A Study on the Healing Effects of Zentangle, Dispositional Hardiness, and Perceived Stress

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ABSTRACT

To alleviate stress in life, I thought of Zentangle, which is a very relaxing way of painting without the use of an eraser, and every brush stroke can be a new beginning. Therefore, the threshold of entry is low, and one can be immersed in the moment of painting, expressing oneself and creating unlimited possibilities without restrictions. In recent years, Zentangle has been widely used in the field of art therapy, but through literature research, it has been found that there is no research on Zentangle based on the three variables of healing effect, dispositional hardiness, and perceived stress. We hope that through this research, the public can have a better understanding of Zentangle, learn to recognize the existence of stress and the importance of stress relief, and use questionnaires to explore the specific effects of Zentangle on reducing anxiety and restlessness. In order to analyze the effect of Zentangle on reducing anxiety and providing a perspective for maintaining mental health, this is the direction of this thesis. The results of this study indicate that although Zentangle has a certain healing effect, the higher the toughness of the character, the more significant is the degree of stress relief compared to the healing effect of Zentangle, and the future research targets can be increased by taking more experienced Zentangle practitioners as samples, or by starting from other research directions, to increase the diversity of the study.

Keywords: Zentangle, Art for healing, Healing effect, Perceived stress, Dispositional hardiness.

1. Introduction

Zentangle[1] is an art form developed by American founders Rick Roberts and Maria Thomas. It is characterized by its simplicity, enjoyment, and relaxation. At the heart of this practice lies the philosophy of acceptance and non-judgmentalism. There is no concept of right or wrong in the creative process; instead, the practitioner is encouraged to focus fully on each stroke in the present moment. No revisions are required, and each mark made may imbue the artwork with new vitality [2].

In contemporary society, the prevalence of stress has led many individuals to experience persistent anxiety and unease due to various life challenges. According to the 2023 survey on the mental health of Taiwanese junior and senior high school students conducted by the Child Welfare League Foundation, 64.7% of respondents reported experiencing psychological distress in their lives [3]. Additionally, a community-based study conducted by the Chinese Holistic Health Association revealed that approximately 5.4 million people in Taiwan may suffer from Generalized Anxiety Disorder, representing 31.7% of the population aged 20 and above—indicating that nearly one in three adults is affected by anxiety [4].

The extent to which stress can be effectively managed is closely related to an individual's level of dispositional hardiness. Maddi and Khoshaba [5] noted that the greater the accumulation of chronic and acute stress, the higher the likelihood of developing physical or psychological symptoms. However, individuals with high hardiness levels tend to experience fewer physiological, psychological, and behavioral burdens when confronted with stressful events or situations.

This study aimed to investigate whether individual differences in dispositional hardiness influence the healing effects of Zentangle, a simple and calming art form, within the framework of art therapy. It also seeks to examine how healing effects may mitigate stress-induced negative emotions and adverse psychological outcomes.

A review of the literature indicates a lack of research integrating Zentangle-based interventions with the examination of three key variables: healing effects, dispositional hardiness, and perceived stress. To address this gap, the present study employed a questionnaire-based survey to investigate whether the therapeutic effects of Zentangle drawing can effectively reduce stress and to what extent, across individuals with differing levels of dispositional hardiness. The primary objective of this study was to evaluate the efficacy of Zentangle as a stress-reduction approach.

2. Literature Review

2.1 Zentangle

In 2005, Zentangle emerged in the United States as a novel art form developed by Maria Thomas and Rick Roberts.

Laura [6] and Kokomi Sato [7][8] noted in their respective works that the term "Zen" in "Zentangle" is a direct translation referring to meditation—specifically the concept of "Zen" as in mindfulness practice—without any religious connotation. It emphasizes a state of focused awareness and appreciation of the present moment, both in spirit and philosophy. According to Laura [6], the term "Tangle" is an interpretative translation referring to "intertwining" or "entanglement," as patterns are often composed of intricate, overlapping lines. The compound term Zentangle—translated into Chinese as Zen and tangle—reflects a juxtaposition of meanings: "Zen" conveys purity and simplicity, while "Tangle" implies complexity. This contrast symbolizes the balance between two types of visual patterns: one characterized by orderly geometric arrangements and the other by lively organic forms, which together harmonize into a unique artistic creation [9].

According to Zentangle [1], the technique of deconstruction in drawing supports practitioners in maintaining focus during structured creation and contributes to emotional stabilization. Participants in related studies on Zentangle have also reported enhanced awareness and acceptance of their present state after engaging in Zentangle drawing, along with a reduction in negative thinking patterns [10].

2.2 Art for Healing and Healing Effect

The term "healing" originates from Japanese and refers to any special object or method that provides the recipient with a sense of comfort and pleasure while also helping to relieve suffering, repair emotional wounds, reduce stress, soothe the mind, and bring about a sense of inner calm [11]. In the context of the present study, the term healing effect refers specifically to the extent to which the practice of drawing a Zentangle may achieve the outcomes, particularly in terms of emotional relief and psychological well-being.

"Art for healing" refers to engagement in artistic activities, such as drawing or sculpting, that allow individuals to focus their attention on the creative process. Within the context of free expression, such activities can help alleviate emotional distress, foster a sense of accomplishment and self-confidence, and thereby reduce psychological stress [12]. In the present study, the term "Art for healing" (also referred to as self-help healing arts or the art of healing) is distinct from "Art Therapy." This study does not address clinical or psychotherapeutic applications; rather, it explores whether the act of creating Zentangle drawings can help reduce stress without implying a need for medical or psychological intervention, as typically required in Art Therapy.

2.3 Zentangle and Healing Effect

Cheng [13] found that engaging in Zentangle drawing helped stabilize her emotional state; the trembling in her hands caused by anxiety gradually subsided as her mood became more settled. The focused nature of the activity allowed her to shift her attention away from stress and reduce her fear of making mistakes during the creative process. In a group-based Zentangle intervention for individuals with schizophrenia, Chen et al. [14] reported improvements in participants' self-esteem and a reduction in social interaction anxiety levels. Thus, the following hypothesis is proposed:

H1: The perceived healing effect of the Zentangle has a significant impact on perceived stress.

2.4 Dispositional Hardiness

Kobasa [15] first introduced the theory of hardiness to examine the personality characteristics that influence how individuals cope with stressful situations in daily life. This construct consists of three interrelated dimensions: commitment, control, and challenges.

In the present study, the definitions of these three dimensions, synthesized and refined from the works of Kobasa [15][16], are as follows:

1.Commitment: The tendency to become actively engaged in life activities and perceive these activities as purposeful and meaningful.

2.Control: The belief that one can influence or regulate the events and experiences encountered in one's life.

3.Challenge: The perception that change is a natural and expected part of life and that such changes provide opportunities for personal growth.

The exploratory study conducted by Stojcevski et al. [17] found that Zentangle practice significantly alleviated psychiatric symptoms, enhanced mindfulness, and reduced perceived stress among individuals with serious mental illness. Although the study did not employ a specific measure of dispositional hardiness, its findings align with the theoretical framework proposed by Kobasa [15][16], which posits that mindfulness and stress reduction are positively associated with the three dimensions of hardiness: commitment, control, and challenge. Therefore, the present hypothesis is supported by both theoretical reasoning and empirical evidence.

H2: The perceived healing effect of the Zentangle has a significant impact on dispositional hardiness.

2.5 Perceived Stress

Perceived Stress: In the present study, perceived stress was defined as an individual's subjective awareness and appraisal of the presence of stress. According to Cox [18], stress arises from an imbalance between environmental demands, as perceived by the individual, and their perceived ability to respond to those demands. In other words, stress is conceptualized as a product of an individual's perception of the relationship between the external environment and their coping resources.

According to Nanavaty [19], the results indicate that the hardiness training program exerted a measurable influence on both hardiness and perceived stress scores. Thus,

H3: Dispositional hardiness significantly impacts perceived stress.

H4: Dispositional hardiness serves as a mediating variable in the relationship between the perceived healing effect of the Zentangle and perceived stress.

3. Research Design

3.1 The Framework

The theoretical framework of this study is illustrated in Figure 1. Four hypotheses (H1–H4) were developed to examine the interrelationships among the perceived healing effects of Zentangle, dispositional hardiness, and perceived stress.

Specifically, H1 proposes a direct relationship between the perceived healing effect of the Zentangle and perceived stress. H2 predicted that the perceived healing effect of the Zentangle method positively influenced dispositional hardiness, while H3 suggested that dispositional hardiness negatively predicted perceived stress. H4 examines the mediating role of dispositional hardiness in the relationship between the perceived healing effect of the Zentangle and perceived stress.

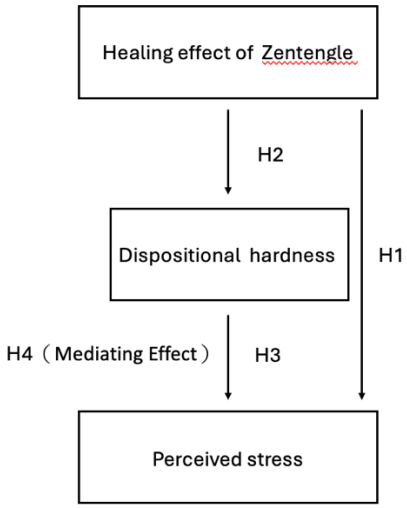

Fig.1. The framework of this study.

3.2 Research Instruments

In the introductory section of the questionnaire, participants were briefly introduced to the concept of Zentangle and asked whether they had prior experience with Zentangling. Only those who reported having engaged in Zentangle practice were included in the analytical sample.

The questionnaire was structured into four sections, as follows:

3.2.1 Healing effect

Based on the research design of Lü Pei-Chen[20] , this study adapted the original questionnaire by replacing the construct of “Natural Elements” with “Zentangle” and modifying “Environmental Healing Perception” to “Perceived Healing through Drawing.” Responses were rated on a five-point Likert scale as follows: strongly agree = 5, agree = 4, neutral = 3, disagree = 2, and strongly disagree = 1. A higher total score on the scale indicates a greater level of perceived healing experienced by the participant through the practice of Zentangle.

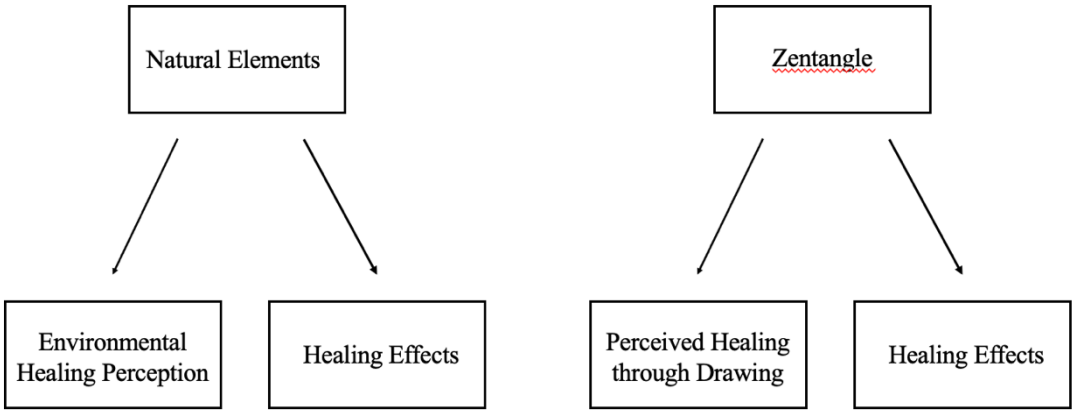

Fig.2. Conceptual framework of healing effects

3.2.2 The hardiness personality scale

The Hardiness Personality Scale used in this study was developed by Tu Kuan-Yu and Weng Chia-Ying et al. [21]. All items were rated on a five-point Likert scale, with response options ranging from "strongly disagree" to "strongly agree," corresponding to scores from 1 to 5. For scoring purposes, item 23, which was negatively worded, was reverse-coded. The total score was obtained by summing all the item responses, with higher scores indicating a greater level of dispositional hardiness. The misfitting items (cm1, cm3, ch1, ch3, and ch5) were removed from the scale. The remaining items were sequentially renumbered to maintain continuity.

3.2.3 The perceived stress scale (PSS)

The Perceived Stress Scale (PSS), developed by Cohen et al. [22], assesses the degree to which individuals perceive their lives as stressful, particularly in terms of feeling a lack of control or an inability to cope with life events. The scale consists of 14 items and is rated using a five-point Likert scale, where responses are scored as follows: "very often" = 5, "fairly often" = 4, "sometimes" = 3, "almost never" = 2, and "never" = 1. The instrument contains seven positively and seven negatively worded items. Specifically, items 29, 30, 31, 32, 34, 35, and 38 were reverse scored. Higher total scores indicate a greater level of perceived stress. The misfitting items (sp4 through sp13) were excluded from the scale, and the remaining items were renumbered consecutively to preserve the sequence of the items.

3.2.4 Background questions

Six background questions were included in the questionnaire to collect demographic and contextual information for the statistical analysis.

1. Sex: Male, female, and other.
2. Date of Birth: Respondents were asked to provide their birth year (Gregorian calendar).
3. Education Level: Categorized during data analysis as "high school or below," "college/university," and "graduate degree or above."
4. Duration of Zentangle Practice: Options included "less than or equal to one week," "more than one week but less than one month," "one to three months," and "more than three months to one year or more."
5. Number of Zentangle Artworks Created: Response options were "1–3," "4–6," "7–9," and "10 or more." For analytical purposes, responses were grouped into "3 or fewer" and "4 or more."
6. Sources of Recent Stress: A multiple-choice item allowing respondents to select from "academic," "work-related," "family," "friends," "personal issues," "financial," or "none."

4. Results and Discussion

4.1 Reliability Evaluation

After retaining only those items that met the evaluation criteria, the final research instrument consisted of 24 items across all measured constructs. The Cronbach's alpha coefficients for each construct ranged from 0.844 to 0.953, exceeding the acceptable threshold of 0.70 [25] [26]. Composite reliability values ranged from 0.846 to 0.955, surpassing the recommended benchmark of 0.70 [27] [28] [29]. The AVE values ranged from 0.603 to 0.704, all of which were above the commonly accepted minimum of 0.50[30][31]. Based on these findings, the results indicate that the measurement instrument employed in this study possessed satisfactory internal consistency and reliability.

4.2 Construct Validity Evaluation

4.2.1 Convergent validity

A reflective measurement model was employed to examine the construct validity of the research instrument. The assessment focused on two components: convergent validity and discriminant validity, and the results are summarized in Table 1.

Regarding convergent validity, all items demonstrated factor loadings exceeding the standard threshold of 0.70, thereby meeting the criterion proposed by Arifin and Yusoff [32]. Furthermore, the t-values of the item loadings ranged from 0.721 to 0.875, all surpassing the acceptable level of 0.70 [33], indicating that the constructs had adequate convergent validity.

Table 1. Summary of convergent validity and reliability coefficients of the final questionnaire (n = 106)

		Convergent Validity		Reliability		
		Factor Loading	Cronbach's α	Composite Reliability (ρa)	Composite Reliability (ρc)	Average Variance Extracted (AVE)
Construct	Item	>.70	>.70			
Dispositional hardiness/ c	ch1	0.795	0.927	0.931	0.938	0.603
	ch2	0.731				
	cm1	0.812				
	cm2	0.809				
	cm3	0.721				
	co1	0.825				
	co2	0.736				
	co3	0.830				
	co4	0.769				
	co5	0.726				
Healing effect of Zentangle/ h	he1	0.820	0.953	0.955	0.960	0.704
	he2	0.851				
	he3	0.825				
	he4	0.875				
	he5	0.867				
	he6	0.808				

		Convergent Validity		Reliability		
		Factor Loading	Cronbach's α	Composite Reliability (ρa)	Composite Reliability (ρc)	Average Variance Extracted (AVE)
Construct	Item	>.70	>.70			
	hp1	0.873				
	hp2	0.860				
	hp3	0.736				
	hp4	0.867				
perceived stress/ sp	sp1	0.798	0.844	0.846	0.896	0.682
	sp2	0.868				
	sp3	0.859				
	sp4	0.775				

4.2.2 Discriminant validity

According to Awang [34], the one-dimensionality technique is achieved when the measuring items have respectable factor loadings for the corresponding latent constructs. Any components with low factor loading should be removed to guarantee the one-dimensionality of a measurement model. The factor loading for each item should be 0.70 or greater for newly designed scales.

Table 2. Summary of fornell-larcker criterion coefficients for the formal questionnaire (n = 106)

Construct	Dispositional hardiness/ c	perceived stress/ sp	Healing effect of Zentangle/h
Dispositional hardiness/ c	0.776		
perceived stress/ sp	0.590	0.826	
Healing effect of Zentangle/h	0.596	0.439	0.839

Finally, the analysis of discriminant validity was conducted using the HTMT (heterotrait-monotrait ratio of correlations) approach, which requires that the correlation between constructs be less than 0.90[35]. The results indicated that all HTMT coefficients ranged from 0.439 to 0.839, remaining below the 0.90 threshold, thereby supporting the discriminant validity of the research instruments. The diagonal values represent the square root of the AVE for each construct, with values exceeding 0.70 being considered acceptable. The detailed results are listed in Table 3.

Table 3. Summary of HTMT Analysis Coefficients for the Formal Questionnaire (n = 106)

Construct	Dispositional hardiness/ c	perceived stress/ sp	Healing effect of Zentangle/h
Dispositional hardiness/ c	0.777		
perceived stress/ sp	0.648	0.826	

Healing effect of Zentangle/h	0.629	0.482	0.839

4.2.3 Structural model analysis

Before conducting the structural model analysis using the formative measurement model, it is essential to examine whether multicollinearity exists among the indicators. In this study, the variance inflation factor (VIF) was used for evaluation. According to Hair et al.[36], VIF values less than 10.0 indicate that multicollinearity is not a threat to the estimates. The results of the analysis are summarized in Table 4, which shows that the measurement items in this study were not affected by multicollinearity.

Partial Least Squares (PLS) analysis was then applied to estimate the values of R^2, adjusted R^2, effect size (f^2), and predictive relevance (Q^2). The results are presented in Table 4.

Table 4. Summary of Coefficients from Formative Measurement Model Analysis (N = 106)

Estimated Variable	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Analysis Results
Healing effect of Zentangle/h -> perceived stress/sp	H1	0.136	0.089	1.528	0.127	Not Supported
Healing effect of Zentangle/h -> Dispositional hardiness/c	H2	0.596	0.081	7.384	0.000	Supported
Dispositional hardiness/c -> perceived stress/sp	H3	0.508	0.099	5.112	0.000	Supported

The estimation of the path coefficients for the research model is presented in Figure 1, and the standardized PLS structural equation model and path coefficient estimates are shown in Figure 3. The analysis results indicate that the perceived healing effect of Zentangle ($\beta = 0.136$, $p > 0.05$) did not reach statistical significance in predicting perceived stress and thus lacked predictive power. However, the perceived healing effect of Zentangle ($\beta = 0.596$, $p < 0.001$) had a statistically significant and positive predictive effect on dispositional hardiness. In addition, dispositional hardiness ($\beta = 0.508$, $p < 0.001$) significantly and positively predicted perceived stress.

H4 (Mediating Effect Test): Although the direct path from the perceived healing effect of the Zentangle to perceived stress was not statistically significant ($\beta = 0.136$, $p > 0.05$), the indirect path through dispositional hardiness was significant ($\beta = 0.596 \times 0.508$, $p < 0.001$). This finding indicates a full mediation effect, providing empirical support for H4.

Moreover, the standardized root mean square residual (SRMR) value should be less than 0.05 to indicate a good model fit, and values below 0.08 are considered acceptable [37].

The overall Standardized Root Mean Square Residual (SRMR) value derived from the data analysis was 0.080, which exceeded the commonly accepted threshold. This suggests that the model exhibits a high degree of residual variance when estimating parameters based on the hypothesized structure. Therefore, a larger sample size is recommended to improve the accuracy and stability of parameter estimates [38][39].

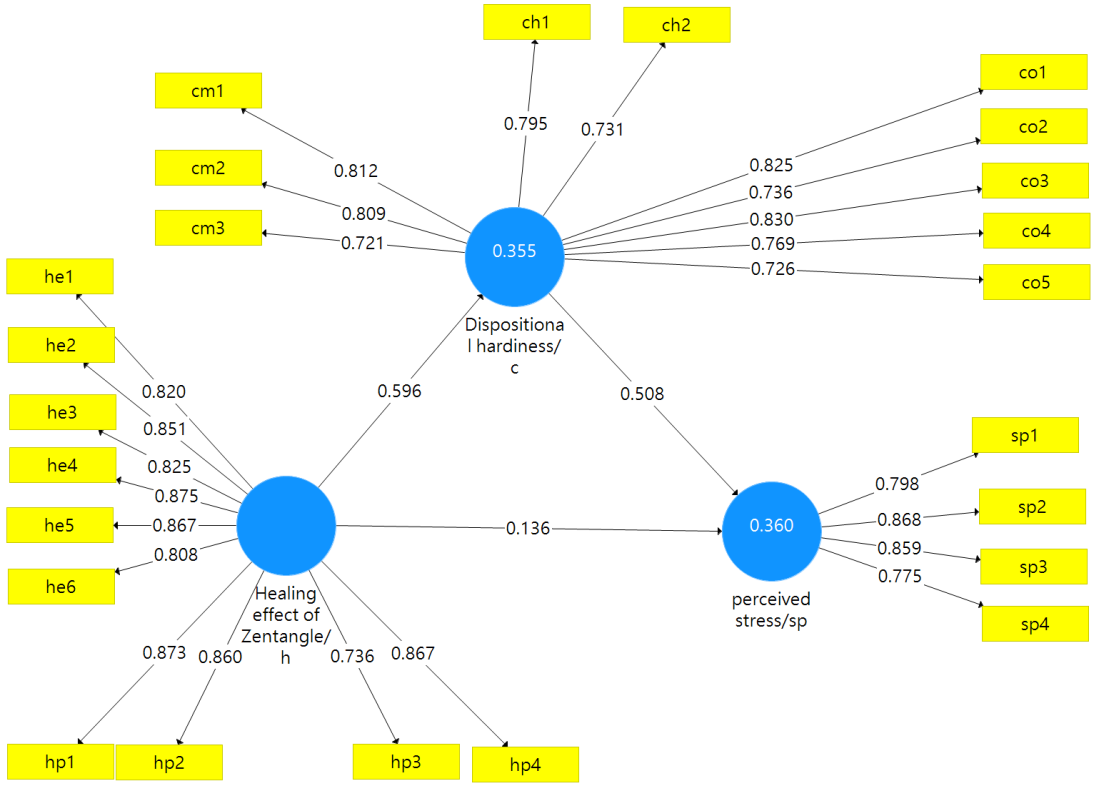

Figure 3. Standardized PLS structural equation model and path coefficient diagram

5. Conclusions

5.1 Research Conclusions

This study investigated the healing effects of Zentangle on dispositional hardiness and perceived stress. Most of the participants were female (72.1%), had a college-level education (67.9%), and had created fewer than three Zentangle pieces (82.1%). The analysis indicated that although the healing effects of the Zentangle had a statistically significant impact on perceived stress, this effect became more pronounced when dispositional hardiness was introduced as a mediating variable. These findings suggest that while Zentangle has a certain degree of therapeutic effectiveness, an individual's level of dispositional hardiness plays a more critical role in stress alleviation. Therefore, while

Zentangle drawing may contribute to stress reduction, enhancing one's dispositional hardiness may yield more substantial benefits in mitigating perceived stress levels.

Furthermore, this study confirmed the full mediating role of dispositional hardiness in the relationship between the perceived healing effect of Zentangle and perceived stress. While the direct impact of Zentangle on stress reduction was limited, its indirect effect through enhancing dispositional hardiness was both statistically significant and theoretically meaningful.

Section 2: Research Recommendations

Given that the majority of the questionnaire respondents were students, women, and individuals with limited Zentangle drawing experience, future studies should include more working professionals and participants with greater experience in Zentangle practice, as they may perceive its healing effects more profoundly. Subsequent research may also consider exploring other drawing styles or artistic modalities to examine their potential in reducing stress or integrating additional variables to expand the research scope. Such directions may enrich the diversity and applicability of research on art-based stress reduction methods.

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Conflicts of Interest

The author confirms that there are no conflicts of interest.

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