




The Effectiveness of Brain-Based, Mindful, and Attachment-Based Parenting Training on Parental Orientation of Students with Social Anxiety Symptoms

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ABSTRACT

Objective: The aim of this study was to compare the effectiveness of attachment-based, brain-based, and mindful parenting training on the parental orientation of mothers of students with social anxiety symptoms.

Methods and Materials: The research method was a quasi-experimental design with a pre-test, post-test, and follow-up with three groups. The statistical population consisted of all mothers with elementary school children. The sample included 60 mothers from the city of Felard, selected purposefully based on inclusion and exclusion criteria, and assigned to three training groups and one control group. The research instrument was the Parental Orientation Scale (Yousefi, 2021). While the control group was on a waiting list, the experimental groups received the educational interventions. The collected data were analyzed at two levels: descriptive (mean and standard deviation) and inferential (repeated measures analysis of variance). Calculations were performed using SPSS software.

Findings: The results showed that brain-based and attachment-based parenting had a significant effect on parental orientation, but attachment-based parenting did not significantly affect mothers' orientation and could improve it.

Conclusion: Thus, it can be concluded that brain-based and mindful parenting methods are effective in improving the mentioned parental constructs.

Keywords: Parenting, Career Development, Attachment, Mental Health, Parental Orientation.

1. Introduction

Children, like adults, can suffer from psychological disorders and problems, among which anxiety disorders are common during this period. One of the most important types of this disorder is social anxiety disorder. The main characteristic of social anxiety disorder is an intense and persistent fear of social or performance situations that cause embarrassment in the presence of these situations (American Psychiatric Association, 2022). Children with social anxiety frequently engage in negative self-perception. They undervalue their talents and prominent personality traits due to poor performance in social settings and even see themselves as lacking significant abilities. Although they may not express it verbally, internally, they cultivate thoughts of worthlessness and an inability to control anxiety, which become part of their beliefs (Mohammadi et al., 2020).

The highest prevalence of social anxiety disorder is found in the age range of 8 to 13 years. This is a period when a child's interaction with parents, especially the mother, plays a significant role, and maternal behavior can be considered a contributing factor to social anxiety at these ages. One of these factors is parental orientation. Parental orientation refers to parents' optimism or pessimism about their parenting (Mohammadi et al., 2020). Parental orientation is derived from life orientation, which refers to optimism and pessimism. Optimistic orientation means having positive expectations for outcomes, while pessimistic orientation means having negative expectations for outcomes (Anvarian & Behboudi, 2023). This concept reflects adults' expectations in the face of life events. Importantly, individuals maintain their optimism or pessimism over time and across various situations. Thus, optimism is a general tendency that reflects expectations across a range of life domains (Carver & Scheier, 2014). Therefore, it seems that parents with an optimistic orientation towards their children can adopt methods that may lead to their children's success, compared to parents with a pessimistic orientation.

Various types of parenting have been introduced to improve parenting conditions and mother-child relationships. One type is attachment-based parenting (Juffer et al., 2023). Parenting styles are described as a set of behaviors that describe parent-child interactions across a wide range of situations and are assumed to create an influential interactive atmosphere (Gregory et al., 2020). The attachment style is an effective factor in the child's positive development and maintaining a positive relationship

between parents and the child. Playful and responsive caregivers are essential for the child's ability to form a secure attachment, capacity for emotion regulation, empathy, and a strong sense of self-worth. Since an individual's sense of trust and self has roots in early years, it is crucial to return to the point where the child's healthy emotional development was interrupted and to provide the necessary positive experiences to resume healthy and positive interaction. Thus, attachment-based parenting includes four fundamental dimensions that form the basis of a healthy parent-child relationship. These dimensions appear as specific behaviors, activities, and words, as described below (Adili et al., 2024):

Parent structure or defining all the rules and boundaries to promote a sense of security and self-regulation in the child. This dimension is often effective for children who show high impulsivity and lack of focus and for parents who have trouble regulating rules or taking initiative.

Engagement: The parent/caregiver focuses personally on the child so that the child knows they are seen and heard in the moment. This dimension promotes joyful and responsive companionship and helps parents and children form deeper emotional connections. Engagement is often effective for socially withdrawn children and parents who tend to be neglectful.

Nurturance: The parent and child engage in soothing activities that are believed to reinforce feelings of warmth, security, and comfort.

Challenge: Helping the child undertake a fun yet challenging task or age-appropriate risk to foster a sense of confidence and competence (Adili et al., 2024).

Another type of parenting is brain-based parenting, which aims to use brain functions to better achieve educational goals and raise healthier and more capable children. The theoretical foundations of brain-based parenting are summarized in two specialized areas: 1) How life experiences affect children's brain development. 2) The neuroscience of parenting, specifically related to brain processes. This method emphasizes the important role of the brain in parenting, showing which brain systems of the mother and child are influential in good parenting traits and what happens in brain systems under parental stress that interferes with caregiving and parenting practices. Brain-based parenting encompasses principles that protect the child's developing brain (referred to as neuroprotective factors) and stimulate brain growth (growth enhancement factors). The general principles of this parenting involve understanding the brain and the effective brain systems in parenting and how to use this knowledge to adopt strategies

that utilize everyday challenges for raising healthy and thriving children. It explains how integrating and creating healthy and effective connections between seemingly separate brain systems with specific functions can help achieve brain integration in the child. Part of the focus of brain-based parenting is on integrating the child's right and left brain to enable them to connect with both their logical and emotional selves. This style also emphasizes the importance of linking the lower, instinctual brain with the upper, thinking brain, helping the child make more balanced decisions. By clarifying how memory functions, it aims to create healthy connections between children's past and present experiences. This style provides strategies to help children develop mindfulness and a clear understanding of their thoughts, enabling them to effectively cope with emotions and react appropriately. Explaining the concept of the "social self" and the "individual self" is another addressed aspect, aiming to lay the foundation for healthy social relationships while maintaining an independent identity (Hughes & Baylin, 2012).

Mindful parenting is a new concept in parenting studies, described as a set of practices or parental skills aimed at enhancing moment-to-moment awareness in parent-child relationships. It is a specific type of intentional and non-judgmental parenting that emphasizes parents' present awareness and non-prejudiced attention to the child (Dumas, 2005). Under stressful conditions, parenting skills often fade for most parents; however, mindful parenting promotes progress in parenting under high-stress conditions and helps parents with children exhibiting psychological symptoms. Mindful parenting training is an effective intervention for families with children having psychological disorders and for parents experiencing parenting stress or difficulties (Shorey et al., 2017). Mindful parenting training reduces parenting stress, negative parent-child interactions, and problematic child behaviors. Mindfulness involves experiencing feelings, thoughts, and negative emotions without suppression or exaggeration, with openness, awareness, and dynamic presence in the moment, closely related to experiential avoidance and self-compassion. Mindfulness is a non-judgmental and receptive mental state where individuals observe their thoughts and feelings as they are without trying to suppress or deny them. In the context of parenting, being mindful means bringing focused attention and awareness to the present moment, having an open and accepting attitude toward thoughts, feelings, and behaviors, and responding appropriately to life's stressful situations, including parenting, contrary to avoiding

experiencing children's emotions and acting in these situations (Shorey & Ng, 2021).

Given the importance of childhood in shaping an individual's future, and considering that social anxiety is a distressing psychological construct among children that can delay their social development, it is necessary to specifically address these children. Given the significant role of mothers in children's lives, improving parenting among mothers is one of the essential requirements for these children. Therefore, this study considered improving parenting using various methods and addressed the question of whether there is a significant difference in the effectiveness of attachment-based, brain-based, and mindful parenting training on parental orientation, parenting stress, parent-child conflicts, parental adaptability, and socio-emotional development of students with social anxiety symptoms.

2. Methods and Materials

2.1. Study Design and Participants

This research employed an experimental method (pre-test, post-test design with three experimental groups and one control group) along with a follow-up stage (two months).

The statistical population of the present study consisted of all mothers with elementary school children diagnosed with social anxiety. To select a sample from these mothers, three large public schools in the city of Felard was chosen by referring to the Department of Education. Sixty mothers were selected conveniently and then assigned to four research groups (mindful parenting training group, attachment-based parenting group, brain-based parenting group, and control group) (each group with twenty members).

Inclusion Criteria: Ability to attend sessions, having a child with social anxiety symptoms confirmed by the principal or vice-principal.

Exclusion Criteria: Simultaneous participation in other psychotherapy or psychological training, absence from more than two sessions.

To implement the research, three elementary schools in the city of Felard were randomly selected. The study was introduced to the schools, and children with social anxiety symptoms were identified. Their mothers were invited to participate through invitation letters. After purposive sampling, the mothers were randomly assigned to experimental and control groups (each group with twenty members). While the control group was on the waiting list, the three experimental groups received related training over

eight ninety-minute sessions conducted by the researcher. Pre-test, post-test, and 45-day follow-up assessments were conducted for all subjects before and after the training.

2.2. Measures

2.2.1. Parental Orientation

To measure parental orientation, the Parental Orientation Questionnaire by Yousefi (2021) was used, containing 15 questions assessing optimism towards parenting. Scoring was done on a 5-point Likert scale, with direct scoring for all questions. "Strongly agree" received the highest score (5) and "strongly disagree" received the lowest score (1). The internal consistency of this questionnaire was 0.85 using Cronbach's alpha. Concurrent validity with the Life Orientation Test was positive and significant. Additionally, each question's score had a positive and significant correlation with the total score, indicating construct validity (Anvarian & Behboudi, 2023). In this study, internal consistency was re-examined and exceeded 0.80.

2.3. Intervention

2.3.1. Attachment-Based Parenting Intervention

The attachment-based parenting intervention focuses on fostering a secure attachment between parents and their children by addressing four key necessities: challenge, security, nurturing, and structure. The program consists of eight sessions, each aimed at educating parents about different aspects of attachment theory and practical strategies to enhance their child's secure attachment (Adili et al., 2024; Gregory et al., 2020; Hughes & Baylin, 2012; Juffer et al., 2023; Wright & Edginton, 2016).

Session 1: Introduction to the Course and Attachment Concepts

Objective: Familiarize participants with the course objectives and the concept of attachment.

Content: Introduce the importance of attachment, its various types, and help parents identify their own and their child's attachment style.

Assignment: Monitor their own and their child's attachment behaviors throughout the week.

Session 2: Impact of Maternal Attachment on Children

Objective: Understand the influence of maternal attachment on children's attachment and its long-term effects.

Content: Discuss how a mother's attachment style affects her child's attachment and the significance of the mother-child relationship in shaping the child's future.

Assignment: Observe and reflect on their interactions with their children.

Session 3: Disruptive Maternal Behaviors and Four Necessities of Secure Attachment

Objective: Identify maternal behaviors that can disrupt attachment and learn about the four daily necessities for secure attachment.

Content: Educate mothers on behaviors that threaten attachment and introduce the four necessities: challenge, security, nurturing, and structure.

Assignment: Monitor the presence and application of these necessities in their family life.

Session 4: Prioritizing Secure Attachment Necessities

Objective: Learn to prioritize the four necessities of secure attachment.

Content: Teach parents how to foster nurturing environments and the importance of play in child development.

Assignment: Observe and implement nurturing practices and note their effects on their children.

Session 5: Strategies for Providing Challenges

Objective: Understand strategies for providing appropriate challenges to promote secure attachment.

Content: Introduce games and activities that help children face challenges and identify factors that hinder this process.

Assignment: Implement and observe the effects of challenge-based activities on their children.

Session 6: Creating Structure for Secure Attachment

Objective: Learn strategies for establishing structure to support secure attachment.

Content: Discuss methods and activities that help create a structured environment and identify factors that can disrupt it.

Assignment: Monitor and enhance their skills in structuring their children's lives.

Session 7: Promoting Engagement for Secure Attachment

Objective: Develop strategies for increasing engagement with children to foster secure attachment.

Content: Introduce activities and methods that enhance parent-child engagement and identify potential disruptions.

Assignment: Observe and improve their engagement skills with their children.

Session 8: Prioritizing Needs Based on Child's Issues and Course Summary

Objective: Summarize the course and teach parents to prioritize attachment necessities based on their child's specific needs.

Content: Help parents understand which attachment necessities to focus on depending on their child's problems, and review the course content.

Assignment: Conduct a month-long observation of their parenting style, emphasizing attachment-based strategies.

2.3.2. *Brain-Based Parenting Intervention*

The brain-based parenting intervention aims to enhance parenting practices by leveraging knowledge about brain functions. The program educates parents on how brain development affects behavior and provides strategies to integrate brain functions to support healthy child development (Hughes & Baylin, 2012).

Session 1: Introduction to Brain-Based Parenting

Objective: Establish therapeutic alliance and provide an overview of the program.

Content: Briefly discuss the importance of effective parenting, conduct a pre-test, introduce participating mothers, and explain brain-based parenting and its goals.

Assignment: Write down several issues and challenges they faced with their children during the week.

Session 2: Role of the Brain in Parenting

Objective: Explain the importance and role of the brain in parenting.

Content: Discuss the physiology and structure of the brain, brain integration, and the concepts of chaos and rigidity in parenting.

Assignment: Note instances of chaos or rigidity experienced during the week and consider how to achieve balance.

Session 3: Integrating the Left and Right Brain

Objective: Understand the functions and roles of the left and right brain in parenting.

Content: Explain the functions of the left and right brain, strategies for integrating both sides in daily activities, and ways to integrate parents' left and right brain functions.

Assignment: Reflect on the roles of the left and right brain in daily life and document challenges faced with their children and how brain integration helped solve them.

Session 4: Integrating the Upper and Lower Brain

Objective: Learn about the functions of the upper and lower brain and their roles in parenting.

Content: Discuss the roles of the upper and lower brain in daily functioning and strategies for integrating these brain regions.

Assignment: Document challenges faced with their children and the role of brain integration in resolving them.

Session 5: Explicit and Implicit Memory in Parenting

Objective: Understand the role of explicit and implicit memory in parenting.

Content: Correct misconceptions about the brain, explain explicit and implicit memory functions, and provide strategies for integrating these memory types in children and parents.

Assignment: Write down explicit and implicit memories and their impact on behavior, and how integrating these memories helped address issues.

Session 6: Understanding and Integrating Different Parts of the Self

Objective: Learn about mind-sight and mindfulness.

Content: Introduce the concepts of mind-sight and mindfulness, differentiate between feeling and being, and teach focused attention techniques.

Assignment: Document feelings and experiences, and note how they used the concepts taught to help their children.

Session 7: Integrating Self with Others

Objective: Understand the importance of social brain development and empathy.

Content: Explain the concept of the social brain, mirror neurons, and strategies for fostering positive social interactions and empathy in children.

Assignment: Note inappropriate social behaviors and document strategies used to improve social relationships.

Session 8: Review and Summary

Objective: Summarize the program and consolidate learning.

Content: Review assignments, summarize key points, address questions, and conduct a post-test.

Assignment: Implement continuous strategies learned throughout the program.

2.3.3. *Mindful Parenting*

The mindful parenting intervention focuses on enhancing parents' awareness and presence in the parent-child relationship. The program teaches mindfulness techniques to reduce parenting stress and improve parent-child interactions.

Session 1: Introduction and Pre-Test Assessment

Objective: Build therapeutic alliance and conduct pre-test assessments.

Content: Introduce parents, explain mindful parenting skills, outline session structure and homework, and conduct a mindful breathing and eating exercise.

Assignment: Practice short meditation and mindfully re-enter parenting with awareness.

Session 2: Filtering the Mind and Unconscious Attention

Objective: Understand how the mind filters experiences and expectations.

Content: Conduct a breathing exercise, discuss participants' experiences, perform a body scan exercise, introduce observing the child and gratitude exercises.

Assignment: Practice short meditation and mindful observation at home.

Session 3: Three-Minute Breathing Space

Objective: Learn a quick method to achieve calmness.

Content: Conduct seated meditation, discuss homework, introduce the three-minute breathing space technique, and perform lying down yoga.

Assignment: Practice the three-minute breathing space at home.

Session 4: Reactions to Stressful Situations

Objective: Recognize automatic reactions to stress.

Content: Conduct seated meditation with focus on sounds and thoughts, discuss stress events, teach avoidance and engagement responses, and perform standing yoga.

Assignment: Practice the three-minute breathing space under stress at home.

Session 5: Inherited and Inner Parent

Objective: Understand inherited parenting models and reflexive reactions.

Content: Conduct seated meditation with emotions, discuss schema models and reflexive responses, and perform mindful walking indoors.

Assignment: Practice seated meditation and the three-minute breathing space at home.

Session 6: Perspective Taking

Objective: Learn to adopt different perspectives.

Content: Conduct seated meditation with selective attention, review schema models, and perform mindful walking outdoors.

Assignment: Practice seated meditation with selective attention at home.

Session 7: Self-Compassion and Gratitude

Objective: Develop self-compassion and gratitude.

Content: Conduct loving-kindness meditation, review previous exercises, discuss mindful days at home or work, and role-play scenarios.

Assignment: Practice loving-kindness meditation at home.

Session 8: Review and Future Planning

Objective: Summarize learned concepts and plan future mindfulness practices.

Content: Conduct body scan, review previous practices, and discuss continuous mindful parenting strategies.

Assignment: Implement continuous self-compassion practices and plan long-term mindfulness exercises.

2.4. Data analysis

Given that each subject underwent training three times, repeated measures analysis of variance was used to compare the means between the experimental and control groups.

3. Findings and Results

To investigate the research question, "Is there a significant difference in the effectiveness of attachment-based, brain-based, and mindful parenting training on parental orientation among students with social anxiety symptoms?" repeated measures analysis of variance was used.

The results showed that parental orientation in the three stages of pre-test, post-test, and follow-up had a normal distribution ($p > .05$), equal error variance ($p > .05$), and equality of variance-covariance matrices (via Mauchly's test of sphericity) ($p > .05$). Additionally, Mauchly's test was significant, indicating that the assumption of sphericity was not met. When the assumption of sphericity is not met, the Greenhouse-Geisser statistic can be referred to in the final analysis tables. Table 1 presents the mean and standard deviation of parental orientation at the pre-test, post-test, and follow-up stages for the research groups.

Table 1

Means and Standard Deviations of Parental Orientation in Research Groups at Three Time Points

Time	Mindful Group M (SD)	Brain-Based Group M (SD)	Attachment Group M (SD)	Control Group M (SD)
Pre-test	91.73 (4.52)	89.07 (7.25)	88.67 (7.85)	89.53 (6.09)
Post-test	98.27 (6.24)	100.53 (5.64)	86.07 (7.76)	89.19 (5.82)
Follow-up	98.53 (5.32)	100.73 (5.44)	86.13 (7.32)	89.33 (6.14)

As shown in Table 1, for the variable parental orientation, especially the brain-based group compared to the mindful group and the attachment group compared to the control group showed more significant changes in the post-test and

follow-up stages. The results of the repeated measures analysis of variance for parental orientation are presented in Table 2.

Table 2

Results of Repeated Measures ANOVA for Parental Orientation

Source of Effect	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Power
Within-Groups							
Time	606.01	1.13	533.91	33.76	.001	.38	1
Time × Group Interaction	1243.46	3.40	365.17	23.09	.001	.55	1
Error (Time)	1005.20	63.56	15.81	-	-	-	-
Between-Groups							
Group	3225.18	3	1075.06	10.39	.001	.36	.99
Error	5796.80	56	103.51	-	-	-	-

Given the violation of the sphericity assumption (Table 4), as seen in Table 2 for the variable parental orientation, the within-groups effect of time ($F = 33.76$, $df = 1.13$, $p < .01$) and the time × group interaction ($F = 23.09$, $df = 3.40$, $p < .01$) show that there is a significant difference in parental orientation over time and in the interaction of time with the group (four research groups) ($p < .01$). The partial eta squared for the time factor is .38 with a power of 1, and for the time × group interaction, it is .55 with a power of 1. This result indicates that for the time factor and the time × group interaction, 38% and 55% of the variance in parental orientation are due to the independent variable (one of the mindful, brain-based, or attachment-based trainings in the

study), confirmed with 100% power. Additionally, as seen in the between-groups effect in Table 6, there is a significant difference in parental orientation for the group factor ($p < .01$). The partial eta squared for the group factor is .36 with a power of .99. This means that the performed ANOVA with 99% power shows that 36% of the variance in parental orientation is significant between at least one of the experimental groups (three training groups) and the control group. Table 3 presents the results of the Bonferroni post-hoc test for pairwise comparisons of the three experimental groups and the control group for the variable parental orientation.

Table 3

Results of Bonferroni Post-Hoc Test for Pairwise Comparisons of Research Groups on Parental Orientation

Variable	Row	Base Group	Comparison Group	Mean Difference	Std. Error	Sig.
Parental Orientation						
Time	1	Pre-test	Post-test	-3.85	.66	.001
	2		Follow-up	-3.93	.65	.001
	3	Post-test	Follow-up	-.08	.20	1
Group	4	Mindful Group	Brain-Based Group	-.60	2.14	1
	5		Attachment Group	9.22	2.14	.001
	6		Control Group	6.71	2.14	.02
	7	Brain-Based Group	Attachment Group	9.82	2.14	.001
	8		Control Group	7.31	2.14	.007
	9	Attachment Group	Control Group	-2.51	2.14	1

As seen in Table 3, for the variable parental orientation, there is a significant difference between pre-test and post-test and follow-up ($p < .01$), but there is no significant difference between post-test and follow-up ($p > .05$). Additionally, in the pairwise comparison of the four research groups, there is no significant difference between the mindful group and the brain-based group ($p > .05$), and both approaches had the same effectiveness on parental orientation. However, there is a significant difference between the mindful and brain-based groups with the attachment and control groups ($p < .01$ or $p < .05$). Additionally, there is no significant difference between the attachment group and the control group ($p > .05$). Therefore, based on the results presented in Tables 4 to 7, the first sub-question of the research, "Is there a significant difference in the effectiveness of attachment-based, brain-based, and mindful parenting training on parental orientation among students with social anxiety symptoms?" is answered as follows: in the comparison of the four research groups, there is no significant difference between the mindful group and the brain-based group, indicating that both approaches had the same effectiveness on parental orientation. However, there is a significant difference between the mindful and brain-based groups with the attachment and control groups. Thus, the mindful and brain-based methods were effective on parental orientation, while the attachment-based method did not improve parental orientation.

4. Discussion and Conclusion

This study aimed to compare the effectiveness of mindful, brain-based, and attachment-based parenting on parental orientation. The results of repeated measures analysis of variance showed that the three methods, mindful parenting and brain-based parenting, could improve parental orientation, but the attachment-based method could not improve this variable.

In alignment with other research findings, it can be said that based on available databases, no published study specifically addressing this topic was found. However, studies have shown the effectiveness of mindfulness on parenting constructs (Bögels et al., 2014; Coatsworth et al., 2018; Shorey & Ng, 2021). Some studies have also shown the effectiveness of the brain-based method on parenting constructs, such as Lilly (2013) and Hughes and Baylin (2012). Additionally, studies have shown the effectiveness of attachment-based parenting (Adili et al., 2024; Gregory et al., 2020; Juffer et al., 2023). Therefore, the results of this

study regarding the effectiveness of the two methods, mindfulness and brain-based, are consistent with other research, while the ineffectiveness of attachment-based parenting is not consistent with other research.

To explain the effectiveness of mindful parenting and brain-based parenting on parental orientation, it can be said that parental orientation is derived from life orientation, which refers to optimism and pessimism. An optimistic orientation means having positive expectations for outcomes, and a pessimistic orientation means having negative expectations for outcomes (Carver & Scheier, 2014). Thus, these two parenting methods possess mechanisms that have improved these two constructs.

In explaining the effectiveness of mindful parenting on life orientation, it can be said that this type of parenting includes two important aspects: 1) being and spending time with the child, and 2) acceptance and warmth towards the child. In this regard, participating mothers learned how to have intentional and non-judgmental parenting with present awareness with their child and pay attention to the child without prejudice. It seems that the training related to this educational goal has reduced parenting stress, improved negative parent-child interactions, and reduced problematic child behaviors. Therefore, mindful mothers learned to bring focused attention and awareness to the present moment, maintain an open and accepting attitude towards thoughts, feelings, and behaviors, and respond appropriately in life's stressful situations, including parenting, contrary to avoiding experiencing children's emotions and acting in these situations (Dumas, 2005). Therefore, they had better relationships with their children, which created a sense of security in the child. Additionally, spending more time with the child reduced the problems arising from the child's unstructured activities, resulting in fewer child problems and increased obedience. All these goals, strategies, techniques, and results have helped mothers experience greater parental orientation.

In explaining the effectiveness of brain-based parenting on parental orientation, it can be said that this method includes mechanisms that have helped improve mothers' parental orientation. In this regard, the goal of this method is to enhance the functioning of various brain dimensions to better achieve educational goals and raise healthier and more capable children. Mothers learned how 1) life experiences affect children's brain development, and 2) the neuroscience of parenting specifically related to brain processes operates. This method emphasizes the important role of the brain in parenting, showing which brain systems of the mother and

child are influential in good parenting traits and what happens in brain systems under parental stress that interferes with caregiving and parenting practices. In fact, brain-based parenting includes principles that protect the child's developing brain (referred to as neuroprotective factors) and stimulate brain growth (growth enhancement factors) (Hughes & Baylin, 2012). The general principles of this parenting involve understanding the brain and the effective brain systems in parenting and how to use this knowledge to adopt strategies that utilize everyday challenges for raising healthy and thriving children. In this regard, mothers learned how to integrate the child's brain so that the child can connect with both their logical and emotional selves. They also learned how the lower, instinctual brain is related to the upper, thinking brain, enabling the child to make more balanced decisions (Hughes & Baylin, 2012). Thus, these mechanisms increased the mothers' influence and helped them better understand their children's behaviors, reducing parent-child problems and improving mothers' optimism about their parenting behaviors.

In explaining the ineffectiveness of attachment-based parenting training on mothers' orientation, the results were contrary to expectations because in this method, mothers learned that secure attachment and its necessities include nurture, challenge, structure, and engagement with the child. Attention to these four necessities is effective in optimizing the mother-child relationship and makes the mother feel more obedient from the child. Additionally, the mother's role in each dimension of nurture, challenge, structure, and engagement is clear, and she knows how to act. Thus, these changes in parenting should improve mothers' orientation. Several reasons can be stated for this result: excessive emphasis on the attachment style and its importance in the first five years may have made mothers feel guilty about their parenting performance or feel they missed opportunities. On the other hand, the effectiveness of this method on orientation may require a longer time. Additionally, a variable may act as a moderator affecting the effectiveness of this method on orientation, which was not identified in this study, such as other factors affecting mothers' mental health, such as their relationship with their spouse.

5. Limitations & Suggestions

This study, like other studies, had limitations, including the non-random selection of participants and the limited statistical population to mothers, making the generalization

of results to other populations cautious. It is suggested that child counselors and family educators consider this method for improving parenting constructs.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed in this article.

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