and income on this correlation (Yuan & Wang, 2020). Researchers collected data from a secondary vocational school in China consisting of 2375 students and an approximate one-to-one gender ratio. These students had diverse socioeconomic backgrounds and offered diverse data for the experiment. The study was primarily carried out by handing questionnaires and forums to students to self-evaluate. The Dweck's 2006 Growth Mindset Scale was translated into Chinese and utilized to assess the mindset of participants (Dweck, 2006). The Self-Satisfaction Subscale of the Life Satisfaction Scale, developed by the China Children and Adolescents Psychological Development Characteristics Survey Project Group was used to determine the level of self-acceptance among students (Dong & Lin, 2011). The socioeconomic status was assessed by combining the gathered information on the family's annual income and the highest level of education attained by the parents. These two subfactors were asked independently and later combined by researchers during the process of data analysis. Researchers then used SPSS 20.0 software to perform descriptive statistics, correlation analysis, and hierarchical regression analysis on the data, accompanied by multiple additional rounds of data analysis, significant correlations between a growth mindset, and positive self-acceptance were revealed. It was clear that even though in higher socioeconomic levels of families, growth mindsets are comparatively weaker at indicating a higher level of self-acceptance, the general trend is still strong and powerful–growth mindsets persistently lead to a higher self-acceptance level.

In a 2024 study done by Wang and co-workers, researchers surveyed 560 college students from China using the Growth Mindset Scale (GMS), which was adapted for Dweck's original scale, UCLA Loneliness Scale (UCLA), Interpersonal Relationships Assessment Scale (IRS), and two measures assessing distinct facets of well-being the Satisfaction with Life Scale (SWLS) and the revised Positive Affect and Negative Affect Scale (PANAS) to determine the mindset of the participants and their interpersonal interaction ability and satisfaction with interpersonal relationships with others(Wang et al., 2024). These questionnaires were administered anonymously through class, and it took around 15 minutes for each student to fill out the forums, making the data accurate and unbiased at the largest effort. The results from the data were run through SPSS. 26.0, and further correlations were analyzed by Pearson correlation analysis. Further chain analyses were also taken to chart out the relationships between mindsets, interpersonal interaction ability, loneliness, and well-being. The results of the study demonstrate that a growth mindset significantly positively predicts the level of interpersonal interaction ability and satisfaction, and tends to lead to better interpersonal distress management; individuals with a growth mindset also displayed a higher level of self-resilience and subsequently exhibited generally better well-being.

This study dived into many aspects of emotional skills mainly surrounding the dimension of our interpersonal emotional ability which is also a significant factor for the prevention of MDD.

Both studies found clear and significant positive correlations between the growth mindset and emotional abilities that predict and contribute to the development of MDD. While the first study focused on the inward emotional ability, the second study explored in depth and breadth the outward emotional ability, both are crucial to our mental well-being. These studies reveal the emotional aspect behind a growth mindset, allowing this article to deconstruct and better understand what a growth mindset truly encompasses, and these components that growth mindsets encompass can help people cope with the external stress we face in a more healthy fashion.

However, both studies aren't perfect. Although correlations between growth mindset and self-acceptance, growth mindset, and interpersonal interactions were found, the studies provided little evidence to account for whether a growth mindset induced self-acceptance or whether it is the other way around. Future studies are required to clarify this relationship.

The data collection methods can also reflect biased results due to their heavy reliance on self-reported information. Future studies can and should consider applying additional data-collecting methods rather than simply asking participants to self-evaluate. Self-evaluation is primarily used in both studies, with no additional sources or information to confirm the data's reliability and authenticity. Considering the fact that many of the questions involve information about an individual's mental status and background, which are very personal, there is a possibility that participants uploaded false information due to their self-esteem or personal considerations. Future studies should consider inviting a second or third source to confirm the accuracy of the information collected, in order to give a more comprehended understanding of the growth mindset.

3 THE EFFECTIVENESS OF SINGLE SESSION EDUCATION IN MINDSET INTERVENTION AMONG ADOLESCENTS

Although human personality can persistently change from life to death, young people's personalities and brain structure are more dynamic, encompassing a higher level of malleability (Spear, 2013). This level of malleability can be deliberately utilized for growth mindset intervention for adolescents. By offering time-efficient and cost-efficient single-session interventions, the positive change in mental health appears to be promising.

In 2015, Miu and colleagues hypothesized that depression symptoms among adolescents might originate from their perceived notion that people's characteristics and social status cannot change (Miu & Yeager, 2015). The researchers believed that helping students adapt to a growth mindset could encourage self-acceptance and decrease depressive episodes. An experiment was carried out to examine the effect of single-session growth mindset intervention on depression-associated episodes. Participants came from three schools in Northern California (N = 599; 48% female, 52% male). The students participating in the study came from vastly different backgrounds and ethnicities, and a poll the researchers took before the mindset intervention experiment indicated that all students were aware of the verbal, physical, and psychological aggression happening around them, with 75% admitting being victims of these abuses. This indicates that the participants are diverse in background and personal experience, but also share key psychological characteristics. The researchers first conducted a baseline survey to measure depressive symptoms among students, a 10-item short form of the Children's Depression Inventory (CDI:S) was administered. To supplement this primary analysis, continuous depressive-symptom analyses on each of the subscales of the CDI:S were conducted, including five factors: negative mood and interpersonal problems. Participants also self-described their psychological status based on the questions the researchers proposed. The students were then assigned to different groups: the intervention group, where students engaged in reading and writing tasks stressing the incremental theory of personality, which posits that personality traits are malleable and can improve with effort and experience; and the control group, where students are assigned to reading and writing tasks on athletic ability (irrelevant to the subject of growth mindset). After nine months, the researchers returned to reassess the depressive symptoms among these students and examine their cognitive shifts. The results were significant: across 600 adolescents, a one-time intervention teaching an incremental theory of personality appeared to reduce the prevalence of clinical levels of depressive symptoms by approximately 40%. By using moderation analysis, the researchers discovered that people who had a stronger preconceived notion of a "fixed mindset" benefited more from the intervention, showing a greater level of decrease in depressive symptoms. Additionally, by analyzing the linguistic cues in the written open-ended responses by students,

the researchers found that treated teens were less likely to use negative emotions and trait words, to talk about the past, and to talk about discrepancies. This subtle change indicates huge psychological changes behind the scene: students' cognitive perception of themselves has taken a positive shift, and many have adopted a growth mindset when encountering life's challenges. The research also pointed out that the intervention targeted depressive symptoms accurately regardless of sex.

In 2024, Heaman and co-workers conducted an experiment focusing on the effects of single-session intervention for growth mindset among high school students, especially stressing the potential differences among different genders (Heaman et al., 2024). This study manifested from Miu's study, using it as a prototype and further expanding the knowledge of mindset prevention, while also refuting some of the findings in Miu's study.

Participants were recruited from three public high schools within a medium-sized city in southwestern Ontario, Canada. The students were tested on four characteristics before the intervention and repeatedly during a four-month follow-up: depressive symptoms, happiness, life satisfaction, and growth mindset. These characteristics were assessed with the Beck Depression Inventory, Subjective Happiness Scale, Brief Multidimensional Student Life Satisfaction Scale, and the Implicit Personality Theory Questionnaire (IPTQ), respectively (Beck et al., 1996, Lyubomirsky & Lepper, 1999, Seligson et al., 2003, Erdley et al., 1997). Depressive symptoms, subjective happiness, and life satisfaction data were collected at two time points: baseline and 4 months post-intervention (primary outcomes). The growth mindset of personality and general growth mindset beliefs were assessed at three time points: baseline, immediate post-intervention, and at 4 months follow-up. Of the 472 participants initial participants, 318 participants returned for the follow-up examination. The intervention was done online, administrating each student with a 30-minute video lecture focusing on growth mindset in personality (experiment group) or growth mindset for athletic ability (controlled group).

By analyzing the responses given by the students, the researchers discovered that the domain of growth mindset lecture videos had less effect on whether a growth mindset is elicited. Still, the experiment group exhibited a persistent and significant increase in happiness and life satisfaction while the control group's scores remained the same, with some even worsening. Additionally, girls exhibited a significant decrease in depressive behaviors while boys did not.

These two studies both proved how short single-session growth mindset intervention elicited growth mindsets among individuals who received growth mindset intervention. In addition, a growth mindset can alleviate depressive symptoms among adolescents, indicating a positive signal for MDD prevention. Although both studies chose a considerable amount of participants, students and adolescents from rural areas were not included, creating a bias that might have led to inaccurate generalizations. Moreover, both studies only took follow-up examinations that only gapped for several months after the intervention was put forward. This time span is relatively short to determine whether or not single-session interventions generated lasting effects, or whether this effect during adolescence can successfully last to adulthood. Future studies should follow up with the participants in a longer gap of time to better understand the long-lasting effects of the intervention.

The second study added some further amendments to the first, by collecting an additional set of data immediately after the intervention. This set of data can help researchers visualize the change or persistency of the effect of the intervention, by comparing this data to the later survey done four months later. The gender difference among interventions is also insightful, suggesting a more diverse and adaptive learning method for different genders, developing a more personal approach to mindset intervention is needed.

Although the first research did not discover differences in the result of intervention between sexes, it does propose that girls generally are more prone to internalizing outside information, which might explain why girls performed better in mental health in the second study. In the future, more modes of teaching other than reading articles and listening to lectures can be included to enrich the learning experience and ensure effective prevention of MDD among all students.

4 CONCLUSION

As the MDD epidemic spreads, innovative methods of prevention should be initiated for the young generation, who are more susceptible to external stress and harmful factors, but at the same time, also capable of positive cognitive change. Applying single-session mindset interventions, which are cost-efficient, can alter adolescents' underlying cognitive perceptions and enhance a growth mindset, which in turn can prevent the young generation from MDD. This promising area calls for more research and

experiments to optimize its effectiveness, making an effort to ensure its treatments impartially apply to all adolescents.

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