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The Effectiveness of a Mindfulness-Based Therapeutic Program Directed at Mothers to Modify Insecure Attachment Behavior

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ABSTRACT

This study aimed to design a mindfulness-based intervention program for mothers with insecure attachment styles, with the goal of modifying their insecure attachment behaviors. The researcher employed a single-case design (A-B) to measure time-series data. The program was implemented individually with one participant who experienced insecure attachment with both her children and her partner. Instruments were selected based on the study's requirements, including the Mindful Attention Awareness Scale and a free-response psychological assessment. Data analysis was conducted using SPSS v21, employing techniques such as autocorrelation, partial correlation, one-way ANOVA, and simple regression analysis for time-series data, along with calculation of clinical significance. The results demonstrated the effectiveness of the experimental program. Exposure to the mindfulness-based intervention program for mothers with insecure attachment led to the development of a more secure attachment relationship after each time delay (lag). This was confirmed by calculating the autocorrelation of the time-series data and determining clinical significance. The results also confirmed the effectiveness of the mindfulness-based intervention program in modifying insecure attachment behaviors, as evidenced by the significant differences in the underlying processes involved, as determined by one-way ANOVA.

Keywords: Mindfulness-based intervention program, Insecure attachment.

1- INTRODUCTION:

Understanding how early relationship dynamics influence attachment patterns is crucial. Many experimental and clinical studies in psychotherapy on attachment have been conducted, most notably attachment theory and the studies of John Bowlby, which revealed that the lack of a sense of security stems from insecure relational attachment behavior (Madouri, 2015). It is noted that psychotherapy

based on attachment theory is one of the best treatments in managing the emotional interactive relationship between mother/child and in modifying relational behavior (Bowlby, 1993).

Attachment theory indicates that interactions with primary caregivers play a central role in shaping emotional bonds and managing social relationships throughout life. Family structure variations introduce diverse caregiving dynamics and relational contexts that influence individuals' attachment orientations (Scharf & Mayseless, 2007), reflecting socialization practices that prioritize emotional expression and closeness in relationships (Collins & Read, 1990). The credit goes to John Bowlby for presenting the internal working model of attachment theory, whose effects appeared in personality and mother/child relational behaviors.

Harlow's study (1958) on intergenerational attachment revealed that a mother's ability to provide secure attachment to her child is linked to her experiences with her parents in childhood. The study concluded that a girl separated from her parents shows severe distortions in mating and motherhood behavior (Bowlby, 1993). Zank (2012) also confirmed in his study that the attachment between the child and the primary caregiver (usually the mother) is internally invested to later become a mental model used by the adult as a basis for building relational attachments with others, foremost the child (Al Jawhara, 2019).

The attachment between the child and the mother or caregiver is crucial for survival. Therefore, single-parent families or those lacking a consistent caregiver may contribute to the development of insecure attachment patterns in children, while families characterized by stable parental relationships and supportive environments tend to promote secure attachment (Scharf & Mayseless, 2007). Families with complex caregiving networks and diverse family roles provide a varied perspective of attachment patterns, including secure and insecure orientations (Van IJzendoorn & Sagi-Schwartz, 2008). In this regard, the study by Jennifer, Jamil, et al. (2010) on mothers' attachment perceptions of childhood security showed that securely attached mothers recalled their mothers as more caring, protective, and secure, while less securely attached mothers described their mothers as less attentive.

Psychotherapy may thus be highly effective in modifying relational behavior. Self-interventions such as meditation and mindful attention increase the sense of security, changing it from insecure relational attachment to secure behavior, and help mothers become more aware and attentive in dealing with their children and their relational attachment behavior. Interest in the effects of mindfulness has notably increased in the past decade (Toniolo, Brasil & al., 2020).

Mindfulness is considered a theoretical construct understood as the ability of conscious attention (Vallejo, 2006). To analyze the positive effects resulting from its development, many clinical trials and intervention programs were conducted. Neuroscientific studies show that the relationship with mindfulness practice has special importance. Falcone and Jerram (2018) found that with meditation practice and enjoyment of the present moment, brain activity increased in the frontal regions, showing different results among meditation practitioners compared to those with no experience in meditation or mindful attention (Falcone & Jerram, 2018). Although still preliminary, these results enhance understanding of how mindfulness skills can be improved (Wang, Fan, Zhu & al., 2019).

Mindfulness-based intervention techniques, which have received the most support from the research community (Kabat, 2012), are those aiming to train participants in accepting thoughts, emotions, and memories, achieving cognitive defusion, and enjoying living in the present moment. Many mindfulness-based intervention programs aim to develop the mental health of mothers or caregivers

(Boekhorst & al., 2020) by helping them become open and avoid experimental avoidance of reactions to painful experiences, schemas, and ingrained beliefs underlying insecure relational behavior, through mindfulness-based techniques and methods.

Based on mindfulness studies and their results in achieving secure attachment, it appears essential that an emotional mother/child bond includes moments of affection such as love, hugging, touching, tickling, and play. The individual needs to live in the present and fully enjoy the moment (Davis, 2016; Sayed, 2013).

Accordingly, the present study attempts to identify the effectiveness of a mindfulness-based therapeutic program directed at mothers in modifying insecure attachment behavior by raising the following questions:

1-1. Research Questions:

1. Does exposing insecurely attached mothers in the study to the mindfulness-based therapeutic program contribute to modifying insecure attachment behavior after each temporal delay period (log)?
2. To which basic processes can the effectiveness of the mindfulness-based therapeutic program directed at insecurely attached mothers be attributed in modifying insecure attachment behavior?

1-2. Study Hypotheses:

1. Exposing insecurely attached mothers in the study to the mindfulness-based training program contributes to modifying insecure attachment behavior after each temporal delay period (log).
2. The effectiveness of the mindfulness-based therapeutic program directed at insecurely attached mothers differs in modifying insecure attachment behavior depending on the basic processes it includes.

1-3. Study Objectives:

- To identify the effectiveness of the mindfulness-based therapeutic program directed at insecurely attached mothers in modifying insecure attachment behavior.
- To determine whether exposing insecurely attached mothers to the mindfulness-based training program contributes to modifying insecure attachment behavior after each temporal delay period (log).

1-4. Importance of the Study:

- The scientific importance lies in studying attachment and insecure attachment and exploring the theoretical heritage associated with it. From a practical perspective, the study's results benefit specialists in rehabilitating insecurely attached mothers to modify their behavior associated with insecure attachment.

1-5. Definition of Study Concepts:

1-5-1. Attachment Behavior:

Bowlby defined attachment as a behavioral pattern and described it as innate attachment skills between mother/child manifested in smiling, sucking, clinging through crying, and play, identified as a functional unit aimed at enhancing psychological closeness. It functions as attachment behavior regardless of the type of behavior (Bowlby, 1969, p. 67).

According to Guedeney & Guedeney, attachment behaviors are those that signal the mother of the infant's need for interaction to enhance closeness, manifested in smiling, play, and cooing. This condition requires caregiving attention, as the child needs an emotional interactive relationship of smiling, play, love, hugging, tickling, and more tenderness, even if spending less time, to achieve a secure base (Guedeney & Guedeney, 2005, p. 12).

1-5-2. Insecure Attachment:

It is the opposite of the child's sense of safety, security, and comfort near the parents or others. It is classified into avoidant insecure attachment, ambivalent insecure attachment, and disorganized insecure attachment (Bowlby, 1993, p. 43).

1-5-3. Mindfulness-Based Therapeutic Program:

The mindfulness-based therapeutic program is defined as a set of structured and planned activities aimed at achieving specific goals to increase a state of full awareness and attention to the present moment, including thoughts, emotions, and memories, and directing selective attention to different aspects of experiencing painful moments, opening up to them without immediate reactions. It aims to achieve internal balance and enhance the ability to cope with daily life stresses more effectively (Boualem, 2021, p. 10).

2- Method and Tools:

2-1. Method:

The study used the single-case method as one of the experimental clinical approaches. It is a method based on comparing the individual's performance in the baseline stage with their performance in the post-intervention stage, meaning before and after applying the experimental program for the experimental design (A-B).

A and B represent a series of repeated observations under baseline (A) and therapy or psychological intervention (B) conditions (Lindsay & Paul, 2000, p. 868).

2-2. Participants:

The current study included one participant (a single case), a 30-year-old woman, married for 8 years. She was intentionally selected based on criteria that met the study's purpose.

2-3. Study Tools:

The researcher relied on free psychological examination, the Full Awareness Listening to the Present Moment Scale, and used the basic processes of acceptance and cognitive defusion.

2-3-1. Free Psychological Report of the Case (B.R):

- **Name:** Case (B.R)

- **Age:** 30 years
- **Gender:** Female
- **Marital status:** Married
- **Educational level:** University
- **Occupation:** Employee
- **Place of interview:** Basma Clinic for Mental Health
- **Main complaint:** According to the patient: *"I feel psychological distress, tension, anxiety, and difficulty interacting and enjoying playing and hugging my children, which has caused me difficulty in building an intimate and emotional relationship with them and an inability to develop their social interaction skills. I feel the urge to cry. My life before marriage was fine despite the difficulties I went through, but after marriage my life changed because of conflicts and my husband's betrayal. I decided to divorce several times but our families intervened, which made things more complicated and provoked my emotions and anger, despite my husband's admission of his mistake and his request for forgiveness and to build a new secure relationship."*
- **Family history:**
    - **Father:** Died at the age of 55 after battling cancer. He was a great personality, a manager in a national institution, had good relations with the staff, was kind and affectionate. He had a good relationship with his children and she recalls that he loved her and hugged her when returning home, despite her poor relationship with her mother. She was very close to her father.
    - **Mother:** 50 years old, strict and harsh in her relationship with the case. Her relationship with her other children was good, even to the point of overprotection. She always felt fear and worry for them from the external environment.
    - **Siblings:** Case (B.R) is the eldest before two brothers. She had a good relationship with them in the early stages of life but it deteriorated due to the mother's excessive protection of her brothers and neglect of her. She always seeks to help them nonetheless.
    - **Mental illness:** There are neurotic and psychotic disorders in the family history. Her maternal aunt has suffered from schizophrenia for 10 years and is under medical treatment. No cases of addiction or personality disorders in the family.
- **Personal history:** Childhood was calm and normal. Despite her father's death, she did not show signs of disorders or behavioral issues.
- **School history:** Academic performance was excellent during all stages, with good relationships with friends and teachers. She participated in scientific, recreational, and sports activities. At university, however, she avoided building relationships with friends and tended to isolate herself.

- **Work:** Worked as a teacher in middle school. During her studies she had superficial relationships, was devoted to work, did everything herself, and sacrificed leisure time for work.
- **Sexual history:** Early puberty at 11 years old, accompanied by severe pain and fatigue during menstruation, especially in the early days. After marriage, the pain subsided but she suffered irregular cycles.
- **Marriage:** Married for 8 years, with two children (a 5-year-old boy and a 3-year-old girl). Marriage was traditional and imposed by her mother. She was not allowed to meet her husband before marriage due to the mother's strictness. She felt no emotional bond with him, and his infidelity became a source of major conflict.
- **General behavior:** Introverted, avoids mixing with others, devotes herself to work at the expense of personal relationships. Concerned with order and discipline. Moves excessively when anxious. Speech is coherent. Emotional numbness toward children and husband, lacking empathy. Her main complaint: difficult life with an unsuitable husband.
- **General mood:** Fluctuating and unstable mood, inability to feel pleasure.
- **Thinking:** Fast, organized, detailed.
- **Hallucinations/delusions:** None observed, but under stress she sometimes experiences thought content confusion and some auditory hallucinations.
- **Obsessions/compulsions:** None.
- **Orientation:** Aware of time, place, people, surroundings, and events.
- **Memory:** Remembers events, places, and people, though complains of poor concentration and attention.
- **Sleep:** Suffers from insomnia at night. Initially due to marital conflicts, later worsened by difficulty accepting her partner and inability to interact with children.
- **Insight:** Aware of her condition, family problems, and desires psychological intervention.
- **Referral objectives:**
    - To determine the type of attachment (mother/child).
    - To understand the prognosis of the case.

- **Tests used:**
    - Initial Japanese Version of Parent/Child Attachment Questionnaire (Keiko Yoshida, Hiroshi Yamashita, Susan Conroy, Maureen Marks, Shiani Kumar).
    - Young's Parenting Questionnaire to determine attachment type.
    - PDQ+4 Personality Disorder Diagnostic Questionnaire to estimate personality disorders according to DSM-IV, indicating traits and their pathological threshold.

Interpretation:
Results of questionnaires, clinical observations, and psychological assessment show that the case suffers from insecure (avoidant) attachment in the emotional interactive mother/child relationship, rooted in childhood scenarios and experiences that shaped her identity. Her feelings, attitudes, and actions are reactions to early cognitive schemas and beliefs, reflected in her relational behavior with her partner and children.

Her performance on the PDQ+4 indicates semi-schizoid traits with four diagnostic criteria, though below the pathological threshold (≥4). The Japanese version of the Parent/Child Attachment Questionnaire confirmed insecure avoidant attachment. Young's Parenting Questionnaire also confirmed deep-seated negative cognitive beliefs about relational attachment from early childhood, influencing her relationship with her children and partner.

- **Cooperation:** Highly cooperative, disciplined, punctual, insightful about her relational behavior with mother, siblings, husband, and children.
- **Medication:** None.
- **Psychotherapy:** None.
- **Recommendations:** The case suffers from insecure avoidant attachment, negatively impacting her relationship with her children and partner. To better manage painful thoughts, memories, and emotions and reduce insecure avoidant relational behavior, it is recommended that she participate in a mindfulness-based therapeutic program directed at insecurely attached mothers to build a secure relationship with her children and partner.

Report Summary of Case (B.R):

The free psychological report included history, medical and mental diagnoses, free psychological assessment, diagnostic tools (notably the Parent/Child Attachment Questionnaire and Young's Parenting Questionnaire), which confirmed negative cognitive schemas and beliefs about insecure relational attachment and the patient's awareness of her problem. The report also included prognosis and recommendations for psychological intervention.

2-3-2. Mindfulness-Based Therapeutic Program:

The case was contracted and informed that the therapeutic program would last for four months, at the rate of one session per week, totaling sixteen sessions.

3- Results:

3-1. Presentation of the Result of the First Hypothesis:

The first hypothesis of the study states that exposing insecurely attached mothers to the mindfulness-based therapeutic program directed at them contributes to modifying insecure attachment behavior after each temporal delay period (log). The results were as follows:

1- Evaluation and Calculation of the Time Series and Clinical Significance

1-1. Scale of Mindful Awareness of the Present Moment:

First: Autocorrelation (ACF – Auto Correlation Function):

The autocorrelation results of the case study explain the strength of the correlation between the observed values of mindful awareness of the present moment and the number of lags for case (B.R). Autocorrelation was measured to predict the time series for different weeks, represented by the number of time lags of the observed values of enjoyment of the present moment during the period of the mindfulness-based therapeutic program. The results are shown in the following table:

Table (01): Autocorrelation (ACF) showing the strength of correlation between the observed values of mindful awareness of the present moment and the number of lags for case (B.R).

Lag	Autocorrelation	Standard Error	Value	Degrees of Freedom	Level of Significance
1	-,110	,228	,232	1	,030
2	,264	,220	1,670	2	,034
3	-,607	,212	9,831	3	,020
4	,018	,204	9,839	4	,043
5	-,527	,195	17,116	5	,004
6	,232	,186	18,668	6	,005
7	-,021	,177	18,682	7	,009
8	,500	,167	27,682	8	,001

It is observed from the values in Table (01) that the correlations **Lagk** shifted from **Lagk+1 to Lagk+8** show that all correlation coefficients are statistically significant at the significance level ($\alpha \leq 0.05$). At **Lag8**, the correlation is positive and statistically significant with a high correlation coefficient of **0.500**, equal to 50%. As for the positive but weak correlations, they are found at **Lagk+2** and **Lagk+6**, with correlations of **0.264** and **0.232** respectively. The correlation at **Lagk+4** was **0.018**, close to zero. The remaining lags at **Lagk+3**, **Lagk+5**, and **Lagk+7** showed weak and negative correlations.

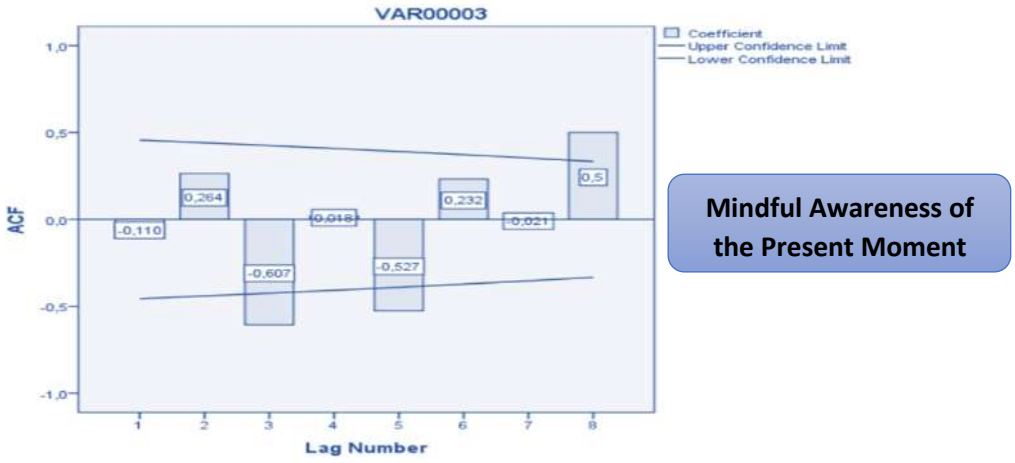

Figure (01): Graphical Representation of the Autocorrelation (ACF) Results between the Observed Values of Mindful Awareness of the Present Moment and the Number of Lags for Case (B.R).

The upper-line bars in Figure (01) indicate positive correlations, while the lower-line bars represent negative correlations. A correlation greater than 50% is statistically significant, whereas correlations less than 25% are weak, whether positive or negative. From the graphical representation, it is observed that the last bar of the upper line at **Lagk+8** equals **50%**, indicating a positive correlation of **0.5** with statistical significance. As for the remaining correlations, whether positive or negative, they are weak, and most of them approach zero at **Lagk+1, Lagk+2, Lagk+3, Lagk+4, Lagk+5, Lagk+6, and Lagk+7**.

1-2. Partial Autocorrelation (PACF – Partial Autocorrelation Function) between the Two Observations (Lagk) and (Lagk+1) of Mindful Awareness of the Present Moment at Lagk for Case (B.R):

Partial autocorrelation was used to measure the strength of the relationship between the two observations (Lagk) and (Lagk+1) of mindful awareness of the present moment at Lagk, which are separated by a time shift. It measures the strength of the autocorrelation between the two observations (Lagk) and (Lagk+1) at lag after time intervals for different weeks during the period of the mindfulness-based therapeutic program. The results are shown in the following table:

Table (02): Results of the Partial Autocorrelation (PACF) showing the strength of the correlation between the two observations (Lagk) and (Lagk+1) of the values of mindful awareness of the present moment at Lagk for Case (B.R).

Lags	Partial Autocorrelation	Standard Error
1	-,110	,250
2	,255	,250
3	-,603	,250
4	-,100	,250
5	-,419	,250
6	-,226	,250
7	,050	,250
8	,307	,250

It is observed from the table that the standard error reached **(0.250)** at all lags, and that **Lagk+3** with a partial autocorrelation of **(-0.60)** is statistically significant and negative. As for the remaining positive correlations, they were weak and negative, close to zero at **Lagk+2, Lagk+5, and Lagk+8**. From the previous and current tables, we conclude that both autocorrelation and partial autocorrelation show the same correlation and statistical significance at **Lagk+3**, with a partial autocorrelation of **(-0.60)**. This explains the partial aspect of partial autocorrelation in relation to autocorrelation.

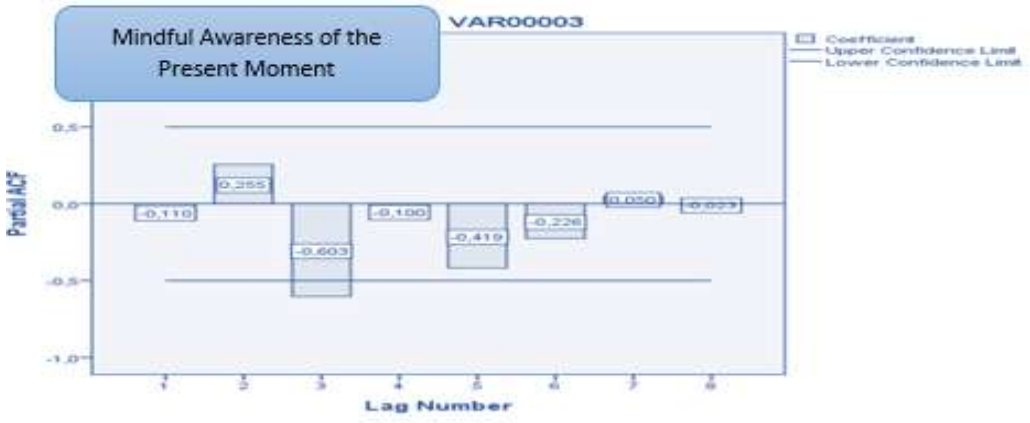

Figure (02): Graphical Representation of the Partial Autocorrelation (PACF) Results between the Two Observations (Lagk) and (Lagk+1) of Mindful Awareness of the Present Moment at Lagk for Case (B.R).

Graphical representation (Figure 17) shows variation in the bars, whether in the upper line or the lower line. The lag at **Lagk+3** was negative and statistically significant, while most of the remaining correlations were negative and close to zero, except for **Lagk+2**, which was positive, weak, and less than 25%.

2- Simple Linear Regression Analysis of the Time Series:

The current study used simple regression analysis to examine the effect of the time series of the scores of the basic process (enjoyment of the present moment) in the training program over time.

Table (03): Coefficient of Determination for Case (B.R) on the Mindful Awareness of the Present Moment Scale.

Model	Correlation Coefficient (R)	Coefficient of Determination (R^2)	Adjusted R^2	Standard Error of the Estimate
1	,74	0,63	-0,68	2,2391

It is observed from Table (03) that the correlation coefficient R^2, which is related to the deviation of the observations from the best estimate and is known as the coefficient of determination, was estimated at **0.63**. Its value ranged between $0 \leq 0.63 \leq 1$, which measures the percentage of variance explained by the change in the independent variable on the dependent variable. In other words, the independent variable (time) accounts for **0.63** of the variance in the dependent variable, namely the observed values of *mindful awareness of the present moment* during the training program. This explains that the independent variable has a large effect on the dependent variable in terms of explained variance.

Table (04): Analysis of Variance (ANOVA) of Simple Regression for Case (B.R) on the Mindful Awareness of the Present Moment Scale.

Model	Sum of Squares	Degrees of Freedom	Mean Square	F Value	Level of Significance
Regression	1,556	1	1,556	0.31	0.05
Residual	70,194	14	5,014		
Total	71,750	15			

Table (04) shows that the value of the simple regression analysis of variance reached an F value of 0.31, which is significant at the 0.05 level. This indicates that there is a statistically significant effect of the regression at the significance level of the independent variable on the dependent variable.

Table (05): Results of the Simple Linear Regression for Case (B.R) on the Mindful Awareness of the Present Moment Scale

Model	B Value	Beta Value	T Value	Level of Significance
(Constant)	,20050		1,17	,000
Time	-,068	0.47	,12	,022

Table (05) shows that the **B value** reached **50.20**, which indicates the presence of an effect of temporal changes on the observed values of mindful awareness of the present moment. This represents a positive and statistically significant effect across different time lags. Its equation can be formulated, which helps in predicting the time series and identifying the response of mindful awareness of the present moment values according to the variation of the time period, through the following equation:

Mindful Awareness of the Present Moment = 50.20 + 0.06 (time lags)

From the previous tables, it appears that there is a statistically significant relationship between the time series of the scores of mindful awareness of the present moment during the mindfulness-based therapeutic program and the variation in time periods (Lagk, Lagk+1). The regression coefficient was high, estimated at **B = 50.20**, and was statistically significant at the **0.01 level**. The coefficient of determination reached **0.74**, meaning that variation in time periods explains **74%** of the variance in the observed values of mindful awareness of the present moment in the therapeutic program. In addition, the value of **F = 0.31**, which is greater than 0.01.

In conclusion, we deduce that all the time series used in the current study demonstrated the strength of the linear relationship between the observations of the basic processes included in the mindfulness-based training program—namely, the values of acceptance, action, cognitive defusion, and mindful awareness of the present moment—across the number of time lags, as represented in the following equations:

1.Acceptance and Action =96.22+0.67 (Time)

2. Cognitive Defusion =58.96+0.34 (Time)

3.Mindful Awareness of the Present Moment =50.20+0.06 (Time)

From the regression equations, it appears that the strongest linear correlation between the observations of the basic processes across the number of time lags is with **Acceptance**, followed by the **Cognitive Defusion** equation, and finally the **Mindful Awareness of the Present Moment** equation.

2- Presentation of the Result of the Second Hypothesis:

The second hypothesis states that the effectiveness of the mindfulness-based therapeutic program directed at insecurely attached mothers in the study differs in modifying insecure attachment behavior according to the basic processes it includes—namely, acceptance, cognitive defusion, and mindful awareness of the present moment. To identify the most effective processes that influenced the training program, a one-way analysis of variance (ANOVA) was used, and the results were as follows:

Table (06): Results of the One-Way ANOVA for the Basic Processes (Acceptance, Cognitive Defusion, and Mindful Awareness of the Present Moment).

Basic Processes	Data	Sum of Means	Degrees of Freedom	Mean Squares	Calculated Degrees of Freedom	Level of Significance
Acceptance and Action	Between Groups	22428,167	2	11214,083	478,893	,000
Mindful Awareness of the Present Moment	Within Groups	1053,750	45	23,417		
Cognitive Defusion	Total	23481,917	47			

It is observed from Table (06) that the **sig value** is smaller than the significance level of **0.001**, which indicates the presence of statistically significant differences between the means. This leads us to reject the null hypothesis, which states that there are no differences between the group means in the scores of the basic processes. Therefore, comparisons were carried out to determine the most influential basic processes for Case (B.R) during the psychological follow-up of the mindfulness-based therapeutic program. The results are presented in the following table:

Table (07): Differences between Group Means of the Basic Processes for Case (B.R).

Groups (1) vs. Groups (2):	Difference Between Means
Cognitive Defusion (1) – Mindful Awareness of the Present Moment (2) Acceptance and Action (3)	49,00000* 41,87500

Mindful Awareness of the Present Moment (2) – Cognitive Defusion (1) Acceptance and Action (3)	49,00000- *7,12500-
Acceptance and Action (3) – Cognitive Defusion (1) Mindful Awareness of the Present Moment (2) and Action (3)	41,87500- *7,12500

It is observed from Table (07) that there are statistically significant differences between the first group and the second group, in favor of the basic process **Acceptance and Action**, which is considered the most influential process in the improvement of Case (B.R).

2- Calculation of Clinical Significance:

2-1. Calculation of Clinical Significance of the Effectiveness of the Mindfulness-Based Therapeutic Program for Case (B.R) According to the Jacobson–Truax Method:

Clinical significance is calculated by computing the Reliable Change Index (RCI) using the Jacobson–Truax equation as follows:

Table (08): Results of Clinical Significance According to the Mindful Awareness of the Present Moment Scale for Case (B.R).

D1	D2	A	R	SD Pre	SD Post	RCI
13	47	7	0.90	2.17	9.4	3.16

The value of the Reliable Change Index (RCI) was estimated at **3.16**, which is greater than the critical value of **1.69** and statistically significant. This indicates that the basic process of enjoying the present moment is effective in the therapeutic program directed at insecurely attached mothers, in order to foster connection and enjoyment of living in the present moment as a secure mother/child relational behavior for Case (B.R).

4- INTERPRETATION OF RESULTS

From the results obtained after calculating the clinical significance of the mindfulness-based therapeutic program for the participant in the study, it was found that the value exceeded the critical value of the Reliable Change Index (RCI = 1.96). The RCI value for the participant on the Mindful Awareness of the Present Moment scale reached 3.61. Based on the Reliable Change Index and the critical value (cut-off point), the participant exceeded the cut-off point, and the RCI was positive and statistically significant. This demonstrates the effectiveness of the mindfulness-based therapeutic program directed at insecurely attached mothers in modifying insecure attachment.

The results of the autocorrelation and partial autocorrelation coefficients also confirmed the effectiveness of the therapeutic program by identifying the degree of the basic processes included in

the program—acceptance, cognitive defusion, and mindful awareness of the present moment—for the participant. The results indicated stability and consistency of the time series through variance.

From the shape of the autocorrelation function (ACF) curve and the partial autocorrelation function (PACF) curve, and by matching the autocorrelation and partial autocorrelation coefficient values of the time series explaining the observed scores of the variable across the number of time lags (log) in Figure (17) for Case (B.R), it was observed that both the ACF and PACF curves were statistically significant and greater than 50% for all the basic processes included in the mindfulness-based therapeutic program directed at insecurely attached mothers to modify insecure attachment behavior.

The results of autocorrelation and partial autocorrelation demonstrated the strength of the relationship between the observed values of the measures and the number of time lags (logk) during the training program. It was observed that throughout the program period, all correlation coefficients fell within the confidence limits.

From the graphical trend of the time series and the calculation of the partial and simple autocorrelation coefficients before the intervention (baseline), it was shown that the scores of the basic processes acceptance, cognitive defusion, and mindful awareness of the present moment differed before and after the implementation of the mindfulness-based therapeutic program during the specified four-month period of training sessions.

The previously presented tables confirmed the strength of the linear relationship between the observed values of the basic processes of the mindfulness-based therapeutic program across the number of time lags (log). This is consistent with the hypothesis of the present study. The current study also aligns with some previous studies that used the time series approach to confirm the effectiveness of therapeutic programs, although such studies are relatively few. Among them is the study of Bahaa (2021), which used the time series approach in analyzing the therapeutic effectiveness of Aaron Beck's cognitive therapy for pain management among cancer patients. The results demonstrated the effectiveness of these techniques in reducing pain scores among cancer patients.

The findings are also consistent with the study by Beckerman & Corbett (2010), which confirmed the effectiveness of cognitive interventions based on mindfulness in reducing symptoms of psychological disorders, despite differences in the basic processes, techniques, and methods used in the mindfulness-based therapeutic program.

Secure attachment is therefore considered one of the positive concepts associated with relational attachment behavior, which has been shown to influence personality and mother/child behaviors. Harlow's (1958) study on intergenerational attachment showed that a mother's ability to provide secure attachment to her child is linked to her experiences with her parents in childhood. A girl separated from her parents demonstrated severe impairments in mating and maternal behavior (Bowlby, 1993, p. 113). Zank (2012) also emphasized that attachment between the child and the primary caregiver (usually the mother) is internally invested to later become a mental model used by the adult as a basis for building attachment with others, beginning with the child (Al Jawhara, 2019, p. 20).

Although attachment between the child and the mother or caregiver is vital for survival, little is known about the biological mechanisms supporting attachment representations or perceptions (Burbach, Young, & al., 2006, pp. 3055–3128). In this regard, the study of Jennifer, Jamil, & al. (2010) revealed

that mothers' perceptions of secure childhood attachment were associated with recalling their mothers as more caring, protective, and secure. In contrast, mothers with insecure attachment recalled their mothers as less attentive.

Research by Lynn, Eileen, & al. (2010) in attachment studies also highlighted parental attachment representations and relational behaviors. Similarly, attachment research (Judy & Ungerer, 2008; David & Howe, 2006) showed that parents' internal working models of attachment relationships tend to transmit either positive or negative attachment patterns to the child, thereby shaping the quality of relational behaviors. The results indicated that securely attached mothers were more responsive to social interaction compared to insecurely attached mothers. These findings underscore the importance of the mother's mental state.

Thus, psychotherapy proves to be highly effective in developing an emotional interactive mother/child relationship, as self-interventions increase the sense of security, leading to a change from insecure relational attachment to secure behavior. They also help mothers become more aware and attentive in dealing with their children and their relational attachment behaviors. In the past decade, there has been a notable increase in research on the effects of mindfulness (Toniolo, Brasil & al., 2020, p. 1077).

GENERAL CONCLUSION:

The present study focused on the issue of relational behavior, particularly the emotional interactive relational conflicts between mother and child. All these factors intertwine to cause insecure attachment (avoidant), which opens the way for psychological intervention to address insecure attachment and to build an emotional mother/child relationship, while letting go of distorted and painful thoughts, memories, and emotions embedded in insecurely attached mothers, rooted in cognitive schemas and beliefs shaped by childhood experiences of relational attachment behavior. Based on the findings of the present study, it can be concluded that relational conflicts internalized by mothers negatively affect mother/child attachment as well as partner relationships, despite the results that have been achieved.

The findings of the present study represent an initial step toward scientific research aimed at reducing the suffering of insecurely attached mothers. From the results obtained, it can be inferred that the life cycle and the intergenerational transmission of insecure relational attachment behavior may play a role in the development of nervous systems across generations. Therefore, it is recommended to increase research and attention to such studies, particularly those addressing relational behavior.

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