Shaping Minds Through Art:

A Systematic Review of Aesthetic and Cognitive Interactions

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Abstract

This study explores the implication and application of art education to enhance cognition through aesthetic development via a systematic literature review. Articles published from 2018 to 2023 were gathered from Scopus, Academic Search Ultimate, JSTOR, ScienceDirect, and SpringerLink. Initial keywords inquiries, "aesthetic" and "cognition" were 2,553 articles. After applying inclusion and exclusion criteria, 12 articles remained for review. Findings indicate aesthetic is a form of cognition, that combines emotions and senses. Aesthetic and cognition can arise and develop at any age. A person's level of personal aesthetic development increases with age and experience, varying among individuals. Some research found that various factors such as age, experience, environment, and art education promote the experiential interplay between aesthetic and cognition, this means developers could use experiential programs to increase aesthetic. Aesthetic development benefits society, individual's health, and well-being. Moreover, aesthetic experience involves sensory, motor, emotional, and memory faculties.

Keywords: *Art Education, Aesthetic Development, Aesthetic-Cognitive Relationship, Well-being Implications, Experiential Programs*

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Introduction

National population ageing is one of the main problems of 21st century and defined as a process which increases the proportion of old people within the total population and the viability of long-living societies will depend on the adaptability of labour markets and the sustainability of social protection systems (International Labour Organization 2009). It affects both developed and developing countries which appears on the agendas of world summits or international conferences at every regions, United Nations states that the challenge for the future is "to ensure that people everywhere can grow old with security and dignity and that they can continue to participate in social life as citizens with full rights". At the same time "the rights of old people should not be incompatible with those of other groups, and reciprocal intergenerational relations should be encouraged." (United Nations, World Population Ageing 1950-2050, Population Division).

Since 2009 at that time till now, due to reports of the (International Social Security Association (ISSA) (2023) to present Priorities for social security Global 2022 Trends, challenges and solutions, the COVID-19 pandemic has made its indelible mark on the 2020 – 2022 triennium even as social security institutions continued to respond to persistent as well as evolving challenges in social security but demographic ageing is still an inexorable trend that has wide-ranging and diverse impacts on different regions. The graying of the population has highlighted the urgent and increasing needs of the elderly, the importance of rethinking pension and long-term care models, and the imperatives of promoting healthy ageing.

Aging Society Comes with Higher Expense

There are fears that public expenditure could rise as ageing in OECD countries accelerates, public expenditure on health soaks up a large part of government budgets. According to an OECD report, the over-65 age group accounts for 40-50% of healthcare spending and their per capita healthcare costs are three to five times higher than for those under 65. Health transition, also known as "epidemiological transition" is defined as a series of interconnected changes which include the change from high to low fertility rates, a steady increase in life expectancy at birth and at advanced ages and a transition from predominantly contagious diseases to non-transmitted diseases and chronic conditions (International Labour Organization 2009). Consequently, it is necessary to prepare for dealing with the changes both mental and physical cause. The elderly are valuable human resources in society because they have potential to develop the country, even the economy and society more efficiently. The difficulty in caring for the elderly lies in the differentiation between care system and requires a high level of technical competence, and social support for the activities of daily living.

According to the 2011 Royal College Dictionary, aesthetics means beauty in nature or art, which everyone can understand and feel. It is the relationship between emotions, mind, and one's personal perception and appreciation of beauty. This may develop further to the point of appreciation, admiration, or even obsession, which have an effect on personality, taste, emotions, values, and decision-making. These are the result of "aesthetic experience," which is expressed in people's behavior. In addition to feeling and perceiving beauty, aesthetic experience also extends to other sensations, such as sadness, revulsion to ugliness, or the attraction to cuteness. Moreover, there are senses of humor, mystery, fun, unattractiveness, enjoyableness, boredom, ambitiousness, inspiration, and forgetfulness. Having senses of ordinary, everyday feelings or emotions can also create aesthetic experiences (Wattananarong 2013).

Insofar as a sense of aesthetic can be created and developed at any age, it increases with experience, which differs with each person. Many scholars have studied aesthetic development, and proposed different theories for the individual level of sensitivity of each person. Two good examples are Parsons (1987) and Housen (2007). Parsons argues for five aesthetic developmental stages, which are 1) Favorite (Favoritism), 2) Beauty and Realism (Beauty and Realism), 3) Expressiveness, 4) Style and Form, and 5) Autonomy. These are very much like the concepts of Housen, who also proposed five stages, 1) Accountive: viewers are storytellers by observation about works of art; 2) Constructive: viewers support their observations about works of art with a framework of evidence; 3) Classifying: viewers identify works of art with art history knowledge, and are analytical and critical of art information; 4) Interpretive: viewers identify works of art by using their critical skills with regard to the elements of art, art experience, art identification and interpretation; 5) Re-Creative: viewers reflect on works of art, speculate, or contemplate works of art with regard to their personal experience and the world at large. Using these conceptions for a framework for stages of aesthetic development, it was found that aesthetic development occurs in the individual in sequential order, and develops with increasing age, throughout each stage of life, from childhood to adulthood. These insights are important reference points for art educators to use pedagogically in designing curricula to educate learners. While there remains the question of how teachers can give learners an aesthetic experience that teaches them to appreciate an art object or nature, frameworks such as Parsons' and Housen's are an important element that will help learners use personal aesthetic experiences to create new knowledge.

Cognition is a learning process in which the process of understanding and perceives various information. Incorporating the body's senses, our minds employ various ways of thinking to understand information, such as critical thinking, reasoning, and decision-making. Problem solving, planning, and cognition enable humans to learn things, and apply what they have learned to their daily lives. Cognitive development varies, depending on factors such as experience, parenting, genetics, and one's environment (Patphol 2015). Cognitive stimulation involves stimulating various parts of the brain related to cognition. Cognitive functions, such as memory, attention, direction, calculation, decision-making, language, and the executive functions, are regular training for the brain in the use of memory, helping to stimulate the brain, thereby enabling more effective cognitive function (Spector et al. 2003).

The development of aesthetics and cognition are interrelated, and proceed with age and experience. At present, there are still very few studies that take any interest in the collection of research works that are related to the relationship between aesthetic and cognition. Analyzing research methods by doing a Systematic Review (SR) is helpful in gaining knowledge about the impacts of the relationship between aesthetic and cognition that appear in the research. The research then guides those professionals involved in educational management in applying it to learning and development.

Research Purpose

The main purpose of this research is to review the relevant literature on the relationship between aesthetic and cognition. The review will focus on various areas of specialization, such as the relationship between aesthetic and cognition for the developing consciousness,

aesthetic and cognition in the elderly, how aesthetic increases cognition, the aesthetic experience and cognition, how to enhance and increase aesthetic experiences in the elderly, how to teach aesthetic experience to the elderly, and the relationship of aesthetic and cognition to automatic learning.

Research Framework

This literary review examines the relationship between aesthetic and cognition. The method of systematic review (SR) was used, which involved the following steps: (1) Defining the objectives and review questions, (2) Defining the framework for searching for the information, (3) Setting criteria for the selection of works and defining search terms, (4) Identifying the database(s) to be searched, (5) Assessing the quality of the participant studies, and (6) Summarizing and synthesizing the knowledge from the research results.

Methodology

The extant research on aesthetic and cognition was systematically reviewed according to the defined research questions. The acquired samples were then passed through inclusion and exclusion criteria. Key particulars included:

1. Using English keywords,
2. Searching international academic databases, such as Scopus, Academic Search Ultimate, JSTOR, ScienceDirect, and SpringerLink,
3. Using search terms and limiting search results, as specified in the defined criteria,
4. (Systematically synthesizing the collected research works, and summarizing the results accordance to research objectives.

Data Collection Procedures and Methods

Articles related to aesthetic and cognition were compiled, using the following selection methods and criteria:

1. Searched for research articles published in foreign online databases, including Scopus, Academic Search Ultimate, JSTOR, ScienceDirect and SpringerLink, using “aesthetic and cognition” for keywords,
2. Entered commands into the Search Field(s) to search for the keywords as Title, Abstract, and Article keywords,
3. Selected only research articles published in English, and for which it was possible to access the full text,
4. Selected only research articles related to aesthetic development, aesthetic level, and cognitive level, based on the topic of the paper that identified as described in the abstract,
5. Selected only articles that matched the research question, this study provides a systematic literature review of the research question on the relationship between aesthetic and cognition.

Applying the PRISMA 2020 flow diagram, data collection and inclusion/exclusion criteria are illustrated in the below figure.

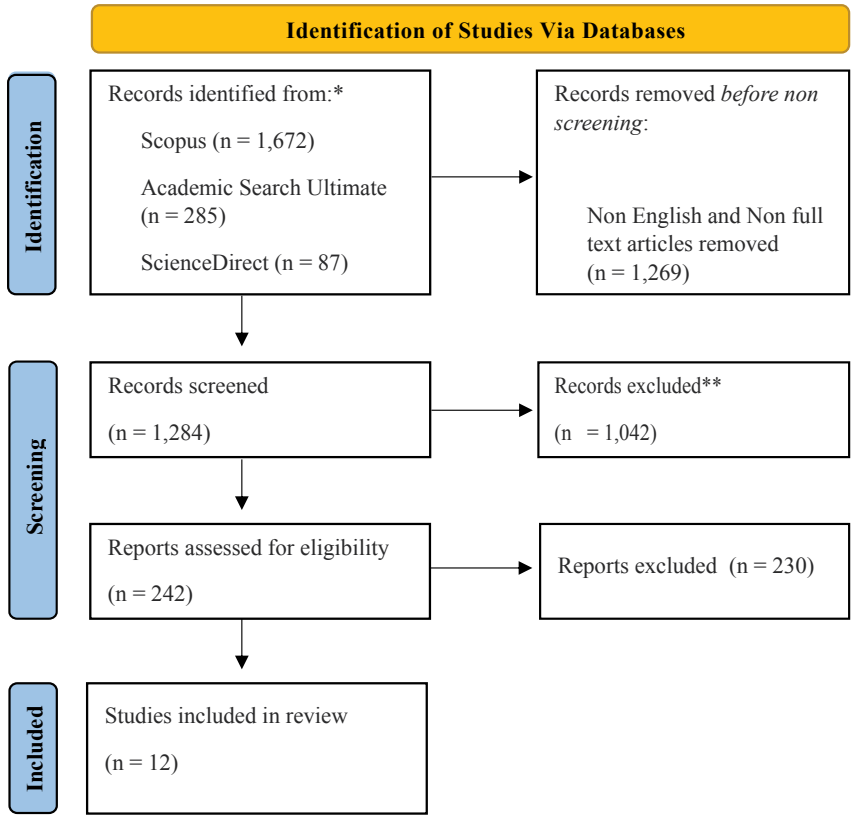

Figure 1. PRISMA 2020 flow diagram.

Research Results

The initial search of the international academic databases listed obtained 2,553 papers. The following is a summary of the papers on topics that were considered most relevant for the purposes of this literature review:

Study	Type of Study	Methodology	Measurement Tools	Sample Population	Keywords	Findings on Aesthetic-Cognition Relationship
Silveri et al. (2015)	Experimental study	Neuropsychological tests, art appreciation tasks	Neuropsycho-logical test battery and art appreciation tasks	16 Alzheimer's patients and 15 caregivers	Aesthetic Preference; Alzheimer's Disease; Art; Dementia; Emotional memory enhancement; Memory; Memory disorders; Neuroaesthetics	Aesthetic perception remains despite cognitive impairment
O'Connell et al. (2013)	Mixed-Methods Study	Questionnaires and patient interviews	Aesthetic and Cultural Seeking Participation Questionnaire	38 stroke patients	Stroke; Aesthetics; Arts; Culture; Leisure	Aesthetic activities can enhance cognitive recovery via sensory and emotional processes
Root-Bernstein (2002)	Theoretical analysis	Literature synthesis	Theoretical analysis	NA	Philosophy of science; Aesthetics; Intuition	Aesthetics supports intuition and "synosia" by improving interface usability and cognitive load.
Deng & Wang (2020)	Empirical, Quantitative	Kansei principles, evaluation of screen interfaces	Kansei-based quantitative evaluation	25 design experts	NA	Six aesthetic factors enhance interface usability and cognitive strain.

Figure 2. Summary of the Literature Review on Aesthetics and Cognition. Continued next page.

Study	Type of Study	Methodology	Measurement Tools	Sample Population	Keywords	Findings on Aesthetic-Cognition Relationship
Almeida-Rocha et al. (2020)	Developmental Study	Interviews and analysis of drawings	Parsons' aesthetic development framework	100 students, 4–20 years old	Aesthetic development; Aesthetic experience; Arts; Developmental psychology; Painting	Support Parsons' theory, Aesthetic development is associated with cognitive development in different stages.
Rashid et al. (2014)	Experimental study	Cross-Cultural, Experimental	Visual stimuli	75 female students, 7 -17 years olds	Aesthetic development; Education; Painting; Art	Cognitive styles in aesthetic perception are different by age and culture.
Brady, E. (2023)	Theoretical Analysis	Using theoretical analysis to investigate aesthetic values as relationship values.	Literature review and theoretical frameworks	NA	Aesthetic value, cognition, reflexive relations, sensory perception, imagination, natural sublime	Aesthetics enhance cognition by integrating sensory, emotional, and intellectual engagement,
Christensen, A. P., Cardillo, E. R., & Chatterjee, A. (2023).	Experimental and Taxonomy Development	Semantic-free association tasks with network analysis	Semantic network analysis; Likert scales	899 participants (aged 19–77)	aesthetic cognitivism; affect; cognition; semantic network	The relationship between aesthetics and cognition is described as a dynamic interplay where the emotional and cognitive dimensions of art engagement inform and enhance each other
Chuang, H. C., Tseng, H. Y., & Tang, D. L. (2023)	Experimental Study	Eye-tracking experiment using Gestalt theory.	Eye-tracking metrics; Likert scale	33 college students	Photography, gestalt, eye tracking, closure, visual perception	Aesthetics and cognition are explored through the impact of Gestalt principles, which significantly affect visual cognitive processes.
Qiao, Q., & Jiang, Y. (2023)	Quantitative research study	A questionnaire survey	Likert scale surveys	1,060 college students	Humans *Cognition *Students/psychology Emotions Universities Surveys and Questionnaires	Aesthetic cognition positively impacts behaviors and emotions by enhancing cognitive processes and developing creative and critical thinking.
Stobbe, E., Lorenz, R. C., & Kühn, S. (2023).	Experimental Study	Randomized experiment with fMRI and cognitive tests	Aesthetic preference questionnaires	30 participants	Attention restoration Environmental sound fMRI Cognitive performance Negative emotions Stress reduction	Aesthetic experiences improve cognition, reduce negative affect, and restore attention, reducing stress and neural efficiency.
Li, L., & Wang, H. (2024)	Experimental Study	Event-related potentials	Reaction times	27 right-handed college students	Humans *Beauty Electroencephalography Esthetics Evoked Potentials/physiology *Judgment/physiology Metaphor Aesthetic judgments ERPs Hand actions Metaphorical association	This study shows how physical movements improve aesthetic judgment ability and how aesthetic experiences enhance cognition.

Figure 2. cont. Summary of the Literature Review on Aesthetics and Cognition.

Findings

The findings from this systematic review, enriched by additional synthesis from recent studies, provide a comprehensive understanding of how aesthetics enhances cognition. This discussion integrates the findings from the reviewed articles with broader theoretical frameworks and empirical evidence to highlight the relation between aesthetics and cognitive processes.

The research on childhood development, including that studied by Almeida-Rocha, Peixoto, and Neves Jesus (2020) and Rashid, Worrell, and Kenny (2014), demonstrates that aesthetic experiences encourage cognitive abstraction and symbolic reasoning. Younger children focus on visual realism, while older adults transition to more complex evaluative processes. Li and Wang (2024) propose evidence of embodied aesthetics, demonstrating that mental connections between horizontal movements and beauty judgements increase neural performance and cognitive agility. This is demonstrated by rapid reactions and promoted cognitive responses. Stobbe, Lorenz, and Kühn (2023) and Christensen, Cardillo, and Chatterjee (2023) argue that viewing natural environments and aesthetic consistent designs increases attention, emotional regulation, and memory recall by reducing cognitive stress. As well as Chuang, Tseng, and Tang (2023) found that harmonious visual layouts based on Gestalt principles enhance cognition and decision-making by utilizing perceptual preferences. Silveri et al. (2015) studies show that art engagement improves Alzheimer's patients with memory recall, and Deng and Wang (2020) research shows that aesthetic experience corresponds to improved creative problem-solving. Overall, these studies highlight that aesthetics, with its potential for involving sensory, affective and cognitive processes, provides a significant part in improving different elements of cognition.

Discussion

Philosophers' Theories Regarding Aesthetic Development

The philosophers' theories most commonly used by researchers regarding aesthetic development:

Parsons' Theory of Aesthetic Development:
Parsons proposed a hierarchy of aesthetic development, outlining five stages: Favoritism, Beauty and Realism, Expressiveness, Style and Form, and Autonomy. These stages demonstrate a progression from simplistic, concrete evaluations to more abstract, critical, and self-aware interpretations of aesthetic experiences.

Housen's Stages of Aesthetic Development:
Housen also identified five stages of aesthetic growth: Storytellers (accountive viewers), Creators (constructive thinkers), Classifiers (classifying forms), Interpreters (engaging interpretively), and Re-Creators (making aesthetic re-creations). These stages highlight the progressive development of individuals interpretative and analytical abilities over a period of time.

John Dewey's Aesthetic Experience:
Dewey highlighted that aesthetic experiences are comprehensive and essential to cognitive and emotional development. Regarding to aesthetics as a way of communicating with the environment in a meaningful way, encouraging exploration and personal development.

This theory supports findings on how aesthetic engagement in educational and therapeutic settings promotes cognitive development and emotional balance.

Immanuel Kant's Aesthetic Judgment:
Kant argued that aesthetic judgment requires the interaction of creative thinking and consideration, enabling abstract reasoning and appreciation of beauty beyond sensory awareness. Researchers use Kant's framework to link aesthetic experiences with higher-order cognitive processes like abstraction and symbolic interpretation.

How Aesthetic Experiences Enhanced Cognition

Aesthetic experiences enhance cognition by reduce cognitive burden, increasing attentional focus, and improving memory retention. Studies by Stobbe, Lorenz, and Kühn (2023) and Chuang, Tseng, and Tang (2023) found that consistent designs and natural sounds enhance cognitive ability by providing a mentally therapeutic conditions. Similarly, Li and Wang (2024) demonstrated how embodied aesthetics, which include conceptual connections between physical movements and aesthetic judgments, improve brain efficiency and cognitive agility. These findings indicate that aesthetics improves cognitive processes by engaging sensory, emotional, and cognitive systems, allowing for increased cognitive engagement as well as cognitive efficiency.

The Aesthetic Experience and Cognition

Aesthetic experiences are unique in their ability to create a comprehensive a cognitive engagement by integrating sensory perception, emotions, and cognitive evaluation. The findings from the research investigated support this point of view, demonstrating that interaction with visual arts and aesthetics enhances creativity, innovative problem-solving, and abstract reasoning. The relationship is evident across all age demographics, suggesting that aesthetics universally enhances cognitive development.

Enhancing Aesthetic Experiences in the Elderly

To maximize the cognitive benefits of aesthetics for the elderly, it is essential to create opportunities for sustained and meaningful engagement. Activities such as participatory art workshops, exposure to natural soundscapes, and structured interactions with aesthetic stimuli can enhance neural activation and emotional well-being. Incorporating technologies like virtual reality to simulate immersive aesthetic environments or guided art therapy sessions tailored to individual preferences can further optimize these experiences

Conclusion

This study concludes by highlighting the important relationship between cognition and aesthetic at every developmental stage. One effective way to promote automatic learning, maintain cognitive function in the elderly, and increase perceptual abilities is through aesthetic experiences. Enhancing the cognitive benefits of aesthetic, especially for the elderly population, requires the development of focused treatments and instructional strategies that encourage sustained engagement and meaningful interaction with visual stimuli. These efforts aim to enhance our understanding of the general significance of aesthetic regarding cognitive growth and learning processes, in addition to promoting personal well-being.

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