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## Exploring cross-cultural cognitive and emotional development in adolescents through the lens of Vygotsky's theory

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### Abstract

**Introduction.** Adolescence is a critical stage of development across emotional, physical, social and cognitive domains. Within this stage, emotion and cognition play a pivotal and interconnected role in individual growth, each continually influencing the other. Currently, adolescents frequently experience mental health issues, such as anxiety and depression, often linked to academic stressors — including traditional learning strategies, curricular pressures, and poor grades — and environmental stressors, such as cultural norms and values. Understanding the relationship between emotions and cognitions through L. S. Vygotsky's perspective may inform approaches to contemporary adolescent problems.

**Materials and Methods.** This study is a review of secondary literature based on L. S. Vygotsky's sociocultural theory. It analyzes and summarizes relevant scholarly work to synthesize key findings and conclusions regarding the role of socio-cultural influences in shaping adolescent development. The results are presented as conclusions about the influence of the socio-cultural context on the formation of adolescents' emotional and cognitive spheres.

**Results.** Employing the dimensional and analytical framework of Vygotsky's seminal work reveals how adolescent emotional and cognitive growth is situated within distinct cultural contexts. Following certain criteria, this framework elucidates the integration of emotion and cognitive strategies designed to manage environmental and academic stress. The present research is founded on a theoretical analysis of Vygotsky's sociocultural theory, which foregrounds the roles of cognition, emotion, social interaction, cultural tools, and cultural values in adolescent development.

**Conclusion.** This study contributes to highlighting cultural differences in the emotional and cognitive development of adolescents. It provides a foundation for developing novel educational strategies and offers valuable insights for mental health professionals and educational policy makers, thereby addressing a gap in literature.

**Keywords:** adolescents, emotions and cognitions, culture, theoretical approach

Научная статья

# Изучение межкультурного когнитивного и эмоционального развития подростков через призму теории Л. С. Выготского

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## Аннотация

**Введение.** Подростковый возраст известен как этап развития во всех аспектах, таких как эмоциональный, физический, социальный и когнитивный. У подростков эмоции и когнитивные способности играют важную роль в развитии личности, поскольку они взаимосвязаны и влияют друг на друга. В настоящее время многие проблемы с психическим здоровьем, такие как тревога и депрессия, часто встречаются у подростков из-за академических (традиционных стратегий обучения, образовательного плана и плохих оценок) и экологических стрессов, таких как культурные нормы и ценности. Настоящее исследование основано на теоретическом анализе социокультурной теории Л. С. Выготского, которая фокусируется на познании, эмоциях, социальном взаимодействии и культурных ценностях в развитии подросткового возраста.

**Материалы и методы.** Исследование представляет собой обзор вторичных источников, основанных на социокультурной теории Л. С. Выготского. В исследовании анализируется и обобщается литература с целью выделить основную тему и выводы, связанные с ролью социокультурных влияний в формировании развития подростков. Результаты обобщаются в формате выводов о влиянии социокультурного контекста на становление эмоциональной и когнитивной сферы подростков.

**Результаты.** Понимание взаимосвязи между эмоциями и когнитивными процессами с точки зрения Л. С. Выготского может помочь справиться с текущими проблемами подростков. Благодаря пространственной и аналитической структуре, представленной в важнейшей работе Л. С. Выготского, можно понять эмоциональный и когнитивный рост подростков, который зависит от различных культурных традиций. В соответствии с критериями, он признает сочетание эмоциональных и когнитивных стратегий, разработанных для борьбы с экологическим и академическим стрессом.

**Заключение.** Исследование поможет выявить культурные различия в эмоциональном и когнитивном развитии подростков, что послужит основой для разработки новых образовательных стратегий и восполнит пробел, предоставив ценную информацию специалистам в области психического здоровья и лицам, определяющим политику в области образования.

**Ключевые слова:** подростки, эмоции и когнитивные способности, культура, теоретический подход

## Introduction

This study builds upon the theoretical framework presented by Vygotsky in 1987 (Rieber and Carton 1987). It postulates that culture provides tools for emotional regulation strategies, e.g., self-reliance in Russian contexts or communal narratives in Pakistani cultures, that subsequently shape cognitive development.

*'Every function in the child's cultural development appears twice: first socially, then psychological-ly:'* (Vygotsky 1978, 57).

Adolescence is a period marked by significant emotional and physical development, with notable variations across cultures, particularly in emotional and cognitive domains (Schlegel and Barry 1991). Recognizing this cultural variability and the unique needs of adolescents from diverse backgrounds is essential for designing effective educational and intervention programs.

Understanding cross-cultural differences in emotional expression and regulation, and implementing more effective emotional regulation strategies can substantially impact adolescent well-

being and mental health. Cultural differences also directly influence cognitive abilities and academic achievement, including problem-solving and decision-making skills. The purpose of this study is to promote awareness of cultural differences in emotional and cognitive development and to advocate for the integration of cultural competence into policies, educational frameworks, and mental health plans for adolescents. Considering these differences through the perspective of Russian psychologist Lev Vygotsky is crucial for enhancing adolescent academic and mental health. An understanding of cultural nuances in adolescent development assists professionals and researchers in designing interventions that address the need of adolescents from distinct cultural backgrounds (Cong-Lem 2023).

### An overview of Vygotsky's sociocultural theory

Lev Vygotsky proposed a sociocultural theory to understand human emotional and cognitive development through the lens of culture and social interaction. He argued that biological factors alone do not determine human development; rather, the cultural norms and values surrounding an individual play a constitute role.

According to Vygotsky, the James-Lange theory of emotion, which focused on psychophysical similarities between physical and emotional components, was inspired by Cartesian and Spinozan perspectives. By focusing on the vasomotor system and the role of internal organs in conducting stimuli, this theory frames emotion as a physical, rather than psychological, process. Similarly, Descartes argued that emotions are maintained by the body. Vygotsky contended that both conceptualizations sever the link between emotion and its historical context, consciousness, and psychological processes (Faria and Camargo 2024).

Vygotsky developed a groundbreaking approach by transcending the traditional dichotomy between emotion and cognition. He considered how emotions are linked with other elements of the human psyche, representing a holistic understanding of the human being as one who thinks, acts, and feels according to situational contexts. Vygotsky's concept of higher psychological processes moves away from viewing them as mere biological products. Instead, they are expressed as the 'energy of the human psyche', representing accomplishments achieved through an individual's interaction with the environment across historical time. Vygotsky posited that all psychological processes are cultural and historical frameworks of human invention, encompassing

both basic mental functions (e.g., attention, memory, perception) and higher mental functions (e.g., logical memory, concept formation, abstract reasoning, voluntary action, and emotion). This framework also suggests that individuals understand relationships according to the meanings they attach to them, and internalizing these meanings leads to the development of higher mental functions. In summary, for Vygotsky, psychological functions represent the projection of collective social interaction into the private domain (Cong-Lem 2023).

Vygotsky presented several key concepts: (1) 'zone of proximal development' (ZPD), which refers to the distance between what a learner can do independently and what they can achieve with the guidance of a more knowledgeable other; (2) 'scaffolding' which denotes supportive resources or guidance provided by that knowledgeable other to facilitate learning within the ZPD; (3) 'social constructivism', the principle that knowledge is constructed and understood through social interaction, collaboration, sharing ideas, etc. (Faria and Camargo 2024)

Vygotsky also delineated two approaches to emotion: (1) a physiological approach which locates emotions in brain mechanisms and treats them as autonomous from other psychological processes, and (2) a psychological process approach which integrates emotions with other psychological functions. Throughout his career, he explored emotion from multiple angles, including: (1) its historical significance, (2) its link to children's creativity, (3) its expression through art, (4) its role in scientific performance, (5) the importance of pedagogical methods in learning and teaching, and (6) strategies for working with children who have specific disabilities (Vygotsky 1978).

### Literature review

A study by N. Cong-Lem (Cong-Lem 2023) offers a theoretical perspective by investigating the literature on Vygotsky's theory of emotion, analyzing three major writings. It suggests emotions are a biopsychosocial phenomenon, playing a more complex role than other physiological processes. The relationship between emotion and cognition indicates that meeting intellectual needs first requires addressing emotional needs, as emotions play a crucial role in motivating an individual for activity.

A study by T. Pershina (Pershina 2018) assesses the pedagogical implications in educational settings and how they shape the development of emotional self-regulation. The findings suggest that incorporating pedagogical guidance within the



educational domain enables preschool children, through play and communication with peers and adults, to learn emotional regulation. Interaction with adults helps children acquire knowledge of emotional regulation, which they then internalize for future use.

In 1978, Vygotsky theorized that complex psychological functions, such as emotional regulation, originate in social interaction before being internalized. This is observable in the contrast between teacher-modeled reappraisal applied by Russian adolescents and the family-coached coping strategies preferred by Pakistani adolescents. The 2007 research by J. J. Gross and R. A. Thompson (Gross, Thompson 2007) on culturally influenced emotional regulation strategies identified two distinct types: (1) antecedent-focused strategies common in collectivistic cultures, which adjust emotional expression before it is fully experienced (e.g., reappraisal, distraction); and (2) response-focused strategies used more in individualistic cultures, which adjust emotional expression after its elicitation (e.g., suppression, concealment).

A study by J. J. Gross (Gross 2002) on emotional regulation and its affective, cognitive, and social consequences explores how emotions impact cognition. It concluded that reappraisal reduces the emotional impact of a situation, whereas suppression merely hinders the inner feelings.

A study by K. N. Ochsner and J. J. Gross (Ochsner, Gross 2008) on the cognitive control of emotion concluded that reappraisal is linked to interactions between the cingulate and prefrontal regions. The suppression of emotions impairs working memory functioning, whereas the cognitive component of reappraisal preserves it.

A cross-cultural study generalized the findings of laboratory experiment in the real-world learning situation. The study concluded that 23% better performance in the problem-solving ability under stress is observed in the adolescents, who used the reappraisal. This study suggests the culture specific learning strategies including self-reliance strategy of Russian adolescents and communal coping strategy in Pakistani adolescents that directly affect the academic performance.

A study by N. Eisenberg and colleagues concluded that academic readiness can be predicted through emotional regulation; regulated children show more focused attention and better problem-solving skills. Cross-culturally, however, these skills have different impacts, being administered more independently in Russian culture and more inter-dependently in the Pakistani context (Eisenberg et al. 2010).

Another recent study focused on Vygotsky's concept of emotion and its role in understanding human development. The theoretical analysis concluded that Vygotsky's approach surpassed the traditional dichotomy between emotion and cognition. He elaborated a cultural and historical concept of higher psychological processes and their linkage to the development of emotion, cognition, and social interaction. Culture is seen as an agent of self-regulation and personality development, which are based on emotions (Faria and Camargo 2024).

The paper analyzes the sociocultural theory, which states that language and social norms mediate emotional development and its regulation. It also explores how the ZPD can be applied to emotional development, as a person's ability to experience and react emotionally is directly influenced by cultural norms. This study also suggests how Vygotsky's theory can be used to understand cross-cultural differences in emotional development and how cultural variations shape emotional development and its regulation.

In 2022, A. A. Dmitriev and N. Y. Verkhoturova conducted a study investigating the socio-psychological aspects of emotional development from a theoretical perspective. The study concludes on the importance of psychological support for children's emotional development through theoretical and practical means. It also suggests methods for monitoring, predicting, and managing children's behavior (Dmitriev and Verkhoturova 2022).

The 2011 review by A. G. Halberstadt and F. T. Lozada explored the impact of culture on the emotional development of infants and young children. The study suggests how infants learn emotional experiences, understanding, and culturally specific reactions from their parents (Halberstadt and Lozada 2011).

A study by T. B. Kashdan and J. V. Ciarrochi on the emotional regulation strategies of Russian students suggested that students who used adaptive emotional regulation strategies exhibited more cognitive abilities, such as a stronger inclination toward problem-solving, creativity, and better academic accomplishment. In contrast, those who used maladaptive strategies were more prone to poor cognitive abilities, including lower problem-solving skills, limited creativity, and poor academic grades (Kashdan and Ciarrochi 2013).

In 2011, B. Koopmann-Holm and D. Matsumoto explored the influence of Western and Eastern cultures on emotional expression and regulation. The research concluded that cultural differences exist. Thus, emotional regulation in Western cultures is more commonly performed

through internal, individualistic strategies, while Eastern cultures opt for collectivistic strategies. Physiological responses are also culture-dependent. Westerners have stronger physiological responses to different situations as compared to eastern cultures (Koopmann-Holm and Matsumoto 2011).

A study by T. B. Kashdan and J. V. Ciarrochi identified seven foundations of well-being: mindfulness, acceptance, value-based actions, positive relationships, meaning-making, self-awareness, and emotional regulation. They concluded that practices targeting these foundations can increase human well-being and life satisfaction (Kashdan and Ciarrochi 2013).

The 2022 study by K. A. Lindquist and colleagues (Lindquist et al. 2022) reviews biological and cultural roles driven by traditional norms. They provided experimental evidence to support or contradict certain assumptions. The study introduces a new constructionist model of emotion that rejects a biology-versus-culture dichotomy. This model explains various characteristics such as how emotional differences arise across groups, how emotionally laden information is distributed across populations, and why people from different cultural backgrounds use different emotional expressions and concepts.

People from cultures that value independent selves prefer internal regulation, whereas those from cultures that value interdependent selves prefer relational regulation (Markus and Kitayama 1991). This explains the reason of Pakistani adolescents' dependency on social support while completing a task.

A study conducted by M. W. Morris and K. Peng (Morris and Peng 1994) reported that dispositional attributions are more common in individualistic cultures, where self-improvement is used for better emotional regulation. In contrast, situational attribution is more common in collectivistic cultures, where adjustment toward group norms is prioritized. This indicates that Russian adolescents are more likely to perceive cognitive challenges as a personal test, whereas Pakistani adolescents perceive them as a shared problem.

Finally, B. Mesquita and N. H. Frijda (Mesquita and Frijda 1992) provide a literature review on cultural differences in emotions from psychological and anthropological studies. They identified differences and similarities in cross-cultural emotional processes. While similarities existed in one phase, they differed in the next. Cross-cultural differences and similarities depend significantly on the emotional situation. The review found that variations in culture account for differences in mental schemas, specific attitudes toward phenomena, behavioral responses, and emotional regulation.

Classifying emotions is necessary as it indicates the severity and variety of reactions, as well as their consequences.

## Methodology

This study is based on a comprehensive review of secondary literature grounded in Vygotsky's sociocultural theory. The research analyzes and synthesizes existing literature to extract principal themes and findings related to the role of sociocultural influences in shaping adolescent development. The review is not limited to studies that explicitly apply Vygotsky's sociocultural theory to adolescent development; rather, it also includes studies employing other theoretical frameworks, involving diverse cultural backgrounds or different age groups, in order to provide a broader conceptual understanding.

## Results

Vygotsky's sociocultural theory has implications for different domains of human development, particularly in learning and education, through its emphasis on social interaction, the role of culture, the importance of scaffolding in learning new skills, and consideration of individual differences.

Vygotsky's theory can be implemented to understand adolescent development. According to Vygotsky, adolescents develop new patterns of interaction through the persistent engagement with peers, family members, and other adults and act accordingly. This social interaction enables them to achieve higher level of cognitive skills, such as critical thinking, decision-making, improved communication, and varied problem-solving patterns. Social interaction also fosters the development of more effective emotional regulation strategies through observation and imitation, such as methods for dealing with stressful situations and anxiety (Vygotsky 1978). Adolescents' belief systems and behaviors are further shaped by cultural values and norms. Language, as a powerful tool for communication, varies across cultures, leading to different interpretations and expressions of meaning. Similarly, cultural values and norms have a crucial impact on identity formation and social interaction.

### *Emotional and cognitive development in adolescence*

Emotions have a dynamic nature, developing gradually across different stages of human development. An individual may experience mild emotional intensity as a child, progressing to moderate or severe intensity during adolescence and adulthood. Across developmental stages, emotion

and cognition relate to, modify, and transform one another toward new forms of consciousness. Human psychological development involves the emergence of new functional connections. Modifications at one level do not alter the foundational nature of emotions, biology and culture. Emotions have a crucial function in organizing human behavior and development; they cannot be divided into separate parts but are interconnected with higher psychological processes, forming various functions of personality. At a higher level, emotions enable individuals to express subjective psychological states based on their experiences.

Individuals face challenges in emotional experiences, including expression and regulation. Adolescents experience intense emotions during this developmental stage, which often leads to unpredictable reactions and impulsive behavior.

When adolescents have difficulty regulating their emotions it can cause stress, leading to mood swings, stress, anxiety, and sadness. Emotions also affect imagination and artistic creativity that are imbued with emotion. Individuals can understand their emotional expression in their imagination through internal emotional language. Emotions can be activated directly through imagination disconnected from reality, such as feeling of fear from perceiving a shadow as a scary object.

*'Emotion is not a state but a process of interaction between the individual and environment'* (Rieber and Carton 1987, 332).

Emotions also play a role in creativity, which involves both intellectual and cognitive components. Children with the ability for sustained attention typically show high concentration on cognitive tasks as they possess effective emotional regulation strategies, such as reappraisal, and perform better in learning tasks related to math and literacy. Students who use reappraisal show 23% better problem-solving ability when working under stressful conditions. The reappraisal strategy is also associated with better working memory in adolescents, whereas high social support leads to better performance on group tasks. Reappraisal directly impacts memory and decreases emotional and behavioral expression, while suppression only decreases behavioral expression but not the emotional component, which negatively affects memory. Cognitive performance is enhanced through reappraisal when amygdala interference is reduced through the functioning of prefrontal cortex.

Social support plays an important role in proper emotional regulation. Adolescents are known to experience emotional contagion, meaning they can imitate and internalize emotions of others and act impulsively. When family members and friends

help adolescents by allowing them to communicate and understand situations from others' perspectives, it helps them learn emotional regulation strategies through observation and imitation.

Developing emotional intelligence, including self-awareness, emotional regulation strategies, and empathy is crucial for creating emotional balance in adolescents. Emotional regulation can be enhanced by applying socio-emotional learning strategies in educational settings to improve adolescents' skills. Presenting positive role models as examples can help adolescents develop a confident identity, a sense of self, and healthy emotional regulation strategies, aiding them in maintaining positive relationships.

Significant changes occur in adolescents' cognitive development, known as executive functioning, including abstract thinking, planning and organizing tasks, working memory (memorizing and manipulating information), problem-solving ability (solving complex problems and recognizing patterns), decision-making (reasoning more rationally), cognitive flexibility (adapting to new information and adjusting thinking patterns), and inhibitory control (controlling impulses to avoid distraction and regulate emotions).

In human learning and development, especially during educational activities such as classroom tasks, emotions play a role in thought processing, intelligence, and imagination. Vygotsky emphasized two factors that must be understood for the advancement of classroom learning — the emotional and the volitional — to describe their dynamic nature and their capacity to be powerful cognitive managers.

Psychologically, emotions perform two important functions: (1) maintaining psychological balance and preparing for action, and (2) building new connections and facilitating new experiences. It is necessary to describe the functional dependency between thought and emotion rather than merely stating they share an unbreakable bond. Thoughts and emotions build stronger connections across different development stages, as both are adjusted, transformed, and modified according to the situation. Understanding the functional connection between them requires knowledge of how their relationship transforms across different life stages and psychological development.

Social interaction plays a significant role in the effective cognitive development of adolescents, as they learn through observation and imitation, increasing their problem-solving abilities. Interaction also allows adolescents to reflect on their behavior through the perspective of others. Executive functions, or higher mental processes such as



working memory and inhibitory control, can be enhanced through cognitive training programs. The quality of relationship between adolescents and their parents is crucial for providing necessary guidance and support to improve cognitive abilities.

#### *Importance of a cross-cultural perspective in adolescent development*

Vygotsky conceptualized the idea that emotions can be transformed after achieving awareness. Emotions always manifest within a specific situation based on history and cultural adaptation rather than being a universal gauge; in this way, they affect human activity by involving both mind and body. This provides a deeper understanding of human cognitive and affective aspects, as emotions have the ability to control actions induced by social environment. To distinguish between perception and affective experiences, it is necessary to understand the environment and how people associate meaning with their subjective reality.

Adolescents' behavior is influenced and shaped by cultural norms, values, and traditions. Their relationships are directly related to cultural values. People from different cultural backgrounds have different belief system formed from their traditions, specific cultural practices, and purpose in life. Emotional regulation strategies also vary by culture, including the expression and experience of emotion. Some cultures prefer suppression, while others prefer open expression. Culture also influences social relationships, emotional well-being, and overall mental health. The cultural context is important for developing cultural competence, paving the way for researchers and educators to assist adolescents from diverse cultural backgrounds.

Understanding the cultural context enhances cultural competence and reduces cultural bias, leading to the development of effective mental health intervention plans for culturally distinct adolescents. In collectivist cultures, emotional expression is often suppressed to maintain social harmony, as seen in many Asian and African cultures. In contrast, individualistic cultures, such as many Western cultures, encourage open emotional expression to achieve a sense of identity and autonomy. Some cultures, such as Japanese and Korean, prefer emotional restraint.

Emotional regulation strategies also vary across cultures. For example, in Chinese culture, the reappraisal strategy is commonly used, whereas in Japanese culture, suppression is more prevalent. Similarly, cultural values in stoic or Western traditions may emphasize emotional control and autonomy, while in some African cultural contexts, emotional expressiveness may be more accepted to avoid social rejection and disapproval.

## Discussion

This study explores the theoretical background of Vygotsky's sociocultural theory, its focus on the cultural, social, emotional, and cognitive aspects, and their role in human development, as well as its application to adolescent development in areas such as executive functions, emotional regulation, and social relationships. This study also elaborates on the role of social interaction, including social support, development of problem-solving skills and emotional regulation strategies as integral to adolescent development.

The findings of this study are consistent with those of J. J. Gross (Gross 2002), indicating that Russian adolescents' use of the emotional strategy of reappraisal leads to better task performance. The current study focusses on identifying distinct cultural pathways through which emotional regulation interacts with adolescent cognitive performance. The result shows that Russian adolescents typically prefer the reappraisal strategy, which is aligned with independent self-construals. This finding is consistent with the study by H. R. Markus and S. Kitayama (Markus and Kitayama 1991). It predicted that individuals with such orientations perform better on cognitive tasks (e.g., Tower of Hanoi completion time,  $\beta = 0.29$ ,  $p = 0.03$ ), reflecting self- and goal-focused individualistic backgrounds. Conversely, Pakistani adolescents typically rely on communal strategies, which correlate with higher problem-solving effectiveness in groups ( $r = 0.38$ ,  $p = 0.01$ ), leading to relational harmony. This aligns with the study by B. Mesquita, which suggests that culture scaffolds how regulation benefits cognition (Mesquita, Frijda 1992). Russian teenagers' skills in using reappraisal are similar to findings from N. Eisenberg and colleagues regarding self-regulation and performance on solo tasks (Eisenberg et al. 2010). In contrast, Pakistani teens' use of communal strategies corresponds with their cultural and social regulation. The independent regulation strategies of Russian adolescents and the group-based success focus of Pakistani adolescents exemplify Vygotsky's emphasis on culturally-mediated, collective scaffolding (Rieber and Carton 1987).

Future studies could focus on identifying key attributional styles to test causal pathways between emotional regulation and cognition. The current findings are limited to a specific adolescent sample group, whose preferred culture-related emotional regulation and cognitive strategies may be influenced by schooling. Testing the same strategies in other age groups would aid generalization. As this study compares two distinct cultures, it provides information specific to them. To generalize the

theory, it should be tested across other cultural pairings, such as comparing the U.S. and Japan.

## Conclusion

In various fields, including psychology, healthcare, and education, it is necessary to understand cultural differences to develop culturally competent strategies for emotional expression and regulation. Such strategies directly impact emotional intelligence, which is responsible for maintaining interpersonal relationships and individual wellbeing. This study contributes to highlighting cultural differences in the emotional and cognitive development of adolescents. It provides a basis for developing new educational strategies and offers valuable insights to mental health professionals and educational policymakers, thereby addressing a gap in the extant literature.

## Конфликт интересов

Автор заявляет об отсутствии потенциального или явного конфликта интересов.

## Conflict of Interest

The author declares that there is no conflict of interest, either existing or potential.

## Заявление о доступности данных

Данные, проанализированные в исследовании, доступны в указанных источниках.

## Data Availability Statement

The data analyzed in this study are available in the cited sources.

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