

CASE REPORTS

From behavioral inhibition in toddlers to anxiety disorder: Influencing factors

Da inibição comportamental em crianças até à perturbação de ansiedade: Fatores influenciadores

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ABSTRACT

Behavioral inhibition (BI), a biologically driven temperamental trait defined by fearful, avoidant, and withdrawn reactions to novelty, is known to represent an early vulnerability in the development of anxiety disorders.

Herein is reported the case of two 18-month-old twins whose parents exhibited high levels of anxiety, restricting the infants' exposure to new stimuli and experiences. One of the twins exhibited inhibited behaviors with high physiological activation and met criteria for inhibition to novelty disorder.

Several factors may predict the persistence of BI across the lifespan and moderate its association with later anxiety disorders, including cognitive or attentional biases, variations in neural functioning, attachment processes, parental psychopathology, and parenting practices. The COVID-19 pandemic exacerbated parental anxiety and pre-existing risk factors in particularly vulnerable children.

Keywords: anxiety disorder; behavioral inhibition; COVID-19 pandemic; inhibited temperament; parental anxiety; toddler

RESUMO

A inibição comportamental, um traço biológico do temperamento caracterizado por reações de medo, evitamento e retração perante a novidade, constitui uma vulnerabilidade precoce no desenvolvimento de perturbações de ansiedade.

É descrito o caso de dois gémeos de 18 meses de idade, cujos pais revelavam altos níveis de ansiedade, restringindo a exposição das crianças a novos estímulos e experiências. Um dos gémeos apresentou um comportamento inibido com elevada ativação fisiológica, preenchendo critérios de perturbação de inibição face à novidade.

Existem vários fatores preditivos de continuidade da inibição comportamental ao longo da vida, que podem moderar o desenvolvimento subsequente de perturbações de ansiedade, como vieses cognitivos ou atencionais, desregulação de circuitos neuronais, vinculação, psicopatologia parental e práticas parentais. A pandemia de COVID-19 exacerbou a ansiedade parental, bem como fatores de risco pré-existentes em crianças particularmente vulneráveis.

Palavras-chave: ansiedade parental; criança; inibição comportamental; pandemia de COVID-19; perturbação de ansiedade; temperamento inibido

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INTRODUCTION

Internalizing disorders, most commonly anxiety disorders, are among the most common mental health problems in children. Evidence of anxiety symptoms is present as early as infancy, with prevalence estimates as high as 10% in preschool children.⁽¹⁾ The etiology and development of anxiety disorders in children are related to the interaction of individual (biological, emotional, and cognitive) and environmental factors, particularly parental anxiety, child overprotection, and insecure attachment. These factors have a significant impact on the child's development beyond the effects on emotional regulation and academic and social functioning.

Behavioral inhibition (BI), originally proposed by Kagan, is a temperamental trait characterized by fearful, avoidant, or withdrawn responses to novelty and/or unfamiliar people with physiological activation.^(2,3) It is a risk factor for the development of anxiety disorders. Although temperamental traits are relatively stable, they can be mitigated by early modification of the environment in which the child is placed.^(4,5) If left untreated, longitudinal studies have described the stability of internalizing symptoms, even when identified in early childhood, and may be associated with more severe cases of anxiety in adulthood.⁽⁶⁾

Understanding the nosology of anxiety disorders in toddlers, including how the emergence of early anxiety symptoms aggregates into clinical syndromes and their course, is in its early stages. The aim of this report was to highlight the interplay between environmental factors and child temperamental dispositions on the emergence of anxiety disorders.

CASE REPORT

Two 18-month-old dizygotic twins, the result of an in vitro fertilization pregnancy, were referred to the child psychiatry consultation because of parental difficulties in giving the children autonomy at feeding time and reluctance to introduce solid foods for fear of choking. They attended daycare from 12 to 15 months of age but remained at home during the COVID-19 confinements while their parents teleworked. Both parents were very anxious and restricted the children's exposure to new stimuli and experiences, which they justified with the pandemic context. The children never attended playgrounds or visited public places and had no contact with other family members since the beginning of the pandemic. The female child exhibited inhibited behavior with high physiological activation (crying, vomiting, avoiding eye contact, freezing for prolonged periods), meeting criteria for inhibition to novelty disorder (according to DC: 0-5, Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood). The male child met criteria for global developmental delay.

Parents and children underwent parent-child interaction therapy (PCIT), which took place every two weeks in the presence of both

parents, children, and two therapists. During these sessions, the causes of parental anxiety were addressed, as well as its impact on modeling stimulus avoidance behaviors and developing the child's self-confidence. In addition, the importance of early experiences in children's development was explained and strategies for gradual exposure to a more stimulating and enriching environment with encouragement of coping strategies were discussed. Despite the parents' low level of adherence to the psychotherapy sessions, over the course of four sessions there was an improvement in the female child's anxiety symptoms: she began to explore the toys in the consultation room and eventually allowed strangers to approach and play with her. At another follow-up visit, at 24 months of age, the girl and her father were subjected to the adapted Strange Situation Procedure (an adaptation of the original Mary Ainsworth experiment, commonly used at the study hospital with children between 12 and 26 months of age) to monitor children's attachment security in the context of caregiver relationships, and a secure attachment was found. However, four months later, the girl was observed again and had regressed to her former inhibited behavior, avoiding contact with strangers and refusing to explore the environment. The parents disagreed with their daughter's need for psychotherapeutic support and discontinued follow-up.

DISCUSSION

BI affects 15-20% of children and is known to represent an early vulnerability in the development of anxiety disorders. In toddlerhood, markers of BI include facial expressions and vocalizations of distress, crying, vomiting, and freezing.^(5,7) According to DC: 0-5, Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood, in children under 24 months of age, inhibition to novelty disorder defines extremely inhibited behavior that impairs the child's functioning. Children present an overall difficulty in approaching and exploring new situations, including resistance to efforts to encourage exploration. It causes distress and interferes with relationships or participation in activities and routines expected for the developmental stage. The continued expression of BI limits exposure to positive early experiences that are essential for optimal brain development and emotion regulation. Although there is limited data on the development of inhibition disorder, BI is believed to be a precursor to other anxiety disorders, namely separation anxiety disorder (which goes beyond normative anxiety for the child's developmental stage and impairs the child's functioning), generalized anxiety disorder, and social anxiety disorder in school age and adolescence.⁽⁸⁾

Although temperamental traits are relatively stable across the lifespan and have a biological basis, the developmental trajectories of children with a history of BI are variable, suggesting that not all young children who display this temperament will go on to develop anxiety problems.^(7,9) Temperamental traits such as BI can

be altered by environmental inputs, suggesting a dynamic interplay between the child's traits and the environment in which the child is embedded. This concept is referred to as "goodness of fit", where there is a transactional process involving interactions between the child and the environment that influences adaptive and maladaptive developmental trajectories.^(4,5)

The competence for emotional self-regulation is an important factor in risk characterization. Self-regulation is not only the process of reducing emotional intensity, but also the process of adapting emotions to the experienced context. That is, in characterizing adaptive behavior, it is important to consider not only the intensity of expressed fear, but also whether these expressed emotions are compatible with the level of novelty and threat. The child's inability to adapt behavior to context or to apply the same behavior to all types of situations, such as remaining frozen in low-threat settings ("high fear-low threat"), illustrates a failure to use coping mechanisms. This dysregulation of emotional and fearful behaviors is the basis of anxiety disorders.⁽⁷⁾ These behavioral and physiological responses are associated with hypervigilance and attentional bias to threat, which are related to hyperreactivity of the amygdala and neuroendocrine responses of the hypothalamic-pituitary-adrenocortical system to stress and novelty, as evidenced by atypical cortisol production.^(4,10)

Anxiety aggregates within families, but only a small part of the risk is due to genetic inheritance, because the biggest influence on the intergenerational transmission of anxiety is parental behavior. These play an extremely important role in contributing to emotional outcomes in children. The development of emotional regulation is still evolving, and parental behavior serves as a regulatory model for learning appropriate responses to situations.⁽⁹⁾ Anxious parents, triggered by their own exacerbated perception of risk and vulnerability, encourage their offspring to develop a greater sense of perceived danger about the environment and model fearful and avoidant behaviors in social situations.⁽¹¹⁾ For example, the parents in this clinical case had difficulty allowing their children to interact with other children or to touch toys in the hospital waiting room for fear of contagion.

Although BI can be detected very early in a child's development, it should not be confused with the normal stranger-anxiety response that occurs at 7-8 months of age, which translates into the ability to distinguish between the attachment bond figure and unfamiliar people. Spitz argued that this type of anxiety expressed at this particular age translates into good emotional development and maturation, as opposed to the maladaptive behaviors that underlie BI. Thus, the end of the first year of life is a sensitive period for exposure to parental expressions of anxiety, especially in the presence of additional vulnerabilities, such as high levels of BI in the child.⁽¹²⁾

Experiences of contact with the environment, especially at preschool age, are almost entirely dependent on parental actions. Overprotective parenting styles are characterized by little encouragement and/or restriction of exploration of new situations.

These have been linked to socio-emotional maladjustment, limiting the development of regulatory abilities and exacerbating behavioral manifestations of inhibited temperament throughout childhood.

⁽³⁾ The use of high-intensity comforting behaviors (e.g., hugging, embracing) or shielding a child from stimuli reinforce the sense of security associated with withdrawal from a distressing situation or stimulus, emphasizing fearful responses and dependence on parents for regulation. Restricting a child's autonomy and independence in potentially stressful circumstances prevents the child from learning social and emotional regulation skills that could otherwise be practiced and developed in such situations. Overcontrol also teaches that a pattern of avoidant responses is acceptable when threatened, thereby increasing the risk of anxiety.⁽¹¹⁾ Moreover, the COVID-19 pandemic exacerbated these parents' anxiety through fear of viral infection, which was exacerbated by general measures of social isolation and closure of daycare centers, resulting in missed educational opportunities, lack of social interactions, and exposure to normative stimuli. In addition, children play an active role in influencing their environment and the protective behaviors of their caregivers. Children with inhibited temperament are particularly prone to elicit protective responses when faced with new and uncertain situations. For example, in addition to crying and vomiting, the girl hid behind her parents and actively sought comfort when exposed to strangers. The context in which these behaviors are requested plays an important role in the risk of future development of anxious behaviors. Protecting children in low-threat situations reinforces dependence on caregivers for self-regulation, hinders the development of appropriate regulatory strategies, and thus leads to the maintenance of the child's inhibition.⁽⁴⁾ On the opposite end of the spectrum are intrusive parenting behaviors, with extreme encouragement to involve the child in new environments without regard to their rhythm and pace. This prevents children from experiencing control over their environment and gaining social and emotional competence in uncertain situations, promotes feelings of helplessness in the child, and, like parental overprotection, limits the acquisition of adaptive self-regulatory strategies that perpetuate the stability of BI.⁽³⁾ In the middle of the spectrum is sensitive parenting, such as protection and physical comfort, which provides a secure base for the child in distressing contexts, promotes independence, facilitates the development of effective emotion regulation during fear-eliciting situations, and has been shown to alter the trajectory of inhibited behavior.^(3,4,13)

Beyond the above constructs related to parent and child behavioral characteristics, the quality of the parent-child attachment relationship is a relational construct that has also been found to influence the trajectories of inhibited children. Caregivers play a critical role in children's harmonious socio-emotional development by serving as a safe base from which children can explore their environment, knowing that the adult is present to provide protection in case of danger. In new or ambiguous situations for the child, they typically turn to the caregiver for support, emotional regulation,

and adaptive coping behaviors.⁽¹⁴⁾ Although the female child had a secure attachment, insecure attachments, particularly the insecure-resistant subtype, are most associated with promoting and reinforcing the development and maintenance of anxiety disorders in children over time. According to the attachment theory, children who have a history of inconsistent or inappropriate responses from caregivers become anxious about their availability that is not relieved when they return from a separation. The development of physiological activation mechanisms (with dysregulation of cortisol production) and hypervigilance that carry over to other situations and relationships predisposes to the stability of BI during the first two years of life.^(4,14)

PCIT has been useful in encouraging communication between parents and of children with therapists, reflecting on their major concerns and promoting change in parent-child interaction patterns. Interaction modeling, such as verbal encouragement to approach the new situation with praise, physically accompanying the child in the interaction, and respecting the child's pace, are incorporated into parent-focused intervention programs aimed at reducing the risk of anxiety in inhibited children.⁽¹⁵⁾ As with any psychotherapy, its efficacy and sustained gains depend on compliance and therapeutic adherence in completing tasks outside of consultation.

CONCLUSION

It has long been hypothesized that the fit between the child's temperament and the environment in which he/she grows up strongly influences the child's emotional development. Some forms of anxiety (separation anxiety, stranger anxiety) are normative at the target age, so determining clinically significant levels of anxiety requires an understanding of typical development in toddlerhood. Parenting styles are considered the most influential aspect of the environment for young children. Overprotection, intrusiveness, and parental anxiety play an important role in the development of anxiety disorders in children with high levels of inhibited temperament. The environmental changes associated with the COVID-19 pandemic and their negative impact on the developmental trajectory and well-being of infants and children should not be forgotten. This calls attention to the importance of interventions targeting parental anxiety in the prenatal and early postnatal years to mitigate the development of anxiety disorders with worsening effects over time. PCIT is useful in modifying parent-child interaction patterns and promoting healthy caregiving environments and optimal social-emotional development.

AUTHORSHIP

Maria do Rosário Monteiro - Conceptualization, Investigation, Methodology, Writing – original draft

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