

The Influence of Growth Mindset on College Students' Positive Psychological Qualities and Intervention

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Abstract

To delve deeper into the influence of growth mindset on enhancing college students' positive psychological qualities and devise strategies to elevate both through targeted interventions, Study 1 conducted a comprehensive questionnaire survey involving 324 university students. Utilizing the Mindset Scale and the Chinese College Students' Positive Psychological Qualities Scale, the study aimed to uncover the relationship between these two constructs. The findings revealed a robust positive correlation, indicating that students with a stronger growth mindset exhibited more pronounced positive psychological qualities across various dimensions. Building upon these insights, Study 2 employed a rigorous randomized intervention approach, involving 60 college students divided into intervention and control groups. Pre- and post-tests were administered to both groups to assess the effectiveness of the intervention. The results demonstrated that the experimental intervention significantly bolstered the growth mindset of students in the intervention group. However, it also highlighted the limitation of short-term, standalone interventions in eliciting immediate changes in positive psychological qualities, suggesting that longer-term, multi-faceted approaches may be necessary for more profound and lasting effects.

Keywords

College students; growth mindset; positive psychological qualities; intervention research.

1. Introduction

Against the backdrop of rapid societal transformations, university students, as a vital force driving social development, have garnered increasing attention regarding their mental health and the cultivation of positive psychological traits. Nevertheless, contemporary university students confront a myriad of stressors, including maladaptation to society, strained family relationships, interpersonal conflicts, and the severity of the employment landscape, all of which contribute to a decline in their mental health status.[1] A meta-analysis conducted by researchers on the mental health issues of Chinese university students between 2010 and 2020 revealed that psychological problems such as insomnia, depression, and self-harm were particularly prominent. Additionally, the detection rates of anxiety, depression, sleep disturbances, and suicide attempts among university students have shown a significant upward trend over the decade.[2] With the expansion of higher education and intensifying competition in the job market, university students are confronted with unprecedented academic pressures, emotional dilemmas, and uncertainties in future planning, posing higher demands on their psychological resilience. Consequently, exploring effective strategies to nurture positive psychological qualities and foster a growth mindset among university students has emerged as a crucial research agenda in the field of higher education.[3]

Growth mindset, an optimistic attitude and cognitive approach, was initially introduced by Carol S. Dweck. Dweck delved into why some students embrace learning, even when confronted with difficult tasks, while others experience anxiety or reluctance to attempt seemingly challenging endeavors.[4] This led to the development of a mindset theory, positing that individuals possess either a growth mindset or a fixed mindset. Those with a growth mindset believe that their intelligence and abilities can be enhanced through effort; the outcome is uncertain, hence they are more inclined to take risks. In contrast, individuals with a fixed mindset tend to perceive their intelligence and abilities as immutable and predetermined, believing that success or failure is already decided. Consequently, a growth mindset may encourage individuals to engage in a broader range of tasks, ultimately leading to increased success. This mindset not only equips university students with resilience to tackle various pressures and challenges in life but also unleashes their potential, fostering holistic personal development.

Dweck posits that without intervention, individuals tend to maintain the stability and consistency of their current, natural mindset. Meanwhile, positive psychological traits refer to the positive, healthy, and upward characteristics exhibited by individuals at the psychological level.[5] Meng Wanjin and Guan Qun introduced the concept of positive mental health education, advocating for a comprehensive approach targeting all students, focused on proactively preventing mental health issues and promoting physical and mental development.[6] They systematically and purposefully enhance students' mental health, outlining a six-dimensional structure of positive psychological traits for university students: cognition, interpersonal relationships, emotions, justice, moderation, and transcendence. These positive psychological traits empower university students to adopt more proactive and effective coping strategies when confronted with stressful events, transforming negative self-perceptions and fostering positive evaluations of their surroundings, thereby better adapting to various stressors or pressure situations in life.[7] While previous research has confirmed that a single intervention can elevate growth mindset levels, whether enhancing growth mindset can, in turn, cultivate positive psychological traits remains an area of ongoing investigation.[8]

In recent years, extensive research conducted by scholars both domestically and internationally has centered on the cultivation of positive psychological traits among university students, revealing that effective psychological interventions can significantly enhance the levels of positive psychological traits in this population. Nevertheless, research on the specific mechanisms and intervention strategies through which a growth mindset influences the positive psychological traits of university students remains inadequate. Consequently, this study aims to delve into the impact of a growth mindset on the positive psychological traits of university students and propose corresponding intervention programs, thereby providing novel insights and methodologies for mental health education in universities.

2. Study 1

2.1. Participants

To ensure the statistical robustness and validity of the study, the necessary sample size was meticulously calculated utilizing the renowned statistical software GPower 3.1.9.2. This comprehensive analysis yielded a minimum requirement of 138 participants, a threshold deemed essential to achieve the desired level of precision and reliability in the subsequent analyses. To fulfill this requirement, a strategic recruitment effort was initiated, targeting undergraduate students enrolled at a prestigious university located in Sichuan Province.

A total of 352 questionnaires were meticulously designed, distributed, and subsequently collected, with each instrument carefully crafted to capture the relevant data pertaining to the

study's objectives. A rigorous screening process was then applied to the collected responses, ensuring that only those meeting the highest standards of completeness, clarity, and relevance were included in the final analysis. This thorough quality control resulted in the exclusion of 28 questionnaires, leaving a total of 324 valid responses, yielding an effective response rate of 92.05%. This high response rate underscores the participants' enthusiasm and commitment to the study, further enhancing the credibility and generalizability of the findings.

Among the 324 valid respondents, a demographic breakdown revealed a gender distribution of 97 males and 227 females. This gender imbalance, although not intentionally sought, reflects the overall gender composition of the undergraduate student population at the university and serves as a natural representation of the study's target sample. The inclusion of both genders in substantial proportions ensures that the study's findings are not unduly influenced by potential gender biases and can be generalized to a broader population.

2.2. Research Instruments

2.2.1. Mindset Scale

In the pursuit of accurately measuring the participants' mindset orientation, the Mindset Scale, originally developed and validated by Dweck (2006), was meticulously selected and adapted for the present study.[4] This scale, renowned for its robust psychometric properties, underwent a refinement process to ensure its suitability for the research context, ultimately resulting in a final questionnaire that retained six core items (Cronbach's $\alpha = 0.73$), a value indicative of excellent internal consistency and reliability. These six items were strategically constructed to capture both positive and negative aspects of mindset, with three items positively scored and three items negatively scored, offering a balanced and nuanced assessment.

To facilitate participants' responses, a 6-point Likert scale was utilized, ranging from 1, labeled "Strongly Disagree," to 6, designated as "Strongly Agree." This scaling system provided a fine-grained measurement of participants' agreement or disagreement with each item, allowing for a nuanced understanding of their mindset tendencies.

During the data analysis phase, a crucial step was taken to ensure the consistency of interpretation across all items. Specifically, the three negatively scored items were subjected to reverse-coding, a process that transformed their original scoring such that higher scores now corresponded to a stronger endorsement of growth mindset characteristics. This step was necessary to maintain a uniform interpretation of scores across the entire scale, enabling a straightforward comparison and analysis of participants' mindset profiles. By adopting these measures, the study not only demonstrated the excellent reliability and validity of the adapted Mindset Scale but also ensured that the collected data accurately reflected participants' mindset orientations, thus laying a solid foundation for subsequent analyses and interpretations.

2.2.2. Chinese College Students' Positive Psychological Qualities Scale

The Chinese College Students' Positive Psychological Qualities Scale, compiled by Meng Wankin and Guan Qun, was adopted to assess the development of positive psychological qualities among university students.[6] This questionnaire encompasses 62 items, categorized into six dimensions: cognition, emotion, interpersonal relationships, justice, self-control, and transcendence. A 5-point Likert scale was used, where a higher total score indicates more pronounced positive psychological qualities. The internal consistency coefficient of the overall scale was 0.92, indicating high reliability. The internal consistency coefficients for the six subscales were 0.80, 0.65, 0.69, 0.71, 0.70, and 0.74, respectively, all statistically significant.

2.3. Results

In the present study, an assessment of the average level of growth mindset among university students yielded a mean score of 19.44, with a standard deviation of 5.90, indicating a moderate

yet varied degree of belief in the malleability of one's abilities and potential for growth. Concurrently, the evaluation of positive psychological traits among the same cohort revealed an average score of 228.86, accompanied by a standard deviation of 28.40, suggesting a generally positive psychological profile with notable individual differences.

To delve deeper into the relationship between these two constructs, a comprehensive correlation analysis was undertaken, not only examining the link between growth mindset and the overall score of positive psychological traits but also dissecting this relationship into its constituent parts by analyzing the six distinct dimensions of positive psychology: cognition, interpersonal, emotion, justice, temperance, and transcendence.

The findings of this analysis were unequivocal, revealing a statistically significant positive correlation between growth mindset and the total score of positive psychological traits, with a p-value of less than 0.001, indicating a strong and robust association. This finding underscores the notion that individuals who possess a growth mindset are more likely to exhibit a broader array of positive psychological attributes.

Furthermore, the analysis extended to the individual dimensions of positive psychology yielded equally compelling results. Specifically, significant positive correlations were observed between growth mindset and scores on each of the six dimensions, namely cognition ($p < 0.001$), interpersonal ($p < 0.001$), emotion ($p < 0.001$), justice ($p < 0.001$), temperance ($p < 0.001$), and transcendence ($p < 0.001$). These findings highlight the multifaceted nature of the relationship between growth mindset and positive psychology, suggesting that a growth-oriented perspective positively influences various aspects of an individual's psychological well-being, from cognitive processes and interpersonal relationships to emotional regulation, moral reasoning, self-control, and a sense of purpose beyond oneself. These findings are summarized in Table 1.

Table 1. Analysis of the Correlation between Growth Mindset and Positive Psychological Traits

	M±SD	Growth Mindset	Cognition	Interpersonal Skills	Emotional Intelligence	Justice	Moderation	Transcendence	Positive psychological quality
Growth Mindset	19.44±5.90	1.00							
Cognition	44.03±7.17	0.29**	1.00						
Interpersonal Skills	37.78±5.07	0.25**	0.73**	1.00					
Emotional Intelligence	41.23±6.13	0.22**	0.64**	0.56**	1.00				
Justice	33.24±4.78	0.24**	0.64**	0.72**	0.63**	1.00			
Moderation	35.29±5.19	0.24**	0.53**	0.56**	0.52**	0.60**	1.00		
Transcendence	37.32±5.90	0.20**	0.79**	0.66**	0.68**	0.60**	0.45**	1.00	
Positive psychological quality	228.86±28.40	0.29**	0.89**	0.84**	0.82**	0.83**	0.72**	0.86**	1.00

Note: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, similarly for subsequent occurrences.

2.4. Discussion

The present study's findings underscore a moderate yet discernible manifestation of growth mindset among university students, which stands in contrast to the typically higher levels reported among secondary school students, as evidenced by recent research conducted by Zhao Yanlong and colleagues.[9] This discrepancy can be contextualized within the broader framework of human developmental psychology, where the formative years of childhood inherently involve relentless learning and skill acquisition, instilling in individuals a profound belief in the plasticity and expandability of their abilities. Conversely, as university students and adults navigate the complexities of life, marked by a myriad of challenges and setbacks, they often encounter experiences that may inadvertently lead to a diminished sense of their own potential, perpetuating a more fixed mindset. Thus, the need for targeted interventions

aimed at nurturing and enhancing growth mindset among this demographic becomes paramount.

Of particular significance is the robust positive correlation uncovered between university students' growth mindset and their positive psychological traits, echoing previous studies conducted by Zhao Yafei and her team.[10] This correlation underscores the pivotal role that a growth mindset plays in shaping an individual's psychological landscape. Students who embody a growth mindset fundamentally believe that intelligence and competence are not static entities but can be cultivated and refined through dedicated effort. They adopt a proactive stance towards adversity, prioritizing the learning process over the immediate outcomes, fostering resilience in the face of obstacles. Rather than succumbing to the temptation of abandoning endeavors amidst temporary failures, these students recognize the transformative power of perseverance, acknowledging that it is through overcoming difficulties that they can achieve continuous personal growth and skill enhancement.[11]

Furthermore, the possession of a growth mindset translates into a more optimistic outlook on life, enabling university students to approach diverse situations with a positive mindset. This psychological stance, in turn, manifests as a heightened expression of positive psychological qualities such as optimism, self-efficacy, grit, and adaptability.[12,13] Therefore, fostering a growth mindset among university students not only enhances their cognitive abilities but also contributes to their overall psychological well-being and resilience, equipping them with the tools necessary to thrive in an increasingly complex and dynamic world.

3. Study Two

3.1. Participants

In the present research endeavor, the determination of an appropriate sample size was meticulously conducted utilizing the G*Power 3.1 statistical software package. With the aim of ensuring sufficient power to detect an effect size of 0.5, a commonly accepted threshold for medium-sized effects in social and behavioral sciences, and maintaining a conservative α level of 0.05 to control for Type I errors, the software's calculations yielded a target sample size of 128 participants.

To achieve this sample size, a strategic recruitment strategy was devised and executed online, leveraging the accessibility and reach of digital platforms. A total of 130 university students, spanning from their first to fourth year of study, were successfully enrolled in the study. These participants were recruited through targeted announcements disseminated across various online channels, specifically tailored to attract those interested in participating in psychology-related experiments.

Upon expression of interest, potential participants were invited to undertake a preliminary test, designed to assess their suitability and ensure a homogeneous sample. This preliminary assessment also served as a means to collect contact information, facilitating subsequent communication and data collection. Following the completion of the preliminary test, questionnaires deemed invalid due to incomplete responses, inconsistencies, or other criteria were meticulously excluded from the analysis.

Ultimately, 130 participants were confirmed for inclusion in the study, adhering strictly to the ethical principle of informed consent. This process entailed ensuring that each participant was fully aware of the study's objectives, procedures, potential risks, and benefits, and had voluntarily agreed to participate. Additionally, it was rigorously verified that none of the participants had undergone any prior training or exposure related to the concept of growth mindset, thereby eliminating potential biases or confounding factors that could influence the study's outcomes.

3.2. Research Procedure

The pre-testing phase of the study was meticulously conducted among all 130 participants, employing two validated and reliable scales: the Growth Mindset Scale and the Chinese College Students' Positive Psychological Traits Scale. These scales were chosen for their respective abilities to assess participants' predisposition towards believing in the malleability of intelligence and their inherent positive psychological attributes, which are crucial factors in understanding the impact of the intervention.

Subsequent to the pre-testing, the participants were subjected to a rigorous randomization process to ensure an unbiased allocation into two distinct groups: an intervention group comprising 65 individuals (with a gender breakdown of 33 males and 32 females) and a control group, also consisting of 65 individuals (with a gender distribution of 35 males and 30 females). This randomization process was critical in mitigating potential biases and ensuring the comparability of the two groups at baseline.

The intervention group then underwent the targeted intervention experiment, which was designed to specifically address and potentially enhance their growth mindset and/or positive psychological traits. Conversely, the control group did not receive any form of treatment or intervention during this period, serving as a point of comparison to assess the efficacy of the intervention.

Post-testing was subsequently administered to both groups after the completion of the intervention period. This step was imperative in evaluating the extent to which the intervention had influenced the participants' growth mindset and positive psychological traits, as measured by the same scales employed during the pre-testing phase. By comparing the pre- and post-test scores of both groups, the study aimed to provide empirical evidence regarding the effectiveness of the intervention in fostering a growth mindset and enhancing positive psychological traits among Chinese college students.

3.3. Intervention Content and Procedure

The growth mindset intervention in this study was meticulously crafted, drawing inspiration from the established research content and procedures outlined by Yeager et al.[14] However, recognizing the potential challenges posed by comprehension and translation issues with English materials, a conscious decision was made to adapt and employ Chinese materials that resonated with similar themes and messages. The intervention experiment was meticulously structured and executed over a span of 40 minutes, ensuring a comprehensive and engaging experience for all participants.

The intervention commenced with participants engaging in a focused reading exercise, delving into three scientific articles that were thoughtfully curated to address the core concepts of growth mindset. These articles, titled "How the Brain Works," "Upgrading Our Brain through Practice," and "Brain Plasticity," collectively conveyed the empowering message that the brain thrives on challenges and can be significantly enhanced through dedicated practice. The articles provided insightful explanations of the basic building blocks of the brain, neurons, and how they interconnect to form intricate networks. Furthermore, the inclusion of research summaries highlighted real-world examples, such as the neurological adaptations observed in London taxi drivers, showcasing the remarkable capacity of the brain to grow and adapt in response to continuous learning and practice.

To further reinforce these concepts, participants were then invited to view an engaging excerpt from a documentary on "Brain Plasticity." This 20-minute segment showcased the breathtaking plasticity of the human brain through a series of inspiring real-life narratives. These stories ranged from the astonishing resilience of a child who underwent hemispherectomy yet managed to function normally, to the transformative journey of an autistic child mastering communication skills through relentless practice. Additionally, the video featured cases of

seniors regaining language abilities through music therapy post-stroke and the unique brain activation patterns observed in divers, illustrating the profound impact of experience and training on the brain's structure and function.

Following the video, participants were prompted to engage in a reflective exercise, asked to draw upon their personal experiences and provide an example where learning and practice had significantly improved their abilities. This step aimed to bridge the gap between the theoretical knowledge presented in the materials and the participants' own lived experiences, fostering a deeper understanding and appreciation of the power of growth mindset.

Finally, participants were assigned a creative task: composing a letter of encouragement to a hypothetical middle school student who had experienced setbacks in their academic pursuits and had lost faith in their ability to improve. This exercise served as a culmination of the intervention, encouraging participants to integrate the key concepts and messages from the articles and video into a meaningful and motivational narrative. By doing so, participants were not only reinforcing their understanding of growth mindset but also practicing empathy and the art of encouragement, thereby achieving a holistic development of their cognitive and emotional skills.

Overall, the growth mindset intervention successfully introduced participants to the fundamental idea that "the brain can grow and change" and fostered their belief in the notion that "abilities can be improved through learning and practice." Through a combination of reading, viewing, reflecting, and creating, the intervention aimed to internalize these empowering concepts, ultimately enhancing participants' growth mindset and empowering them to embrace challenges and persist in their endeavors.

3.4. Results

3.4.1. Effectiveness of Random Group Allocation

In order to rigorously assess whether any inherent disparities existed between the randomly assigned intervention and control groups at the outset of the study, a series of statistical tests were meticulously conducted. These tests were designed to evaluate the baseline measurements across various domains, with a particular focus on scores pertaining to growth mindset and positive psychological traits. The subsequent analysis, as summarized in Table 2, revealed that no statistically significant differences were discernible between the two groups in terms of their initial scores on these crucial dimensions.

This pivotal finding underscores the effectiveness of the random allocation process employed in this study, ensuring that participants were distributed across the intervention and control groups in a manner that preserved equivalence between them. Consequently, any subsequent changes observed in the outcomes of interest can be confidently attributed to the effects of the intervention, rather than to preexisting differences between the groups. In essence, this finding validates the robustness of the study design and strengthens the internal validity of the conclusions drawn from the analysis.

Table 2. Analysis of the Effectiveness of Random Grouping

	Intervention Group	Control Group	<i>t</i>	<i>P</i>
Growth Mindset	21.37±6.79	21.67±5.78	-0.26	0.79
Positive psychological quality	231.48±25.25	235.89±18.74	-1.13	0.26

3.4.2. Post-Intervention Results

Subsequent to the successful completion of the intervention experiment, a rigorous statistical analysis was undertaken to compare the performance of the intervention group against that of the control group. Specifically, an independent samples t-test was administered, which is a widely accepted statistical procedure for evaluating the mean difference between two independent groups. The primary objective of this test was to ascertain whether the intervention had a discernible impact on the growth mindset and positive psychological traits of the participants.

The outcomes of this analysis, as presented in Table 3, revealed a striking disparity between the two groups in terms of growth mindset. Specifically, the results indicated a statistically significant difference ($p < 0.001$), indicating that the intervention group had demonstrably higher levels of growth mindset compared to the control group. This finding underscores the efficacy of the intervention in fostering a mindset characterized by a belief in personal development and the capacity to learn and grow from challenges.

Conversely, the analysis failed to uncover any significant difference ($p > 0.05$) in the levels of positive psychological traits between the intervention and control groups. This observation suggests that, while the intervention was effective in enhancing growth mindset, it did not have a discernible impact on other positive psychological attributes measured in this study. The absence of a significant difference in this domain may be attributed to various factors, including the specific nature of the intervention, the duration of the study, or the inherent resilience and stability of positive psychological traits in the study population.

Table 3. Difference Analysis between Intervention Group and Control Group

	Intervention Group	Control Group	<i>t</i>	<i>P</i>
Growth Mindset	26.55±4.29	20.86±6.06	6.19	0.00
Positive psychological quality	233.40±23.26	235.20±18.49	-0.49	0.63

3.4.3. Intra-Group Difference Analysis

To gain a deeper understanding of the intragroup changes that occurred as a result of the intervention, we conducted separate analyses to compare the pre- and post-intervention scores within both the intervention and control groups. This approach allowed us to isolate the effects of the intervention and assess its specific impact on the growth mindset and positive psychological traits of the participants.

In the case of the intervention group, a paired samples t-test was employed to compare the growth mindset scores before and after the intervention. The results of this analysis, as presented in Table 4, were highly significant ($p < 0.001$), indicating a substantial and statistically meaningful improvement in the growth mindset of the participants. This finding underscores the positive impact of the intervention on fostering a mindset that values learning, perseverance, and adaptability in the face of challenges.

In contrast, while the scores for positive psychological traits in the intervention group did exhibit a slight upward trend, this change did not reach statistical significance ($p > 0.05$). This observation suggests that, while the intervention may have had a modest influence on these traits, the effect was not large enough to be reliably detected within the context of this study.

For the control group, a similar analysis was performed to compare the pre- and post-test scores for both growth mindset and positive psychological traits. As indicated in Table 5, no significant differences ($p > 0.05$) were observed in either domain. This finding is consistent with the expectation that, in the absence of any intervention, the scores of the control group would remain relatively stable over time, reflecting the inherent stability of these psychological constructs. Overall, these results provide further evidence of the effectiveness of the

intervention in promoting growth mindset, while also highlighting the importance of conducting both intergroup and intragroup comparisons in evaluating the impact of interventions.

Table 4. Difference Analysis before and after the Intervention in the Intervention Group

	Intervention Group	Control Group	<i>t</i>	<i>P</i>
Growth Mindset	21.37±6.79	26.55±4.29	-7.32	0.00
Positive psychological quality	231.48±25.25	233.40±23.26	-1.62	0.11

Table 5. Difference Analysis before and after the Intervention in the Control Group

	Intervention Group	Control Group	<i>t</i>	<i>P</i>
Growth Mindset	21.66±5.78	20.86±6.06	1.47	0.14
Positive psychological quality	235.89±18.74	235.20±18.49	0.61	0.54

3.5. Discussion

This study aimed to investigate whether the growth mindset of university students could be altered through a specifically designed intervention program, and whether such changes in growth mindset would subsequently lead to improvements in positive psychological traits. The results indicated that the intervention group exhibited significantly higher levels of growth mindset compared to the control group following the intervention, suggesting that targeted intervention measures can effectively promote the development of growth mindset among university students. Consistent with previous research, participants' understanding of brain plasticity and the capacity for change and growth, coupled with knowledge acquisition and real-life case studies, facilitated the internalization of this cognition and its application through letter-writing activities.[15] This cognitive transformation and internalization contributed to the enhancement of participants' growth mindset. Both single-session and multi-session interventions for fostering growth mindset have been widely employed in previous studies, with single-session interventions being more economical and convenient while still achieving comparable results in elevating growth mindset, earning favor among some researchers.[16]

While the current short-term intervention successfully boosted the growth mindset of university students, no significant changes were observed in their positive psychological traits either within the intervention group pre- to post-intervention or when compared to the control group. This outcome may stem from various factors. Firstly, positive psychological traits encompass a multifaceted concept, including self-esteem, optimism, adaptability, and self-efficacy, among others. Researchers have proposed interventions such as group counseling and sandplay activities specifically tailored to nurture these traits, which have yielded positive results. [17,18] In contrast, the intervention in this study primarily focused on cultivating growth mindset, with relatively limited positive impacts on other aspects. Secondly, the development and changes in positive psychological traits are likely influenced by individual differences, environmental factors, and other complex variables. As stable psychological characteristics that emerge over an extended period, positive psychological traits are difficult to alter in a short timeframe, rendering it challenging for a solitary intervention to produce significant effects in a short duration. Nonetheless, the intervention group demonstrated a trending improvement in positive psychological traits, albeit not reaching statistical significance, which hints at a potential positive association between growth mindset and positive psychological traits. Future research could delve deeper into the specific mechanisms

underlying this association and explore how to more effectively enhance university students' positive psychological traits through a combination of multiple intervention strategies.

4. Limitations and Future Directions

Despite the insights gained from this study, several limitations warrant acknowledgment and future considerations. Firstly, the relatively small sample size and the confinement of the study to a single geographical region limit the generalizability of the findings. To address this, future endeavors should endeavor to expand both the number and the geographical scope of participants, thereby enhancing the representativeness and robustness of the results.

Secondly, owing to various constraints, the present study implemented a short-term intervention. While this was sufficient to elicit changes in university students' mindset, the sustainability of these effects remains uncertain, and no significant improvements were observed in their positive psychological traits. To gain a deeper understanding of the long-term impact of growth mindset interventions and explore whether sustained exposure can lead to alterations in positive psychological qualities, longitudinal studies with follow-up assessments are imperative.

Furthermore, research has demonstrated that both explicit and implicit interventions can enhance growth mindset levels.[19] Building upon this, universities could consider incorporating growth mindset curricula into their educational offerings or seamlessly weaving growth mindset principles into various teaching practices. Some researchers advocate for the development of comprehensive and hands-on brain science course resources tailored to individual institutions and their unique contexts.

Beyond direct interventions targeting students, future endeavors should also explore avenues to indirectly influence university students' growth mindset and positive psychological traits. This includes interventions aimed at educators, as well as initiatives focused on fostering a campus culture conducive to these qualities. By empowering teachers and shaping a supportive environment, universities can holistically promote students' mental health by nurturing their growth mindset and positive psychological attributes.

5. Conclusion

This comprehensive study meticulously underscores a profound and statistically significant positive correlation existing between university students' growth mindset—an orientation characterized by a belief in the malleability of abilities and intelligence—and their possession of positive psychological traits. Furthermore, it delves into the intricate interplay of this mindset with the multifaceted constructs of "cognition," encompassing intellectual curiosity and adaptability; "interpersonal relationships," signifying effective communication and empathy; "emotion," referring to emotional resilience and positive affect; "justice," embodying a sense of fairness and ethical judgment; "moderation," indicating balance in decision-making and behavior; and finally, "transcendence," which captures a sense of purpose and connection beyond the self.

Crucially, the investigation reveals that targeted interventions aimed at nurturing a growth mindset among university students have demonstrated remarkable efficacy in enhancing their levels of this mindset. However, it also underscores a crucial limitation: short-term, standalone intervention sessions, though effective in fostering a growth mindset, proved insufficient in eliciting substantial changes in the students' positive psychological traits. This finding underscores the complexity and interconnectedness of these psychological attributes, suggesting that a more nuanced and sustained approach is necessary to effect profound transformations.

In light of these observations, the study underscores the urgent need for the development and implementation of more comprehensive and sustained intervention strategies. These strategies should not only reinforce the cultivation of a growth mindset but also integrate holistic approaches that address the various dimensions of mental well-being in a concerted manner.[20] By fostering a supportive environment that encourages continuous learning, personal reflection, and social engagement, such interventions have the potential to promote not just intellectual growth but also emotional balance, ethical development, and a sense of purpose among university students. [21] Ultimately, this comprehensive approach holds the key to fostering holistic mental well-being, equipping students with the resilience and adaptability required to navigate the challenges of higher education and beyond.

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