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Evaluating Critical Factors Of Chinese Calligraphy's Psychological Effects On Chinese College Students

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ABSTRACT

The large magnitude of changes in the world's socio-economic, political, and technological landscape and the prevalence of COVID-19, have resulted in Chinese college students experiencing increased psychological problems. The usage of art has traditionally been linked with the alleviation of psychological problems such as depression and anxiety. Hence, there is a need to evaluate the critical factors of Chinese calligraphy handwriting (CCH) and use it to improve the overall health and academic success among college students. This study reviews the literature to identify the methods for enhancing psychological problems among Chinese college students, CCH characteristics, and its effectiveness in mental health intervention. We aim to evaluate the critical factors of CCH in improving the psychological problems among Chinese college students using objective assessments. In our review, we include therapeutic approaches to psychological issues among Chinese college students, the CCH fonts, characters, patterns, and content, and the CCH as an intervention on the body and the mind, listing the therapeutic applications and effects of calligraphy. CCH is proposed as a comprehensive solution to Chinese college students' psychological problems, thereby improving academic success and overall well-being.

Keywords: Chinese calligraphy handwriting, psychological problems, Chinese college students

1. INTRODUCTION

Psychological well-being is a fundamental criterion for developing college students into competent human beings as society evolves(Peng et al., 2022). These problems can seriously affect students' physical health and cognitive functioning and become a significant obstacle to academic success(Lin et al., 2022). Active Minds statistics show that 39% of college students face significant mental health challenges. Research has emphasized the prevalence of psychological health disorders, with conditions such as depression, anxiety, and stress significantly impacting college students(L. Gao et al., 2020). The emergence of the 2019 coronavirus disease pandemic has exacerbated this situation(Kunzler et al., 2021; Prati & Mancini, 2021; Purnama et al., 2021; S. Wu et al., 2021). Moreover, it had a detrimental effect on college students' mental health, according to a September 2020 study of 2,051 students. Approximately 75% have experienced increased stress (84.25%), anxiety (82.35%), sadness (73.23%), and depression (60.7%) since the outbreak of the pandemic(Active Minds, 2020). Influencing factors include elevated risk of infection, profound lifestyle changes, strict quarantine measures, disruption of education, and career-related uncertainty(Wang & Li, 2022). Failure to take action on this condition could negatively affect a person's overall quality of daily life (Barbosa-Camacho et al., 2022). Therefore, it is imperative to rapidly develop effective interventions and establish sustained psychological services to address the mental health dilemmas college students face.

Many effective methods exist to address psychological health issues, including medication, cognitive-behavioral, psychosocial, and art therapy(Hankin, 2006). However, conventional methods like medication, counseling, and psychotherapy often have drawbacks, such as side effects, dependency risks, and social

stigma(Højlund et al., 2022; X. Liu et al., 2023). Art therapy has emerged as a promising alternative, supported by significant research, to provide non-threatening means to alleviate depression, anxiety, and stress in students(Cheshure et al., 2023; Limone & Toto, 2022). In art therapy, calligraphic psychotherapy has been used in clinical psychiatry since the 1950s and 1960s(Hogan, 2015). Over the past five decades, scholars have determined that CCH promotes behavioral change, cognitive and intellectual effects, physiological relaxation, and emotional balance(H. S. R. Kao et al., 2021). In addition, calligraphy, as an integral part of Chinese culture, enjoys prominence in compulsory and university general education, thus providing a solid foundation for calligraphy therapy.

This study presents the results of a desktop survey identifying the critical factors of CCH and its improvements in college students' psychological health problems. Following an introduction to the background, the paper articulates the methodology, conducts a thorough literature review, presents the findings, and concludes with a comprehensive discussion.

2. METHOD

This study explores various ways to improve the psychological well-being of Chinese college students. It delves into CCH and its potential to address psychological health problems. These keywords were identified using Ibrahim's technique of categorizing research question structures (or RQ structures), which involves identifying three different RQ structures-"WHO," "WHAT," and "HOW"-in formulating the main research question(Ibrahim, 2008). It defined the affected elements, the knowledge required to solve the problem, and the target impact of the study(Ibrahim, 2011). This comprehensive study covers three key areas: strategies to improve psychological health problems among Chinese college students, the characteristics of CCH, and the potential of CCH to enhance psychological health. For each area, the paper elucidates previous scholars' central arguments, highlights their contribution to future research, and identifies aspects of each topic that merit further exploration. The resulting synthesis will provide an integrated understanding of the critical elements of CCH to meet the psychological health needs of Chinese college students. This study's goal is to present an integrated solution that has the potential to shape the future of psychological health support, thereby contributing to improvements in overall well-being and academic success. This study reviewed abstracts or full texts of selected articles. A Point of Departure (POD) tree diagram was used to synthesize and prioritize high-potential solutions(Ibrahim, 2020). The synthesis process itself was rigorously documented through the EAGLE online system.

3. RESULTS

3.1 Methods to Improve Mental Health Problems in College Students

There are many ways to improve psychological health problems among college students, including social support, mental health services, Mindfulness meditation, physical activity, and participation in the creative arts. Social support has emerged as a critical and highly effective intervention that includes seeking comfort and guidance from different social networks, including friends, family, peers, academic institutions, and mental health professionals(Tol et al., 2011; Y. Xiang et al., 2020). Mental health services, including in-person individual and group counseling, have historically been essential in giving students access to expert advice and intervention (Drum & Denmark, 2012). Additionally, mindfulness meditation is becoming more popular for mental health. It promotes positive thinking, focus, stress reduction, and psychological well-being (Khoury et al., 2017). Yoga (Cramer et al., 2017), tai chi (Huston & McFarlane, 2016), and aerobic exercise(Herbert et al., 2020) also enhance psychological well-being. In addition, participation in creative arts activities, including music(Ning, 2023), painting(Hongtao, 2021), and calligraphy, provided a platform for self-expression, relaxation, and a deeper connection to Chinese culture. However, the resources available at many universities are too limited to support a holistic approach to student mental health, and students are often reluctant to seek help at traditionally structured student counseling centers (Farrer et al., 2013). Activities such as positive thinking, yoga, and other activities often require costs and extended hours, which may financially burden the average person. In conclusion, conventional methods such as social support, mental health services, Mindfulness meditation, exercise, and participation in creative arts can effectively alleviate college students' psychological health challenges.

3.2 Characteristics of Chinese Calligraphy Writing

3.2.1 Chinese Calligraphy Fonts

Chinese calligraphy has evolved throughout history along with the development of Chinese characters. Currently, five main scripts are used: seal script, clerical script, regular script, running script, and cursive script(L. Xiang et al., 2020). These scripts have their unique characteristics and conventions(Cai, 2010), as shown below:

Figure 1: Different Styles of Classical Chinese Calligraphy.

The strokes of the seal script are made up of a combination of vertical and horizontal lines and arcs, and the lines are uniformly thick and thin, giving it a dignified and neat appearance. It is the simplest of the five script styles and requires minor technical complexity. Horizontal strokes dominate clerical script but introduce more strokes than seal script, making clerical script works vibrant and stable(Zhang, 2021). The regular script is characterized by a dignified and neat appearance, a square structure, and dense strokes, requiring rigor, proportionality, grace, and technical difficulty. Based on the regular script, the running script shows a lively and rapid form of writing, emphasizing change and liveliness. The cursive script combines rounded and rigid strokes to produce fluid and emotive line combinations that offer the highest degree of freedom and control(Guo, 2022). A comparison of the seal, clerical, and regular scripts with the running and cursive scripts shows that the former is more "static" while the latter is more "dynamic." Kao's (1984) study showed that seal scripts are relatively easy to master, mainly because they rely the least on precise finger muscle control (H. S. Kao et al., 1986). In another study that examined participants' heart rate fluctuations using a variety of scripts, researchers using the Inter-beat Interval (IBI) measure found that heart rate decreased during the first 10 seconds of writing with a brush(H. S. R. Kao et al., 1989). Additionally, researchers chose regular script as the writing text to demonstrate the utility of Chinese calligraphy in enhancing computation and memory(H. S. Kao et al., 2019). regular scripts and running scripts have improved working memory and attention (Chan et al., 2017) and reduced depression and anxiety(A. Liu, 2017). Therefore, understanding the different characteristics of various calligraphic fonts and selecting the most appropriate font to address the psychological well-being of college students is a crucial consideration. One can effectively use Chinese calligraphy's potential as a therapeutic tool by making appropriate choices.

3.2.2 Chinese Calligraphy Writing Patterns

Chinese calligraphy, writing with a soft brush, requires excellent attention and keen observation(H. S. R. Kao, 2006). It significantly impacted participants' perceptual, cognitive, and physiological responses. In addition to the five scripts, there were three patterns: tracing, copying, and freehand. These patterns represent different mental activities associated with calligraphy(Shek et al., 1986). Tracing involves placing model figures underneath the exercise paper, which the calligrapher fills in with a pen, hence the term "tracing." When copying, the calligrapher puts the model figure or example next to the paper and writes while observing it. Freehand is the calligrapher's most self-directed method, in which they do not refer directly to the model but use the brush to trace the model characters in their mind and put them down on the paper(W. Li, 2010). Each pattern of writing has a different effect on heart rate activity. Tracing produces the most significant heart rate slowdown, followed by copying and freehand writing(Matsumoto & Okada, 2021). The correlation between heart rate and the calligrapher's attention level was evident in tracing and less so in copying and freehand writing. Among the three writing modes, attention was highest in tracing, slowest in heart rate activity, and slowest in writing tempo(H. S. Kao et al., 1986). Empirical studies have further elucidated the specific advantages of these patterns. Tracing has been associated with improvements in depression and memory functioning(Hsieh et al., 2019), while transcription enhances mood, attention, and memory (Hsiao et al., 2023). As an efficient method of calligraphy, tracing is usually the starting point for beginners, who may gradually progress from tracing to copying and eventually to writing with a free hand.

3.2.3 Chinese characters

The unique form of Chinese characters' construction makes Chinese calligraphy an art. Early Chinese calligraphy characters exhibit distinct hieroglyphic symbols(J. Gao, 2018). This feature resembles the hieroglyphic writing system in cultures such as Ancient Egypt, Sumer, Ancient Greece, Crete, and Maya(Boltz, 1986). It is shown in the figure below:

Figure 2: Pictogram Writing in different cultures.

Chinese calligraphy has uniquely preserved the hieroglyphic elements present in earlier forms of writing. Hieroglyphic symbols underwent a process of simplification and abstraction, gradually forming a system of hieroglyphs and symbols representing words, concepts, and ideograms. Each sign has a specific meaning, thus developing a complex system of pictographs and ideographs(Koriat & Levy, 1979). Chinese calligraphy characters summarize the three essential components of formal beauty: line (strokes), structure (geometric shapes), and rhythm(W. Li, 2010). It employs a diverse range of strokes, each of which requires the mastery of precise lifting and pressing techniques, while the geometry of the characters requires control and variation in writing. In addition, Chinese characters are organized according to specific geometric properties (e.g., connectivity, closure, orientation, and symmetry) that allow for the adaptation and representation of the author's perceptual, cognitive, and bodily in-stance states during the writing process (Yang et al., 2010). This concept is consistent with Psychogeometric theory(Lam et al., 2019). Handwriting that focuses on the high geometric properties of Chinese characters has been shown to alleviate anxiety (Chien et al., 2020), enhance attention and concentration, and improve the regulation of heart rate variability(Lam et al., 2019). Reading Chinese characters with geometric features helps cognitive processing. Asymmetric characters appear to have a more significant effect than symmetric characters(H. S. R. Kao et al., 2004). These aspects highlight the intricate interplay between Chinese calligraphy's visual and cognitive elements, making it a unique art form with far-reaching effects on its practitioners' psychological and physiological well-being.

3.2.4 Textual content of Chinese calligraphy

Chinese calligraphy is a revered art form known for its profound cultural significance and exquisite aesthetics(Bai, 2015). It combines a text's content with its structure's beauty, providing an experience that resonates deeply with the participant and has a multifaceted impact on both a physical and psychological level. A study selecting the use of positive words (such as peace and life) demonstrated their effectiveness in alleviating depression, anxiety, and stress, enhancing mood and cognition, and ultimately improving one's quality of life, contributing to enhanced inner peace and overall well-being(Huang et al., 2022).

However, investigations into the therapeutic effects of Chinese calligraphy have focused on specific groups, and there are apparent gaps in understanding the critical elements of CCH. Existing studies need a comprehensive elaboration of the research design and operational concepts, as well as guiding theories regarding the selection of specific messages for calligraphy therapy, and there needs to be more evidence. This study argues that the choice of seal/regular scripts, the combination of tracing techniques, the choice of characters with high geometric attributes, and the infusion of positive textual content in CCH represent a powerful integration of the It provides a viable way for Chinese university students to cope with mental health challenges by alleviating psychological health problems. Future research efforts could expand the scope of this area of study by exploring the broader societal benefits of well-being-enhancing Chinese calligraphy practices.

3.3 CCH for Improving Psychological Problems

3.3.1 Chinese Calligraphy and Mind and Body Health

Chinese calligraphy has unique physical and psychological health benefits, ranking among the top 20 activities for fitness and longevity (H. Li & Yu, 2015).CCH has physical requirements, such as a straight back, neck, open arms, firm feet, strong fingers, soft palms, flat wrists, and raised elbows. In addition to improving physical health, CCH also triggers psychological responses. It brings pleasure, relaxation, clarity, focus, and calm. Associated psychophysiological changes include heart rate, respiration, blood pressure, digital pulse volume,

EEG, EMG, and skin temperature(H. S. R. Kao et al., 1989). It was shown that the seemingly simple practice of writing can be used as an effective therapeutic tool to positively impact physical and mental health.

CCH requires an individual's bodily functions (e.g., wrist movements), executive position (e.g., Chinese character image, writing process), attention (e.g., focusing on the materials used in the calligraphic activity), and left and right brain functions to work simultaneously, which is highly beneficial to both the mind and body(H. S. R. Kao et al., 2021).

3.3.2 Chinese Calligraphy in Therapeutic Practice

Research on the effects of calligraphy on cognition, mood, depression, and overall health has received much attention since the 20th century. Researchers have focused on the results of CCH on the brain, mind, and body and have targeted interventions for different populations (primarily older adults). A large portion of this research has been devoted to investigating behavioral, psychological, and communication symptoms in people with dementia(H. S. Kao et al., 2019; Tong et al., 2021; Yan et al., 2022), fatigue, depression, and anxiety in people with cancer(Yang et al., 2010), and its effects on stroke(X. Wu et al., 2022)and schizophrenia(Huang et al., 2022). A few studies have focused on intellectual disability, special educational needs, improved memory and thinking skills, primary insomnia(Fung et al., 2019), and significant reductions in salivary cortisol levels in child survivors(Zhu et al., 2014). Additionally, adolescents have received attention, with a particular focus on the effectiveness of calligraphic therapy in addressing stress, anxiety disorders, depression, and social adjustment-related issues(Sarman & Günay, 2023). These efforts have illuminated the ability of CCH to enhance perceptual and cognitive skills (Kwok et al., 2011). The CCH field has ventured into developing processing systems for multiple languages, including English, Japanese, and Korean. Such an approach is novel in that it has the potential to not only benefit users of Chinese characters but also to extend its advantages to users of other writing systems(H. S. R. Kao et al., 2012).

CCH has become an indispensable complementary therapy with a growing international presence, especially in the U.S., the U.K., Germany, and Turkey. The annual output has remained steady, demonstrating its continued relevance and ever-expanding reach. However, despite the large number of studies examining the impact of calligraphy on various populations, there remains a gap in research specifically aimed at alleviating mental health problems among college students. It is suggested that a future comprehensive examination of the critical determinants of CCH be conducted to address psychological health challenges among the student population. Suppose the intervention can be effective in helping college students improve their psychological health issues. In that case, it will enhance their learning productivity, promote academic success, and improve overall quality of life and well-being.

4. DISCUSSION

Based on an extensive and detailed literature review, this study systematically analyzes, integrates, and prioritizes methods to improve psychological health problems that plague college students to find efficient solutions. From the results, this study identified existing conventional tools and techniques to improve mental health problems through social support, mental health services, positive thinking, physical exercise, and participation in creative activities. CCH emerged as an art-based intervention with a deep social foundation. Building on this foundation, the study delves further into the subtle features of CCH skills that can improve psychological health problems. The paper strongly advocates a selective approach that includes using seal script, tracing as a fundamental practice, carefully curating characters with high geometric attributes, and incorporating positive textual content. The study concludes that intricately incorporating these elements into the structure of calligraphy therapy can effectively alleviate existing mental health problems and raise the standard of current psychological well-being. The aim is to ameliorate mental health problems, promote academic success, and foster social and cultural integration. In essence, it is an alternative pathway that complements and refines existing art therapy paradigms and introduces novel perspectives on the efficacy of art interventions as tools for positive change.

Figure 3 shows the Point of Departure (POD) tree diagram explaining the prioritization process of Chinese university students seeking to address mental health issues. Figure 4 illustrates the conceptual framework. As shown in the figure, there is a need to develop interventions and prevention strategies to address college students' psychological health problems, with clear information on research design, operational concepts, and so on. Then, a conceptual framework based on CCH as an intervention to reduce mental health problems among Chinese college students is presented, providing a clear roadmap for systematically exploring this critical issue.

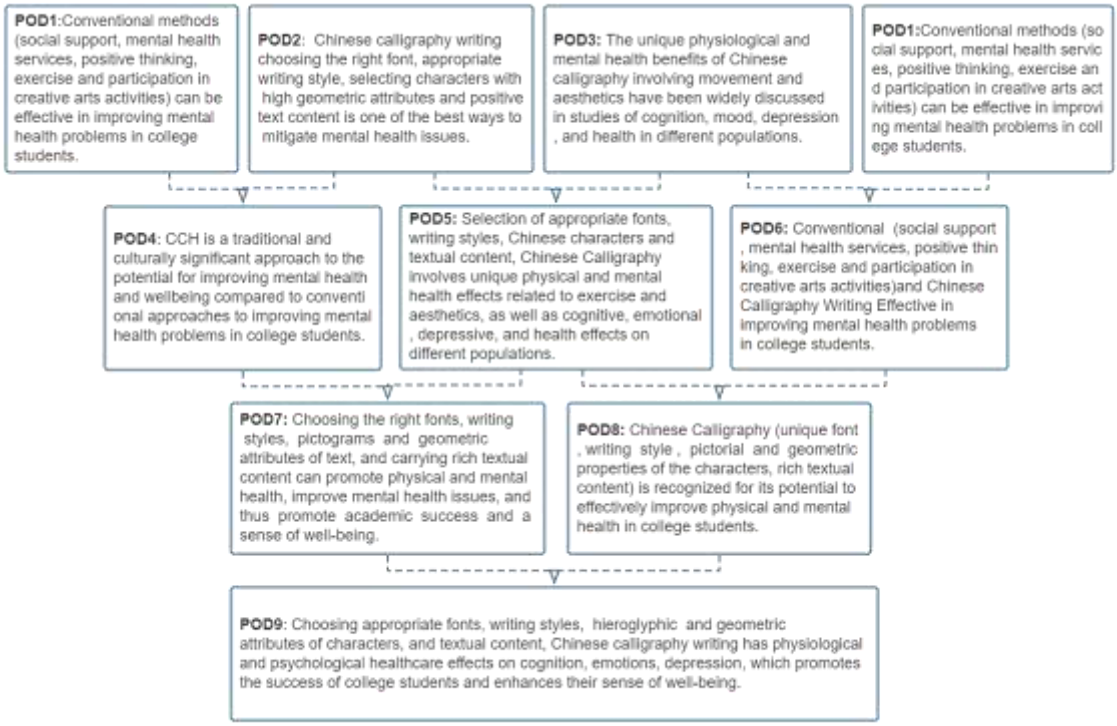

Figure 3: Point of Departure (POD) Tree Diagram for improving mental health issues among Chinese college students (Adapted from Ibrahim and Mustafa Kamal, 2018).

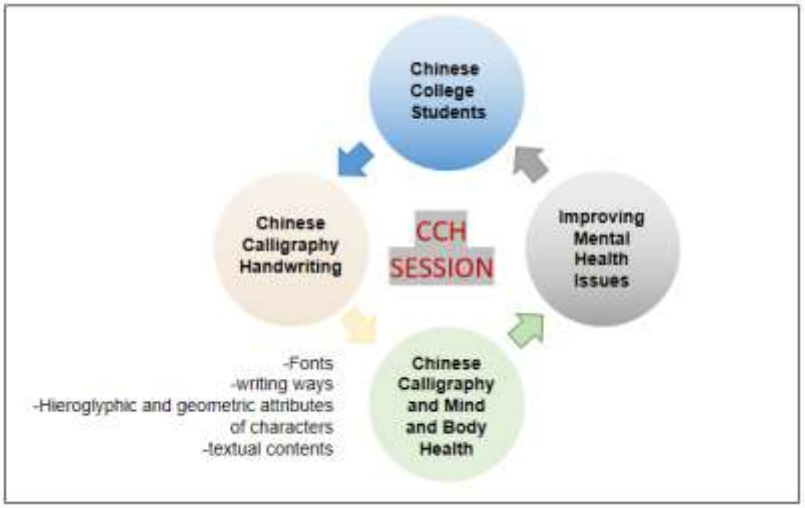

Figure 4:Proposed Conceptual Framework for improving mental health issues among Chinese college students.

5. CONCLUSION

This paper evaluates critical factors in CCH that may improve Chinese college students' psychological problems. Their psychological issues are addressed through various activities, including social support, mental health services, positive thinking, exercise, and creativity. The study also provides a comprehensive understanding of the traits and efficacy of CCH in clinical practice. Adopting specialized Chinese calligraphy techniques, such as the "tracing" method, beginning with seals or clerical scripts, choosing characters with geometric properties, and combining auspicious characters, protects Chinese college students.Chinese calligraphy displays promise in treating dementia, primary insomnia, anxiety, and depression, demonstrating its versatility and capacity to improve psychological well-being among numerous populations. While previous studies have mainly examined elderly individuals, our study focuses on CCH as a comprehensive approach to improving mental well-being. This method underscores the significance of arts and culture-based calligraphy activities within mental health. This expands our interpretation of intervention options and affects educators and university officials. Future research should develop and evaluate CCH intervention frameworks for college student mental health support. To determine the psychological benefits made possible by CCH, quantitative tests should be used in

conjunction with qualitative feedback from the involved students. It is also essential to study CCH's capacity to improve non-Chinese-speaking students' mental health and adaptability to diverse cultures.

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