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The functional limits of adolescence: dealing with the superego

O limite funcional do adolescente: lidando com o superego

Igor Alexandre Capelatto[1], Ângela Mathylde Soares[2]

[1] Universidade Estadual de Campinas, Instituto de Estudos da Linguagem, Programa de Pós-Graduação de Linguística. Campinas, SP, Brasil. Correspondence to: I. A. CAPELATTO. E-mail: <capuccinoprod@gmail.com>.
[2] Emil Brunner World University, Post-Doc Program, Neuroscience Program. Miami, FL, United States.

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Abstract

Objective

This article seeks to understand why adolescence is a phase of constant change, often characterized by fear, anxiety, and confrontations, examining the physical relationships in the brain and the psycho-emotional structure of adolescents.

Method

Through the psychoanalytic perspectives from Dolto, Freud, Roudinesco, and Zimerman, alongside neuroscience contributions from Blakemore, De Menezes, and Stefaniszen, this study aims to understand the plasticity of the adolescent brain.

Result

Observation of articularly the Prefrontal Cortex and Temporal Lobe ins adolescence – and the structure of the Superego. The goal is to provide an overview of boundaries, guilt, anxiety, fears, identity, self-observation, moral consciousness, and the formation of ideals in adolescence.

Conclusion

Adolescents exhibit certain behaviors such as excessive morning sleepiness, agitation, lack of attention and cognitive difficulties that, as the research indicates, are often part of a neurobiological structure and other times part of emotional symptoms. This research made these observations to help parents, health professionals and educators in caring for adolescents.

Keywords: Adolescente; Amygdala; Limbic system; Prefrontal cortex; Superego.

Resumo

Objetivo

Este artigo procura entender por que a adolescência é uma fase em constante mutação, portanto de medo, angústia e enfrentamentos, fazendo um estudo das relações físicas do cérebro e a estrutura psicoemocional dos adolescentes.

Método

Através de uma leitura por meio da psicanálise de Dolto, Freud, Roudinesco e Zimerman e da neurociência de Blakemore, De Menezes e Stefaniszen, este estudo frisa compreender o mecanismo plástico do cérebro adolescente.

Resultado
Observações e apontamentos em especial do Córtex Pré-Frontal e Lobo Temporal e a estrutura do Superego nos adolescentes, de modo a apresentar um panorama sobre limites, culpas, angústias e medos, identidade, auto-observação, consciência "moral" e formação dos ideais na adolescência.

Conclusão
O adolescente apresenta determinados comportamentos como o sono excessivo matinal, agitações, falta de atenção e dificuldades cognitivas que muitas vezes, como a pesquisa aponta, são parte de uma estrutura neurobiológica e outras vezes parte de sintomas emocionais. Esta pesquisa fez estes apontamentos para auxiliar pais, profissionais da saúde e educadores no cuidar dos adolescentes.

Palavras-chave: *Adolescente; Amígdala cerebral; Sistema límbico; Córtex pré-frontal; Superego.*

What is adolescence? What is the concept of adolescence? How did the practical experience of the clinic and lectures in schools provide a reflection on adolescence? Adolescence as a period of human life that is in constant transformation and loss. It involves dealing with physiological changes, a body in constant transformation, and psycho-emotional changes. It involves experiencing various difficulties, such as childhood, school changes, changes in environments, and relationships. In the midst of these transformations, there is a difficult task of learning about new rules, such as new criteria, new responsibilities.

I usually say that adolescence is the period in which the Superego is most active. For Freud, "The superego acts as a judge or censor in relation to the ego. Freud sees moral conscience, self-observation, and the formation of ideals as functions of the superego (...) The superego establishes the censorship of impulses that society and culture prohibit from the id, preventing the individual from satisfying their instincts and desires" (Lima, 2010, p. 281). Without this active censor, how can we demand certain functions, obligations, and activities from adolescents? It is not just the idea that pleasure often comes from actions that transgress norms, rules, and limits, but it is also the observation that at this age, when the function assigned does not bring a pleasurable reward, it is difficult to understand the importance of these needs. Do adolescents then live for pleasure? It is not that pleasure is an active energy of adolescents, but "giving meaning" is what somehow works. Be it the thing itself, or the thing as a path to reward. It is a brain structure and there is no way to deny it. Adolescents are therefore subjects who need a functional meaning.

Therefore, this article aims to investigate the functioning of the superego in adolescence and guide parents, educators, and professionals on how to deal with adolescents.

Method

This is a bibliographic research study in the fields of psychoanalysis and neurology, utilizing a phenomenological approach to the study of the adolescent Superego. It draws analogies between the psychoanalytic understanding of the Superego and the physiological processes of the brain through the lens of neurology.

Instruments

The bibliographic base seeks to explore concepts that inform the psycho-emotional and physiological functioning of the adolescent brain, highlighting how the Superego develops in the context of gray matter loss. The goal was to select authors who provide both precise insights and broader perspectives for professionals in psychoanalysis and education who may not be familiar with the topic.

Brain Plasticity: "Adolescents as Mutants"

Adolescence is a period of constant transformation and loss, characterized by physiological changes, an ever-changing body, and psycho-emotional shifts. It involves navigating multiple losses, such as the end of childhood, changes in school environments, and shifting relationships. Amid these transformations, there is the challenging task of learning new rules, responsibilities, and demands. I often say that adolescence is when the Superego is most active. Perhaps "due to their mutant nature" (Dolto, 1990, p. 18), adolescents are frequently misunderstood or labeled as "troublesome." As Lima (2010, p. 281) notes:

> [For Freud], the Superego develops from the Ego during the latency period, which Freud identifies as occurring between childhood and early adolescence. During this phase, our moral and social personality takes shape. The Superego acts as a judge or censor over the Ego. Freud saw moral conscience, self-observation, and the formation ofideals as functions of the Superego. (...) The Superego enforces the repression of impulses prohibited by society and culture, preventing the individual from fully satisfying their instincts and desires.

In psychoanalytic practice, we observe that adolescents' complaints reflect this mutability, with new issues arising in each session even if previous ones remain relevant. One day, they may talk about playing with dolls or toy cars; the next, they discuss relationships. Keeping up with these constant changes can be challenging.

Treating adolescents requires navigating their "mutant" discourse, understanding that new concerns will emerge with each session, and recognizing that language (their communication style) is continually shifting. Thus, it is essential to understand the neuropsychological mechanisms of adolescence. This article aims to explore the way the adolescent Superego (and therefore the Ego) works, which is the entity that helps us understand boundaries, rules, and what is permissible. By studying the adolescent Superego, we can propose some clinical management strategies.

During the research for my book "*O Adolescente na Virtualidade da Psicanálise*" (The Adolescent in the Virtuality of Psychoanalysis), I found that clinical management must be highly adaptable. Today, they may enjoy a certain game, but tomorrow they will not. Today, they talk about a TV series they are watching, but by the next session, they have moved on to another one. This is part of the process of leaving childhood behind and moving toward adulthood – a transitional stage we call adolescence. Of all the changes adolescence brings, accepting new rules is perhaps the hardest.

To comprehend the functioning of the Superego, in addition to psychoanalysis (for which I draw on Freud, Dolto, Zimerman, and Roudinesco in this article), studying neurology becomes essential, particularly regarding gray matter (where the Ego and Superego functions reside). When discussing the adolescent brain, we must consider its plasticity – a brain whose gray matter is in a state of constant flux. This mutability creates conflicts in the development of the Superego.

But what is the Superego? According to Zimerman (2009), besides teaching us about limits, the Superego generates guilt, along with its associated anxieties and fears, by internalizing "bad objects".

Zimerman (2009, p. 84) states that:

> The term 'Superego' can either refer to a necessary structure that regulates and limits the individual's behavior (in which case some authors use the term auxiliary ego) or to a psychic instance that predominantly internalizes 'bad objects' with tyrannical and even cruel characteristics, compelling the individual to submit to the dictates of what they can or cannot fantasize, desire, think, prefer, say, do, and, above all, be.

In clinical practice with adolescents, the most frequent complaints from parents and educators are that adolescents do not obey the rules, refuse to complete tasks, do not want to study, do not make their beds, only seek pleasure, and often "break the rules." If the Superego is a regulator of what can and cannot be done, it is difficult for the adolescent brain (specifically the prefrontal cortex) to establish new rules when some have yet to be fully formed — such as whether they are "old enough" to do certain things or if they should stop doing things they used to as children. What defines the age at which adolescence begins and childhood ends?

According to the neuroscientist Sarah-Jayne Blakemore, the number of synapses (the points of contact between neurons) in the prefrontal cortex is greater at the onset of adolescence but drastically decreases in the following years (Blakemore, 2012). Using MRI scans, she observed a reduction in gray matter. Blakemore (2011, p. 4) explains: "For instance, the brain regions associated with emotions are more developed during adolescence than the prefrontal cortex, which is far from mature. Therefore, adolescents do not yet have a fully functional prefrontal cortex".

It becomes clear that "brain regions involved in interpreting information and making decisions are still developing" (Blakemore, 2011, p. 4). As such, adolescents are not yet prepared to make "certain rational decisions" like adults. Blakemore also emphasizes that there is no precise age when the brain becomes fully mature. Thus, when caring for adolescents, whether at home, school, or in therapy, we must remember that they are in transition and constantly changing. We can no longer treat them as children, but neither can we expect them to take on adult responsibilities. This difficulty in defining the period of adolescence has long been acknowledged.

In psychoanalysis, we see important work by Dolto (1990), who published a book entitled *The Cause of Adolescents*, as well as Winnicott's studies and later contemporary psychoanalysts like Calligaris and Delaroche. However, they all recognize this phase as one of flexible and constant transformation.

The Changing Gray Matter

We can say that the adolescent's prefrontal cortex is like soft clay, still moldable and not yet hardened. Any movement, any element integrated into this mass will transform it. These elements include hormones, bodily changes, external factors (social and cultural), and emotions. According to studies by Edify Education (2023, para. 7), it is stated that: "(...) The adolescent brain contains lower levels of serotonin and dopamine, neurotransmitters that provide a sense of pleasure and well-being. This can increase aggression, along with higher testosterone levels, contributing to outbursts of anger and impulsive behavior".

In summary, since this area is responsible for "a wide range of cognitive functions" (Blakemore, 2012, 2:7) and is in constant flux, with both gains and significant losses, we can conclude that adolescents lack full control over the Superego. Blakemore (2012, 1:49) points out that:

> One of the regions of the brain that changes most radically during adolescence is the so-called prefrontal cortex. Well, this is a model of the human brain, and this is the prefrontal cortex, right here at the front. The prefrontal cortex is an interesting area of the brain. It is proportionally much larger in humans than in any other species, and it is involved in a wide range of high-level cognitive functions, such as decision-making, planning for what you are going to do the next day, week, or year, and inhibiting inappropriate behaviors, like stopping you from saying something really rude or doing something really stupid. It is also related to social interaction, understanding others, and self-awareness.

This lack of control over the Superego is also what causes difficulty in social interaction. "Understanding others" is what we call interaction or bonding in psychoanalysis (Blakemore, 2012). The difficulty in this understanding represents a "failure in bonding." For adolescents to accept themselves (self-awareness) and others, within the framework of norms, rules, and desires, limits must be established. When we see that this brain has not matured yet, we realize it is not capable of identifying itself in the "mirror". This is an important point, leading to one of the clinical approaches I developed throughout my research (as outlined in my 2023 book – Capelatto, 2024): analyzing adolescents in the therapeutic setting must be handled with the understanding that they are beings in constant "mutation" — therefore, nothing is fixed.

Adolescents don't have a defined image or an established personality; "they are in a phase of experimentation and discovery". Thus, demanding from them an identity – and expecting that they have established desires, in relation to their identification and future – and requiring them to follow adult rules and norms denies this brain's plasticity, this brain whose gray matter is changing daily. Therefore, communicating with them involves understanding that they will be a different person in each session and helping them to recognize what they identify with and what they do not as they go through each change, as well as helping them face the daily mourning of their losses (from childhood) and prepare for the future demands of adulthood. But allowing them to go through adolescence in a healthy way, developing their Ego, and being able to see themselves and create their moral and ethical framework, as Freud presented in 1932 (in "New Introductory Lectures on Psychoanalysis", as cited in De Menezes and Stefaniszen, 2020, p. 54):

> The Superego is one of the psychic instances Freud described in the second topography of the psychic apparatus, carrying out the functions of self-observation, 'moral' consciousness, and the formation of ideals (Freud, 1932). It is through the Superego that the Ego evaluates itself.

Gray Matter: the Limbic System and Ego Functions

Shall we talk about the Ego? The function responsible for memory, emotions, and perception? The one that allows a person to become aware of their own identity? In the brain, there's an area we can associate with the Ego, known as the Limbic System – a structure located beneath the prefrontal cortex responsible for emotional responses. The term was introduced in 1878 by anatomist and physician Paul Broca, who described the Ego as the "limbo," the boundary between different parts of the brain – between critical judgment and instinctual drives (the Id, the psychic function of impulses). Lima (2010, p. 284) explains that: "The Id is the psychic instance 'primarily oriented toward the most primitive life processes, such as survival (drinking and eating), defending life or territory (attack and aggression), propagating life (reproduction), and obtaining pleasure".

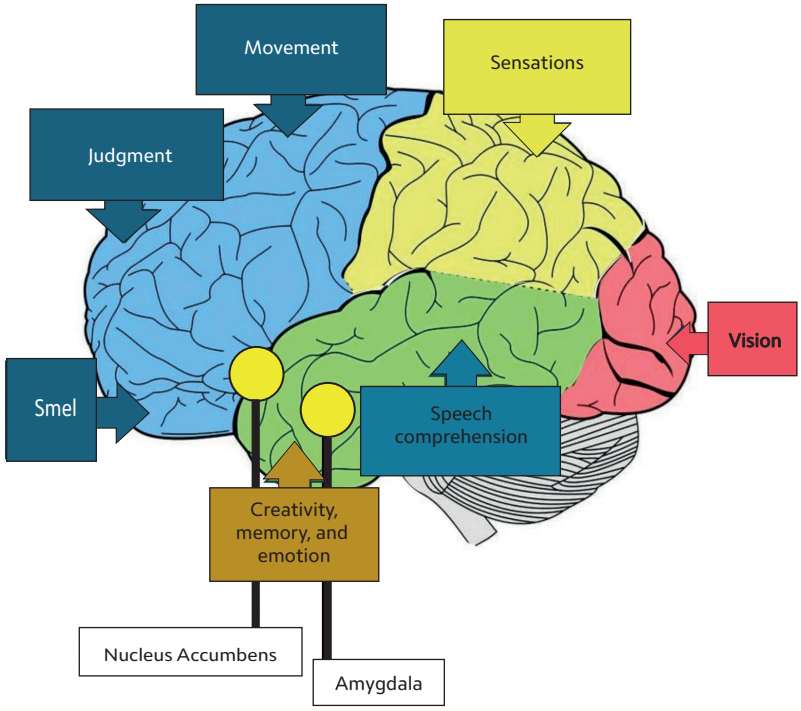
As Zimerman (2009, p. 83) states, "the Ego is what enables adaptation to the reality of the external world". It's the psychic apparatus that manages self-esteem, the self-image, and how the subject integrates this image with the world. According to Zimerman (2009, p. 83):

> The Ego can be understood from three perspectives: 1) As a psychic apparatus with essential functions, most of which are conscious, for adaptively relating to the reality of the external world – such as perception, thought, memory, attention, anticipation, discrimination, critical judgment, and motor action. 2) As the seat and source of a set of more complex functions, most of which are unconscious – such as the production of anxiety, defense mechanisms, identification phenomena, and symbol formation. 3) As the seat of representations that shape the subject's self-image and structure their sense of identity and self-esteem.

Since the adolescent brain is undergoing transformation, with the gray matter showing plasticity, we also see a "dysfunction" in the Ego, as the gray matter responsible for this function – namely,

the Limbic System – is also affected. Within this system, "there is a nucleus responsible for the "pleasure center," known as the Nucleus Accumbens" (Schwienbacher et al., 2004, p. 87). This nucleus acts as a "limbic-motor interface and plays a central role in the brain's reward circuits" (Neto, 2015, p. 11). Interestingly, the Nucleus Accumbens is located right at the border ("limbo") between the Prefrontal Cortex and the Temporal Lobe which can be interpreted as the interaction zone between the Ego and the Superego. Additionally, the Amygdala, situated in the more emotionally intense area of the Temporal Lobe, plays a key role in processing emotions (Figure 1).

Figure 1
Nucleus Accumbens



There are two key factors in the malleability of the limbic system, governed by the Nucleus Accumbens: one concerns risk-taking, which creates a sense of excitement, making pleasure not merely a consequence of desire but a function of "danger" – not danger as a threat, but as satisfaction. The second factor is that by defying norms and rules, adolescents experience an identity conflict (they want to be different, but paradoxically, this difference often leads to low self-esteem when it results in exclusion from the group). As Neto (2015, p. 11) adds:

> There is a famous line in Shakespeare's The Winter's Tale, where he describes adolescence as follows: 'I would there were no age between sixteen and three-and-twenty, or that youth would sleep out the rest; for there is nothing in between but getting wenches with child, wronging the ancientry, stealing, fighting.' He goes on to say: 'Who would hunt with such weather except those burning brains from nineteen to twenty-two?' So, nearly 400 years ago, Shakespeare already depicted adolescents in a way that is quite similar to today. But nowadays, we attempt to understand their behavior in terms of the underlying changes occurring in their brains. For instance, risk-taking: We know adolescents are more prone to taking risks than children or adults, especially when they are with friends. It's important to become independent from parents and impress friends during adolescence. Today, we try to understand this based on the development of a part of their brain called the limbic system. (...) The limbic system is deep in the brain and is involved in things like emotional processing and reward processing. It provides the sense of reward when we do fun things, including taking risks. It makes risk-taking feel exciting. Research shows that these regions within the limbic system are hypersensitive to the feeling of reward from risk-taking in adolescents compared to adults, while the prefrontal cortex, seen here in blue in this slide, which prevents excessive risk-taking, is still maturing in adolescents.

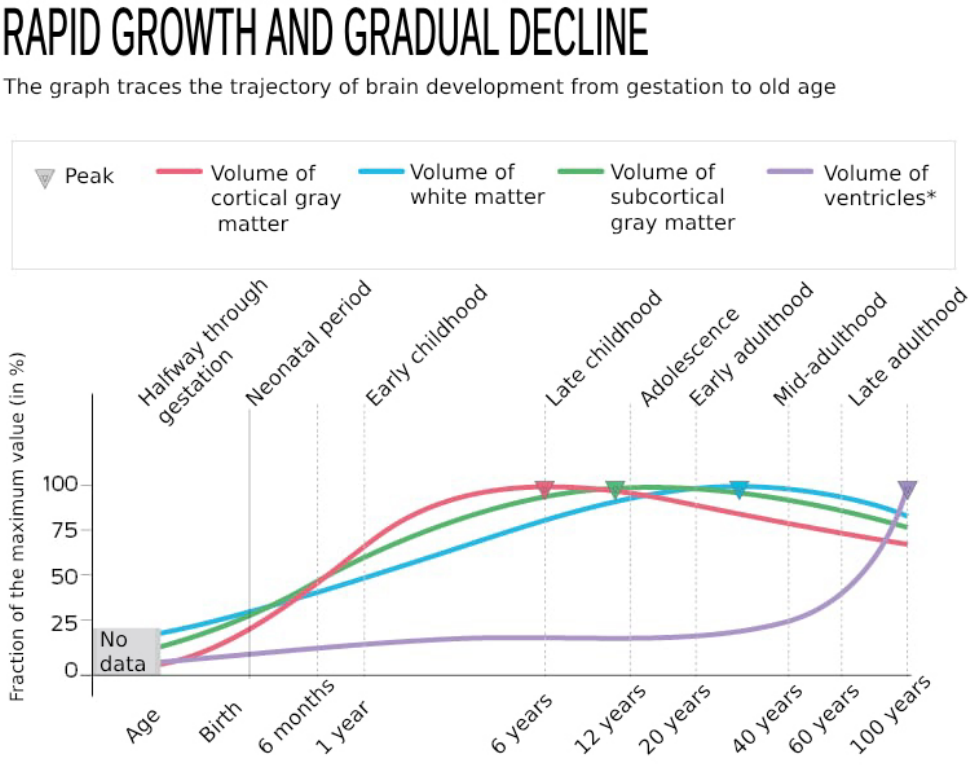
I highlight this discussion about the Ego to illustrate how fragile the capacity of adolescents is to establish a sense of identity (self-recognition) and belonging (to the family, school, or social group). When it comes to risk-taking, the risks are not necessarily about acceptance or rejection but are instead driven by pleasure. Thus, as adults often say, adolescents just want to have fun and think it is cool to break the rules to avoid frustration, limits, and unpleasant experiences. The one who "controls" the Ego is the Superego. But, as we have seen, the Superego is still undergoing transformation during adolescence, with both gains and losses.

Gray Matter: Prefrontal Cortex and Superego Functions

According to Roudinesco (1998, p. 744), the superego "acts as a judge and censor in relation to the ego". Imagine a computer with an overloaded memory, all programs running simultaneously, yet lacking an ideal processor to handle all that data. That is the adolescent brain: a brain that thinks a lot, bombarded by countless pieces of information, orders, and functions, but lacking the maturity to process, interpret, and absorb all those thoughts.

In the article "Study Maps Brain Evolution Throughout Life" (Zorzetto, 2022, para. 5), a graph (Figure 2) illustrates the development of gray and white matter across human life stages. In adolescence, there is a reduction in gray matter, which decreases the capacity of the prefrontal cortex – and, therefore, of the superego. This reduction results in decreased control over the ego, as noted by Roudinesco (1998). Concurrently, there is a significant increase in white matter, composed of axons that transmit electrical signals in the brain.

Figure 2
Rapid Growth and Gentle Decline



Note: *Cavittes filed with cerebrospinal fluid.
Source: Bethlehem et al. (2022).

During adolescence, as the cognitive and critical judgment capacities decrease (along with the ability to comprehend emotions, thoughts, and execute tasks), there's a high level of brain activity for absorbing information and engaging in various mental tasks. In other words, the adolescent brain processes a lot at once but takes time to respond and understand.

If the superego's function is to provide "critical judgment" to the ego, and this function is diminished in adolescents' brains, how can we help them develop these faculties? Based on the clinical cases I observed and documented in my book (Capelatto, 2024), the most crucial strategy for managing this is to help adolescents deal with frustrations.

Let's think of this brain that resists the limits imposed by the external world – by adults, parents, and schools. Adolescents do not accept these limits because they do not fully understand them. They perceive these limits as attacks on their established childhood life. Much of what they could do before, they no longer can, and the anxiety that leads to frustration stems from the fear of loss and the need to assume greater independence. Many tasks that were previously handled by parents or teachers must now be done alone. This fear hinders adolescents from fully engaging their reflective and critical judgment functions.

There's another brain area, the amygdala, located in the temporal lobe, responsible for emotional regulation and memory modulation. The amygdala is part of the limbic system and can be thought of as its processor. It plays a central role in processing fear. In the adolescent brain, the amygdala often "replaces" the prefrontal cortex when it comes to decision-making, solving problems, and adhering to rules and norms. As noted by Edify Education (2023, para. 4), "It's worth remembering that the amygdala is associated with emotions, impulses, aggression, and instinctual behavior". This is why adolescents often respond more impulsively (where the Id assumes control) to stimuli, leading to manifestations like anger. As psychoanalyst Capelatto (2010, para. 2) points out, "anger is the child of fear, and fear is the engine of life. We cannot live without it – unless we become ill".

Now, if we combine all these elements – excessive activity, a reduction in prefrontal cortex function (with the amygdala stepping in), hormonal overdrive, and external pressures – what do we get? It has become common to refer to this as a "storm" in the adolescent brain. According to Blakemore (2011), however, this term is too negative. Adolescence isn't solely a negative experience. A better term might be fatigue – a combination of overwork and strain. But it's not just being physically tired; it is emotional exhaustion. When a computer overloads, it either freezes or crashes. Similarly, the prefrontal cortex's inability to regulate puts the amygdala into overdrive, leading to emotional disarray.

Conclusion

Behold the Fatigue in Adolescents, there is no Inhibitory Control of the Prefrontal Cortex (the Superego), but Rather a Loss of Control

To illustrate this study on the Prefrontal Cortex, Limbic System, and Amygdala, and their relationship with adolescents' psycho-emotional functions, I developed a table (Table 1). The study presented in this article demonstrates that the relationship between Id, Ego, and Superego, which shapes the self, or I, in adolescents, leads to impulsive behaviors, identity conflicts, and difficulties in managing frustrations.

Table 1
Psychic relations with brain functions

Psychic Functions	Brain Functions	Physical/Psychoemotional Manifestation	Behavioral Manifestation
ID	Amygdala	Increased sensory perception and heightened emotions, especially fear	Impulsive behavior
Ego	Limbic System	Decreased connection between the Prefrontal Cortex and Amygdala	Identity in conflict: tastes and desires change frequently
Superego	Prefrontal Cortex	Reduced gray matter: loss of prefrontal cortex control	Difficulty in dealing with frustrations, expectations, and grief

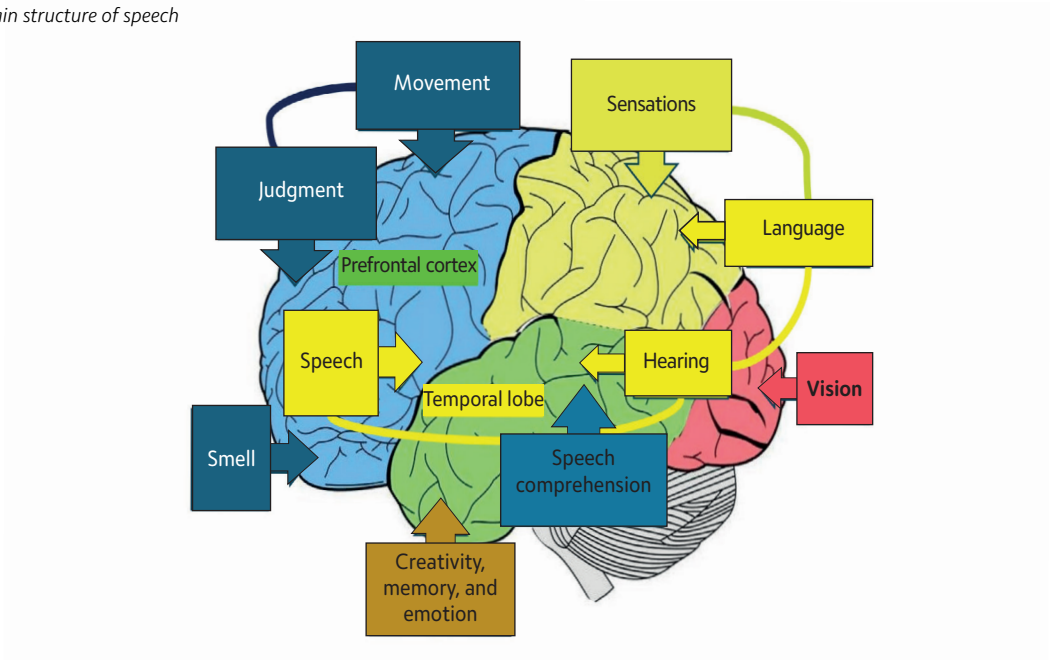
Since the adolescent brain is undergoing a lengthy maturation process – characterized by new physical and psychic structures, as well as marked losses – we can conclude that adolescence is a phase of intense emotional activity, which results in fatigue. This fatigue, intrinsic to being an adolescent, becomes a defining feature of this life stage.

How can we address this fatigue in clinical settings? A collaborative approach involving endocrinologists and therapists (to treat both physical and social fatigue) is essential. However, it is not enough to think of combating fatigue merely through dietary control or medications that boost energy, alongside suggestions for activities that improve concentration and physical well-being. We must also consider that this fatigue is connected to the brain's plasticity — an increase in electrical impulses combined with a reduction in gray matter.

Returning to clinical management, I argue that it's crucial to help adolescents navigate this constant brain "switching" and their interactions with others (family, school, social groups) that place demands on them. Helping adolescents discern between what is reasonable and what is excessive in these demands is vital. They will need to start doing certain things on their own and stop doing others — thus, they must learn to cope with grief, frustrations, and the acceptance of change.

Additionally, when discussing the Prefrontal Cortex, Limbic System, and Amygdala, we are also addressing a critical aspect of language formation, as suggested by the brain schema I present next (Figure 3). Given the brain's plasticity, we can infer that an adolescent's language is "mutant", reflecting their ongoing transformation. Therefore, understanding, studying, and supporting adolescents involves working with the way they express themselves, be it through language or gestures.

Figure 3
Brain structure of speech



Given the continuous changes – physical, emotional, and relational – we can conclude from this study that the most significant observation, from both neurological and psychoanalytic perspectives, is the inhibitory dysregulation of the Prefrontal Cortex. In other words, adolescence is the phase during which the Superego is in conflict. What was once solidified during childhood – the understanding, respect, and acceptance of limits, laws, norms, others, and the world – seems to diminish (alongside the reduction of gray matter) and takes time to re-establish. Adolescence is a hiatus for the Superego. This is because everything previously considered as established rules and limits in the real world – family, school, social relationships – has changed. Now the rules, relationships, preferences, and desires are different. This loss of control, this fatigue, can be understood as adolescent symptoms stemming from causes such as doubt, uncertainty, and the challenge of dealing with losses and new expectations. Ultimately, adolescence can be seen as a period marked by a "pathology" of the Superego.

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Contributors

Conceptualization: I. A. CAPELATTO and Â. M. MATHILDE. Data curation: I. A. CAPELATTO. Investigation: I. A. CAPELATTO. Methodology: I. A. CAPELATTO and Â. M. MATHILDE. Writing – original draft: I. A. CAPELATTO. Writing – review and editing: I. A. CAPELATTO and Â. M. MATHILDE.