

Children's Responses to Stress and How to Address Them

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Abstract:

The current study aimed to estimate the different responses that appear on the school child after being exposed to chronic stressful conditions, and to try some methods to deal with them in order to extract which method is the most effective. The application was carried out in several stages (five) on a sample of 75 schoolchildren. The Castaneda inventory scale was applied, as well as Rey's test (A), then the treatment modalities were tested on a sample of 21 children chosen from the large sample. The results of measurement and experimentation showed that anxiety, school performance, and illness are all possible responses for the child, and there is no specific pattern. Conversation-based psychological support was also found to be more effective than cognitive assessment.

Keywords: appreciation, child response, stressful conditions, treatment methods.

Introduction:

In this research, we aimed to shed light on a critical phase in an individual's life the actual entry into continuous interaction with a broader environment. After approximately the first six years of life, a new phase begins, adding to the child's narrow environment the condensed societal environment, where individuals from various families gather in a single institution. The purpose of this institution is to teach children reading, writing, and subsequently, various sciences (school).

This phase is considered a fundamental stage for testing the psychological health of children, particularly. The nature of the child's interaction with the new environment will indicate their level of adaptation. It is true that the elements of adaptation are dual: internal (pertaining to the child) and external (pertaining to the environment). While dysfunction can occur in external elements, the internal elements remain the primary responsibility in all cases.

1. The Problem:

The social environment provides a set of psychosocial stress factors such as divorce, separation, death, or, more generally, social difficulties—whether relational or material. These challenges represent the most significant pressures an individual faces because they "lead to a radical change in

an individual's life, and not everyone can adapt to them" (Boudarène, 2005, pp. 12-13). The ability to adapt varies according to the individual's age and corresponding maturity; what is difficult for an adult is even more so for a child. According to Bee and Boyd (2003), a disrupted environment (divorce) "is a traumatic event for the child" (Bee & Boyd, 2003, p. 218). Ingoldsky et al. (1999) state that a child's parents separating, or even staying together while continuing conflicts, predisposes the child to experience the same negative effects associated with unfavorable divorce. Pegani et al. (1997) cite negative impacts on children, such as behavioral disorders, manifesting as aggressive responses, emotional disturbances such as depression and anger, and decreased academic performance. According to McLanahan and Sandefur (1994), as cited in Bee and Boyd (2003), children living with one parent due to divorce are twice as likely to drop out of school (Bee & Boyd, 2003, pp. 219-221).

Emotional responses appear in the initial stage of stress, as Mason mentioned, citing Boudarène (2005), who disagreed with Selye's concept of "nonspecific stress response," which is the same for both joy and sadness. Danasio (2000) concurs, placing emotions at the core of behaviors and abilities, which result from the somatic encoding of past experiences. Psychologists and physiologists differ regarding primary and secondary responses. Psychologists emphasize cognitive processes that identify threats, followed by emotional activation (hormonal arousal). In contrast, physiologists assert that hormonal responses and subsequent emotional arousal, as reflexes, precede the recognition of threats (Boudarène, 2005, pp. 39-40).

The adaptive nature of emotional response is its most significant aspect, as it enables the individual to be alerted and become aware of the event, meaning it interrupts active cognitive and/or behavioral processes to reorganize a new action plan. At this point, emotion aids in adapting to the situation or event, restoring the individual's internal (psychological and physiological) balance. Emotional imbalance is temporary, but if it persists, it disrupts internal equilibrium for an extended period, causing the individual to experience a painful event whose intensity varies depending on the event and the individual's psychological nature (e.g., a tendency to exaggerate matters, panic). If this state persists, it can become independent of the triggering event and continue even after the event has ceased. When efforts to control and manage emotions fail, the situation becomes pathological.

The emotion that arises as a response to stress is referred to as anxiety. If it becomes pathological, it is termed pathological anxiety. Debonis (1988) describes pathological anxiety as "a negative emotion that distorts the perception of events, alters the dynamics of adaptation, and creates a sense of threat and danger, which characterizes both anxiety and negative expectations, further exacerbating the condition" (Boudarène, 2005, pp. 41-43). Anxiety is the first psychological disorder linked to stress; it may be accompanied by functional disorders, which are "not psychosomatic diseases. Psychological or physical stress can cause genuine disturbances: anger, cold, shock, resistance... can lead to functional or organic disorders" (Coudron, 1992, p. 37). Stress can cause actual deterioration of an organ, leading to illness. While this applies to adults, does it also apply to children?

Can a child exposed to a stressful event or situation manage and adapt to it independently, maintaining internal balance and their life routine? Is this possible with family support when the stressor occurs outside the home? What happens when the family or extended family is the source of the stress?

Bee and Boyd (2003) cite several studies, such as those by Masten and Coatsworth (1998) and Masten, Sesma, and Miliotis (1999), which conclude that children do not show the same level of vulnerability to stress. They vary in their resilience. Protective characteristics that shield children

from the negative effects of stress and disorders include good intelligence, parental guidance, care from skilled adults, effective schools, a sense of security and attachment to parents, community involvement (friends, neighbors, extended family), and stable employment for both parents (Bee & Boyd, 2003, p. 223). Resilient children exhibit cognitive and relational skills, enabling them to establish and maintain relationships and to understand and process what happens around them.

Exclusive responses in children manifest in developmental areas characteristic of the stage they are in. For children aged 7–13, these responses are often related to school, including school phobia, learning difficulties, and psycho-motor instability (Douki & al., 1986, p. 59). The American cognitive-behavioral psychologist Dumas (2005) identified four levels where anxiety manifests: emotional, cognitive, physiological, and behavioral. He argues that anxiety affects the overall functioning of the child, necessitating intervention across all these levels (Dumas, 2005, p. 19). His cognitive-behavioral approach to treating anxiety in children is based on this premise.

A question arises in this context: Does psychological treatment for children require addressing all aspects of suffering, or can it focus on only some—or perhaps just one—aspect, with modifications potentially improving the whole?

According to Thomas, Yan, and Stelmach (2000), as cited in Bee and Boyd (2003), primary school children experience increased physical growth, which enhances motor skills, improving speed, performance, and coordination between visual and motor functions (Bee & Boyd, 2003, p. 115). The most significant motor skills during this stage involve fine motor movements (e.g., finger movements), which enable writing and drawing.

Related to this growth, two major changes occur in the brain. The first happens between the ages of 6 and 8, and the second between 10 and 12. According to Spreen et al. (1995), between 6–8 years, there is rapid growth in new synapses and an increase in cortical density in sensory-motor areas, leading to the development of manual skills and improved visual-motor coordination. Between 10–12 years, another rapid growth phase of new synapses occurs, along with increased cortical density in the prefrontal lobe, where cognitive functions related to logic and planning are controlled.

During the school years, myelinization continues, particularly in connections between the reticular formation and the prefrontal lobe. The reticular formation manages and controls attention, and thus attentional regulation significantly improves during these years (Lin et al., 1999, as cited in Bee & Boyd, 2003, p. 256). Between ages 6 and 12, selective attention develops, performance speed increases, and visual perception is established by age 6, while spatial perception is established by age 8 (Bee & Boyd, 2003, p. 158).

According to Kail (1990), the improved information processing abilities observed in school-aged children result from enhanced memory capabilities (Bee & Boyd, 2003, p. 157).

From a general health perspective, Bee and Boyd (2003) note that children in the concrete operations stage (school age) are typically healthy, experiencing only minor illnesses like colds or upper respiratory infections 4–6 times a year. However, 10% of them report sleep difficulties. The most significant risks to their lives are accidents, particularly traffic accidents.

Italian researcher Maffeis et al. (1993) reported that 23.4% of boys and 12.7% of girls aged 10 suffer from obesity. According to the French National Institute of Health and Medical Research (INSERM, 2001), 12% of children in the United States are obese (Bee & Boyd, 2003, p. 158).

Neglect, Abuse, and Their Impacts on Children : The greatest dangers to children arise from neglect and abuse, alongside pressures linked to poverty and familial relational conflicts. According to Margolin and Gordis (2000), abuse leads to the development of post-traumatic stress syndrome, which includes high levels of anxiety. Glaser (2000) notes that abused children are more prone to academic difficulties and delinquency and exhibit slower brain development compared to their peers (Bee & Boyd, 2003, p. 159).

Learning difficulties, as shown in several studies, stem from weaknesses in working memory and short-term memory. Swanson (1994) conducted a study and found that typical children outperformed those with learning difficulties in working memory tasks involving skills such as listening and attention, verbal recall, spatial-visual perception tasks, and verbal relationships. Similarly, typical children demonstrated better short-term memory in tasks such as word sequences and reproducing designs (Al-Zayat, Vol. 2, 2001, p. 471). Statistically significant correlations were found between memory measures and academic achievement for both typical children and those with learning difficulties. Both working and short-term memory have a combined influence on academic achievement. Brown (1984) argued that weak memory capacity leads to problems in information processing, causing difficulties in following instructions that rely on memory (Al-Zayat, Vol. 2, 2001, p. 474).

Pressley (1987) attributed the failure of children with learning difficulties to two factors: the first is the lack of an information base, meaning a cognitive structure equivalent to that of typical children, and the second is weak retention and retrieval abilities (Al-Zayat, Vol. 2, 2001, p. 466).

Cognitive Aspects of Learning and Memory

According to Al-Rasheedi et al. (2000), cognitive processes are interrelated and sequential under normal conditions, beginning with sensation, which represents the initial psychological connection between the individual and external objects (the environment). Sensation initiates perception, which is the primary source of knowledge. Sensory knowledge drives all subsequent cognitive processes. Perception is a cognitive process connected to other psychological processes of the personality, such as thinking (awareness of the situation), speech (naming the perceived object), emotions (attitudes toward the perceived), and voluntary effort (voluntary perceptual organization) (Al-Rasheedi et al., 2000, p. 43).

Selective attention, another cognitive process, supports perception and enhances awareness of a limited range of stimuli (Al-Rasheedi et al., 2000, p. 133). The individual encodes perceived information in memory and employs it in behavior, with behavior reflecting retrieval. Therefore, memory consists of a sequence of interconnected cognitive processes, progressing from sensory memory to short-term memory (immediate and working memory) and long-term memory.

“Pattern recognition” occurs through memory structures when sensory memory information connects with long-term memory (Al-Rasheedi et al., 2000, pp. 99–102). According to Shakshak (2008), cognitive processes overlap, as attention increases the speed and clarity of perception. Attention

facilitates the encoding of images and meanings, making sensations meaningful and organized, enhancing retention, and improving the ability to retrieve information (Shakshak, 2008, p. 29).

Based on the aforementioned information and study findings, the following questions arise:

- 1- Does the child in the concrete operational stage, who is experiencing a stressful period, respond adaptively to the stressful situation such that this pressure and the effort exerted for adaptation do not disrupt the child's overall balance?
- 2- In other words, can a child in the concrete operational stage maintain their psychological well-being under stress, avoiding anxiety? Can they sustain their physical health without falling ill? Can they preserve their cognitive abilities without experiencing school performance difficulties?
- 3- At a secondary level, if an imbalance manifests in these areas during a stressful situation, is it temporary and resolves over time, or does it indicate a pathological condition requiring therapeutic intervention?
- 4- Should treatment focus on the most affected area, or should intervention address all aspects? Specifically, should the intervention target anxiety or cognitive processes?
- 5- Which treatments are more effective: psychological therapy based on moral support (primarily verbal) or therapy focused on cognitive and performance-based correction (concrete approaches)?
- 6- Does combining two therapeutic methods yield better results than a single approach?
- 7- Does an organic illness in a child during the concrete operational stage mitigate stress, or does it add to the initial stress?
- 8- In other words, do children with organic illnesses exhibit the same responses emotional anxiety and cognitive responses as healthy children?

2. Research Hypotheses

2.1 Diagnostic Hypotheses:

- 1- Chronic stress in children at the concrete operational stage leads to the emergence of patterned responses: emotional (anxiety), cognitive-performance related (cognitive processes and learning difficulties), and physical (organic illness).
- 2- The responses of children in the concrete operational stage to stressful conditions are general, involving an overlap of all response types.
- 3- The intensity of responses to stressful conditions varies among children in the concrete operational stage across the different response types.

2.2- Therapeutic Hypotheses:

- 1- Patterned responses require therapeutic intervention, as they do not subside over time.

- 2- Psychological therapy based on moral support reduces the intensity of anxiety in children at the concrete operational stage.
- 3- Cognitive-performance correction improves cognitive (academic) performance.
- 4- A dual-integrated therapeutic approach demonstrates greater effectiveness than a single-method treatment.

3. Operational Definitions of Concepts

3.1 Concrete Operational Stage

This stage corresponds to the child's presence in primary school.

3.2 Chronic Stressful Condition

A chronic stressful condition refers to a situation or event that has occurred in the child's life and persisted along with its consequences, such as parental divorce, worsening living conditions, poverty, severe parental conflicts, loss of one or both parents, illness of the remaining parent, relational problems, etc.

3.3 Anxiety (Emotional Response)

Anxiety is represented by the score obtained by the child on the modified Castaneda scale.

3.4 Cognitive Processes

Cognitive processes encompass all mental operations performed by the child to achieve the required performance, as measured by the modified Guy/A model. This includes patterns of perception, attention (as reflected in performance accuracy and richness), memory retrieval, and processing speed.

3.5 Learning Difficulties

The terms learning difficulties, acquisition difficulties, school adaptation issues, and academic achievement are used synonymously. These were measured through the child's results in two semester exams, noting the overall decline in grades, whether affected by a single subject or multiple subjects.

3.6 Psychological Intervention

Psychological intervention includes psychological support aimed at addressing the problem and mitigating its effects, as well as applying the designed model for improving attention and perception, thereby enhancing performance.

4. Methodology for Testing Hypotheses

4.1 Data Collection Approach:

The sample was not pre-selected; instead, it was gradually formed from schoolchildren aged 6–7 and 13–14 years (pre-adolescence). The sample selection process included identifying children exposed to chronic stressful conditions, excluding those with general intelligence issues based on previously satisfactory academic performance, and those without chronic physical illnesses. The sample included primarily children from basic education schools and a minority from the new primary school system due to the extended research timeline.

The research involved the following steps:

- 1- **First Interview:** An initial interview was conducted with each participant, discussing their situation, school and family conditions, friends, academic performance, self-perception, and satisfaction. The researchers were already familiar with the school environment, as they were part of the medical team within the Detection and Monitoring Unit, ensuring a comfortable and familiar setting for the interviews.
- 2- **Second Interview:** During the second meeting, the child's recent developments in school, family, and peer relationships were explored. After confirming their readiness for active participation, the child was encouraged to take the modified Guy (A) test, introduced as a meaningless geometric shape. This was administered to a total of 75 school children.
- 3- **Subsequent Interviews (Third, Fourth, and Fifth):** The Castaneda anxiety scale was applied through conversational methods addressing the child's habits, fears, and beliefs. Indirect scoring of the scale items was followed by providing the child with an Algerian Arabic-adapted questionnaire, which was cross-checked with the interview findings. A subset of 34 children ($N_1=34$) was retained based on the analysis of the lie scale.
- 4- **Selection for Therapeutic Intervention:** Among the children who completed the Guy test and anxiety scale ($N_1=34$) and exhibited chronic stress-related impacts (cognitive and/or emotional), 21 cases ($N_2=21$) were selected for therapeutic intervention. They were divided into three groups ($N_2-1=7$, $N_2-2=7$, and $N_2-3=7$), each subjected to a specific treatment method:
 - **Group 1 (N2-1):** Cognitive correction (Experiment I).
 - **Group 2 (N2-2):** Cognitive correction (Experiment II).
 - **Group 3 (N2-3):** Psychological support based on Dumas's method for addressing anxiety, fears, and problems.
- 5- **Post-Intervention Reassessment:** Following the therapeutic phase, the modified Guy (A) test and the anxiety scale were re-administered to all participants in $N_2=21$ for comparison of pre- and post-intervention states.
- 6- **Additional Sample for Clinical Comparison:** A smaller sample ($N_3=7$) of children with the same age range and characteristics as the primary sample, but also experiencing brain injuries requiring hospitalization and surgery, was selected. Due to health-related constraints, this sample was reduced to $N_3=4$. These cases underwent clinical study, including interviews at the hospital, application of the children's anxiety scale, and the modified Guy (A) test.

- **Subgroup N3-1=2:** Treated with Experiment I of cognitive correction combined with psychological support.
 - **Subgroup N3-2=2:** Treated with Experiment II of cognitive correction combined with psychological support.
- 7- **Final Reassessment:** After completing follow-ups, the anxiety scale and modified Guy (A) test (transfer stage without memory recall, to avoid bias from repetition) were re-administered to evaluate intervention effectiveness through pre- and post-treatment comparisons.

4.2 Data Processing Approach:

Statistical methods were used to analyze the data (Halimi et al., 1985). The following tools were employed:

- 1- **Frequencies:** Used for counting occurrences within the data.
- 2- **Percentages:** Utilized to evaluate the effectiveness of therapeutic interventions.
- 3- **Chi-Square Test (Khi²):** Applied when the data were qualitative and based on frequencies, such as the case with perceptual and recall patterns. Its formula:

$$K_{hi^2} = \sum \frac{(A-B)^2}{B}$$

- 4- **Pearson Correlation Coefficient:** Used to assess the validity and reliability of the scales and to investigate the strength or weakness of the relationship between two variables (intra-sample analysis). It was also applied in the factor analysis of anxiety manifestations. Its formula:

$$r = \frac{[n(\sum X^2) - (\sum X)^2][n(\sum Y^2) - (\sum Y)^2] - (\sum X \cdot Y)^2}{\sqrt{[n(\sum X^2) - (\sum X)^2][n(\sum Y^2) - (\sum Y)^2]}}$$

- 5- **t-Test (Difference Between Two Means):** Used when the data were quantitative and based on scores. Its formula:

$$t = \frac{\bar{X} - X_1}{\sigma / \sqrt{n}}$$

Table No. 01 presents a summary of the methods used for analysis across the various stages of the field investigation.

Table 01: Summary of Fieldwork Steps (Sample Size / Measurement Tool / Analysis Tool)

Fieldwork Stages	Sample Size	Measurement Tool	Analysis Tool
First Stage	N=75	Modified Guy (A) Test: <ul style="list-style-type: none"> • Transfer • Retrieval 	<ul style="list-style-type: none"> • t-Test • Chi-Square Test (Khi²) • Pearson Correlation Coefficient
Second Stage	N ₁ =34	<ul style="list-style-type: none"> • Children's Anxiety Scale 	<ul style="list-style-type: none"> • Pearson Correlation Coefficient • t-Test
Third Stage	N ₂ =21/3	<ul style="list-style-type: none"> • Cognitive Correction I and II (Experiment) • Psychological Support III (Problem Solving) 	<ul style="list-style-type: none"> • Percentages • Qualitative Analysis
Fourth Stage	N ₂ =21/3	(Post-Test Measurement)	<ul style="list-style-type: none"> • Pearson Correlation Coefficient • Chi-Square Test (Khi²)

		<ul style="list-style-type: none"> • Modified Guy (A) Test: Transfer • Children's Anxiety Scale 	
Fifth Stage	N₃=4	<ul style="list-style-type: none"> • Modified Guy (A) Test: Transfer - Retrieval • Children's Anxiety Scale • Experiments I and II for Cognitive Correction and Psychological Support III • Reassessment 	<ul style="list-style-type: none"> • Qualitative Analysis

5. Research Findings:

The validity of the research hypotheses was confirmed in five stages, with the results of each stage revealing the following:

In the first stage, we measured cognitive performance processes, including perception and memory retrieval, in a sample of N=75 children. We studied the relationships among these processes and their connections with factors such as gender, age, level of acquisition, and learning difficulties.

It was found that cognitive processes in children during the concrete operational stage are primarily linked to perceptual abilities. Accuracy, which is associated with good attention and proper perception, results in a corresponding accuracy in retrieval. This conclusion is supported by the tendency of most children to maintain a consistent pattern of performance in both perception and memory retrieval.

Some children, however, showed an improvement in perception during retrieval rather than a decline, indicating their ability to sustain representational cognitive activity and adapt effectively after a brief period of maladaptation. Older children appeared to perform more accurately in both perceptual and retrieval tasks compared to younger ones.

Additionally, boys demonstrated greater accuracy than girls in perceptual performance but not in retrieval. Children with poor academic achievement performed worse than their peers in both perception and retrieval. No significant difference was observed between children with and without learning difficulties in terms of performance, except in terms of time, as children with learning difficulties tended to rush. This suggests that good performance requires deliberation and that children with learning difficulties struggle with time organization.

Consequently, children experiencing stressful conditions do not exhibit uniform cognitive responses. Some are negatively affected, while others are not. Cognitive performance responses both perceptual and retrieval vary in intensity, ranging from absent to present.

In the second stage, we examined the anxiety factor and its six underlying components (physiological, emotional, cognitive, social, impulsive behaviors, and negative expectations) on one hand, and its relationship with cognitive performance on the other. This was conducted on a sample of N=34

children who were selected from the initial 75 based on the validity and lie scale (11 items) included in the Castaneda Anxiety Scale.

The results showed no relationship between the level of anxiety or its six underlying components and school achievement or learning difficulties. However, older children [ages 11–13] exhibited higher average anxiety levels compared to younger children [ages 8–10]. The correlation between perceptual and retrieval performance whether in terms of accuracy, attention, retrieval ability, performance time, or performance pattern was found to be very strong in children with low anxiety levels, followed by those with moderate anxiety.

This indicates that children in the concrete operational stage respond differently to stressful conditions emotionally. The same findings were observed in the sample of children who showed organic impairments, as they were exposed to chronic and severe stressful conditions.

From these findings, the diagnostic hypotheses can be validated:

1. First Hypothesis: Children in the concrete operational stage exhibit patterned responses to stressful conditions, which vary between emotional, cognitive-performance-related, and organic responses.
2. Second Hypothesis: The intensity of these responses varies.
3. Third Hypothesis (Partially Validated): The overlap between response types is not complete, as learning difficulties and school achievement levels were found to have no significant correlation with anxiety levels, meaning children do not differ significantly in terms of anxiety levels.

Regarding the hypotheses related to psychological treatment, Experiment III (psychological support) demonstrated positive outcomes across most levels, confirming that fostering reassurance and comfort significantly impacts other cognitive aspects. It had a notable positive influence on attention, accuracy, anxiety, acquisition, and performance patterns, although the comprehensive cognitive correction method (Experiment I) showed a stronger impact on performance time.

Thus, while overall improvement in emotional and cognitive levels was not achieved, the **fourth hypothesis** stating the necessity of psychological intervention and the insufficiency of time alone to induce change was validated.

In terms of preferring a specific intervention method, engaging in dialogue with the child proved more effective than performance-based cognitive correction. This finding contrasts with the expected advantage of concrete methods (assessment models), which are typically more suited to children in the concrete operational stage. Psychological support improved perceptual patterns, attention, accuracy, and acquisition but had an equal effect on anxiety as cognitive correction (Experiment II).

Accordingly, the therapeutic hypotheses were only partially validated:

- The **fourth hypothesis** was confirmed for cognitive and performance aspects but not for anxiety.
- The **fifth hypothesis** was partially validated, as Experiments I and II produced satisfactory results on perceptual patterns and performance time.

Contrary to expectations, dual-method integration (III+I and III+II) was less effective overall.

- The combination of psychological support and comprehensive correction (III+I) positively impacted perceptual patterns and performance accuracy but had a negative effect on anxiety.
- The combination of psychological support and segmented correction (III+II) performed 10% better than the first combination, particularly in attention, accuracy, and performance time.

A plausible explanation for these results lies in the fixed amount of time allocated to each method, whether single or combined.

Furthermore, the constant demand for good performance and improvement in the educational setting may render performance-based correction methods less effective, as they themselves may become a source of stress. Conversely, providing children the opportunity to speak and express themselves an uncommon and welcome experience within the school context—proved to be an effective element in reducing stress.

Conclusion:

This research has provided a substantial amount of data, which we have endeavored to handle with care and precision. However, it still requires deeper reflection and greater attention, as well as more time to fully comprehend its entirety. This would potentially enable us to reach a theorized outcome that can be aligned with existing theories and yield recommendations in a format that is practical and applicable in the field.

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