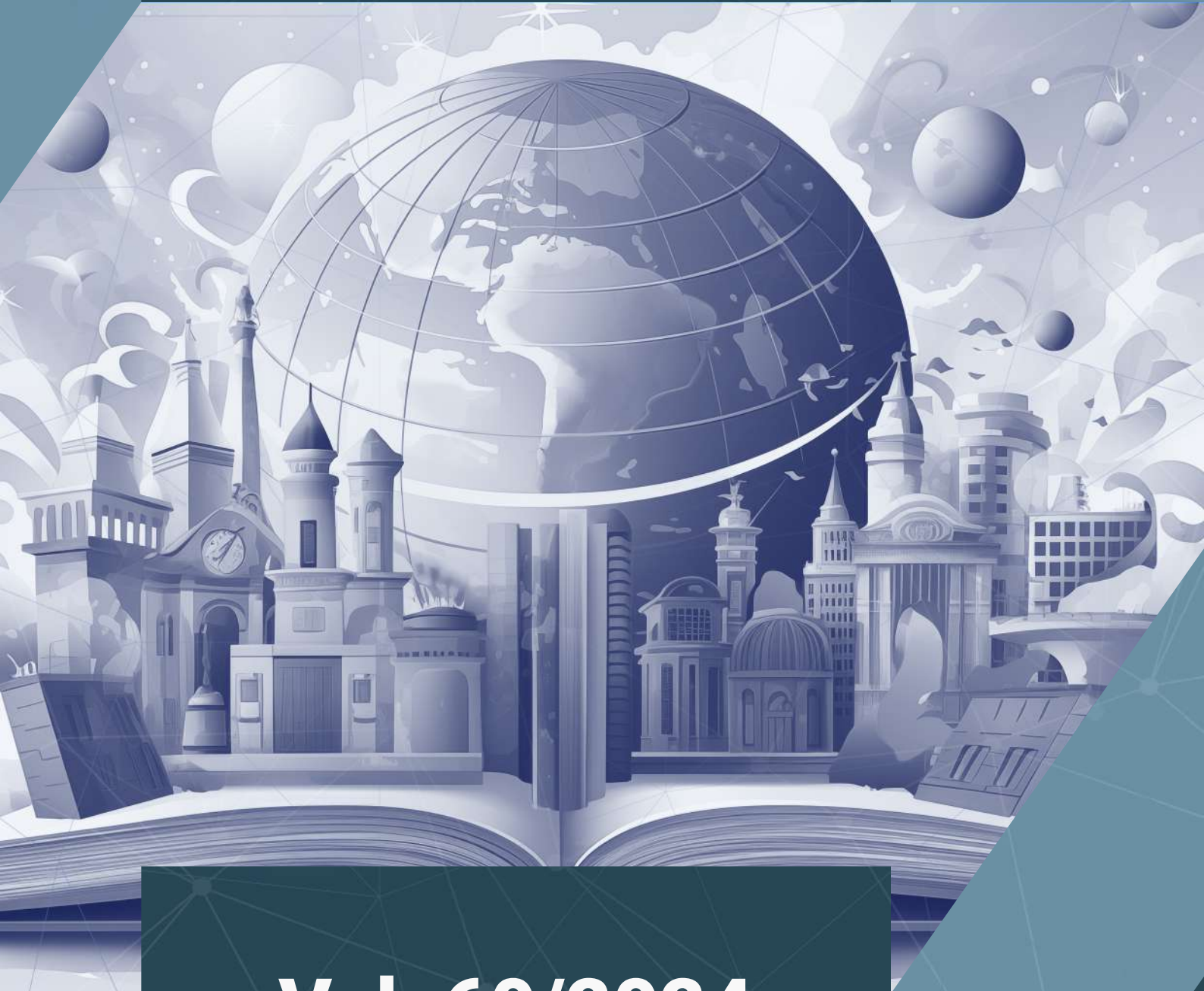




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The Effect of Integrative Biopsychosocial Therapy on Comorbid Major Depressive Disorder and Posttraumatic Stress Disorder

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Abstract. Comorbid Major Depressive Disorder (MDD) and Posttraumatic Stress Disorder (PTSD) pose significant clinical challenges due to their complex and intertwined symptoms. This study examined the effectiveness of integrative biopsychosocial therapy in treating these conditions in a female participant, aiming to improve anxiety, depression, sleep disturbance, and overall psychological well-being. Using an experimental approach, an ABA single-subject reversal design was employed. The participant received tailored integrative biopsychosocial therapy and data were analyzed visually. Initially symptomatic of MDD and PTSD, the participant showed improvements in mood regulation, relational indicators, and cognitive functioning during the intervention. Quantitative data indicated substantial reductions in anxiety, depression, and sleep disturbance, confirming the therapy's effectiveness. However, PTSD symptoms showed variability, indicating the need for ongoing support. The study highlights the safety and effectiveness of integrative biopsychosocial therapy in enhancing mood, relational stability, and cognitive function in individuals with comorbid depression and PTSD. Future research should address sample diversity, extend baseline periods, and tailor PTSD interventions to optimize outcomes and expand evidence-based practices. Limitations include the small sample size and the need for longer-term follow-up to assess sustained effects. The intricacy of treating trauma and the variability in PTSD symptoms require further investigation. This study informs clinicians and researchers about the effectiveness of integrative biopsychosocial therapy, emphasizing the importance of addressing biological and psychosocial factors in treatment planning for comorbid depression and PTSD.

Keywords. Psychopathology, Comorbid Depression and PTSD, Biopsychosocial Therapy, Single-Subject ABA Design, Philippines

1.0 Introduction

Integrative Biopsychosocial Therapy, introduced by Engel [1], diverges from traditional mental health treatments by recognizing the interconnectedness of biological, psychological, and social factors in shaping well-being [2]. Rooted in Engel's model, this approach addresses physiological, psychological, and social dimensions of mental health conditions. Rather than a new therapeutic system, it embodies an orientation focused on understanding clients for

effective interventions [3]. Utilizing multiple perspectives aids in comprehending comorbid pathology [4], such as posttraumatic stress disorder and depression.

Posttraumatic stress disorder (PTSD) frequently co-occurs with other mental health conditions, notably depression [5], amplifying their impact within specific geographic boundaries and posing significant global mental health challenges. Depressive disorders rank as the foremost cause of disability worldwide [6], while PTSD manifests prominently in regions afflicted by conflicts, natural calamities, and various traumatic incidents [7]. The integrative biopsychosocial therapy approach offers a promising framework for addressing the intricate nature of comorbid PTSD and depression [8]. By comprehensively considering the interconnected factors influencing individuals' mental well-being, clinicians can formulate more holistic and efficacious treatment strategies.

In the Philippines, addressing mental health concerns is increasingly crucial amid challenges from natural disasters, socioeconomic disparities, and social instability [9]. Violence against women (VAW) is a pervasive issue, with Filipino women aged 15-49 experiencing physical, sexual, and emotional abuse from intimate partners. Alarming statistics persist, with 8,399 reported cases of physical violence, 1,791 rapes, and 1,505 acts of lasciviousness as of 2021 [10]. Despite the high prevalence, less than one out of 10 women seek professional help for mental health issues such as depression, anxiety, and suicidal attempts [11]. The National Demographic and Health Survey of 2022 reveals that nearly one out of five women has experienced violence from their current or most recent partner [12]. Despite governmental efforts, more comprehensive solutions are needed, with integrative biopsychosocial therapy suggested as a promising culturally sensitive intervention [13].

In an LGU in Negros Occidental, the Philippine National Police (PNP) has observed a troubling escalation in VAWC cases, overseeing 27 incidents from 2022 to 2023 alone (Mocyat, personal communication, January 13, 2024). Additionally, within the same locality, there are 146 psychiatric patients with psychotic, mood, and trauma-related disorders attended to during a single consultation schedule (Alparito, personal communication, December 19, 2023). This surge is expected to persist, with potential unreported instances of VAWC due to various legitimate reasons (Magpusao, personal communication, February 29, 2024). These local statistics emphasize the pressing necessity to confront the severe repercussions of VAWC-related disorders, underscoring the importance of adopting a holistic biopsychosocial approach to treatment. Such an approach should address immediate legal and medical issues and offer comprehensive support for survivors' mental and emotional well-being.

Recent experimental studies in Western Visayas, particularly Negros Occidental, have focused on specific demographics such as seminarians [14], individuals with HIV [15], and children in conflict with the law [16], addressing psychological distress or well-being. However, there is a gap regarding the treatment of comorbid depression and PTSD through integrative biopsychosocial therapy. While some studies [17,18] have shown modest benefits of medication in reducing PTSD symptoms and the superiority of pharmacotherapy over placebo or no intervention in preventing PTSD or ASD [19], and sustained benefits of psychotherapy [20], no local research has addressed integration. Thus, there is an urgent need for research in Negros Occidental to explore tailored interventions within the local context for managing the co-occurrence of depression and PTSD. Unlike previous group-based designs, this research will employ a single-subject experimental design, offering a unique advantage in examining interventions at the individual level and enhancing clinical relevance.

This study assessed the effect of integrative biopsychosocial therapy on a female client diagnosed with both major depressive disorder and posttraumatic stress disorder. The findings

provided vital baseline data essential for the development of viable interventions tailored to individuals facing the challenging comorbidity of depression and posttraumatic stress disorder, particularly within the Philippine population. The output developed will provide essential data to help clients dealing with the complexities of depression and PTSD interaction.

2.0 Framework of the Study

This paper theorized that integrative biopsychosocial therapy could serve as an effective treatment approach for individuals diagnosed with comorbid depression and posttraumatic stress disorder. Grounded in the biopsychosocial framework first articulated by Grinker [21] and refined by Engel [1], this study extended the theoretical foundations by incorporating insights from Campbell and Rohrbaugh [22].

Grinker's [21] Biopsychosocial Model offered a foundational framework for understanding and addressing psychiatric disorders. This examined the interplay among biological, psychological, and social factors in shaping mental health conditions. Emphasizing the nature of mental illness highlighted the importance of biological, psychological, and social dimensions, including familial dynamics, cultural influences, and societal factors. While initially focusing on psychological and social aspects, the model acknowledged the biological underpinnings. Developed within psychiatry, it advocated for integrating biological, psychological, and social factors to advance diagnosis, treatment, and prevention strategies.

In addition to Grinker's proposition, Engel's [1] Biopsychosocial Model represented an advancement with broader implications across diverse healthcare domains. Engel's model revolutionized medical thinking by highlighting the critical integration of biological, psychological, and social factors in comprehending health and illness, thereby challenging the limitations of the traditional biomedical model that often neglected psychological and social dimensions. Advocating for a comprehensive approach, Engel emphasized the necessity of considering biological mechanisms and an individual's psychological experiences and social context. His model exerted profound influence, reshaping medical practice by incorporating psychological and social factors into healthcare delivery across disciplines such as primary care, chronic disease management, and psychiatry. By underlining the interconnectedness of biological, psychological, and social aspects, Engel's model advocated for a patient-centered and holistic approach to healthcare, enhancing the quality of patient care and outcomes.

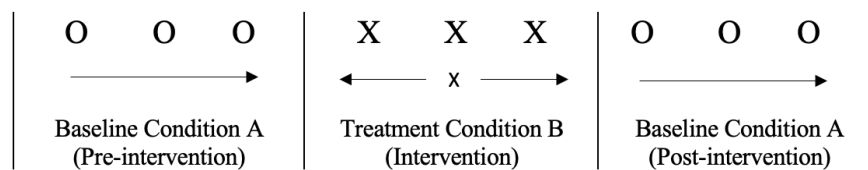
Meanwhile, Campbell and Rohrbaugh [22] posited that health and illness stem from the interplay of biological, psychological, and social factors. They stress that prescribing therapy within this model should mirror precise medication prescription. Specifically, clinicians are urged to delineate the focus of psychotherapy, establish clear goals, and select appropriate techniques tailored to the individual's needs and circumstances. Just as pharmacotherapy is diverse in its forms and indications, psychotherapy offers a range of modalities, each with distinct benefits and considerations. Thus, analogous to medication, psychotherapy should be prescribed with specific dosage, frequency, and consideration of potential side effects. Anchored in this framework, the goal is to deeply understand the intricate connections among physiological, psychological, and social dimensions in comorbidity cases, thereby facilitating the development of a holistic treatment approach customized to the individual's unique requirements.

By integrating the Biopsychosocial Model into therapeutic interventions, particularly for individuals with comorbid depression and PTSD, the utilization of integrative biopsychosocial therapy aimed to address the problem of the case of interest. Drawing from Grinker [21] and Engel [1], alongside Campbell and Rohrbaugh [22], this approach highlighted the

interconnectedness of biological, psychological, and social factors in shaping illness experiences. Through the precise application of therapeutic techniques and the clear establishment of treatment goals, therapists addressed the complex interplay among these dimensions, ultimately striving to alleviate symptoms, foster long-term recovery, and enhance the client's well-being.

3.0 Methods and Materials

Research Design. This employed an experimental research design. An A-B-A Single Subject Experimental Design (SSED) examined an individual's behavior through repeated observations [23]. The A-B-A SSED process consisted of 3 phases: assessing the baseline behavior (pre-intervention), implementing the treatment intervention to modify the behavior (intervention), and withdrawing the treatment (post-intervention) to observe post-intervention effects. This withdrawal phase was central for evaluating the treatment's impact and determining whether observed changes were sustained, reverted to the baseline, or followed a distinct pattern of change.



Note: A single-subject design, also known as an N-of-1 design, revolves around observing the behavior of a solitary individual or a small group of individuals over a specific period.

Participant. The participant (Ana, not her real name) presented symptoms indicative of depression and PTSD, as clinically diagnosed by a psychiatrist. A conducted evaluation indicated that she had no physical limitations. She had been diagnosed with comorbid disorders: (1) Major Depressive Disorder (MDD) with anxious distress and (2) Posttraumatic Stress Disorder (PTSD). The researcher employed a purposive sampling. Within psychotherapy research, this sampling was a pragmatic approach to suggesting and evaluating theories [24].

Measures. The researcher utilized the integrative biopsychosocial assessment and treatment by Campbell and Rohrbaugh [22]. Throughout the pre-experimental and experimental stages, the researcher implemented various measures to ensure the generation of results.

Pre-experimental

Client's Medical-Laboratory Evaluation. The client had previously been advised to undergo medico-legal and routine medical tests with an independent laboratory to rule out other potential medical conditions and confirm the diagnosis. Consent had been obtained before she underwent a series of laboratory examinations.

The Complete Blood Count (CBC) is a fundamental blood test that offers insights into blood composition, encompassing red blood cells, white blood cells, and platelets. In Ana's recent case, a comprehensive CBC analysis revealed normal hematocrit levels, hemoglobin, and other hematological counts. While slight elevations were observed in

the red blood cell count and neutrophil differential count, further evaluation by the attending psychiatrist determined that the client's condition was unrelated to hematological abnormalities. The Neutrophil-Lymphocyte Ratio (NLR) of the client is three (3).

Thyroid Function Tests. Research suggests that thyroid-stimulating hormone (TSH) is essential in regulating neuronal growth and development and influencing neurocognitive functions like mood and cognition in the adult brain [25]. Additionally, deviations in the levels of free thyroxine (FT4) have been observed in individuals with psychiatric conditions such as schizophrenia and affective disorders [26]. In the present case, the client exhibited normal thyroid function, as revealed by the normal results of the thyroid panel.

The Electrocardiogram (ECG) is a diagnostic tool performed on the client to evaluate her present cardiac conditions. It plays a big role in the evaluation of her anxiety by helping differentiate between her anxiety-related symptoms and cardiac manifestations. A licensed physician in internal medicine performed and read the client's ECG. The sinus rhythm on the client's ECG reflects the normal electrical rhythm of her heart, clearing cardiac-related abnormalities of her anxiety. The attending psychiatrist also evaluated the results.

Serum Glutamate Pyruvate Transaminase (SGPT) and Serum Glutamate Oxaloacetate Transaminase (SGOT). The client underwent testing for *Serum Glutamate Pyruvate Transaminase (SGPT) and Serum Glutamate Oxaloacetate Transaminase (SGOT)*, enzymes primarily located in the liver and commonly evaluated via blood tests to assess liver function. According to Labenz et al. [27], elevated levels of these liver enzymes, as seen in conditions like nonalcoholic fatty liver disease (NAFLD), represent an independent risk factor for the development of depression and anxiety, even after adjusting for other contributing factors. In the client's case, while the client's liver function tests showed a slight elevation, psychiatric evaluation by a licensed physician determined that the client's symptoms were psychogenic by nature rather than somatogenic.

Serum Potassium (K^+) and Serum Sodium (Na^+) levels were assessed, as these are important electrolytes involved in various physiological processes such as nerve transmission, muscle function, and fluid balance. Studies [28,29] have shown the intricate relationship between ions and neurotransmitter function. Daut and Fonken [30] said that dysregulation of neurotransmitters is a common feature in depression and anxiety disorders. In the evaluation of electrolyte levels, the client's results did not indicate any direct psychopathology related to electrolyte imbalance, as confirmed by the attending psychiatrist.

Fasting Blood Sugar can be important in ruling out anxiety and depression symptoms of the client. Hypoglycemia can lead to symptoms such as trembling, sweating, palpitations, irritability, and anxiety, while hyperglycemia has been linked to an increased risk of mood disorders such as depression [31]. As viewed and evaluated, the client has

no somatogenic anxiety or mood problems related to her glucose level at the time of evaluation.

Lipid Profile. The client underwent an evaluation of her Lipid Profile, a necessary step in assessing her health status and potentially ruling out underlying contributors to anxiety and depression symptoms. Research by Roohafza et al. [32] supports the association between dyslipidemia and comorbid anxiety and depressive disorders. Their study revealed that patients with both anxiety and depressive disorders exhibited significantly higher total cholesterol, triglyceride, and low-density lipoprotein cholesterol levels, along with lower levels of high-density lipoprotein cholesterol. In the client's case, a normal lipid profile was observed, as determined by the attending psychiatrist during the evaluation. This finding suggests that dyslipidemia may not be a contributing factor to the client's anxiety or depression symptoms.

Chest Posterior-Anterior (PA) X-ray. A Chest Posterior-Anterior (PA) X-ray was performed on the client to rule out respiratory causes of anxious distress. Identifying anxiety disorders in adults presents challenges, as symptoms often mirror those of physical conditions and depression [33], potentially mimicking respiratory or cardiovascular issues. Following the imaging, the client was free of any respiratory concerns that might have complicated the diagnosis of psychological anxious distress.

Mental Status. During her VAWC evaluation, Ana manifested a mental status reflective of her past struggles with major depressive disorder and PTSD, as evidenced by an evaluation conducted using Zuckerman's [34] checklist. In appearance and self-care, Ana's posture, motor activity, grooming, and clothing exhibited normality, suggesting that she maintained a basic level of personal care and presentation. Her sensorium appeared intact, with no orientation, attention, or concentration difficulty. In relating, Ana displayed normal interpersonal skills, maintaining appropriate eye contact, a cooperative attitude toward the researcher, and responsive facial expressions.

However, her affect and mood revealed a notable significance, as her affect remained appropriate while her mood was described as highly dysphoric. This incongruence suggested a deep emotional distress related to the persistent response to the loss of her husband. Ana's thought and language patterns remained within normal limits, with a regular speech flow congruent to the thought content and no notable preoccupations. Although she had frequent memories lingering from the trauma, her organizational skills and executive functions, including abstraction, judgment, insight, and decision-making, appeared intact, reflecting cognitive stability. The evaluation also shed light on the significant stressor in Ana's life—the traumatic experiences caused by her live-in partner. Her coping ability was described as guarded, indicating a heightened vulnerability to the emotional toll of her symptoms. Ana relied on significant others and friends for support, emphasizing the importance of her social network in her coping mechanisms.

Psychiatric Evaluation. The client's comprehensive evaluation by a licensed psychiatrist in the Philippines identified the presence of comorbid disorders, specifically (1) Major Depressive Disorder (MDD) and (2) posttraumatic stress disorder (PTSD). Medical-related concerns were addressed, and the specialist provided a certification of evaluation to document the diagnosis.

Psychological Evaluation. The researcher initially evaluated and screened the client to determine her condition. Intelligence, personality, and other diagnostic tools were used to evaluate the client's case.

Intelligence Assessment. Raven's Standard Progressive Matrices were administered to assess the client's intelligence, revealing an average intelligence level. This suggests that the client possesses cognitive abilities within the average range compared to the general population. Raven's Progressive Matrices (RPM) have been widely accepted as a measurement of the Intelligence Quotient (IQ) of humans [35].

Personality Assessment. The Basic Personality Inventory (BPI), a standardized tool, examined the client's personality. The results indicated elevated levels on the scales of depression, persecutory ideas, anxiety, thinking disorder, and self-depreciation. This information confirmed the client's psychopathology and was used for the client's treatment planning.

Depression and Distress Assessment. Severity Measure for Depression—Adult (adapted from the Patient Health Questionnaire–9 [PHQ-9]) was given to the client, resulting in an evaluation of severe depression. The client's emotional distress was evaluated using the DSM-5-TR Self-Rated Level 1 Cross-Cutting Symptom Measure—Adult Form. In depression, anxiety, and sleep disturbance, the client exhibited significant presentations respectively. These findings suggest the presence of emotional and psychological distress in the client's life. Depression, anxiety, and sleep disturbance symptoms were measured during the treatment phase of the study.

PTSD Evaluation. The International Trauma Questionnaire [36] and the National Stressful Events Survey PTSD Short Scale (NSESSS) [37] are designed as a concise tool for evaluating posttraumatic stress disorder (PTSD) in adults who have undergone an exceptionally stressful event or experience. The results revealed that the client had severe PTSD.

Social Evaluation. The client's case had been assessed previously by a Police Staff Sergeant non-commissioned officer of the LGU's Women and Children Protection Desk (WCPD) of the PNP, assisted by the city's social welfare development office. Necessary documentation related to the client's VAWC case was requested and provided. Social and legal factors contributing to the client's case were evaluated.

Experimental

Biological Monitoring. It was important to meticulously manage the client's present physical condition to ensure optimal care. This involved thoroughly monitoring the psychopharmacological regimen to assess the necessity and appropriateness of each medication and its dosage.

Vital signs monitoring. The client was given the necessary medication to alleviate symptoms of PTSD and depression by a licensed physician specializing in psychiatry.

Since the client's psychopathology was not related to any medical condition as ruled out by laboratory studies, the client's temperature, pulse rate, respiratory rate, and blood pressure were strictly monitored by a registered nurse to ensure the stability of her vital signs during her medical treatment.

Psychological Monitoring. Regular symptom monitoring was essential to assess the effectiveness of the intervention over a specific period. By tracking symptom changes, the researcher could gauge whether the treatment had the desired impact.

DSM-5-TR Level 2 Cross-Cutting Symptom Measures. To monitor changes in the client's symptom presentation [38], it was clinically necessary to administer the following measures at regular intervals.

The DSM-5 Level 2—Depression—Adult measure utilizes the 8-item PROMIS Depression Short Form to evaluate the distinct domain of depression in individuals aged 18 and above. This tool prompts the individual receiving care to assess the severity of their depression over the past seven days. A reliability coefficient of 0.974 for the 8-item short form proves suitable for capturing the unidimensional construct of depression [39]. Each item within the measure employs a 5-point scale from never to always, yielding a score range from 8 to 40, where higher equivalent T-scores signify heightened depression severity.

The DSM-5 Level 2—Anxiety—Adult measure utilizes the 7-item PROMIS Anxiety Short Form to evaluate the distinct domain of anxiety in individuals aged 18 and older. Demonstrating strong internal consistency with an α value of 0.93 [40], this tool effectively captures the pure essence of anxiety. Each item prompts individuals receiving care to assess the severity of their anxiety over the past seven days. Rated on a 5-point scale from never to always, each item contributes a score range from 7 to 35. Higher equivalent T-scores signify heightened severity of anxiety.

The DSM-5 Level 2—Sleep Disturbance—Adult measure utilizes the 8-item PROMIS Sleep Disturbance Short Form to assess the exclusive domain of sleep disturbance in individuals aged 18 and above. Each item prompts the patient to assess the severity of their sleep disturbance over the past seven days. With a reliability coefficient of 0.90 for the short form [41], each item on the measure is rated on a 5-point scale from never to always, resulting in a score range from 8 to 40. Higher equivalent T-scores denote increased severity of sleep disturbance.

The International Trauma Questionnaire (ITQ) is a concise and straightforward assessment tool designed to specifically target the fundamental aspects of PTSD. Developed in alignment with the organizational framework outlined in the ICD-11 by the World Health Organization, the ITQ prioritizes clinical utility and global relevance by focusing solely on the core symptoms of PTSD. Accessible to all interested parties, the ITQ is freely available in the public domain [36]. Utilizing dimensional scoring for PTSD symptoms, scores are aggregated to generate a comprehensive PTSD score.

The Mental Status Evaluation (MSE) and behavioral observation will systematically assess the client's behavioral and cognitive abilities, covering various aspects such as physical appearance, demeanor, awareness, motor skills, communication, emotions, thoughts, perceptions, attitude, and examiner's observations. These will also evaluate higher-order cognitive functions, which hold significant clinical importance. In this research, the researcher will facilitate weekly evaluations, alternately online and face-to-face, using a mental status evaluation checklist [34].

The Flourishing Scale [42] evaluates psychological well-being. It is a reliable and concise questionnaire comprising 8 items designed to assess the client's perception of her relationships, self-esteem, purpose, and optimism. The client's self-reported evaluation yielded a singular score indicative of her psychological well-being.

Data collection procedure. The procedure for this study was meticulously designed to ensure a comprehensive understanding of the participants' baseline characteristics, response to treatment, and post-intervention outcomes.

Before the experiment. In pre-experimental stage, the process began with the identification of a suitable client through a referral from a local government unit (LGU) in Negros Occidental. A thorough screening ensured the accurate diagnosis of comorbid Major Depressive Disorder (MDD) and Posttraumatic Stress Disorder (PTSD), verified the absence of related and overlapping severe medical conditions, and confirmed the client's willingness to participate. Upon meeting the criteria, the client and her significant others were informed about the study's purpose, procedures, and potential risks and benefits. Informed consent was then obtained.

Before the experiment started, individual orientation sessions were conducted involving all key professionals involved in the research. This session ensured that everyone understood the research process and their respective roles. Coordination with relevant agencies, like LGU's City Health Office, Social Welfare Office, and Philippine National Police (PNP), was also established. A non-disclosure agreement from the key professionals was obtained to emphasize confidentiality.

During the experiment. The experimental phase was divided into three stages: pre-intervention, intervention, and post-intervention.

Pre-intervention. The client underwent a 15-day baseline condition A. During this period, a registered psychometrician monitored the client's depressive symptoms, anxious distress, sleep disturbance, PTSD symptoms, total PTSD score, and psychological well-being daily, either online or by phone. A registered nurse performed daily assessments of vital signs (temperature, pulse rate, respiration, and blood pressure) to establish a stable baseline. The researcher facilitated these assessments and was supervised by a licensed physician specializing in psychiatry.

Intervention. Following the pre-intervention phase, the client entered a 30-day treatment condition B, where she received integrative biopsychosocial therapy tailored to address her comorbid MDD and PTSD.

Biological interventions involved pharmacotherapy and lifestyle modification. The pharmacotherapy component involved administering Sertraline, a Selective Serotonin Reuptake Inhibitor (SSRI), at a dose of 50 mg daily in the morning to stabilize mood, reduce anxiety, and alleviate trauma-related symptoms. Lifestyle modifications included daily aerobic exercise, specifically 30 minutes of brisk walking and 30 minutes of sunlight exposure daily to regulate sleep patterns, improve mood, and enhance physical health.

Psychological interventions were a key aspect of the phase, employing several cognitive-behavioral strategies. The client maintained a daily mood tracker to monitor mood fluctuations for awareness and identify triggers and an evening gratitude journal to focus on positive experiences. Morning sleep monitoring helped address sleep disturbances, while twice-daily 20-minute breathing exercises promoted relaxation and stress reduction. Additionally, the client kept a thought record every evening to document and challenge negative or distorted thoughts, an important part of the technique of cognitive-behavioral therapy (CBT).

Social-legal interventions were also integrated into the intervention phase. The client received supportive measures that included regular dialogue and police visibility, with a police staff sergeant visiting thrice a week for one month (12 sessions) to enhance the client's sense of safety and support. Participation in a one-month livelihood assistance program, where the client took on house parent duties in a crisis center from Monday to Friday, from 9:00 am to 4:00 pm, aimed to provide a sense of purpose, improve self-esteem, and offer a structured daily routine. Campbell and Rohrbaugh's [22] work will form the template for the biopsychosocial therapy treatment plan.

Table 1. Biopsychosocial Therapy Treatment Plan

Therapy	Type of Intervention	Specific Intervention	Dose / Duration	Frequency	Target	Persons Involved
BIOLOGICAL Pharmacotherapy	Medication	Sertraline	Daily 50 mg	Daily (morning)	Dysphoric Mood, Anxious Distress, and Trauma symptoms	Participant Nurse Significant Others Researcher
	Selective Serotonin Reuptake Inhibitor (SSRI)					
Lifestyle modification	Active Lifestyle	Aerobic Exercise (brisk walking)	Daily 30 min	Daily 30 min		
	Phototherapy	Sunlight Exposure	Daily 30 min			
PSYCHOLOGICAL Individual Psychotherapy	Cognitive- Behavioral Techniques	1. Mood Tracker	Daily	Evening	Dysphoric Mood, Anxious Distress, and Trauma symptoms	Participant Psychometri cian Significant Others Researcher
		2. Sleep Monitoring		Morning		
		3. Breathing Exercises		Morning and Evening at 20 minutes daily		
		4. Thought Record		Evening		
		5. Gratitude Journal		Evening		
SOCIAL Supportive Therapy	Dialogue and Police Visibility	Reassurance Teaching	Three times per week	M-W-F for 12 sessions	Adaptive functioning and total well-being	Participant Social Worker Police Officer Significant Others Researcher
Social Assistance	Assistance Program	Livelihood (House parent duties)	30 days	Monday to Friday		

Note: Treatment plan template based on Campbell and Rohrbaugh (2013)

Daily monitoring by a registered psychometrician tracked the client's depressive symptoms, anxious distress, sleep disturbance, total PTSD score, and psychological well-being online or by phone. Concurrently, a monitoring registered nurse conducted daily assessments of the client's vital signs, including temperature, pulse rate, respiration, and blood pressure, in the LGU's City Health Office. The researcher conducted regular mental status evaluations at Session 1, Session 15, Session 30, Session 45, and Session 60 to systematically monitor the participant's progress.

The researcher facilitated both the psychometrician and the nurse and was supervised by a licensed physician specializing in psychiatry, ensuring a coordinated approach to care that effectively integrated medical, psychological, and social interventions. By combining these various therapeutic components, the intervention phase aimed not only to alleviate the client's symptoms but also to enhance the client's functioning and quality of life.

Post-intervention. After completing the intervention phase, the client reverted to a 15-day baseline condition A for the post-intervention phase. During this period, the same instruments and procedures from the pre-intervention phase were used to monitor the client's symptoms. The psychometrician conducted daily assessments of depressive symptoms, anxious distress, sleep disturbance, PTSD symptoms, total PTSD score, and psychological well-being while the nurse monitored vital signs. These activities were again facilitated by the researcher and supervised by a psychiatrist.

After the experiment. Upon completion, a debriefing session was conducted with the client and her significant others to facilitate her experiences during the intervention. Referrals for continued support and treatment were provided as preferred, ensuring that the client received appropriate follow-up care. This final step ensured that the client's well-being was maintained beyond the study period and that any emerging needs were addressed promptly. Certifications from monitoring professionals were obtained for documentation purposes.

Data analysis procedure. After the data collection, the data were meticulously prepared and organized for visual analysis. Numerical values were assigned to the observed behaviors, facilitating the creation of graphs that depicted fluctuations and trends in the client's symptoms across different phases. Using Miller's [43] four steps of visual analysis ensured a rigorous assessment. This visual analysis process allows the researcher to draw meaningful conclusions regarding the efficacy of integrative therapy in addressing the client's comorbid MDD and PTSD using the last three data points in every study phase. By integrating Miller's [43] four steps, the analysis is stronger, ensuring the conclusions are based on a thorough and systematic data evaluation.

Divided data. The first step asked if the ranges of behavior in the 2 conditions were divided, examining whether the data points for the baseline (A) and intervention (B) phases showed distinct ranges without overlap. Clear separation between the two phases indicated that the intervention has had an effect.

Stability. The second step asked if the rates of behavior in the 2 conditions were stable, which was important for drawing valid conclusions. This involved assessing whether the behavior remained consistent without significant fluctuations within each phase. A stable baseline and a stable intervention phase suggested that observed changes were due to the intervention rather than random variability.

Convincing data. The third step asked if the differences were convincing, combining insights from the first 2 steps. The differences were likely convincing if both the ranges were divided and the rates were stable. Convincing differences implied that every pair of adjacent conditions had to be divided, and every condition had to be stable. If these criteria were met, it could be predicted that additional observations would continue to show a difference.

Causality. The final step asked whether the treatment caused the differences, determining causality. If the data had been convincing and a reversal ABA design had been used, as in the present study, it could be concluded that the treatment had caused the observed differences. If the differences had not been convincing or a suitable design had not been used, causality could not have been established.

Ethical Considerations. The researcher adhered to the Philippine Health Research Ethics Board (PHREB) ethical guidelines and addressed the general principles of respect for persons, beneficence, and justice to ensure the ethical soundness of the study. The researcher prioritized the female participant's welfare, confidentiality, and privacy, ensuring ethical standards and compliance with the Data Privacy Act of 2012. The participant received a comprehensive study explanation and a voluntary consent form with no participation obligation. The researcher protected the participant's identity and data throughout the study.

4.0 Results and Discussion

Participant's Vital Signs Monitoring

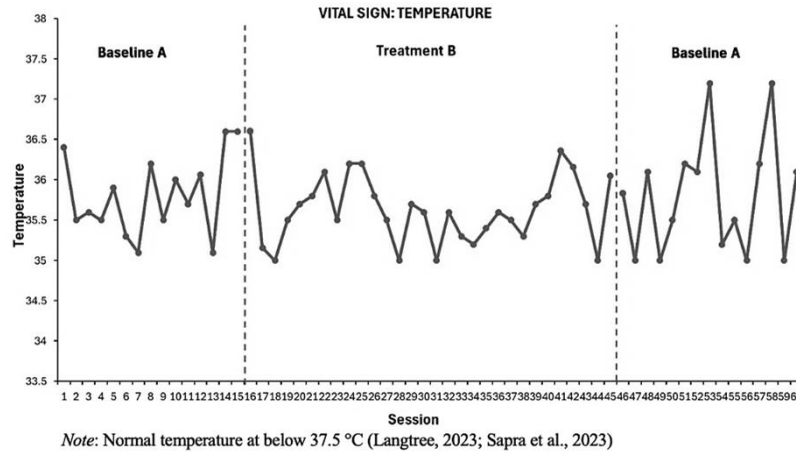
Temperature monitoring. The data were plotted in a graph to visually examine the client's temperature readings across three phases: baseline (Sessions 1-15), intervention (Sessions 16-45), and post-intervention (Sessions 46-60). During the baseline phase (Sessions 1-15), the client's temperature ranged from 35.1°C to 36.6°C. The client's body temperature varied somewhat but not extremely during the baseline phase, reflecting natural variation without intervention. These readings provided a reference point for the participant's typical temperature range before any intervention was applied.

In the intervention phase (Sessions 16-45), the client's temperature ranged from 35.0°C to 36.36°C. This phase demonstrated a relatively normal temperature profile, suggesting the stabilizing effect of the integrative biopsychosocial therapy. Importantly, throughout the intervention phase, the participant's temperature remained established and within normal limits, with no readings reaching the febrile threshold of 37.5°C. This indicates that the therapeutic interventions did not induce abnormal or febrile temperatures.

The post-intervention phase (Sessions 46-60) exhibited a wider range of temperature variability, from 35.0°C to 37.2°C. The increased fluctuations in this phase reflect physiological changes following the cessation of structured intervention. Although some are higher readings (Session 53 and Session 58), none crossed the critical threshold of 37.5°C, indicating that the participant's body temperature remained within normal limits. Throughout all phases, the

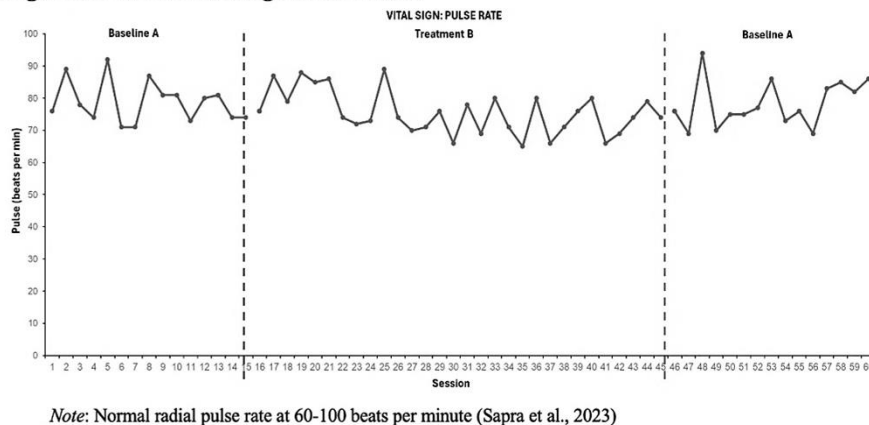
participant's temperatures did not exceed the febrile threshold of 37.5°C, suggesting no indication of fever or infection during the study period. The consistent ranges and lack of extreme deviations highlight that integrative biopsychosocial therapy did not adversely affect the participant's physiological state as measured by body temperature. The fluctuations observed were within normal physiological variation.

Figure 2. Temperature Monitoring Across Phases



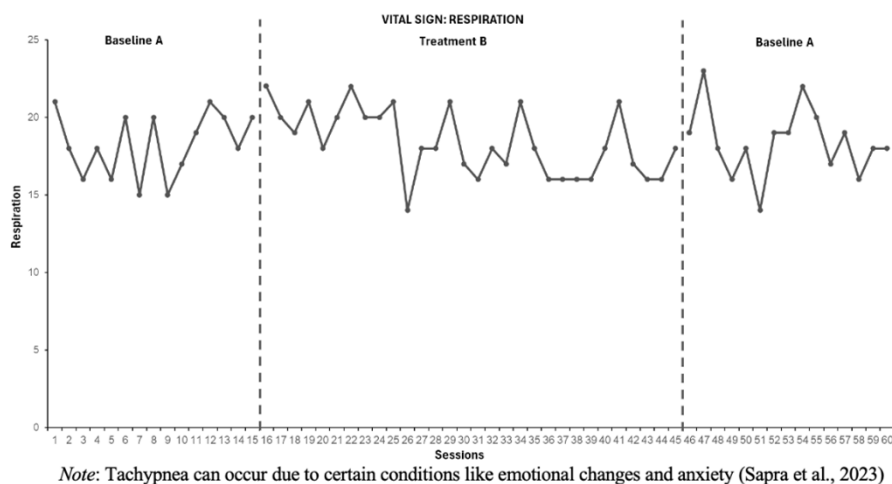
Pulse monitoring. The participant's pulse rate was monitored daily across three phases: the initial baseline phase (15 days), the intervention phase (30 days), and the final baseline phase (15 days). Throughout the initial baseline phase during Sessions 1 to 15, the client exhibited varying pulse rates ranging from 71 to 92 beats per minute (bpm). Subsequently, during the intervention phase spanning Sessions 16 to 45, the pulse rates ranged from 65 to 89 bpm. Despite a slight decrease in the average pulse rate compared to the baseline phase, all pulse rates remained within the normal range. Following the intervention, during the post-intervention baseline phase from Sessions 46 to 60, the client's pulse rates ranged from 69 to 94 bpm. Remarkably, the pulse rates returned to a stable baseline similar to the initial phase, confirming the absence of any significant pulse rate problems across all study phases. Not all data points have reached the critical pulse level of 100 bpm. Figure 4 reflects the visual representation of data points across phases.

Figure 3. Pulse Monitoring Across Phases



Respiration monitoring. During the baseline phase (Session 1 to 15), the participant exhibited respiration rates ranging from 15 to 21 breaths per minute. Upon initiating the intervention phase (Session 16 to 45), the phase displayed a wider range of 14 to 22 breaths per minute, which includes some instances slightly above the normal range. During the post-intervention baseline phase (Session 46 to 60), the range of respiration rates observed was 14 to 23 breaths per minute. The consistent respiration rates, mostly within the normal range across different study phases, indicate that each phase did not induce any adverse respiratory effects. The slight elevations in respiration rate, occasionally above the normal range, can be understood in the context of the participant's emotional struggles associated with her condition. This aligns with Sapra et al. [44], which note that individuals with these conditions may experience tachypnea due to emotional challenges.

Figure 4. Respiration Monitoring Across Phases



Blood pressure monitoring. Throughout the study, the participant's blood pressure (BP) was monitored meticulously during Baseline A, Treatment B, and a return to Baseline A. During the initial Baseline A phase, which spanned Sessions 1 to 15, the participant's BP readings were consistently within the normal range. Specifically, the systolic BP readings ranged from 100 to 130 mmHg, and the diastolic BP readings ranged from 60 to 80 mmHg. Markedly, most readings clustered around 110/70 mmHg and 120/70 mmHg, indicating a stable baseline. For instance, the BP reading in Session 1 was 110/80 mmHg, and similar readings were observed throughout this phase, such as 110/70 mmHg in Sessions 2, 4, 9, and 11. The highest systolic reading was 130/80 mmHg in Session 3, which still fell within the normal range, demonstrating no signs of significant BP elevation or fluctuation.

During the Treatment B phase, from Sessions 16 to 45, the participant received integrative biopsychosocial therapy. BP monitoring continued, and the readings remained stable and within the normal range, with systolic BP readings between 100 and 130 mmHg and diastolic BP readings between 60 and 80 mmHg. For example, the BP reading in Session 16 was 130/70 mmHg, while in Sessions 22 and 40, the readings were 120/80 mmHg, reflecting consistent normal BP levels. Throughout this treatment phase, readings such as 110/70 mmHg in Sessions 23, 25, and 29 further illustrated the absence of significant BP elevation or fluctuation, suggesting the therapy had no adverse cardiovascular effects.

In the final phase, a return to Baseline A from Sessions 46 to 60, BP monitoring continued as the treatment was withdrawn. The participant's BP readings remained stable and within the normal range, with systolic BP ranging from 100 to 120 mmHg and diastolic BP from 60 to 80 mmHg. For instance, readings were 120/70 mmHg in Sessions 46, 47, and 49 and 110/60 mmHg in Sessions 48, 50, and 51, showing consistent BP levels post-intervention. At the end of this phase, in Sessions 56 to 60, BP readings such as 100/60 mmHg and 110/60 mmHg indicated no significant elevation or fluctuation, maintaining a stable BP profile.

Table 2. *Blood Pressure Monitoring Across Phases*

Baseline A			Treatment B						Baseline		
Session	BP	Result	Session	BP	Result	Session	BP	Result	Session	BP	Result
1	110/80	*Normal	16	130/70	Normal	31	110/70	Normal	46	120/70	Normal
2	110/70	Normal	17	120/60	Normal	32	110/70	Normal	47	120/70	Normal
3	130/80	Normal	18	120/70	Normal	33	120/70	Normal	48	110/60	Normal
4	110/70	Normal	19	120/70	Normal	34	120/70	Normal	49	120/70	Normal
5	130/70	Normal	20	120/70	Normal	35	120/70	Normal	50	110/60	Normal
6	100/70	Normal	21	120/70	Normal	36	120/70	Normal	51	110/60	Normal
7	120/70	Normal	22	120/80	Normal	37	110/60	Normal	52	120/70	Normal
8	110/80	Normal	23	110/70	Normal	38	110/70	Normal	53	110/60	Normal
9	110/70	Normal	24	100/60	Normal	39	110/70	Normal	54	110/70	Normal
10	110/60	Normal	25	110/70	Normal	40	120/80	Normal	55	110/70	Normal
11	110/70	Normal	26	110/60	Normal	41	110/60	Normal	56	100/60	Normal
12	110/70	Normal	27	110/70	Normal	42	120/70	Normal	57	110/80	Normal
13	110/80	Normal	28	120/70	Normal	43	120/70	Normal	58	100/60	Normal
14	120/70	Normal	29	110/70	Normal	44	120/70	Normal	59	110/60	Normal
15	120/70	Normal	30	110/70	Normal	45	110/70	Normal	60	100/60	Normal

*Based on the Department of Health Advisory, blood pressure is elevated if it exceeds 140/90 mmHg (DOH, 2020)

Across all phases—Baseline A, Treatment B, and the return to Baseline A—the participant's BP readings consistently fell within the normal range. This stability suggests that the integrative biopsychosocial therapy did not adversely affect BP levels, an important consideration given the participant's comorbid conditions of major depressive disorder and posttraumatic stress disorder. In the case of the medication used, the present result confirms Borhannejad et al. [45] on the safety of sertraline. The lack of significant BP fluctuations or elevations throughout the study stresses the safety and non-invasive nature of the therapeutic interventions used.

Ana's daily routine during the treatment, for her, was essential in her life. She expressed gratitude for her ability to complete her treatment activities, which contribute to her health. Her engagement in routine tasks helps her manage stress and improve her mood. Completing tasks also gives her a sense of accomplishment and stability, further contributing to her well-being.

- naka-walking, nahimo mga tasks (Day 2, March 29)
- Nakaya ko man japon everyday ang tasks ko (Day 8, April 4)
- Walking and jogging (Day 11, April 7)
- naka walking; jogging (Day 20, April 16)

Psychological Monitoring

Routine Mental Status Evaluation. At the onset of the monitoring, Ana exhibited symptoms consistent with major depressive disorder and PTSD, reflected in her mental status examination using Zuckerman's [34] checklist. Her appearance and self-care indicators, including posture, motor activity, grooming, and clothing, were normal, demonstrating her

ability to maintain basic personal care. Sensorium functions such as attention, concentration, and orientation were also intact. In relating, Ana maintained slightly avoidant eye contact and displayed a sad facial expression, although she cooperated with the examiner. Her affect was appropriate, but her mood was dysphoric, indicating significant emotional distress. Thought and language patterns were normal, with regular speech flow and congruent thought content, though she was preoccupied with death threats. Despite these preoccupations, her cognitive functions were within normal limits, including organization, abstraction, judgment, insight, and decision-making. Her primary stressor was identified as social-legal issues, and her coping ability was described as guarded, with self-control deficits and reliance on significant others for support.

In session 15, Ana's appearance and sensorium remained stable. Relational indicators improved, with normal eye contact and continued cooperation. Although her mood remained slightly dysphoric, her affect was appropriate. Her thought and language patterns were consistent with the initial session, but her decision-making showed slight difficulty, reflecting ongoing cognitive strain about her situation. Stressors remained social-legal, and her coping ability was impaired, indicating increased difficulty managing her symptoms. By session 30, improvements were observed. Ana's mood had shifted to euthymic, and her relational indicators, such as eye contact and facial expression, normalized. Cognitive functions, including decision-making, showed improvement. Thought and language patterns showed no preoccupations or hallucinations. However, her coping ability remained guarded, suggesting persistent vulnerability.

Ana's progress continued in session 45. Her mood was euthymic, and her overall appearance and sensorium were stable. Relational indicators remained positive, with cooperative behavior, normal eye contact, and facial expressions. Cognitive functions were intact, but her coping ability still reflected a guarded stance. Skills deficits shifted to worries about her safety, indicating ongoing concerns about her circumstances. By session 60, Ana maintained her euthymic mood, and her appearance, sensorium, and relational indicators remained stable. Cognitive functions were normal across all areas, and thought and language patterns showed no signs of preoccupation or hallucinations. Despite these improvements, her coping ability remained guarded, suggesting a need for continued support and monitoring.

Table 3.1. Participant's Routine Mental Status Evaluation (Zuckerman, 2010)

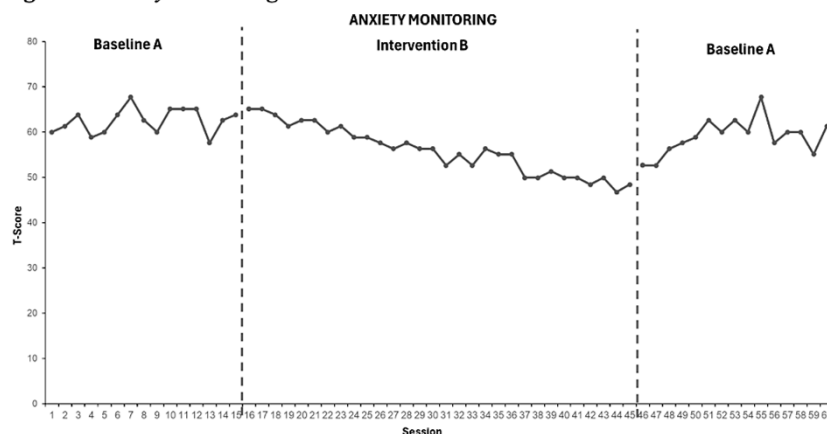
Mental Status Descriptors	Session 1	Session 15	Session 30	Session 45	Session 60
<i>Appearance</i>					
Stature	Average	Average	Average	Average	Average
Weight	Average	Average	Average	Average	Average
Clothing	Normal	Normal	Normal	Normal	Normal
Grooming	Normal	Normal	Normal	Normal	Normal
Cosmetic Use	None	None	None	Appropriate	None
Posture/Gait	Normal	Normal	Normal	Normal	Normal
Motor Activity	Normal	Normal	Normal	Normal	Normal
<i>Sensorium</i>					
Attention	Normal	Normal	Normal	Normal	Normal
Concentration	Normal	Normal	Normal	Normal	Normal
Orientation	Normal	Normal	Normal	Normal	Normal
Recall/Memory	Normal	Normal	Normal	Normal	Normal
<i>Relating</i>					
Eye Contact	Slightly Avoidant	Normal	Normal	Normal	Normal
Facial Expression	Sad	Sad	Normal	Normal	Normal
Attitude Towards the Examiner	Cooperative	Cooperative	Cooperative	Cooperative	Cooperative
<i>Affect and Mood</i>					
Affect	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Mood	Dysphoric	Slightly Dysphoric	Euthymic	Euthymic	Euthymic

Table 3.2. Participant's Routine Mental Status Evaluation (Zuckerman, 2010)

Mental Status Descriptors	Session 1	Session 15	Session 30	Session 45	Session 60
<i>Thought and Language</i>					
Speech Flow	Normal	Normal	Normal	Normal	Normal
Thought Content	Congruent	Congruent	Congruent	Congruent	Congruent
Preoccupation	Death Threat	Death Threat	None	None	None
Hallucination	None	None	None	None	None
Organization	Normal	Normal	Normal	Normal	Normal
<i>Executive Functions</i>					
Fund of Knowledge	Average	Average	Average	Average	Average
Intelligence	Average	Average	Average	Average	Average
Abstraction	Normal	Normal	Normal	Normal	Normal
Judgment	Normal	Normal	Normal	Normal	Normal
Reality Testing	Realistic	Realistic	Realistic	Realistic	Realistic
Insight	Good	Good	Good	Good	Good
Decision-Making	Normal	Slightly Confused	Normal	Normal	Normal
<i>Stress</i>					
Stressors	Social-Legal	Social-Legal	Social-Legal	Social-Legal	Social-Legal
Coping Ability	Guarded	Impaired	Guarded	Guarded	Guarded
Mental Status Descriptors	Session 1	Session 15	Session 30	Session 45	Session 60
Skills Deficits	Self-Control	Self-Control	Self-Control	Worries	Self-Control
Supports	Significant others	Significant others	Significant others	Significant others	Significant others
<i>Social Functioning</i>					
Social Maturity	Responsible	Responsible	Responsible	Responsible	Responsible
Social Judgment	Normal	Normal	Normal	Normal	Normal

Anxiety Monitoring Result. The participant's anxiety levels were recorded as T-scores across three phases: an initial 15-day baseline period (sessions 1-15), a 30-day treatment period (sessions 16-45), and a post-intervention 15-day baseline period (sessions 46-60). During the initial baseline phase, spanning sessions 1 to 15, T-scores ranged from 57.6 to 67.7, signaling mild to moderate levels of anxiety. As the treatment phase commenced, initial T-scores at session 16 indicated moderate anxiety (T-score of 65.1), gradually decreasing to 46.7 by session 45, indicating a shift from none to slight anxiety levels. Subsequently, during the post-treatment baseline phase (sessions 46-60), T-scores ranged from 52.6 to 67.7, reflecting a mild level of anxiety, slightly higher than during the treatment phase but generally lower than the initial baseline. These findings suggest a positive impact of integrative therapy in alleviating anxiety symptoms, emphasizing the importance of continued support post-intervention to maintain the improvements achieved. The anxiety monitoring result provides preliminary evidence that such an intervention can lead to substantial improvements in anxiety symptoms, which is critical for developing tailored therapeutic strategies for similar populations. The observed reduction in T-scores during the treatment phase suggests that a combination of pharmacological, psychological, and social interventions can effectively address complex psychiatric conditions.

Figure 5. Anxiety Monitoring Across Phases



Note: Intervention started from Session 16 to Session 45 (30 days)

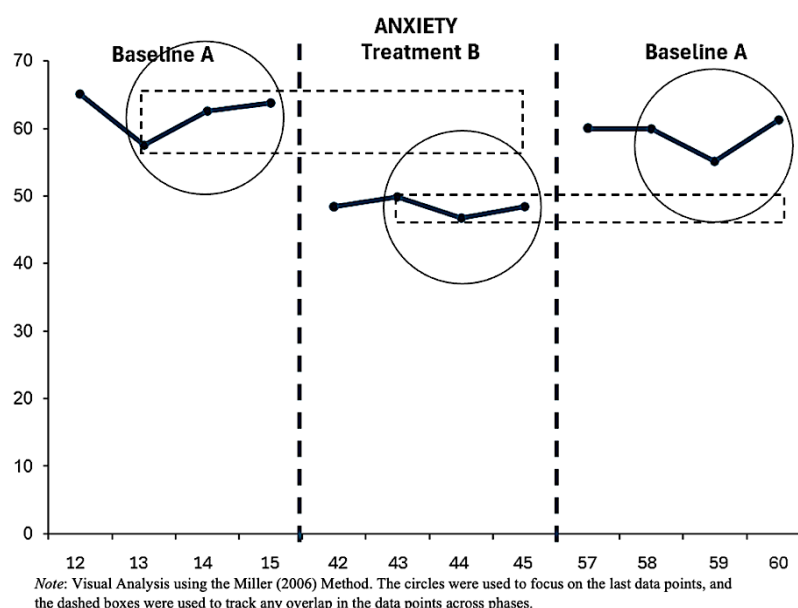
Visual Analysis of Participant's Anxiety Level

Division of Data. The first step in Miller's [43] visual analysis approach involves examining whether the ranges of behavior in the baseline and intervention phases are divided. This step assesses if the data points for the baseline (A) and intervention (B) phases show distinct ranges without overlap, same with intervention (B) and Post-intervention Baseline (A). In this study, the last three data points for each phase monitoring participant's anxiety were as follows: Baseline A (sessions 13-15) had T-scores of 57.6, 62.6, and 63.8; Treatment B (sessions 43-45) had T-scores of 49.9, 46.7, and 48.4; and Post-Treatment Baseline A (sessions 58-60) had T-scores of 60, 55.1, and 61.3. The data show a clear division between the baseline and intervention phases, with the intervention phase exhibiting significantly lower T-scores than the initial baseline phase.

The distinct ranges of T-scores between the baseline and intervention phases imply that integrative biopsychosocial therapy may have effectively reduced the anxiety levels. The absence of overlap between these phases supports the hypothesis that the intervention had a measurable impact. The clear division between the baseline and intervention phases is significant. It suggests that the changes observed in anxiety levels are not due to natural fluctuations but the result of the therapeutic intervention. This separation is important for establishing the efficacy of the treatment.

This finding aligns with studies that highlight the effectiveness of targeted interventions in managing various aspects of anxiety, including cognitive, behavioral, and emotional factors [46]. The integrated treatment in this study, which focuses on developing new or improved coping strategies and increasing awareness of intense emotions, along with a behavioral component, can lead to significant reductions in anxiety symptoms. This is evidenced by noticeable changes in symptom severity. Cognitive-behavioral interventions have also been found to be effective in preventing and reducing anxiety symptoms, particularly when individually administered [47]. The divided data from the anxiety monitoring of the participant provide compelling evidence that integrative biopsychosocial therapy was effective in reducing anxiety symptoms during the intervention phase. This division features the potential of such comprehensive approaches in managing complex psychiatric conditions.

Figure 6. Divided Data Points of Participant's Anxiety Symptoms

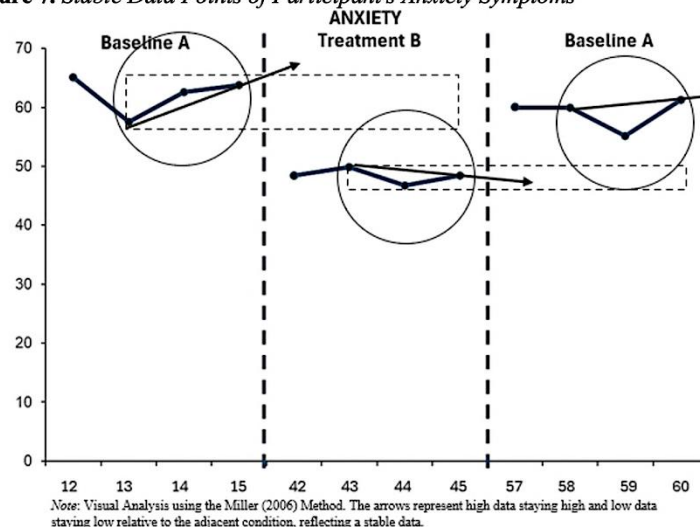


Stability. The second step in Miller's [43] visual analysis is to determine the stability of behavior rates within each phase. Stability is important for drawing valid conclusions about the intervention's effect, as it ensures that observed changes in anxiety are not due to random variability. T-scores during the baseline remained high overall. In contrast, the treatment phase exhibited a downward trend with relatively stable T-scores towards the end (sessions 43-45: 49.9, 46.7, and 48.4). The post-treatment baseline phase showed a slight T-score increase, indicating some variability but still lower than the initial baseline. The stability observed in the treatment phase suggests that the reduction in anxiety levels was consistent and reliable, likely attributable to the therapeutic intervention rather than random fluctuations. The increased stability in the intervention phase reinforces the effectiveness of the therapy. As reflected, T-scores during the treatment phase are significant as they indicate that the observed reductions in anxiety were not isolated events but sustained improvements. Ana's journal entries reflect a journey of emotional resilience and personal growth. She often acknowledges her struggles with anxiety and trauma but also expresses a desire to heal and improve her mental health.

maamat2 ayo sa trauma (Day 3, March 30)
move on sa mga nagakatabo (Day 6, April 2)
amat amat na nakon malimptan; mag okay ang tanan (Day 16, April 12)
help ang self na maka-decide sang tama (Day 24, April 20)

The observed stability during the intervention phase is consistent with findings from studies on the long-term effects of social-legal intervention, psychotherapy, and pharmacotherapy. For instance, Slavin-Mulford et al. [48] found that stable reductions in anxiety were associated with consistent interventions. Similarly, Schmidt et al. [49] demonstrated sustained reductions in anxiety sensitivity and perceived burdensomeness following brief interventions, with these reductions mediating long-term symptom change. The stability of T-scores in the treatment phase signifies that integrative biopsychosocial therapy had a consistent and sustained impact on reducing anxiety symptoms. This finding highlights the reliability and potential long-term benefits of the therapy.

Figure 7. Stable Data Points of Participant's Anxiety Symptoms



Convincing Data. The third step involves assessing whether the differences between the phases are convincing, combining insights from divided data and stability. Convincing

differences suggest that every pair of adjacent conditions is divided and every condition is stable. The analysis reveals clear, convincing differences between the baseline and intervention phases. The intervention phase showed a distinct separation from the baseline phase and maintained stable T-scores, particularly in the last three sessions (43-45). The post-treatment baseline phase showed some increase but did not revert to initial baseline levels, further indicating sustained improvement. The convincing data imply that integrative biopsychosocial therapy was effective in producing and maintaining significant reductions in anxiety levels. The combined evidence of divided and stable data strengthens the argument for the intervention's efficacy. The convincing data between the phases of the present study are significant as they provide evidence that the therapeutic intervention had a genuine and sustained impact on the participants' anxiety levels.

A range of studies support the effectiveness of integrative biopsychosocial therapy in reducing anxiety. Nakao et al. [50] emphasized the effectiveness of cognitive-behavioral therapy, a component of this approach, in managing anxiety and other mental health issues. Hughes et al. [51] provided evidence for the holistic self-learning approach, which includes biopsychosocial elements, in reducing depression and anxiety. These findings collectively highlight the potential of integrative biopsychosocial therapy in achieving and maintaining reductions in anxiety.

Causality. The final step in Miller's [43] visual analysis is to determine causality, assessing whether the observed differences can be attributed to the treatment rather than other factors. Causality can be established with two conditions: convincing data and strong experimental design. The consistent reduction in T-scores during the treatment phase, combined with the stability and distinct division from baseline phases, suggests a causal relationship between integrative biopsychosocial therapy and the reduction in anxiety symptoms. Given that an A-B-A single-subject experimental design was used, a reversal design [43], the study is well-positioned to rule out alternative explanations. The A-B-A design employed in this study allows for a clear observation of the treatment's effects by establishing a baseline, introducing the intervention, and then withdrawing the treatment to see if the behavior reverts. The sustained improvements in anxiety levels during the treatment phase and the partial maintenance of these improvements during the post-treatment phase imply that the changes were due to the therapy rather than extraneous variables.

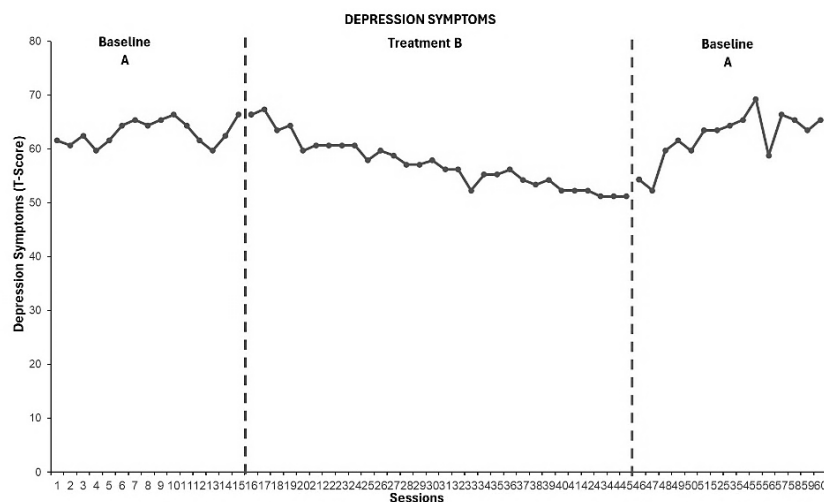
Establishing causality is significant as it confirms that the therapy itself, rather than external factors, was responsible for the improvements in anxiety symptoms. This causal link aligns with research demonstrating the effectiveness of comprehensive treatment approaches in managing anxiety and depression. Lang et al. [52] suggest that cognitive behavior therapy, social skills instruction, and applied behavior analysis can reduce anxiety symptoms in individuals with autism spectrum disorders. Otto et al. [53] and Bandelow et al. [54] both highlight the efficacy of cognitive behavioral therapy and pharmacotherapy in treating social anxiety disorder. Sareen and Stein [55] initially support this, emphasizing the need for a combination of pharmacotherapy and psychotherapy in treating social anxiety disorder. These findings show the importance of a comprehensive approach to anxiety treatment, addressing both the psychological and social aspects of the condition. The causality established in this study highlights the role of integrative biopsychosocial therapy in significantly reducing anxiety symptoms. An A-B-A design, which rules out individual differences and time coincidences, ensures that the observed changes can be confidently attributed to the therapy.

Depression Symptoms Monitoring

During the initial baseline phase (Sessions 1-15), the participant exhibited fluctuating yet consistently high T-scores of depression, ranging from 59.7 to 66.4. This indicates a persistent and severe level of depressive symptoms before the intervention, with the highest T-scores of 66.4 recorded during Sessions 10 and 15 and the lowest T-scores of 59.7 during Sessions 4 and 13.

In the treatment phase (Sessions 16-45), depressive symptoms significantly reduced over time. Initially, the T-scores remained high but decreased progressively from Session 20 onwards. During this phase, the T-scores ranged from 51.2 to 67.4, with a marked decrease observed in the latter part of the phase. The highest T-score was 67.4 in Session 17, while the lowest was 51.2 in Sessions 43, 44, and 45. In the post-intervention baseline phase (Sessions 46-60), depressive symptoms initially increased slightly but then stabilized at a higher level than during the intervention phase but lower than the initial baseline phase. The T-scores ranged from 52.3 to 69.3, with the highest score being 69.3 in Session 55 and the lowest score being 52.3 in Session 47.

Figure 8. *Depression Symptoms Monitoring Across Phases*



The data implies that integrative biopsychosocial therapy has a significant impact on reducing depressive symptoms in the participant. The initial drop in depression levels during the treatment phase implies the effectiveness of the therapy. However, the increase in depressive symptoms during the post-intervention baseline suggests that the therapeutic effects may require sustained intervention to maintain improvements. The observed reduction in depressive symptoms aligns with existing literature that supports the efficacy of integrative therapies in managing complex mental health conditions. Karimi et al. [56] found that integrative reminiscence therapy significantly reduced depression in older adults, while McCarney et al. [57] conducted a meta-analysis that showed a significant reduction in depressive symptoms through mindfulness-based therapies.

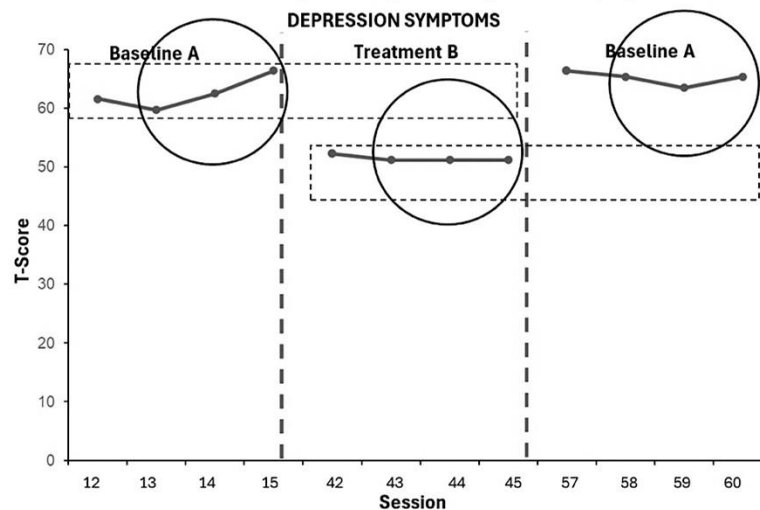
Visual Analysis of Participant's Depression Symptoms

Division of Data. In the final 3 sessions of the post-intervention baseline (Sessions 58-60), the T-scores were 65.4, 63.5, and 65.4. A clear division can be observed by comparing these with the final three sessions of the intervention phase (Sessions 43-45), where the T-scores

were 51.2, 51.2, and 51.2. The post-intervention baseline shows significantly higher T-scores than the intervention phase, indicating a rise in depressive symptoms after the treatment was withdrawn. The clear division of data points between the intervention and post-intervention phases suggests that the intervention significantly reduced depressive symptoms. The rise in scores after the withdrawal of treatment implies that the therapeutic effects may not be sustained without ongoing support. This division signifies the importance of continuous treatment and monitoring for individuals with severe depressive symptoms. It suggests that while integrative biopsychosocial therapy can be effective, its benefits may diminish once the treatment is stopped.

The observed division is consistent with a range of studies that explored the effectiveness of biopsychosocial therapy in reducing and improving depressive symptoms. Timis et al. [58] found that biologic therapies significantly decreased disease severity and alleviated depression and anxiety symptoms in psoriasis patients. Law [59] and Sarris [60] highlighted the role of interpersonal psychotherapy in reducing depressive symptoms and improving interpersonal functioning. Monferrer et al. [61] initially confirmed the present study's result by reviewing various psychosocial interventions, including pharmacological and psychotherapeutic approaches. They found that they were effective in improving depressive symptoms and social functioning. However, the present study disproves McGill [62], saying that while the biopsychosocial model can effectively predict the presence, severity, and chronicity of depression, its role in treatment success is less clear.

Figure 9. *Divided Data Points of Participant's Depression Symptoms*



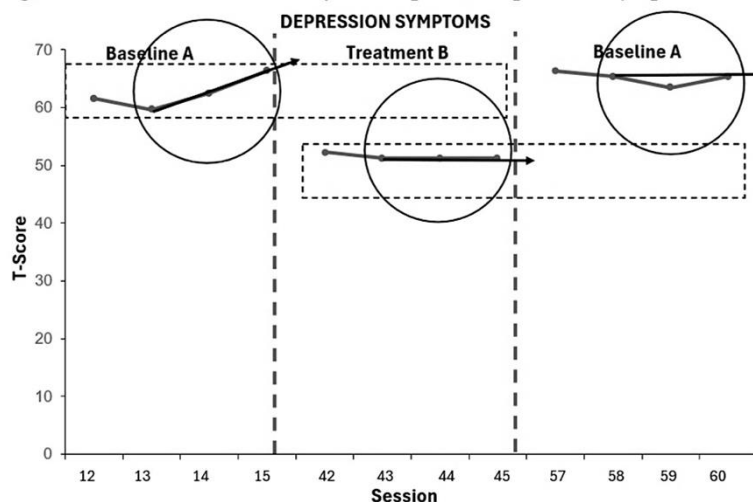
Note: Visual Analysis using the Miller (2006) Method. The circles were used to focus on the last data points, and the dashed boxes were used to track any overlap in the data points across phases.

Ana's interactions with family, friends, and support figures were seen as important elements in her journal. These relationships offer her emotional support and a sense of belonging, which is vital for her mental well-being. Ana often highlights the positive impact of these interactions on her mood and emotional state, indicating their importance in her daily life. Her son is frequently mentioned, suggesting a strong bond and his role as a significant source of comfort. These interactions help her mitigate feelings of isolation and anxiety, providing a network of support that is essential for her emotional health.

A friend visit me...talk kami kag si Y (Day 4, March 31)
Yan still chat kag may mga friend (Day 5, April 1)
Meeting with friends (Day 7, April 3)
Talk with my friends...Mam X (Day 13, April 9)

Stability. Stability in depressive symptoms data points refers to the consistency of the symptoms within each phase. Stable depressive symptoms data implies that the observed changes in the symptoms are reliable and not due to random fluctuations. Using Miller's [43] method, stability was found in the pre-intervention phase (59.7, 62.5, 66.4). During the last three sessions of the intervention phase, the T-scores (51.2, 51.2, 51.2) were stable. In contrast, the last three sessions of the post-intervention baseline (65.4, 63.5, 65.4) showed higher but still relatively consistent scores. The stability in both phases suggests that the observed changes in depressive symptoms are likely due to the intervention rather than random variations. It indicates that the reductions in depressive symptoms during the intervention were not due to extraneous factors. This consistency in the client's depression symptoms data points strengthens the reliability of the results. The consistent reduction in depressive symptoms during the intervention phase highlights the efficacy of integrative biopsychosocial therapy. The stable yet higher post-intervention scores on depression symptoms indicate a potential need for ongoing intervention.

Figure 10. Stable Data Points of Participant's Depression Symptoms



Note: Visual Analysis using the Miller (2006) Method. The circles were used to focus on the last data points, and the dashed boxes were used to track any overlap in the data points across phases

Confirming the present result is the study of Hughes et al. [51] that demonstrated the efficacy of integrative biopsychosocial therapies in reducing depressive symptoms. They confirmed that a holistic self-learning approach, including nutritional coaching and peer support, improved mental health outcomes in young adults. Moreover, a similar result was also published by Lopresti [63], saying that integrative or adjunctive treatments will increase treatment efficacy if utilized.

Convincing Data. Convincing data are characterized by clear division and stability of depression symptoms. When data meet these criteria, the intervention likely caused the observed changes. The results show a clear division between the treatment and post-intervention phases, with stable T-scores during the treatment phase and variable T-scores post-intervention. This pattern suggests convincing evidence of the therapy's impact during treatment. The

convincing results of the data points indicate that the therapy effectively reduced depressive symptoms during the treatment phase. However, post-intervention data suggest that the therapy's effects may not be long-lasting without continued treatment. These findings emphasize the therapy's effectiveness and the importance of ongoing intervention.

The data's convincing nature aligns with studies demonstrating significant improvements in depressive symptoms with integrated therapies. Rajabpouranvar et al. [64] supported the findings, saying psychological therapy, such as the case of mindfulness-based behavior-cognitive therapy, was effective in reducing symptoms of persistent depression, while Cardozo-Batista and Tucci [65] also added that a significant reduction in depressive symptoms following a natural therapy-based intervention. The present study also agreed with Twomey et al. [66], emphasizing that the effect of therapy will not be long-lasting without continuity. However, the long-term effectiveness of intervention without continued treatment remains unclear, suggesting the need for further research in this area.

Causality. The A-B-A design employed in this study shows a clear division and stability during the treatment phase and a relapse in the post-intervention phase. The treatment phase's stable reduction in T-scores compared to the baseline and post-intervention phases indicates that the therapy was the cause of the improvement. The causal relationship established by the ABA design and the convincing data supports the effectiveness of integrative biopsychosocial therapy. However, the relapse in symptoms post-intervention suggests that ongoing treatment is necessary to maintain the benefits. Establishing causality is fundamental for validating the therapy's effectiveness and developing evidence-based treatment protocols. The established causality is consistent with Kim and Steiner [67] and Stoney and Johnson [68] that have emphasized using experimental designs in clinical research. Kim and Steiner [67] specifically highlights using quasi-experimental designs when randomized experiments are not feasible. The results, together with the appropriate experimental design, confirm that integrative biopsychosocial therapy caused the observed reduction in depressive symptoms. This features the therapy's potential as an effective treatment for comorbid MDD and PTSD while also highlighting the necessity for sustained treatment to prevent relapse.

Sleep Disturbance Monitoring

Sleep disturbance was measured using the DSM-5 Level 2—Sleep Disturbance—Adult measure, providing a reliable gauge of the client's sleep patterns across different intervention phases. The data collected across the baseline, treatment, and post-intervention phases indicate significant variations in the client's sleep disturbance T-scores. During the initial baseline (A) phase, T-scores fluctuated between 51.2 (Session 12) and 60.4 (Session 9), showing moderate to high levels of sleep disturbance. In the treatment (B) phase, T-scores exhibited a downward trend, starting at 57.3 (Session 16) and reaching as low as 39.8 (Sessions 34, 41, 43, and 44), suggesting a substantial reduction in sleep disturbance. However, the final baseline (A) phase revealed an upward shift in T-scores, peaking at 67.5 (Session 55), indicating a resurgence in sleep disturbance symptoms once the treatment was withdrawn. This pattern highlights the therapy's temporary effectiveness in mitigating sleep disturbances and the potential rebound effect post-intervention.

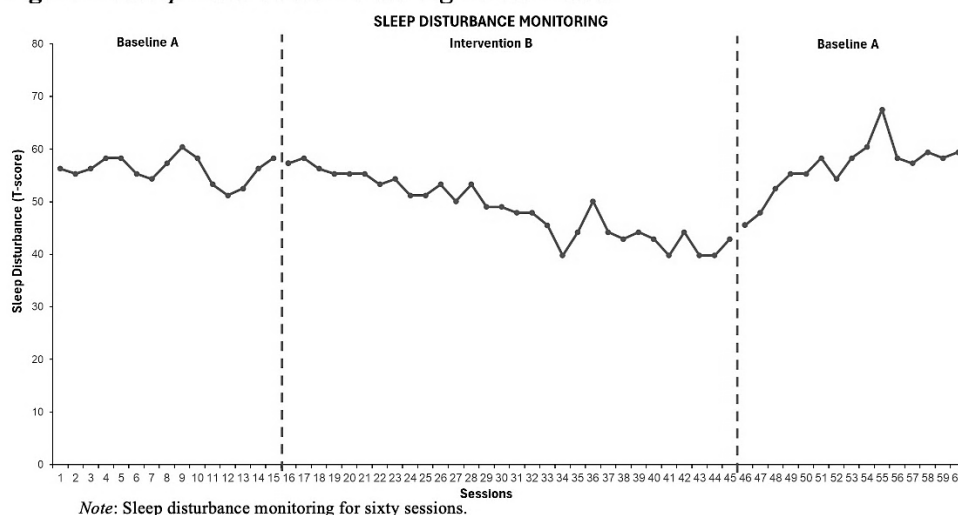
The observed data implies that integrative biopsychosocial therapy can significantly reduce sleep disturbances in individuals with comorbid MDD and PTSD during the intervention period. However, the increase in T-scores following the cessation of treatment suggests that the therapeutic benefits may not be sustained without ongoing intervention. This indicates a need

for continuous or repeated therapeutic sessions to maintain the positive outcomes achieved during the intervention phase. The findings emphasize the importance of long-term support and follow-up in managing sleep disturbances in clients with the same comorbidity. The study proves the significant effectiveness of integrative biopsychosocial therapy and provides evidence for incorporating such holistic interventions into treatment plans. This research highlights the potential for pharmacological, psychological, and social interventions to alleviate complex symptoms of sleep disturbance associated with comorbid conditions.

The results align with existing literature supporting the efficacy of integrative approaches in treating depression and PTSD. Unlike Sohi et al. [69], where a young patient with MDD experienced distressing sleep paralysis episodes after starting sertraline, which resolved upon tapering off the medication, the present study observed an improvement in sleep disturbances during the treatment phase. The findings also support Merrill et al. [70], who found that behavior modification can enhance sleep. However, the resurgence of symptoms post-treatment also confirms Li et al.'s [71] recommendation for routine assessment and management of sleep symptoms in the integrated management of depression.

The results indicate that integrative biopsychosocial therapy is a potent intervention for reducing sleep disturbances in the short term for individuals with MDD and PTSD. The significant reduction in T-scores during the treatment phase features the therapy's immediate benefits, likely due to the combination of pharmacological and non-pharmacological strategies. However, the subsequent increase in T-scores after treatment cessation suggests that ongoing therapy is significant for maintaining these benefits. This stresses the necessity for continuous support and possibly developing maintenance strategies to prevent relapse.

Figure 11. Sleep Disturbance Monitoring Across Phases

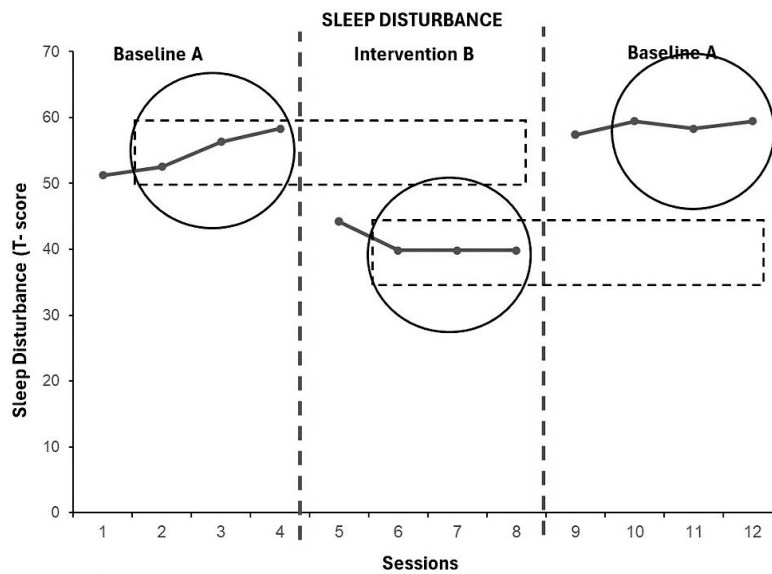


Visual Analysis of Participant's Sleep Disturbance

Division of Data. Miller's [43] visual analysis approach examines whether the sleep disturbance data points ranges for the baseline and intervention phases are distinct. By analyzing the last three sleep disturbance data points in each phase, we can observe if the changes in sleep disturbance scores indicate a clear division between baseline and treatment conditions. During the initial baseline phase, the last three sessions recorded T-scores of 52.5, 56.3, and 58.3, reflecting consistently high levels of sleep disturbance. In the intervention phase, the last three T-scores were significantly lower: 39.8, 39.8, and 39.8, indicating a marked decrease in sleep

disturbance. However, in the final baseline phase, the last three T-scores increased again to 59.4, 58.3, and 59.4, suggesting a return to higher sleep disturbance levels. The distinct ranges of T-scores between the baseline and intervention phases imply that integrative biopsychosocial therapy effectively reduced sleep disturbance during treatment. This clear division highlights the therapy's impact and points out its potential as an effective intervention for individuals with comorbid MDD and PTSD. The rebound in T-scores during the final baseline phase further emphasizes the need for ongoing treatment to sustain the positive outcomes.

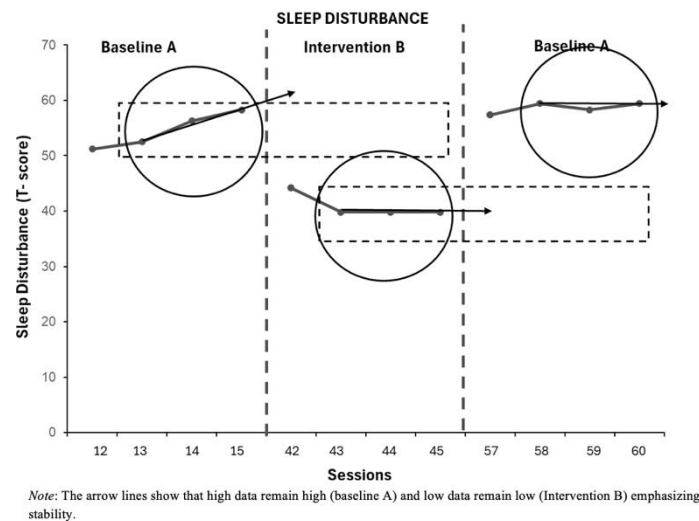
Figure 12. Divided Data Points of Participant's Sleep Disturbance Symptoms



Research on the biopsychosocial approach to treating sleep difficulties and related disorders has shown promise, with improvements often observed during treatment. However, improvement may only be sustained with continued identification of sleep behavior [72]. The data division in this study clearly shows that integrative therapy significantly reduced sleep disturbance, as indicated by the lower T-scores during the intervention phase. The return to higher T-scores after treatment cessation suggests that the therapy's benefits are only sustained with ongoing support. This finding also encourages the necessity for continuous or repeated therapeutic sessions to maintain improvements in sleep disturbance.

Stability. Stability within the baseline and intervention phases is important for validating the intervention's effects on sleep. Analyzing the last three data points in each phase helps determine if the observed changes in sleep are stable and reliable.

Figure 13. Stable Data Points of Participant's Sleep Disturbance Monitoring



In the initial baseline phase, the last three T-scores were relatively stable at 52.5, 56.3, and 58.3 (Sessions 13-15), indicating consistently high sleep disturbance levels. During the intervention phase, the last three T-scores showed a stable reduction to 39.8, 39.8, and 39.8 (Sessions 43-45). However, the final baseline phase increased T-scores to 59.4, 58.3, and 59.4 (Sessions 58 – 60), reflecting a stable return to higher sleep disturbance levels.

The stability observed within each phase suggests that the sleep disturbance data points are reliable and not influenced by random variability. Baseline data remain high relative to the intervention phase data. The consistent T-score reduction during the intervention phase confirms that the therapy effectively reduced sleep disturbances. The stability in the final baseline phase indicates that the return to higher T-scores is not a random fluctuation but a genuine reversion to baseline conditions.

Similar studies emphasize the importance of stability in validating the effects of interventions. Research on sleep disturbances in individuals using sertraline shows promise [73]. Other psychosocial interventions have also been found effective in improving sleep [74, 75]. The stability of the data points within each phase indicates that the observed changes in sleep disturbance are consistent and reliable. The stable reduction in T-scores during the intervention phase confirms the therapy's effectiveness, while the stable increase in the final baseline phase highlights the need for ongoing intervention.

Convincing Data. In this study, convincing data from Miller's [43] visual analysis combines insights from divided and stable data from sleep disturbance monitoring. The same last three data points per phase were evaluated. The initial baseline phase had high and stable T-scores (52.5, 56.3, and 58.3), indicating significant sleep disturbances. During the intervention phase, T-scores dropped and remained low (39.8, 39.8, 39.8), showing a clear and stable reduction. In the final baseline phase, T-scores increased again and stabilized at higher levels (59.4, 58.3, 59.4), suggesting a return to significant sleep disturbances. The clear division and stability of T-scores between the phases provide convincing evidence that integrative biopsychosocial therapy effectively reduces sleep disturbances. The consistent rebound in T-scores during the final baseline phase reinforces the therapy's temporary nature and the need for ongoing intervention. These findings are significant as they highlight the therapy's potential to relieve sleep disturbances.

Studies on the efficacy of combined pharmacological [76] and integrated cognitive-behavioral interventions [77] similarly report convincing evidence of symptom reduction of sleep disturbance during treatment, followed by a return to baseline levels without continued intervention. The convincing data in this study indicate that integrative biopsychosocial therapy significantly and reliably reduced sleep disturbances during the intervention phase. The clear and stable T-score reduction proves the therapy's efficacy. However, the return to higher T-scores in the final baseline phase underscores the need for ongoing therapeutic support to maintain these improvements.

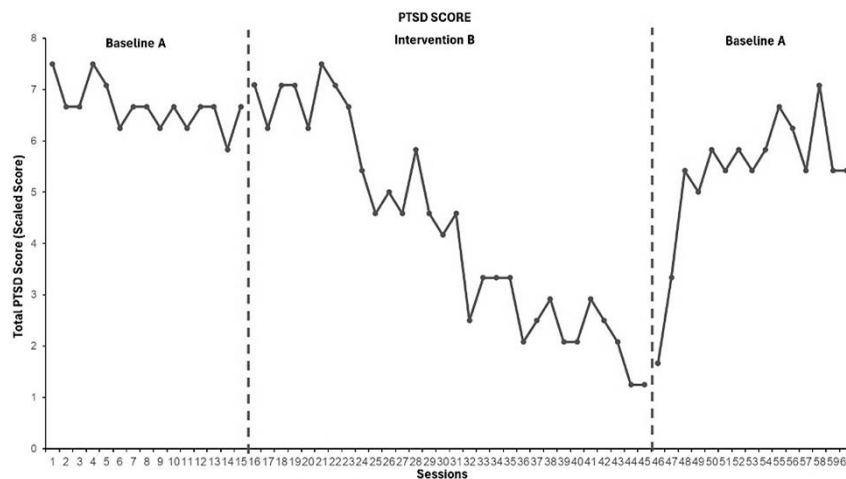
Causality. This step in analysis is important for establishing a cause-and-effect relationship between the intervention and the observed changes. Analyzing the experiment with convincing data on its effect on sleep disturbance and the ABA experimental design of the present study helps determine if the intervention caused changes in sleep disturbance. Based on the analysis, since the data are convincing across phases and the ABA design is a strong design for behavior analysis [43], the observed differences in T-scores across the phases, combined with the clear division and stability of data, strongly suggest that the integrative biopsychosocial therapy caused the reduction in sleep disturbances.

The return to higher T-scores in the final baseline phase further supports the causality, as it rules out alternative explanations such as time coincidences or random variability. This finding is significant as it establishes the therapy's efficacy in reducing sleep disturbances in individuals with comorbid MDD and PTSD. Related literature often emphasizes the importance of establishing causality in single-subject designs, specifically ABA designs [78]. The causality established in this study indicates that integrative biopsychosocial therapy was responsible for the observed reduction in sleep disturbances during the intervention phase. The convincing data and the strong design provide evidence of the therapy's effectiveness. These findings highlight the importance of ongoing therapeutic support to sustain the benefits achieved during treatment and feature the potential of integrative approaches in managing sleep disturbances in individuals with comorbid MDD and PTSD.

PTSD Score Monitoring

The study employed a single-subject experimental design (A-B-A) to systematically assess changes in the client's PTSD symptoms over three distinct phases: baseline (A), treatment (B), and post-treatment baseline (A). The data collected were meticulously analyzed using visual analysis, and Miller's [43] four steps of visual analysis were used to determine the therapy's efficacy.

Figure 14. Total PTSD Score Monitoring Across Phases



Note: The arrow lines show that high data remain high (baseline A) and low data remain low (Intervention B) emphasizing stability.

During the initial baseline phase (sessions 1-15), the client's PTSD scaled scores fluctuated within a narrow range, with scores mostly hovering around 6.67 and peaking at 7.50. This stability in high scores indicated persistent and severe PTSD symptoms. As the treatment phase commenced (sessions 16-45), a noticeable decline in scaled scores was observed. The scaled scores began to decrease significantly from session 24, dropping to as low as 1.25 by session 45, reflecting a marked reduction in PTSD symptoms. The post-treatment baseline phase (sessions 46-60) showed a gradual increase in scaled scores, peaking again at 7.08, indicating some return of symptoms but not to the original severity seen in the initial baseline phase.

The data suggest that integrative biopsychosocial therapy can effectively reduce PTSD symptoms in individuals with comorbid MDD and PTSD. The substantial decline in scores during the treatment phase implies that the combination of pharmacotherapy, lifestyle modifications, cognitive-behavioral strategies, and social-legal support was effective in managing and alleviating PTSD symptoms. However, the resurgence of symptoms post-intervention highlights the potential need for sustained therapeutic efforts or follow-up support to maintain the benefits achieved during active treatment. The findings relate to the importance of continuous care and possibly integrating long-term strategies to prevent relapse.

The results of this study align with existing literature that emphasizes the importance of integrative approaches in treating trauma and stressor-related disorders. The present study's result agreed with the result of Davis et al. [79], which indicates that physical interventions for trauma and stressor-related disorders are promising. Moreover, the results also emphasized the study of Dass-Brailsford and Myrick [80], who mentioned that an integrated approach to treatment is the acceptable and preferred approach to treatment.

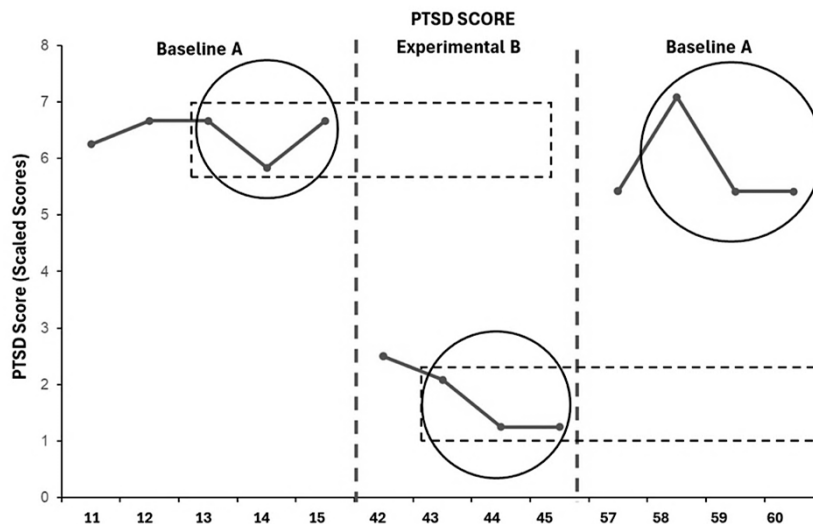
Visual Analysis of PTSD scores

In Miller's [43] method of data analysis, the last three data points from each phase (baseline A, treatment B, and post-intervention baseline A) were critically examined through the lenses of data division, stability, convincing data, and causality.

Division of Data. Division of data involves assessing whether the ranges of behavior in different conditions (baseline, treatment, post-intervention) are distinct and non-overlapping.

The clear division also suggests that the intervention may have caused changes in behavior. In the initial baseline phase, the last three data points were 6.67, 5.83, and 6.67 (Sessions 13-15). The corresponding points were significantly lower during the treatment phase, at 2.08, 1.25, and 1.25 (Sessions 43-45). In the post-intervention phase, the last three data points rose to 7.08, 5.42, and 5.42 (Sessions 58-60). There is a noticeable drop during the treatment phase and an increase once the intervention is withdrawn. The clear division between the baseline and treatment data indicates that integrative therapy had a significant effect on reducing PTSD symptoms. This finding aligns with previous studies where sertraline [81, 71], light therapy [82], exercise [83], and mindfulness breathing [84] can be a viable treatment for PTSD. The partial return to baseline levels of the PTSD symptom post-intervention findings emphasizes the necessity of continuous support. The distinct separation or division of treatment data involving PTSD monitoring from both baseline phases emphasizes the efficacy of integrative therapy.

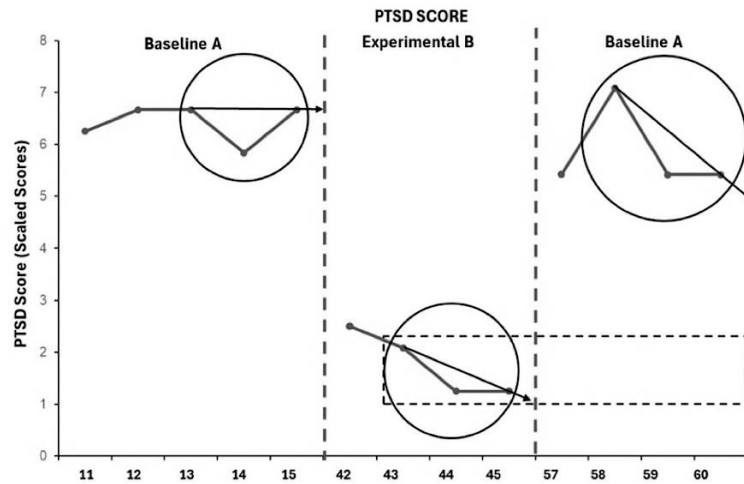
Figure 15. Divided Data Points of PTSD Scaled Scores



Note: Miller (2006) method showed no overlap of the data points on the study. This means the data were divided.

Stability. Miller's [43] approach to stability assesses whether the PTSD scores within each phase remain consistent without significant fluctuations. In the baseline phase, the scores (6.67, 5.83, 6.67) show minor fluctuations but remain relatively stable around a mean of approximately 6.39. The treatment phase scores (2.08, 1.25, 1.25) are consistently low, indicating stability. However, in the post-intervention phase, there are obvious fluctuations in the PTSD score data points. Although the data on the intervention phase remained low, the baseline in the post-intervention did not remain high, making it unstable. The instability in the post-intervention phase suggests that the client's PTSD symptoms are changing with or without the intervention. This instability highlights the need for additional strategies or treatment time to ensure symptom stability.

Figure 16. Unstable data points of the client's PTSD Scores



Note: The arrow on the post-intervention is not staying high. This means the data were not stable.

The findings confirmed that PTSD often persists, as documented in the literature. Many treatments stabilize symptoms, but maintaining these improvements post-treatment is challenging. According to the DSM-5-TR [38], about half of adults recover within three months, while others remain symptomatic for over a year and sometimes for more than 50 years. Triggers like trauma reminders, life stressors, or new traumatic events can worsen symptoms. For the participant whose case is in legal proceedings, the long-term success of treatment may depend on trauma type, population, and treatment duration [85]. Continuous monitoring and adaptive strategies are essential for managing symptoms.

Convincing. Applying Miller's [43] criteria, the researcher examines the convincingness of data points in Baseline A to evaluate the reliability of PTSD symptom monitoring. The PTSD symptoms data points were divided and unstable. Session 58 (7.08) notably showed higher severity than nearby sessions, contributing to a downward trend in the data points. The pre-intervention baseline remained high, while during the intervention phase, data points remained low. However, post-intervention data points did not remain high. The division and instability of the data points suggest that the results were not convincing. The divided yet unstable nature of the data points makes it difficult to confidently attribute symptom severity changes to treatment. The result also confirms Arnberg et al. [86] in their study that research has shown that posttraumatic stress can be long-term. The result suggests that more intensive follow-ups and observations are necessary.

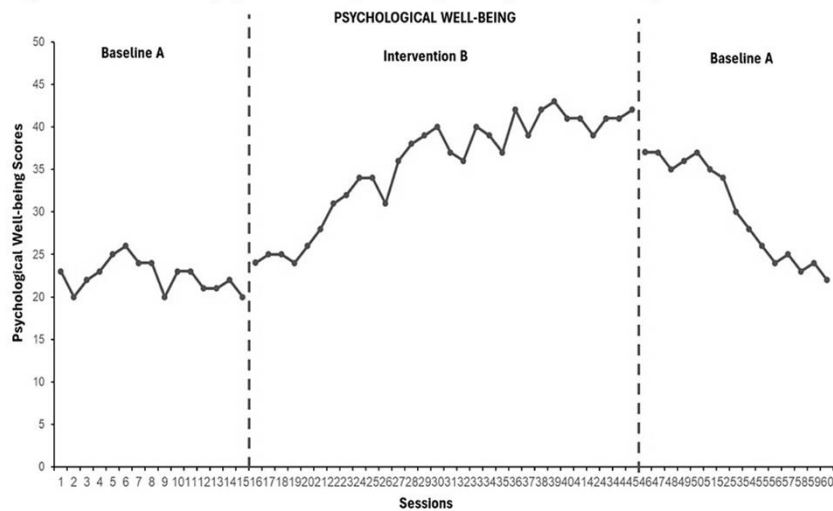
Causality. Using Miller's [43] framework, the researcher assessed the implications for causality within the ABA design based on data points. Despite using the ABA design structure, considered a strong design [43], the lack of convincing data suggests that integrative biopsychosocial therapy had caused no strong influence or cause changes in the client's PTSD symptoms. Here, the participant experienced relationship trauma with ongoing legal complications. Social factors, like those present in this case, are significant predictors of the long-term course of PTSD [87]. The results suggest that prolonged treatment for PTSD may be necessary.

Monitoring of Participant's Psychological Well-being

This section discusses the psychological well-being monitoring of a client undergoing integrative biopsychosocial therapy for comorbid major depressive disorder (MDD) and

posttraumatic stress disorder (PTSD). Data were gathered using the Flourishing Scale [42], providing a comprehensive view of the client's perception of her relationships, self-esteem, purpose, and optimism.

Figure 17. Monitoring of the Participant's Psychological Well-being



Note: Data points across phases obtained from the Flourishing Scale (Diener et al., 2009)

During the first baseline phase (sessions 1-15), the client's psychological well-being scores ranged from 20 to 26, indicating a relatively stable but low level of psychological well-being. Upon entering the treatment phase (sessions 16-45), the scores showed a marked increase, ranging from 24 to 43, demonstrating significant improvement in the client's psychological well-being. In the second baseline phase (sessions 46-60), the scores decreased but remained higher than the initial baseline, ranging from 22 to 37. These data suggest that the integrative therapy had a positive impact, although some decline was observed after the treatment was withdrawn. The significant improvement in psychological well-being scores during the treatment phase highlights the effectiveness of integrative biopsychosocial therapy in improving the client's perception of her relationships, self-esteem, purpose, and optimism. The decline in scores after the treatment phase emphasizes the necessity of ongoing support to improve psychological well-being.

The observed improvements align with findings from existing literature that highlight the benefits of integrative therapeutic approaches for managing psychological well-being. Bhartiya and Verma [88] positioned that the biopsychosocial model can be used in healthcare because patients are not only biological beings. The comparison of the baseline and the intervention reinforces the strength of the current study's findings and the importance of sustained intervention. The results suggest that integrative biopsychosocial therapy is a highly effective approach for improving psychological well-being in individuals with comorbid MDD and PTSD.

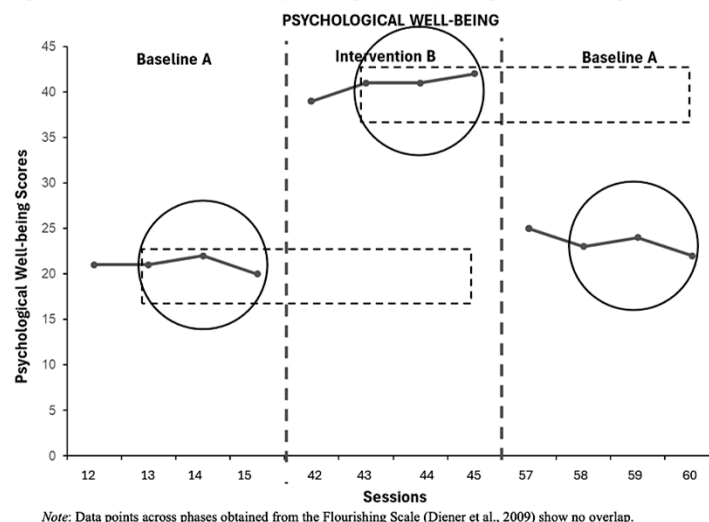
Visual Analysis of the Participant's Psychological Well-being data points

The visual analysis of the participant's psychological well-being scores, based on Miller's [43] approach, offers a comprehensive evaluation of the effects of integrative biopsychosocial therapy. This analysis examines the division of data, stability, convincing data, and causality across the baseline, treatment, and post-intervention phases.

Division of Data. The data from the last three sessions in each phase clearly demonstrate a division between the baseline (A) and treatment (B) conditions. During the first baseline phase (sessions 13, 14, and 15), the scores are consistently lower, ranging from 20 to 22. The scores markedly increase in the treatment phase (sessions 43, 44, and 45), showing a consistent range between 41 and 42. This distinct separation indicates a clear difference in the psychological well-being scores between the baseline and treatment phases. Finally, in the post-treatment baseline phase (sessions 58, 59, and 60), scores drop again to a range of 22 to 24, similar to the initial baseline. This clear division between phases suggests that the intervention had a notable impact on the participant's psychological well-being.

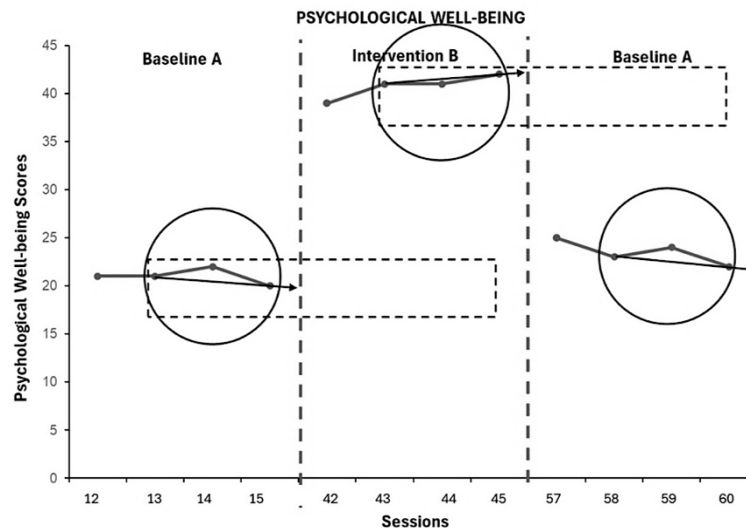
This clear division between phases indicates that the treatment significantly impacted the participant's psychological well-being. The distinct separation of scores demonstrates the intervention's effectiveness, which is crucial for validating the treatment and understanding the interplay of biological, psychological, and social factors. Papadimitriou [89] previously emphasized the major role psychological and environmental factors play in a patient's illness severity. The intervention's use of multiple domains also maintained fidelity to the model, supporting the current study's findings. The distinct separation in scores suggests that the treatment phase substantially improved the participant's psychological well-being. The division of data confirms that the intervention caused a noticeable change in the target behavior. Figure 19 shows the division of psychological well-being scores data points.

Figure 18. Divided Data Points of Participant's Psychological Well-being



Stability. Stability within each phase is critical for drawing valid conclusions, as it indicates that observed changes in psychological well-being are likely due to the intervention rather than random variability. The data's stability is evident within each phase, particularly in the last three data points. In the initial baseline phase, scores remain consistent at 20, 21, and 22. During the treatment phase, scores are stable at 41 and 42. In the final baseline phase, scores are also stable, ranging from 22 to 24. As observed, baseline data remain low, and intervention data remain high relative to the adjacent conditions.

Figure 19. Stable Data Points of Participant's Psychological Well-Being



Note: Data points across phases obtained from the Flourishing Scale (Diener et al., 2009) show stability.

This stability supports the reliability of the observed effects, indicating that the changes in psychological well-being are consistent and not due to random fluctuations. Stability within phases strengthens the evidence for the treatment's impact. It is a key factor in single-subject experimental designs and is frequently used to verify the consistency of treatment effects [90]. The stability observed aligns with established methodologies. Additionally, the stability of the results also features the importance of social aspects that influence an individual's life's physical and psychological facets [91]. The consistent scores within each phase suggest that the intervention had a reliable and repeatable effect on the participant's psychological well-being. The stability within each phase further confirms that the changes in the data points were due to the treatment rather than external factors.

Ana's gratitude journal also revealed a profound reliance on faith and spirituality. Throughout the 30 days, her entries consistently acknowledge God's protection, provision, and guidance. This theme is a cornerstone of her daily reflections, showing that her faith is a vital source of strength and comfort. Her spiritual connection is evident in her regular mentions of prayer and gratitude towards God for the smallest of blessings. Ana frequently credits God for her safety, the provision of daily needs, and emotional support. This spiritual connection also extends to her prayers, which she views as a means of maintaining a close relationship with God and finding solace amidst her challenges.

God protect (Day 1, March 28)

Safe always, God protect and provide (Day 3, March 30)

God is always with me (Day 10, April 6)

God naghatag sg protection; safe (Day 23, April 19)

Convincing data. According to Miller [43], convincing data are characterized by both divided and stable data that provide strong evidence that the intervention had a significant impact. The data from the last three sessions in each phase are divided and stable. The initial baseline phase shows low, stable scores (20-22), the treatment phase shows high, stable scores (41-42), and the final baseline phase returns to low, stable scores (22-24). The clear distinction between phases in the data stresses the intervention's positive impact on the participant's

psychological well-being. Convincing data, as noted by Miller [43], are fundamental to strong single-subject experimental designs and signal the effectiveness of interventions. This study's compelling data on psychological well-being also emphasizes clinicians' importance in understanding and managing the factors contributing to diseases rather than focusing solely on treatment. This approach necessitates self-awareness and a holistic understanding of health [88]. The clear and consistent differences between the baseline and treatment phases imply that the intervention was successful. The convincing data prove that the treatment was responsible for the observed improvements in psychological well-being.

Causality. Establishing causality involves demonstrating that the treatment directly caused the observed changes, supported by a strong research design and convincing data [43]. Given that this study observed an A-B-A design, the strong division and stability of data across phases, with low scores in the initial baseline, high scores during treatment, and low scores again in the final baseline, suggest a causal relationship between the intervention and the observed improvements in psychological well-being. The consistent pattern of changes across phases supports the conclusion that the treatment caused the observed differences. Establishing causality is essential for validating the effectiveness of the intervention [43]. This also aligns with Bhartiya and Verma [88], who suggest that an individual's well-being is a combination of biopsychosocial factors. These factors enhance quality of life, highlighting the importance of using diverse methods in preventing and managing diseases. The results indicate that integrative biopsychosocial therapy directly improved the participant's psychological well-being. The data prove that the treatment caused the observed changes, confirming its efficacy.

5.0. Conclusion

Integrative biopsychosocial therapy, in this study, is an effective therapy for comorbid major depressive disorder and PTSD. The client maintained stable vital signs, indicating no adverse effects from the intervention. Significant improvements were seen in anxiety, depression, sleep disturbances, and well-being, demonstrating the intervention's effectiveness. While PTSD symptoms significantly decreased, indicating a positive response to the intervention, further treatment and follow-up are needed to fully assess the impact.

6.0. Limitations of the Findings

The study identified valuable areas for enhancing future research and interventions for individuals with comorbid major depressive disorder and PTSD. While the lack of long-term follow-up, particularly on PTSD symptoms, offers an opportunity to explore the sustainability and long-term effectiveness of integrative biopsychosocial therapy, the single-subject scope suggests the potential for expanding the research to diverse demographics and cultural contexts. Incorporating more comprehensive qualitative analyses alongside quantitative measures, and post-intervention medical-laboratory evaluation could enrich understanding and provide deeper insights into the therapy's impact. The ongoing development of this therapy presents an exciting opportunity for further research and practical application, aiming to refine and strengthen its effectiveness in addressing comorbid depression and PTSD.

7.0. Practical Value of the Paper

The practical value of this research is evident in its demonstration of the effectiveness of integrative biopsychosocial therapy in treating individuals with comorbid major depressive disorder and PTSD. By showcasing significant improvements in anxiety, depression, sleep disturbances, and psychological well-being, the study presents a strong therapeutic approach

that can be readily adopted in clinical practice. Furthermore, the research stresses the necessity of personalized interventions and continuous support, providing critical insights for mental health practitioners seeking to optimize treatment outcomes for patients with complex comorbid conditions. This study lays a foundation for enhancing comprehensive mental health care strategies. Mental health practitioners may utilize the proposed pocket guide entitled *Integrative Biopsychosocial Therapy for Comorbid Depression and PTSD – Pocket Guide for Mental Health Practitioners* for future implementations and improvements, ultimately contributing to more effective and holistic patient care.

8.0. Directions for Future Research

Future research should focus on generating more studies, enhancing more on the methodological rigor and scope investigating the efficacy stability of integrative biopsychosocial therapy for comorbid depression and PTSD. This includes adopting longer baseline periods and multiple baseline designs across different behaviors or individuals to better assess intervention effects. Long-term follow-up studies are important to evaluate the sustainability of therapeutic outcomes over time. Expanding the sample size and including diverse populations will help determine the generalizability of findings across various demographics and cultural contexts. Additionally, integrating other qualitative analyses with quantitative measures will provide a richer understanding of participants' subjective experiences, thereby refining and improving therapeutic approaches. Continued research should also focus on the development and refinement of the integrative biopsychosocial therapy, ensuring it is grounded in comprehensive data and capable of addressing the complex interplay of biopsychosocial factors in comorbid conditions.

9.0. Declaration of Conflict of Interest

The authors declare no conflict of interest.

10.0 Acknowledgement

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