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Theoretical And Practical Foundations of Sensorimotor Regulation of Adolescent Anxiety Through Art Therapy

Maryna Matsela, Master's degree student
Faculty of Humanities and Pedagogy,
Department of Psychology
National University of Life and Environmental Sciences of Ukraine, Ukraine
***Academic Supervisor*:**
Hanna Tsvietkova, Doctor of Pedagogical Sciences, Professor
Department of Psychology

National University of Life and Environmental Sciences of Ukraine, Ukraine

Adolescence represents a critical period of personal development during which profound neurodynamic reorganization and identity formation unfold against the backdrop of heightened sensitivity to social evaluation. Under contemporary Ukrainian conditions, this normative developmental vulnerability is substantially exacerbated by the chronic trauma of war: persistent air raid alerts, disrupted schooling, learning in bomb shelters, the breakdown of familiar social ties, and the adaptive challenges of relocation. Empirical observations demonstrate that anxiety symptoms occupy a leading position among emotional well-being disturbances in adolescents, leading to impaired attention, decreased academic performance, and somatovegetative dysfunctions [1].

Adolescents' urgent need for psycho-emotional stabilization significantly exceeds the capacity of school psychological services. The majority of acute affective states occur directly within educational settings or at home—prior to assessments, during public presentations, or in response to sudden acute stress. This creates an urgent necessity to establish validated, safe, and operational self-help protocols that can be effectively implemented by educators, parents, or adolescents themselves. The aim of this study is to provide a conceptual foundation for the sensorimotor mechanisms of art therapy interventions and to design a differentiated multi-tiered model for anxiety reduction in adolescence.

Anxiety is conceptualized in psychological science as a multidimensional construct integrating affective patterns, cognitive distortions, avoidant behavioral responses, and pronounced autonomic activation [1]. In adolescent populations, physical indicators of arousal (tachycardia, tremor, respiratory difficulties, muscle tension) typically precede conscious verbal recognition of one's emotional state. Consequently, conventional verbal counseling and rational reassurance during peak

moments of panic or acute distress often prove insufficient, necessitating direct somatic grounding [6].

Art therapy within psychological intervention provides a safe nonverbal regulatory channel, normalizing psychomotor tension and reducing physiological distress. Grounded in the Expressive Therapies Continuum (ETC) developed by S. Kagin, V. Lusebrink, and L. Hinz [5], the physical properties of expressive media directly modulate central nervous system functioning. Highly structured, resistant media (graphite and colored pencils, fine liners, templates, modeling clay) engage the kinesthetic-sensory level of regulation, restoring an internal sense of control and grounding, whereas fluid media excessively stimulate the affective level and, without structured containment, may exacerbate disorganization [5].

Synthesizing theoretical and empirical evidence highlights several regulatory mechanisms of expressive artistic engagement: 1) sensorimotor and proprioceptive stabilization: repetitive tactile interaction with paper and resistance from physical materials generate a steady stream of proprioceptive input, attenuating sympathetic hyperarousal and anchoring the individual in the present moment; 2) respiratory-motor synchronization: coordinating graphic movements (e.g., the 'Drawing of Breath' technique using a square trajectory or smooth wave) with prolonged exhalation reflexively enhances parasympathetic vagal tone, stabilizing heart rate and reducing situational distress [7]; 3) bilateral rhythmic coordination: synchronous, mirror-like drawing with both hands promotes interhemispheric integration and releases psychomotor tension; 4) cognitive refocusing and externalization: empirical studies confirm that focusing attention on structured, rhythmic activities (such as coloring mandala segments) provides superior anxiety reduction compared to emotionally venting fear-related imagery [3, 4], while externalization (depicting anxiety as an external entity followed by visual transformation or disposal) reduces subjective fusion with distress [2].

Drawing on principles of psychological safety, time efficiency, and accessibility, a three-tiered anxiety intervention model for adolescents was developed: Tier 1 comprises express techniques lasting 1–3 minutes ('4-4-4-4 Drawing of Breath', 'Discharge onto Paper' [2], 'Draw What You See', and 'Bilateral Drawing') designed for immediate stabilization during acute stress by teachers, parents, or adolescents independently; Tier 2 involves structured short practices lasting 15–20 minutes (mindful mandala coloring [3, 4], clay modeling, creating a 'Safe Place' visualization, and the 'My Pillars' resource collage [6]) aimed at alleviating cumulative fatigue and tension during homeroom periods or at home; Tier 3 entails a structured group program (five 60-minute sessions) facilitated by a qualified psychologist, structured around trauma-informed care stages to cultivate sustainable coping skills and establish an individualized 'Art First-Aid Kit'.

Art therapy interventions for adolescent anxiety rest upon robust neurophysiological foundations of sensorimotor and rhythmic autonomic regulation. Employing structured media and concise instructions eliminates risks of secondary traumatization while ensuring rapid psycho-emotional stabilization. The proposed

differentiated three-tiered model serves as an accessible, practical psychosocial framework that equips adolescents with effective self-soothing skills amidst pervasive chronic stress.

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