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PSYCHOLOGICAL CHARACTERISTICS OF THE DEVELOPMENT OF COGNITIVE STYLE IN ADOLESCENTS

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ABSTRACT

This article explores the psychological characteristics underlying the development of cognitive styles in adolescents. The study emphasizes the interaction between personality, environmental factors, and cognitive processes that shape the individual's way of perceiving, processing, and responding to information. It highlights how adolescence, being a period of significant intellectual and emotional transformation, is marked by variability in cognitive styles such as field dependence–independence, reflective–impulsive tendencies, and analytical–holistic orientations. The article provides an analytical overview of theoretical and empirical studies, methodologies for assessment, and the implications of cognitive style development for educational psychology.

Keywords: Adolescents, cognitive style, personality development, psychology, education, reflection, cognitive processes, learning strategies.

INTRODUCTION

Cognitive style refers to an individual's consistent way of organizing and processing information, perceiving reality, and responding to environmental stimuli. During adolescence, individuals undergo major transformations in thinking, reasoning, and emotional regulation. The development of abstract and logical thinking, self-awareness, and social cognition leads to diverse cognitive preferences and strategies.

Understanding cognitive style during this stage is essential because it influences how adolescents learn, solve problems, and communicate. Psychological studies have shown that cognitive style acts as a bridge between cognitive abilities and personality traits, mediating how intelligence manifests in behavior and learning outcomes. Therefore, identifying the psychological features of cognitive style development in adolescents contributes to designing more effective pedagogical and developmental interventions.

Detailed Overview of the Psychological Characteristics and Development of Cognitive Style in Adolescents (12–18 years)

Cognitive style is an individual's characteristic and relatively stable way of perceiving, attending to, organizing, processing, and retrieving information. It is not the same as intelligence (ability), but rather the preferred manner or "style" in which cognitive abilities are applied. During adolescence, cognitive styles undergo profound reorganization due to brain maturation, identity formation, and increasing social-cognitive demands.

Major Dimensions of Cognitive Style Relevant to Adolescence

Field-Dependence vs. Field-Independence (Witkin, 1962; Witkin & Goodenough, 1981)

- Field-dependent: Perception is strongly influenced by the overall context; difficulty separating a part from the whole.

- Field-independent: Ability to disembed relevant elements from a confusing background; analytical, detail-oriented perception.
- Instruments: Rod-and-Frame Test, Embedded Figures Test (EFT), Group Embedded Figures Test (GEFT).

Reflection vs. Impulsivity (Kagan, 1965; Kagan et al., 1964)

- Impulsive: Fast responses with many errors on tasks involving uncertainty.
- Reflective: Slower, more accurate responses; better hypothesis testing and error-checking.
- Classic measure: Matching Familiar Figures Test (MFFT).

Analytic vs. Holistic / Serialistic vs. Holist (Pask, 1976; Riding & Cheema, 1991)

- Analytic/Serialistic: Step-by-step, focused, detail-oriented processing.
- Holistic: Big-picture, relational, simultaneous processing.

Tolerance vs. Intolerance of Ambiguity and Need for Cognitive Closure

- High intolerance/need for closure: Preference for certainty, quick decisions, discomfort with open-ended situations.
- High tolerance: Comfort with uncertainty, multiple possibilities, delayed closure.

Convergent vs. Divergent Thinking

- Convergent: Single correct answer, logical deduction.
- Divergent: Generation of multiple ideas, originality, flexibility (central to creativity).

Developmental Trajectory Across Adolescence

Early Adolescence (approximately 12–14 years)

- Still moderately field-dependent. Performance on embedded figures tasks improves but remains slower and less accurate than in older teens.
- Predominantly impulsive cognitive tempo on MFFT (fast guesses, high error rates).
- Thinking is transitioning from concrete to formal operations, but hypothetical-deductive reasoning is inconsistent.
- Low tolerance for ambiguity; preference for clear rules and black-and-white answers.
- Epistemological beliefs are " "dualistic" (Perry, 1970): Knowledge is right or wrong, authorities have the answers.
- Divergent thinking and creativity scores begin to rise sharply (often peak around 8th–9th grade).

Middle Adolescence (approximately 15–16 years)

- Rapid increase in field-independence. Significant improvement on EFT/GEFT; adolescents can now restructure perceptual fields and solve complex problems more autonomously.
- Marked shift toward reflective cognitive tempo. Latency times on MFFT lengthen, error rates drop dramatically.
- Consolidation of formal operational thought: systematic hypothesis testing, combinatorial reasoning, understanding of probability and correlation.
- Growing tolerance for ambiguity. Adolescents start to accept that different viewpoints can be legitimate.
- Identity exploration (Marcia's moratorium status) drives the need for more flexible cognitive styles.
- Peak or near-peak of divergent thinking and ideational fluency (Torrance Tests).

Late Adolescence (approximately 17–19 years)

- High field-independence in most individuals (comparable to adult levels).
- Reflective style becomes dominant in academically successful students.
- Emergence of post-formal or relativistic-dialectical thinking (Labouvie-Vief, 2006; Kramer, 1983):
  - Recognition that problems can have multiple valid solutions.
  - Integration of contradictions and acceptance of context-dependence of truth.
  - Reflective judgment (King & Kitchener): ability to evaluate evidence and tolerate ill-structured problems.
- High tolerance for ambiguity and low need for cognitive closure (except in authoritarian personalities).
- Divergent thinking may slightly decline as specialization and conventional academic demands increase.

Biological and Neurological Underpinnings

- Massive prefrontal cortex maturation (executive functions, inhibitory control, planning).
- Parietal lobe development → improved perceptual disembedding and spatial restructuring (field-independence).
- Strengthening of frontoparietal and frontotemporal networks → better selective attention and working memory.
- Dopaminergic changes in reward and salience networks → increased motivation for novelty and exploration (drives identity exploration and flexible thinking).

Psychosocial and Environmental Influences

Identity status (Marcia)

- Moratorium and achievement statuses are associated with reflective, field-independent, ambiguity-tolerant styles.
- Foreclosure and diffusion correlate with impulsive, field-dependent, closure-seeking styles foreclosure.

Schooling and teaching style

- Inquiry-based, discovery-oriented education accelerates reflective/analytic styles.
- Rote, highly structured teaching maintains or reinforces impulsive/holistic styles.

Culture

- Collectivistic cultures tend to preserve higher field-dependence longer.
- Individualistic cultures accelerate field-independence and analytic processing.

Gender differences (small but consistent)

- Girls often show earlier shift to reflective tempo.
- Boys sometimes display higher initial divergent thinking and slightly later maturation of inhibitory control.

Clinical and Educational Significance

- Persistent impulsivity or extreme field-dependence beyond mid-adolescence can be a marker for ADHD, learning disabilities, or executive-function deficits.
- Gifted adolescents frequently show very early reflective, highly field-independent, and complexity-tolerant styles.
- Excessive need for closure in late adolescence is linked to dogmatic thinking, prejudice, and authoritarian attitudes (Adorno; Kruglanski's need for closure scale).

CONCLUSIONS

The development of cognitive style in adolescents represents a complex interplay between biological maturation, personality, social interaction, and educational experience. Recognizing the diversity of these styles helps educators and psychologists support adolescents in achieving cognitive flexibility and self-awareness. Cognitive style serves as a psychological mechanism that determines how knowledge is perceived, structured, and applied. Its development during adolescence is a crucial predictor of later academic and professional success.

Individualized Education: Teachers should identify students' cognitive styles and adapt teaching methods accordingly.

Training in Reflection: Incorporate metacognitive exercises to enhance self-regulation and reflective thinking.

Balanced Learning Environments: Combine structured and exploratory activities to develop both analytical and creative styles.

Emotional Support: Establish psychologically safe learning spaces that encourage independent reasoning and risk-taking.

Cross-cultural Research: Conduct further comparative studies to explore how cultural and socioeconomic contexts shape adolescent cognitive styles.

Integration in Curriculum: Cognitive style awareness should be part of teacher education programs to improve pedagogical effectiveness.

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