

Cognitive flexibility as a factor of academic resilience: A theoretical perspective

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Abstract: This paper examines the relationship between cognitive flexibility and academic resilience. Cognitive flexibility is defined as the ability to adjust strategies and to adapt student's thinking according to a changing environment. Academic resilience is the capacity of students to adapt and to overcome school challenges. This review aims to understand cognitive flexibility and academic resilience and to illustrate the importance of cognitive flexibility in academic resilience as a protective factor. Therefore, the results indicate a significant positive correlation between cognitive flexibility and academic resilience. Students with high cognitive flexibility cope better with academic challenges. In conclusion, Cognitive flexibility emerge as an important protective factor to promote academic resilience among students.

Keywords: *Cognitive flexibility; academic resilience; school; students*

1. INTRODUCTION

From engineering and psychology to neurobiology, ecology, and sociology, as well as in public health and disaster management, resilience is a concept mobilized in various disciplines. The evolution of the term and its uses highlights its adaptability and broad applicability. Resilience is not a new concept; the term was first used in physics in the 60s. In ecology, the central question to be answered in the 70s and 80s was defining the sustainability or persistence of a complex ecosystem (Barocca et al., 2020). Resilience has become a versatile notion that refers to the ability of systems, individuals, and communities to respond to various types of disturbance, stress and change, as well as stressors and changes and to recover from them.

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Garmezy and Rutter (1983), pioneers in the study of resilience, showed that factors such as family support, the quality of the school environment, and individual characteristics play a crucial role in resilience. These researchers have highlighted that resilience is not innate but a dynamic process that develops over time through environmental interactions.

In the school context, school resilience is one of the key concepts in education. It refers to a student's ability to cope effectively with adversity, stress and difficulties in school.

We can also describe academic resilience as a positive component, which has an important contribution to the development of students in the face of different adversities and unexpected situations at school. This capacity persists regardless of all challenges and difficulties, maintains stability among these students, and allows them to cope efficiently with stress related to the school environment and all obstacles. It can also be defined as the augmented likelihood of achieving success in many aspects of life, even when faced with negative circumstances caused by early experiences and conditions (Radhamani & Kalaivani, 2021). It is based on several personal, family, social, and school factors that interact to either promote or hinder a student's academic success. Among these factors, cognitive flexibility is gaining increasing attention, which is increasingly recognized as central to understanding academic resilience.

Today's students face enormous pressures and stress at school, such as underachievement, poor performance, homework deadlines, competition, challenging classes, demanding subjects, restrictive timetables, peer pressure and, a difficult home and school environment. Even in these challenging circumstances, some children do not just survive; they thrive and succeed. It is essential to understand why some students succeed at school while their peers from similar social and economic backgrounds do not. The term commonly used to describe these children is school resilience. The term commonly used to describe these children is school resilience. School resilience is the increased likelihood of succeeding at school despite environmental adversities due to early traits, conditions and experiences (Cassidy, 2016).

Academic resilience results from the interaction between external protective factors, such as social and environmental support from peers, teachers, and family, and internal factors like problem-solving skills, self-efficacy, self-awareness, and cognitive abilities. Over the past three decades, cognitive flexibility has gained increasing attention as a key factor in fostering academic resilience (Terrisse & Lefebvre, 2007). Cognitive-control mechanisms allow us to use internal goals and current context to guide information processing from the top down. This model

suggests that cognitive flexibility depends principally on cerebral processes in the prefrontal cortex. This model demonstrates the importance of cognitive flexibility among students; it improves their capacities to change from one task to another, regulate their emotions, and find an alternative solution to their difficulties. The cognition promotes rapid reorganization of cognitive strategies to adapt to new situations. Therefore, Cognitive flexibility could be essential in how a student manages academic demands, solves problems and reacts to stressful or difficult situations in the school context (Braem & Egner, 2018).

The relationship between cognitive flexibility and academic resilience is established on the idea that the ability of student to adapt and to persevere in facing challenges and difficulties. Cognitive flexibility as the capacity to think differently and flexibly in order to adjust student's strategies has a major role in academic resilience. A student who can modulate his or her cognitive responses in the face of non success will be more capable to succeed and persevere in difficult academic situations. Recent research (Martin & Marsh, 2009) has highlighted cognitive flexibility as an essential protective factor in academic resilience. These studies have shown that cognitively flexible students are better equipped to manage academic stress, adjust expectations and bounce back from failure. Moreover, cognitive flexibility lets them solve problems with new and more creative solutions to adapt rapidly to changes in academic environment and to maintain high motivation regardless obstacles.

This descriptive narrative paper will first explore academic resilience, how authors and theories define it, and various factors and dimensions related to this concept. We will then examine the concept of cognitive flexibility, defining its main components and importance in students' cognitive functioning. Finally, we will explain the relationship between these two concepts by reviewing recent empirical research.

2. Theoretical Consideration:

2.1 Cognitive flexibility:

Cognitive flexibility is a central psychological construct that has been studied in several contexts. It is a difficult concept to define due to the multiplicity of approaches and perspectives that focus on it. Authors from fields as varied as psychology, neuroscience and education have explored cognitive flexibility from divergent angles.

Over the years, cognitive flexibility has been used with psychological, adaptive, mental, and explanatory flexibility. In neuroscience, cognitive flexibility is often used interchangeably with behavioral flexibility. The cognitive part refers to the mental capacity to switch from one cognitive set or strategy to another in

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response to changing contextual demands (Ionescu, 2012). The behavioral part refers to the capacity to change behavior adaptively in response to changing environmental demands (Uddin, 2021).

According to Martin and Anderson (1998), cognitive flexibility is defined as a person's consciousness that, in every circumstance, there are options and alternatives accessible, the aptitude to be flexible and accommodate to the situation. According to this concept, a high level of cognitive flexibility can indicate that individuals can actively deal with the obstacles they face in their daily lives. Individuals with low cognitive flexibility confront challenges when adapting to unanticipated situations (Martin & Anderson, 1998).

Cognitive flexibility refers to adapting and shifting between different cognitive tasks and perspectives. In the context of educational achievement, cognitive flexibility has an important role in students' ability to use numerous learning situations, understand new concepts and solve complex problems. Cognitive flexibility tends to be more adaptable, creative and resilient when faced with academic challenges. This cognitive skill allows students to approach learning with an open mind, explore alternative strategies and adjust their thinking to meet different academic demands. As a result, cognitive flexibility contributes to more effective learning experiences and improved educational outcomes (Nakhostin-Khayyat et al., 2024).

It refers to the cognitive skill of individuals, and their thoughts depend on the changing conditions. It results in adaptive behavioral responses to these conditions. Cognitive flexibility allows the person to know the substitute pathways of resolutions in any circumstance. Cognitive flexibility is described as the capacity of an individual to change between thoughts. Descriptions include a person's ability to adapt to several to several situations they have experienced or their capacity to associate many abilities with responding to environmental indications (Kirikkanat, 2023).

Cognitive flexibility refers to “the individual's ability to adapt to changes in his or her environment, whether this involves changing strategy, adopting a different perspective on a problem or, more generally, seeking alternative ways of reasoning and thinking” (Camarda et al., 2018). It also refers to controlling attention on what is relevant and shifting it if necessary. Based on this idea, the child disentangles his attention from one task or situation to engage in a new one, depending on the demands of the necessity.

According to Clement (2006), a person's capacity for flexibility is the ability to adapt to change. The author distinguishes between two types of flexibility. One is reactive flexibility, which refers to the aptitude to change behavior in response

to external constraints. In this sense, cognitive flexibility is a skill that enables individuals to adapt to various situations in their daily lives constantly. Spontaneous flexibility, on the other hand, enables individuals to produce a variety of responses in a context that does not require modification (Clement, 2006).

In clinical neuropsychological research, cognitive flexibility is considered as an essential aspect of executive function that emphasizes the ability to switch between tasks and goals as the central element of cognitive flexibility (Miyake et al., 2000). The ability to switch between criteria, rules and tasks is generally implemented as 'set switching' and 'task switching', with set switching being considered a narrower, lower-level form of cognitive execution and task switching the most complex form of cognitive flexibility (Bunge & Zelazo, 2006).

Two forms of cognitive flexibility are distinguished in the literature; reactive flexibility expresses itself when the environment changes and task constraints require a change in response to adapted behavior. Spontaneous flexibility arises when the subject presents varied responses in a stable environment that does not necessarily constrain change. Spontaneous flexibility is thought to be underpinned more specifically by the anterior portion of the inferior frontal gyrus and the left dorso-median thalamic nucleus (Clément, 2006).

In daily life, as our tasks change, different task sets become pertinent and could be stimulated and compete with each other. The key to this flexibility in changing is how we adjust or modify these representations based on the present task demands. Behind this cognitive flexibility lays several fundamental cognitive processes. Firstly, cognitive flexibility principally depends on attentional processes. In order to understand that a situation has changed and the necessities of an alternative response, the person needs a higher level of attentional control; this will permit the person to comprehend the new situation and plans the reactions to be taken. To be cognitively flexible, a person needs to perceive the environmental conditions that could interfere with the task. In addition to this, she/he needs to invest resources in aborting an automatic response and, therefore, to plan a new sequence of corresponding actions that effectively address the new task demands (Canas et al., 2006).

There is Perspective Shifting, to change one's point of view or strategy, to see different ways of perceiving a situation or to conceive different points of view, or switch from one way of thinking to another in order to solve a complex problem or situation. The second process that underlines cognitive flexibility is called Automatic Response Inhibition. Through this process. The second process that underlines cognitive flexibility is called Automatic Response Inhibition. It

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suppresses habitual responses to adopt new approaches. This inhibitory control prevents rigid thought patterns and routine behaviors that are unsuitable for new situations (Karchach & Unger, 2014).

Cognitive executive control is another process central to cognitive flexibility. Executive processes regulating thinking and action-planning, long-term focusing, and reactive adjustment of responses according to the changing environment are included in this flexibility. Usually, the flexibility also supervises the shifting of attention or the task from one idea to another. Cognitive flexibility involves allocating attention deliberately and selectively. The individual must attend to subsequent information while setting advanced control from irrelevant information. This attentional shifting is vital to the adaptation of response according to subsequent circumstances: of course, cognitive flexibility cannot but imply some cooperation with inhibition and working memory. Flexibility requires inhibiting non-useful information (such as the previous task) currently and activating in working memory currently relevant information for the new task (Karchach & Unger, 2014).

The development of cognitive flexibility is related to the maturation of the brain networks involved in inhibitory control and working memory. Although the role of inhibition and working memory in flexibility and the processes that help distinguish it from other functions need clarification. Many studies maintain that, in both children and adults, cognitive flexibility is particularly complex and depends on a range of cognitive mechanisms (Cragg & Chevalier, 2012).

The development of cognitive flexibility involves several key stages; the first one is during preschool (3 to 5 years). In this period, children can alternate between simple tasks. They can adjust their actions according to changes in the rules (e.g. they understand that they must take off their shoes before entering the house, wear them to school, opt for boots when it snows, etc.). Next, during the school years (ages 5 to 12), Cognitive flexibility continues to develop. Children can alternate between several complex tasks and adapt their behavior to sudden changes. Finally, cognitive flexibility improves accuracy from adolescence to adulthood (aged 12 and over). Adolescents can review their actions and the plans they have set themselves in light of changes that occur. They can also switch their attention fluidly between different tasks (e.g. driving a car carefully while examining road signs and passing pedestrians) (Fournier, 2017).

The development of cognitive flexibility also shows a linear and constant progression. From age 3 to 17, the child gains precision and efficiency but loses in execution speed. By the age of 15-17, abilities are comparable to those of adults. Thanks to the maturation of neural networks because of learning, it is possible to

master strategy changes in more complex tasks (Fourneret, 2017).

2.2 Academic resilience:

Etymologically speaking, the term “resilience” derives from the Latin word *resilio* meaning “resistance”, with the concept first appearing in the 17th century in the physics. From nowadays, the semantic field of the word “resilience” has become very broad, which means that it is used in many different fields. It is used in many fields of research, including the social sciences (Cyrulnik, 2007).

Resilience is a multidimensional concept that has aroused growing interest in various fields, particularly psychology. Originally derived from the Latin *resilire*, meaning, “to bounce back”. Resilience refers to the ability of an individual, a group or a system to recover from a difficult situation, adapt to change and keep moving forward in spite of hardship. Resilience was initially assimilated with invulnerability.

Over the decades, resilience arouses a large interest among researchers, clinicians and practitioners in psychology in general, which explain the different definitions that are given to this concept. More specifically in psychology, the use of the term resilience emerged in 1982 following a study that began in 1955. In a phenomenological, longitudinal study of the development of 698 children born on an island near Hawaii, Werner and Smith (1982) identified for each child the risk factors present at birth and likely to negatively influence their physical, intellectual and psychosocial development. Thirty years later, the results show that more than a third of these children developed favorably despite the risk factors initially present. These favorably developed children shared common traits such as a sense of autonomy, good self-esteem and positive social dispositions.

Among the various research studies and paradigms in developmental psychology, researchers agree on a general and formal definition of resilience as a positive adaptation of the individual in the context of significant adversity. Thus, the most widespread definition of resilience is the process, capacity or outcome that demonstrates effective adaptation despite circumstances of threat or challenge (Masten, et al., 1990).

Resilience is less a personal trait or characteristic of an individual than the product of dynamic interactions between adversity and a variety of interpersonal and environmental assets mediating risk. It can be said that resilience is determined by an individual's personal characteristics (intelligence, coping skills and strategies, self-efficacy) and environmental factors (family support, supportive and caring relationships with teachers and adults). Others identified resilience as a dynamic process that entails effective adaptation in considerable adversity.

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According to Cyrulnik (2007), resilience is the ability to succeed in living and developing acceptably despite stress or adversity that usually carries the severe risk of an adverse outcome. Resilience is thus seen as a particular skill that contradicts predictions about an individual. Resilience is the ability of an individual to overcome trauma and continue to evolve. Resilience depends on the social environment, and its development depends on external supports from family, school, work or religious organizations (Gayet, 2007).

Two fundamental dimensions of resilience, which emerged from Rutter's research (1994), are frequently emphasized in studies. The first one is that a person's resilience does not imply that he or she will automatically be resilient in all areas of their life and to all adverse conditions. A young person, who demonstrates resilience in his or her studies, might not do the same in the face of family circumstances (parental divorce) that are detrimental to them (as problems). The second one is that Resilience is built up through life experiences, which means that resilience capacities change as we grow older (Rutter, 1994).

In the educational context, the term resilience is associated with school failure and dropout, disadvantaged backgrounds, substance abuse and family maltreatment. Resilience is often approached by considering students who come from disadvantaged social backgrounds, and their resilience is then defined as the ability to persevere and achieve school-set goals of success immediately, despite exposure to complex personal and environmental situations (Wang et al., 1994). Similarly, Martin and Marsh (2006) examined resilience in the academic context focusing in challenges setbacks, and pressures associated with it, academic adversities or challenges, as well as ways of coping with them. They termed it academic resilience, which refers to academic success despite challenging circumstances in the educational process. Interestingly, Martin and Marsh (2006) pointed out that little research has been conducted on academic resilience even though all students can experience some level of poor performance, adversity or challenge at school.

According to Bouteyre (2004), school resilience can be recognized by the fact that a student pursues his education “normally” when, due to the difficulties he or she faces, he, or she should fail. It is the probability of failure that is reversed” in at-risk students who succeed at school. According to Cyrulnik (2007), in educational terms, resilience echoes a kind of protection of the subject against the adversity of the environment or the harmful effects of a sociocultural context plunged into precariousness through affective, and relational interactions (encouragement, support, listening), “resilience tutors”. The aim is to enable the adolescent to create appropriate strategies for change. The young person will need

to develop protective factors to combat risk factors. Risk factors present in the young person and her environment increase the likelihood of failure. Protective factors help to combat these risk factors and may be linked to the individual or depend on the context and interactions. For example, a healthy emotional bond with a teacher appears to be a protective factor (Terrisse & Lefebvre, 2007).

Academic resilience is characterized as the process of an individual who has accomplished academic achievement despite risks (e.g., low socioeconomic status, single-parent family, and low academic expectations) that typically have an impact on poor academic performance" (Morales & Trotman, 2011, p. 1). Academic resilience refers to a student's capacity to cope with academic challenges, stress and the pressures at school (Morales & Trotman, 2010).

Academic resilience is a concept, which developed as a special kind of psychological resilience. In academic settings focused on individuals' functioning academically when faced with negative environmental factors or adversities classified academic resilience into three principal elements. The first one is reflective and adaptive help-seeking, which includes individuals who can assess their strengths and weaknesses and actively pursue support and encouragement from others as a means of adapting to various situations. The second one includes perseverance, which relates to individuals who demonstrate diligence, refuse to give up easily, concentrate on processes and objectives, and exhibit persistence when confronted with challenges. The last aspect is negative affect and emotional response, encompassing feelings of anxiety, negative emotions, optimism-pessimism, and the acknowledgement of negative circumstances that individuals experience in their lives (Martin & Marsh, 2006).

In favor of studying academic resilience, one has to look beyond simply traditional education. For example, it is commonly known that a student at risk of failure presents a more intricate case than those who are not at risk of failure. Waxman et al. (2003), note that examining resilient students can help educators in developing strategies for optimizing the educational experience of all students, particularly those at risk of failure. In another example, McLafferty et al. (2012) found both resilience and emotional intelligence to be powerful predictors of how students process and cope with the challenges they are confronted with in university. However, in their model resilience was the strongest predictor of grades, attendance, and study behavior. A similar study on stress, anxiety, and depression (Abiola & Udofia, 2011) found that low-resilience medical students reported those negative occurrences after a major professional exam to be slightly more prevalent as compared to their counterparts of high-resilience.

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Academic resilience is when a student being successful academically despite challenging environmental conditions. Following that along that line, resilient students as those who are highly motivated and successful despite stressful conditions and academic conditions that would generally prevent success. McLafferty et al. (2012) observed that resilience was predictive of adjustment to university, proving to be the only significant predictor of adjustment subscales related to grades, attendance and study methods. Furthermore, Abiola and Udofia (2011) noted that after passing a primary professional examination, medical students with low resilience experienced increased perceived stress, anxiety and depression.

Academic resilience is a critical factor in academic success, even in the face of personal and environmental adversity. Resilient students are characterized by their ability to maintain superior motivation and high performance, even when faced with stressful situations and risky conditions. According to Waxman et al. (2003), these students succeed at school despite adverse circumstances. Cyrulnik, 2007 approaches school resilience as a dynamic process. He sees resilience as a complex interaction between the individual and his social and cultural environment. For Cyrulnik, 2007 resilience is the ability to bounce back from failure, develop and learn from adversity (Cyrulnik, 2007).

According to various authors, including Garmezy (1985), risk factors are those present in the individual or in his or her ecosystem that increase the likelihood of failure or pathological behaviour. Conversely, protective factors counter or limit the effects of risk factors. Both risk and protective factors can be linked to the individual himself, to the different levels of his ecosystem, or, rather, to the interactions between these levels.

First, we will understand the definition of risk and protective factors. In general, risk factors are defined as all factors likely to compromise a child's social and psychological adaptation. Thus, the risk of maladjustment can be a personnel or environmental condition that increases the probability of the child developing emotional or behavioral problems. Protective factors act as shields that enable students to overcome obstacles, while risk factors can hinder their progress. The protective factors most often cited in the literature are social support, academic engagement, motivation and stress management skills. Social support, whether from family, school or peers, is crucial in providing a sense of security and belonging (Gramzey, 1985).

3. The relationship between cognitive flexibility and academic resilience:

Recent research on the relationship between cognitive flexibility and academic resilience is rooted in several bodies of theory from a variety of

disciplines: developmental psychology, educational science and, more recently, neuropsychology and neuroscience. School resilience and flexibility are two concepts that, despite their differences, are linked by their ability to adapt and overcome all difficulties in a complex school environment. Cognitive flexibility, which refers to the ability to adjust one's thoughts and behaviors according to the situation, is considered to be one of the pillars of academic resilience and an essential driving force for students to solve problems and cope with adversity. Cognitive flexibility may assist also in feelings of self-efficacy, positive assessment or reevaluation of the situation, and eventually, more resilient outcomes when faced with adversity.

Cognitive flexibility is an executive function; executive functions comprise several higher-order cognitive processes essential for regulating and managing a person's thoughts and behaviors. Executive functions include working memory, inhibitory control, and cognitive flexibility, all of which are associated with the functioning of the prefrontal cortex. Executive functions are essential for using appropriate problem solving, adjustment, and coping strategies in the face of new, complex, and stressful situations and can help to manage stressful events better. Executive functions can facilitate adaptive responses to the environment that can avoid further stress or adversity (Corbo & al., 2024).

The study's results of (Sharianti et al., 2024) showed a significant difference in executive functions (inhibition, cognitive functions) between individuals with higher and lower levels of resilience. Cognitive flexibility is essential for reacting appropriately when faced with changing conditions or unexpected events. Cognitive flexibility also enables students to adapt to the situation, improving resilience. Moreover, students who demonstrate cognitive flexibility can modify compulsive and maladaptive thoughts with appropriate and adaptive ones.

Moreover, limited cognitive flexibility may contribute to greater vulnerability to stress and lower resilience. These students are generally better prepared to assume their school responsibilities, engage more in social interactions, tackle complex problems and effectively manage the multiple demands of school life. In addition, students with high cognitive flexibility can usually set realistic goals and make strategic plans to achieve them. They can change their cognitive strategies, opt for various approaches and see different perspectives on academic resilience (Sharianti et al., 2024).

According to the cognitive model of resilience of Parsons et al. (2016), flexibility in affective–cognitive systems is a main component of accomplishing resilient results. In this model, a mapping system assimilates information about the present situation and evaluates whether present responses suit individuals'

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goals. If the system's output is not favorable to touch desired goals, then the mapping system will change to another cognitive processing mode to stimulate more adaptive outcomes. By applying either persistence or flexibility depending on the environmental cues, outcomes, and goals, individuals can maximize their ability to achieve the best possible outcomes (Parsons et al., (2016).

Genet and Siemer (2011) found that higher trait resilience was related with better cognitive flexibility, as measured using a task-switching task. In this task, participants had to categorize stimuli based on one of two task rules. Normally, a modification to a dissimilar task rule incurs a reaction time cost (the “switch cost”), and thus a greater switch cost is indicative of poorer cognitive flexibility. Hildebrandt et al. (2016) who presented obtained same results that better resilience was associated with a lower switch cost (better cognitive flexibility scores on the CD-RISC were associated with better scores on a neuropsychological test of cognitive flexibility using changing rule sets.

Cognitive flexibility is appropriate to the capacity to recreate awareness in numerous ways resting on changing situational demands. The eventual objective of cognitive flexibility is to allow individuals to develop their aptitude to understand different situations. Cognitive flexibility is that individuals can adapt their cognitive processing strategies to new and unexpected situations. It allows also the use of regulatory strategies to assess by prompting individuals to frame problems, examine situations, and argue the benefits and drawbacks of various alternatives. (Orakci, 2021)

Students with cognitive flexibility can manage their thoughts, emotions and behaviours when faced with academic or personal challenges and are likely to display adaptability and flexible problem-solving strategies. These students are often better prepared to deal effectively with the multiple demands of school life. In addition, students who demonstrate high cognitive flexibility can usually set realistic goals and develop strategic plans to achieve them. They can modify their cognitive strategies, adopt diverse approaches and consider different perspectives of academic resilience.

Similarly, empirical studies demonstrate a direct link between resilience and cognitive flexibility, as in Fredrickson's (2001) theory, which assumes positive emotions promote cognitive broadening and flexibility, leading to developed resilience. Empirical support for this model comes from studies showing that positive affect increases thinking flexibility, promotes broader attention and is associated with trait resilience.

This study argues that based on the postulate that resilience is the ability to adapt flexibly to emotional life events, cognitive processes that promote flexibility

are at the heart of this resilience. She also finds that cognitive flexibility is the ability to shift from affective to non-affective processing of affective stimuli, a capacity we have termed "flexible affective processing", predicting individual differences in resilience. In addition, cognitive flexibility measured by a conventional task-switching paradigm predicted resilience level is one of the first demonstrations of a positive relationship between executive control and resilience measures in an adult population.

Students exhibiting a high degree of academic resilience show greater tolerance to stressors see stressors with greater intelligence and, in spite of difficult circumstances, routinely strive for goal attainment. Cognitive flexibility was recognized as one of five critical and influential factors contributing to resilience. Higher resilience individuals tend to perceive negative situations in a more realistic and flexible way than lower resilience subjects do.

4. Conclusion:

While cognitive flexibility and academic resilience are related yet somewhat different concepts, both are basic in students' potential for success in such a demanding school environment. Whereas cognitive flexibility allows the students to adapt to the challenge, academic resilience strengthens them to outlast despite the adversity. More clearly in the course of this review, cognitive flexibility has played an important role in promoting academic resilience. It allows students to change their learning approach, reconsider their attitude in the face of adversities and remain engaged even when challenged academically.

In conclusion, cognitive flexibility is one of the characteristics that promote academic resilience; when students can use flexible learning strategies, they are better able to cope with the academic challenges and changes in an academic world. It is very possible that the strengthening of this competence through pedagogical practice and targeted support program in the school will create positive effects for students in terms of academic performance and well-being. The research must therefore continue on this line of inquiry; equally, effective interventions must be developed to further such essential competencies.

5. Recommendations:

- Create a positive school environment that promotes students' mental health.
- Strengthen school resilience programs by setting up individualized support systems for students with difficulty and by offering targeted interventions to help students better manage stress and other problems.

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- Train and raise awareness among teachers and educational staff of the importance of school resilience and cognitive flexibility.
- Encourage varied teaching methods by introducing activities that promote flexible thinking, such as problem-solving and critical thinking, to stimulate students' adaptability.
- Explore the role of cognitive flexibility in developing academic resilience through in-depth longitudinal studies, observing its evolution and long-term effects on students' academic success.

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