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**Research Article**

# Conceptualizing twice-exceptionality from a neuroadaptive perspective: Cognitive Resonance Model (CRM)[1]

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**Abstract**

The concept of twice-exceptionality (2e) has generally been defined in the literature as the coexistence of giftedness and disability (such as learning difficulties, attention deficits, emotional intensity, etc.), and has often been explained through the tension between these two opposing conditions. However, this traditional approach remains insufficient for understanding the educational and developmental dimensions of 2e individuals. In particular, addressing twice-exceptionality primarily through a diagnostic-oriented framework may fail to fully capture the complex challenges experienced by these individuals. The Cognitive Resonance Model (CRM) is a neurocognitive framework developed to enable a more comprehensive understanding of the 2e phenomenon. CRM proposes that the cognitive tension existing between giftedness and disability undergoes a neuroadaptive transformation through adaptive tension. This process allows individuals to redirect challenges toward their strengths, facilitating the attainment of a state of cognitive resonance. Within the model, key concepts such as the short circuit loop are emphasized, helping individuals establish a balance between their challenges and strengths. This article explains the core concepts of CRM, supported by the theories of Dabrowski and Festinger, including Cognitive Focus Domain, Cognitive Dissonance Zone, Short Circuit Loop, Flow and Neuroadaptation, and Cognitive Integration. The paper also addresses critical issues such as the functioning of the model in the absence of disability in 2e, the model's search for new terminology specific to twice-exceptionality, and the reinterpretation of giftedness within the CRM framework. The CRM represents a paradigm distinct from classical approaches in the educational and developmental support of twice-exceptional individuals. Unlike traditional diagnostic-centered models, CRM acknowledges the simultaneous presence of both challenges and strengths, explaining this dynamic through processes such as cognitive energy, neuroadaptation, and identity integration. In conclusion, CRM offers a holistic approach that enables 2e individuals to realize their potential more effectively and provides a theoretical foundation for future educational interventions.

## To cite this article

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## Introduction

Gifted children may present with physical, sensory, communicative, or learning disabilities, as well as social, emotional, and behavioral disorders. The severity, type, and number of disabilities accompanying giftedness are unique and specific

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for each twice-exceptional child. Research in the field of twice-exceptionality (2e) has expanded across several subdomains, including the identification of exceptionality, the description of co-occurring disabilities, the modeling of twice-exceptionality (Ronksley-Pavia, 2015), the role of teachers and families in the 2e phenomenon (Baum et al., 2017; Besnoy, 2015), and the psychological dimensions of twice-exceptionality.

Since Baum (1989) and Baum et al. (1989) pioneering studies, there has been a steady increase in the number of research studies focusing on twice-exceptionality. When the literature between 2000 and 2015 is examined holistically, it becomes evident that research has largely concentrated on learning disabilities, while experimental studies have remained limited in scope (Foley-Nicpon, 2015; Lovett & Sparks, 2013).

**Defining the Phenomenon of Twice-Exceptionality**

Twice-exceptionality (2e) refers to the coexistence of giftedness and disability, such as learning disabilities or attention-deficit/hyperactivity disorder (ADHD) (Reis et al., 2014; Baum, Schader, & Hébert, 2014). The definition of twice-exceptionality is closely related to its identification and diagnosis. For example, a student who has been formally identified as both gifted and having a disability is considered to fall within the scope of twice-exceptionality. If twice-exceptionality is to be conceptualized schematically;


**Figure 1.** Schematic representation of the twice-exceptionality (2e) phenomenon

There are examples in the literature that similarly attempt to schematize the situation illustrated in Figure 1. Individuals who exhibit twice-exceptionality constitute a clear example of the asynchronous development described in definitions of giftedness. Due to the simultaneous presence of high abilities on one hand and learning deficits on the other, the 2e phenomenon is often perceived as involving mutually exclusive and developmentally opposing conditions (Baum, Schader, & Owen, 2017). This perception contributes to the phenomenon being evaluated as paradoxical and inconsistent (Ronksley-Pavia, 2015), and consequently, to its limited comprehensibility (Silverman, 2009).

In the literature, various and sometimes conflicting labels are used to describe these students, including *gifted learning disabled*, *dual/twice exceptional*, and occasionally *twice special*. In the present study, the term twice-exceptionality (2e) is preferred. Globally, there is still no universally accepted definition or standardized diagnostic procedure for 2e students within educational systems.

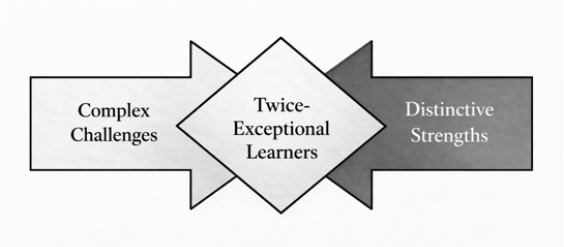


**Figure 2.** Visualization of the Complex, Dynamic, and Paradoxical Structure of Twice-Exceptionality (2e)(Adapted from Baum, Schader, & Owen, 2017)

The visualization of twice-exceptional students in order to facilitate conceptual understanding was developed by Baum, Schader, and Owen (2017). This representation consists of two interwoven arrows illustrated in blue (distinct strengths), yellow (complex challenges), and green (the intersection of both, representing twice-exceptionality). Understanding 2e through this paradoxical relationship and dynamic structure renders the phenomenon more comprehensible.

**Conceptualizing Giftedness**

It is evident that the conceptualization of giftedness has undergone several paradigm shifts over the years. Among theorists who have approached this phenomenon from genetic, developmental, and classificatory perspectives, the most influential include Renzulli's (1978) Three-Ring Conception of Giftedness and Gagné's (1985) Differentiated Model of Giftedness and Talent (DMGT).


**Figure 3.** Renzulli's (1978) Three-Ring Conception of Giftedness (Tortop, 2024)

This theory argues that giftedness requires the simultaneous presence of three components: task commitment, creativity, and above-average ability. Another influential theory is Gagné's (1985) Differentiated Model of Giftedness and Talent (DMGT). In this model, giftedness and talent are conceptualized as distinct constructs, explaining how potentials (natural abilities) evolve into talents through the influence of environmental factors, intrapersonal factors, and chance.

**Characteristics of Twice-Exceptional Children**

The answer to the question of what characterizes twice-exceptional (2e) students may be considered as the combination of characteristics associated with giftedness and those observed in the identified area of disability. While characteristics stemming from giftedness constitute students' strengths, those originating from the area of disability form their weaknesses (Fugate, 2014). Due to these coexisting differences, 2e students often struggle to cope with numerous socio-emotional challenges (King, 2005).

They are confronted with heightened sensitivities and intense emotional experiences derived from giftedness, as conceptualized by Dabrowski (1964). These students may demonstrate high performance in areas where their abilities emerge, while simultaneously exhibiting low performance in areas that are suppressed or constrained by disability. As a result of the ongoing internal conflict between strengths and weaknesses, the intensity of overexcitability may increase, leading students to display stubborn, argumentative, and persistently critical behaviors (Sosland, 2022; Baum, Schader, & Owen, 2017; King, 2005).

Repeated experiences of failure in areas of weakness or difficulty may contribute to low motivation, depressive mood, low tolerance, heightened sensitivity, excessive irritability, reduced self-confidence, and low perseverance, particularly when students attribute academic outcomes to internal and uncontrollable factors (Woodcock & Vialle, 2010). Academically, these students may experience difficulties in cognitive skills such as attention and focus, including memory-related problems; motivational skills such as failure to achieve academic goals; metacognitive skills such as ineffective planning; and executive skills such as disorganization (Sosland, 2022; Fugate, 2014; Baum, Schader, & Owen, 2017). These challenges may also lead to school-related anxiety (Coleman, 1992).

Additionally, low self-esteem and weaknesses in interpersonal relationship skills may result in difficulties in forming friendships, increased feelings of loneliness, and depressive symptoms (Barber & Mueller, 2011; Nielsen, 2002). The limited number of empirical studies examining the socio-emotional development of these children further restricts a comprehensive understanding of these dimensions (Foley-Nicpon & Assouline, 2013).

**Identification of Twice-Exceptional Students**

The identification of twice-exceptional (2e) students and the procedures through which such identification should be conducted constitute a critically important issue (Jacobs, 2020; Maddocks, 2018). The literature indicates a scarcity of studies addressing the identification of 2e students and reports that only a very limited number are identified at the elementary school level (Baum & Owen, 2004; Lovett & Sparks, 2013). The absence of a legal framework recognizing

twice-exceptionality contributes to the deepening of identification-related challenges. This issue may become less problematic if 2e is addressed as a distinct field, similar to other areas of special education (Pereira, Knotts, & Roberts, 2015).

During the identification process of 2e students, a phenomenon conceptualized as "masking" may result in the concealment of strengths, areas of disability, or both simultaneously (Jacobs, 2020; Omdal, Baldwin, & Pereles, 2021). Even highly experienced and knowledgeable teachers may encounter difficulties in identifying 2e students (Baldwin et al., 2015; Foley-Nicpon et al., 2011). Another challenge in identifying 2e students relates to inconsistencies and ambiguities in their definitions (Randall, 2021). Misconceptions and myths held by teachers and families regarding twice-exceptionality may further complicate the identification process (Baum, Schader, & Owen, 2017).

Although there is currently no widely accepted identification method for twice-exceptionality (Al-Hroub & Whitebread, 2019), certain indicators provide limited pathways for identifying 2e students with learning disabilities. For instance, large discrepancies between verbal and performance scores on intelligence tests may signal learning disabilities, and the combined use of selected intelligence tests with academic achievement assessments may support identification efforts (Waldron & Saphire, 1990). Until differentiated identification procedures specifically designed for 2e students are established, it is recommended that existing legal regulations and identification practices for gifted students and those with specific learning disabilities continue to be applied (McCoach et al., 2001, p. 410).

In recent years, there has been an increase in efforts aimed at developing screening instruments for twice-exceptionality (Şakar, 2022). As both theoretical and practice-oriented research on the identification of 2e students expands, corresponding legal regulations are expected to follow. Maddocks (2018) proposes addressing weaknesses in existing identification procedures by jointly considering alternative giftedness identification criteria, internal measures related to individual learning disabilities, and absolute deficits in cognitive processing and academic achievement.

**Explanation of the Cognitive Resonance Model (CRM)**

Twice-exceptional individuals exhibit a tension structure in which challenges such as learning difficulties, attentional problems, and emotional intensity coexist with high potentials including abstract thinking, artistic creativity, and strong memory capacity. This tension may at times produce a short-circuit effect within the cognitive system. A short circuit refers to a sudden redirection toward areas of strength in order to compensate for cognitively challenging domains; this redirection generates concentrated cognitive energy and a flow state.

Explaining this phenomenon solely through existing theories of giftedness remains difficult. Previous approaches have largely offered classificatory explanations focused on special education needs, and can be considered insufficient in addressing the phenomenon in a holistic, natural, and evolutionary manner. A schematic representation of the CRM model and its components is presented in Figure 4. The components and processes of the model are explained through illustrative examples.

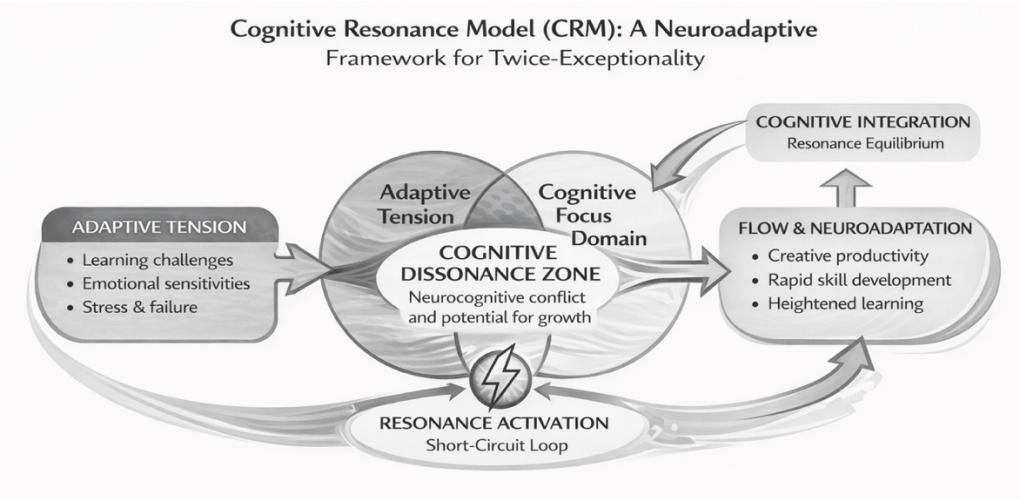


**Figure 4.** Schematic representation of the CRM

**Adaptive Tension**

The concept of adaptive tension refers to the cognitive tension created in twice-exceptional individuals by the presence of disabilities such as attention-deficit/hyperactivity disorder and learning difficulties, experiences of failure, and environmental mismatches such as behavioral problems and stress. This tension triggers a search for rebalancing within the individual. In this process, experienced stress does not function as a destructive force but rather as a transformative energy that initiates cognitive restructuring. In essence, the coexistence of challenge and tension constitutes a starting point that enables the emergence of cognitive resonance and the initiation of creative processes.

The theoretical foundations of this concept are grounded in Dabrowski's (1964) Theory of Positive Disintegration and Festinger's (1957) theory of cognitive dissonance. Within the framework of these theories, individuals achieve a developmental transformation of energy through internal and environmental challenges. As is well known, Dabrowski's overexcitability domains, such as intellectual, imaginational, and emotional overexcitabilities, represent the source of this restructuring process. According to Dabrowski, gifted individuals experience internal tension and conflict through these heightened sensitivity domains. In the CRM model, the crisis reflected by this tension, followed by awareness and transformation processes, is conceptualized as a series of developmental stages for twice-exceptional individuals. From this perspective, the notion that development cannot occur in the absence of internal conflict provides an explanatory basis for the processes observed in these individuals.

This process constitutes a dynamic reorganization that emerges at cognitive, emotional, and environmental levels. Festinger's explanation that individuals experience cognitive discomfort when inconsistencies arise among attitudes, beliefs, and behaviors, such as believing oneself to be intelligent while experiencing academic failure, initiates a search for cognitive coherence. This discomfort, conceptualized as cognitive dissonance, functions as a motivational force. Within the CRM model, the recognition of this internal tension represents the initial stage that propels the individual toward a comprehensive reorganization of the self.

Adaptive tension can be observed in prominent figures in whom giftedness and disability coexist. For example, Vincent van Gogh's emotional instability and intense emotional energy may be associated with emotional overexcitability; this crisis and stress functioned as a driving force through adaptive tension, carrying him into developmental phases and enabling him to achieve a unique balance in artistic expression. Similarly, Temple Grandin's experiences illustrate the concept of adaptive tension. Her sensory overload and neurological sensitivity contributed to an intuitive understanding of animal behavior and enabled her to reach cognitive balance through scientifically significant discoveries. As depicted in the film A Beautiful Mind, John Nash's experiences of paranoid schizophrenia, social isolation, and cognitive complexity represent a clear manifestation of adaptive tension. These challenges were transformed into a search for abstract mathematical order, ultimately leading to his receipt of the Nobel Prize.

As demonstrated in these examples, the common element lies in the fact that twice-exceptional individuals do not suppress internal tension; rather, this tension serves as the initial energy that triggers cognitive restructuring. This initiating force is defined as adaptive tension.

**Cognitive Focus Domain**

Within the CRM model, the concept of the Cognitive Focus Domain can be defined as the area of strength in which cognitive energy is most intensely concentrated and individual potential operates in an active manner in twice-exceptional individuals. This concept reframes giftedness not as a fixed and immutable trait, but as a dynamic cognitive center through which the brain redirects its energy in response to experienced tension, stress, and failure. In this sense, the Cognitive Focus Domain addresses a significant gap in existing conceptualizations of giftedness.

This concept is fully aligned with the Cognitive Short-Circuit Loop proposed in the CRM model, which is explained in subsequent sections. As illustrated through the metaphor of an electrical circuit, when an individual encounters difficulty, accumulated tension and cognitive energy are redirected by the neurocognitive system toward domains that function more efficiently. Through this focused redirection, the individual restructures the learning process, enhances creativity, and establishes resonance through areas of strength. In the CRM model, the Cognitive Focus Domain represents the area in which difficulty and stress are transformed and potential becomes activated.

The functioning of the Cognitive Focus Domain may be theoretically supported by Csikszentmihalyi's (1990) concept of flow emerging from the balance between challenge and skill, drawing on research on cognitive compensation in gifted and twice-exceptional individuals (Silverman, 2009; Baum, Schader, & Hébert, 2014), and Gardner's (1983) theoretical explanations suggesting that cognitive energy may be concentrated in different domains across individuals. The operation of this process within the CRM model can be illustrated through examples. In a gifted individual with attention-deficit/hyperactivity disorder, general distractibility may be replaced by hyperfocus in specific domains, fostering innovation and creative production. In gifted individuals with autism, stress and tension arising from limitations in social communication may enhance systematic thinking and attention to detail, enabling domains such as data science or musical composition to develop into areas of exceptional talent. In a gifted individual with dyslexia, difficulties in verbal processing may redirect cognitive energy toward visual-spatial centers, resulting in the development of strong design abilities.

These examples demonstrate that the Cognitive Focus Domain cannot be explained solely through giftedness potential, but should instead be understood as a neuroadaptive feedback response of the brain to experienced challenges. Within the CRM model, this concept represents the point toward which cognitive energy generated by adaptive tension is directed and consolidated. As a result of experienced tension, the individual restructures the cognitive system, focuses on strengths, restores balance in learning processes, and achieves a state of resonance. In other words, the Cognitive Focus Domain is the cognitive center in which twice-exceptional individuals establish internal balance and transform their potential.

**Cognitive Dissonance Zone**

Within the CRM model, the concept of the Cognitive Dissonance Zone represents the critical area in which internal tension and stress emerging during the adaptive tension stage are transformed into a process of cognitive reorientation. At this stage, the individual becomes aware of inconsistencies and incompatibilities between internal cognitive structures and external expectations. The cognitive system seeks a response to this imbalance.

This concept can be associated with Festinger's (1957) theory of cognitive dissonance, which explains that individuals experience psychological discomfort when confronted with mental inconsistencies and are motivated to reduce this discomfort by restoring coherence. Through this drive to resolve inconsistency, the brain enters a process of cognitive restructuring. In gifted individuals with learning disabilities, for example, difficulties and tension associated with reading and writing coexist with high levels of creative and abstract thinking, resulting in contradiction and misalignment within the cognitive system. Awareness of this condition initially generates stress and feelings of inadequacy, but over time becomes the first signal of cognitive realignment.

At this point, the individual enters the previously described short-circuit phase, characterized by the formation of new neurocognitive connections. During this phase, the brain attempts to generate new strategies, alternative pathways, and novel modes of thinking. For instance, in individuals with dyslexia, difficulties in word processing may lead to the activation of visual processing centers, enabling information to be processed in a visual-spatial manner. This shift represents a direct outcome of the neuroadaptive effects of the Cognitive Dissonance Zone.

This process can also be illustrated through widely known cinematic examples. In the film Good Will Hunting, the character Will demonstrates this dynamic, as emotional and cognitive conflicts ultimately lead to the recognition of his own potential. Once difficulty and potential are simultaneously acknowledged, the short-circuit loop is activated, and the foundations of targeted cognitive resonance within the Cognitive Focus Domain begin to emerge.

**Short Circuit Loop (Resonance Activation)**

This concept, which holds vital importance within the CRM model, is explained through the metaphor of a "short circuit" encountered in exceptional cases within electrical systems, drawing on the author's eleven years of experience as a science teacher, including the last three years working with gifted students. In teaching electrical circuits, it was consistently emphasized that electric current tends to follow the shortest and most efficient path, and this principle was illustrated through concrete examples for students. The inclusion of this concept in the CRM model stems from the

strong structural similarity it shares with the phenomenon described in these electrical systems[3]. This component is positioned at the core of the CRM model. Resonance activation, or the initiation of the short circuit, refers to the moment in which the energy of internal tension within the individual is transferred to a strong cognitive domain. This process can be explained through the Short-Circuit Loop. Rather than expending cognitive energy in areas of weakness, the brain redirects it directly toward areas of strength, as this represents the path of least resistance and constitutes the most natural evolutionary and existential flow. In this sense, the process operates in a manner similar to the principle of communicating vessels.

This phenomenon may be theoretically grounded in cognitive compensation processes, whereby individuals channel cognitive resources toward domains of strength, resulting in heightened productivity under conditions of challenge (Silverman, 2009; Baum et al., 2014). The Cognitive Short-Circuit Loop unfolds in five stages: the triggering stage, characterized by the experience of stress and tension; the cognitive shift stage, during which cognitive energy is redirected toward the dominant focus; the intense flow stage, marked by performance enhancement in the strength domain; compensatory development, in which gifted potential is realized; and the identity integration stage, involving the construction of a new identity through the balance of challenge and strength.

This loop is not only neuroadaptive but also inherently creative. Experienced cognitive tension and internal conflict are transferred into the Cognitive Focus Domain. As an example, the character in the film Rain Man demonstrates how tension arising from autistic challenges functions as a trigger that transforms into extraordinary memory capacity. Similarly, Albert Einstein's childhood learning difficulties contributed to the redirection of cognitive energy toward visual-mathematical thinking. While a short circuit in physical systems is typically understood as a destructive event that prevents a system from functioning, within the CRM model, a short circuit represents a creative redirection and the adaptive functioning of the system itself.

**Flow and Neuroadaptation**

Within the CRM model, the concept of Flow and Neuroadaptation refers to the stage in which resonance is activated and the individual enters a cognitive state of flow. According to Csikszentmihalyi's (1990) theory of flow, individuals experience deep concentration and intrinsic satisfaction when a balance is achieved between challenge and skill. In twice-exceptional individuals, this flow state emerges when the strong cognitive domain becomes activated. In this process, experienced challenges do not function as obstacles; rather, they operate as driving forces. Through neuroplasticity, the brain forms new neural connections, which is why this stage is defined as neuroadaptation.

For example, the emotional challenges experienced by Temple Grandin triggered a neuroadaptive process that supported the development of her intuitive cognitive abilities, while the physical limitations experienced by Stephen Hawking activated a neuroadaptation directed toward the development of abstract thinking skills. External tensions create internal openings, allowing the neuroadaptive resonance state to operate at full capacity. Similarly, although Trischa Zorn's visual impairment may be perceived as a limitation in daily life, it led her to develop a distinct form of focus in sports. According to the CRM model, individuals achieve cognitive alignment by directing attention toward areas of strength rather than areas of limitation. Zorn interpreted her visual impairment not as a barrier but as a difference that enabled deeper engagement in swimming. This cognitive alignment transformed her into the most successful swimmer in Paralympic history.

**Cognitive Integration**

Within the CRM model, the final stage explained through the concept of Cognitive Integration can be defined as a state of lasting balance between an individual's cognitive strengths and weaknesses. At this stage, internal contradiction is resolved and integration is achieved. This phase may be compared to the final developmental stage described in

[3] Some criticisms may be raised regarding this concept. For example, it may be argued that when a short circuit occurs, the system does not function, as in everyday examples such as a car failing to operate due to a grounding short circuit. However, in scientific explanations and in solving electrical circuit problems, when one path contains resistance and another path consists of a resistance-free wire, the resistive path is marked with an X and eliminated, and the current is assumed to flow through the resistance-free path. In this case, the system does not stop functioning; rather, it continues to operate by redirecting the current through the path of least resistance.

Dabrowski's (1964) theory. In addition, self-efficacy, as explained by Bandura (1977), has developed, and the individual has formed a strong belief in their own abilities. Figures such as Frida Kahlo and John Nash may be presented as significant examples of personal cognitive integration.

**Questions Regarding the CRM**

***Q1. Within the CRM model, the concept of cognitive imbalance is proposed instead of disability. In this context, a key question arises: if there is no disability present in twice-exceptional individuals, how can cognitive imbalance be explained?***

The CRM model differs from other models that attempt to explain twice-exceptionality. The explanation of how cognitive imbalance may emerge within the neurocognitive system in the absence of disability can be articulated as follows. In the CRM framework, disability, such as learning disabilities, autism, or physical impairments, is not conceptualized as the direct cause of resonance. Rather, it is considered a cognitive tension factor that stimulates the initial energy required for resonance. If an individual does not experience disability, but also does not possess giftedness, the mechanism referred to as adaptive tension may not be activated; however, disability is not the sole cause or trigger of this process.

The formation of adaptive tension may be influenced by environmental factors, intense emotional experiences, external or internal stressors, internal conflicts, and cognitive imbalances such as excessive curiosity. From this perspective, the concept of disability within the CRM model is not addressed in a clinical sense but is instead explained within a neurocognitive context and conceptualized as a shift in cognitive energy.

In the CRM framework, the emergence of cognitive resonance at the final stage necessarily requires the presence of cognitive tension. Imbalance constitutes the primary driving force in the formation of the neuroadaptive cycle or framework. At times, existential questioning, excessive curiosity, or heightened cognitive stimulation may also generate such cognitive imbalance. In this regard, the triggering role of disability or other factors may be compared to the way stress creates adaptive responses that strengthen the immune system within biological systems. Disability, environmental influences, internal and external stressors, and cognitive stimulation function as signals that initiate reorganization and restructuring within the cognitive system.

These processes can be illustrated within the framework of CRM concepts as presented in Table 1.

**Table 1.** Stages of transformation from cognitive imbalance to cognitive resonance through CRM concepts

| Stage | Process | Outcome |
|---|---|---|
| Adaptive Tension | Disability, internal or external stress, excessive curiosity, challenges, failure, cognitive overstimulation, or mismatch lead to the accumulation of energy within the individual's cognitive system. | Cognitive tension emerges. The individual experiences a state of imbalance. |
| Cognitive Dissonance Zone | The individual enters a state of cognitive dissonance, such as thinking, "I am intelligent, but I am unsuccessful." | The individual becomes aware of being in a cognitive gap. |
| Short Circuit Loop | The brain's cognitive system begins to shift cognitive energy from areas of weakness toward areas of strength. | Neuroadaptive orientation begins within the cognitive system. |
| Cognitive Focus Domain | The individual experiences intense focus and flow within their area of strength. | Creativity and productivity increase. |
| Resonance Activation | Neural and cognitive balance is established between areas of strength and weakness. | Cognitive resonance emerges. |

In summary, as shown in Table 1, the formation of adaptive tension in twice-exceptional individuals within the stages of the CRM does not require the presence of disability alone; cognitive overstimulation, environmental factors, curiosity, and stress may also serve as triggers.

***Q2. If the CRM model finds concepts such as twice-exceptional individuals or dual individuals to be inadequate, which term does it propose for describing such individuals?***

CRM explains that there are problems in both the models that attempt to explain the 2e phenomenon and in its conceptualization within the literature. In the current literature, the term "twice-exceptional learners" (or dual exceptional individuals) has been conceptualized in a way that implies the existence of two separate categories and a tension or difficulty between these two categorical structures, and this understanding has become embedded in the terminology.

In this framework, giftedness and disability are treated as opposing forces or paradoxes, with potential or strengths on one side and disability or weaknesses on the other. Consequently, the definition of twice-exceptionality reflects a bipolar structure. However, CRM does not interpret this dual structure as an opposition or polarity; instead, it conceptualizes it as a dynamic neuroadaptive system. From this perspective, the concept of twice-exceptionality remains an incomplete and static definition within the CRM framework. In brief, while twice-exceptionality describes a paradox or opposition, cognitive resonance describes a transformation.

CRM conceptualizes giftedness and disability as interacting vectors within the same cognitive system rather than as opposing conditions. Therefore, instead of the classical notion of being exceptional in two domains, CRM argues that terms such as resonant learners or cognitively resonant individuals would be more appropriate. Ultimately, these individuals are no longer defined by a bipolar structure of giftedness and disability, but as individuals who have achieved balance through cognitive resonance. Another proposed term is "cognitive resonance-enabled individuals," which emphasizes individuals who have transitioned into or activated a resonance state, while also implying cognitive energy transformation. This conceptualization involves integration, as cognitive integration emerges as an outcome of the processes described within the CRM. For this reason, CRM approaches twice-exceptionality not as a diagnosis or identification category, but as a form of cognitive restructuring.

***Q3. Is the CRM solely a model for explaining twice-exceptionality, or can it also be applied to the explanation of giftedness?***

Within the CRM framework, the classical explanation of twice-exceptionality is reinterpreted by suggesting that twice-exceptional individuals are not fragmented or impaired gifted systems, but rather extreme models that illustrate how giftedness operates. CRM explains giftedness by placing cognitive resonance at the center, and argues that internal adaptive tension driven by curiosity and intense learning motivation, the redirection of cognitive energy toward creative domains through the short-circuit loop, and the observation of flow and cognitive integration during resonance activation collectively characterize the process.

For this reason, within the CRM framework, giftedness can be defined as the sustainable state of cognitive resonance. This distinction is illustrated in Table 2.

**Table 2.** Explanation of neuroadaptive processes in twice-exceptional and gifted individuals within the CRM framework

| Process Component | In 2e individuals | In gifted individuals |
|---|---|---|
| **Adaptive Tension** | Disability, learning difficulties, internal conflict | Curiosity, cognitive complexity, existential tension |
| **Cognitive Dissonance Zone** | Imbalance emerging through the recognition of weakness | Cognitive dissatisfaction driven by the search for new knowledge |
| **Short Circuit Loop** | Shift of energy from weak areas to strong areas | Redirection of energy toward exploration and creativity |
| **Cognitive Focus Domain** | Intense focus in the compensatory domain | Intense flow within the area of interest |
| **Resonance Activation** | Cognitive balance aligned with challenge | Cognitive balance achieved through creative production |
| **Cognitive Integration** | Integration of disability and strengths | Integration of identity and talent |

In summary, within the CRM framework, giftedness is not conceptualized as an innate potential but as a cognitive state. Giftedness can be understood not as a trait, but as a mode through which cognitive energy reaches a state of resonance. For this reason, it is explained not as a static trait but as a neuroadaptive process. Within CRM, the concise formulation of giftedness is as follows:

*Giftedness = Sustained Cognitive Resonance*

## Conclusion

The model referred to as the Cognitive Resonance Model (CRM) presents a theoretical framework developed to explain the cognitive, affective, and neurological processes of twice-exceptional individuals. What distinguishes the CRM from previous models explaining twice-exceptionality is that, rather than emphasizing the simultaneous coexistence of disability and giftedness, it focuses on the brain's reorganization toward internal balance through adaptive tension. Models in the literature, such as those proposed by Baum, Schader, and Owen (2017) or Ronksley-Pavia (2015), primarily address twice-exceptionality at a descriptive level. In contrast, the CRM emphasizes that the processes underlying the 2e phenomenon are dynamic, neuroadaptive, and process-oriented.

Within this model, the challenges and disabilities experienced by the individual are not regarded as deficits, but rather as functional triggers that initiate the cognitive resonance process. From this perspective, CRM abandons the notion of two opposing conditions found in other models and instead centers on tension–adaptation–balance processes grounded in neurocognitive reorganization. These processes are explained through the activation of the short-circuit loop.

The CRM model is theoretically grounded in Dabrowski's (1964) Theory of Positive Disintegration, Csikszentmihalyi's (1990) Flow Theory, and contemporary neurodiversity research as articulated Armstrong (2018). Within this theoretical context, the validity of the Resonance Activation / Short Circuit Loop component is further strengthened. In recent research on the educational and developmental support of twice-exceptional individuals, the traditional special education assumption that identification alone leads to success has been increasingly replaced by an emphasis on the holistic understanding of individuals' cognitive and affective processes (Foley Nicpon & Colangelo, 2016).

The CRM provides a theoretical framework for instructional interventions that focus on cognitive resonance across individuals' strengths and weaknesses. As such, the CRM model represents a novel area for theory and practice in twice-exceptionality research. In summary, the CRM explains the learning experiences of twice-exceptional individuals not through the axis of "disability and giftedness," but through the processes of cognitive energy, neuroadaptation, and identity integration. In this respect, CRM offers a valid, innovative theoretical foundation at both neuropsychological and pedagogical levels and remains open to future empirical research.

**Biodata of Author**

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