# Theory of Mind, Aesthetic Judgment and Child Development Issues: A Narrative Review

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**Abstract:** The Theory of Mind (ToM) is an empathy related concept that refers to the ability of attributing mental states to oneself and to others. ToM is present throughout the process of aesthetic judgment and essential for an aesthetic experience to happen. We present a narrative overview of four influential studies that propose a developmental model of aesthetic judgment in children and we discuss their inherent relationship with ToM. We argue that ToM permeates the four suggested models, although not expressly mentioned in them, and conclude that ToM cannot be separated from the aesthetic experience in the context of child development.

**Keywords:** Art Appreciation; Aesthetic Experience; Aesthetic Judgment; Child development; Empathy; Imagination; Shared meaning; Theory of Mind (ToM)

## Introduction

Aesthetics refers to a branch of philosophy dealing with the nature of art, beauty, and taste, with the creation and appreciation of beauty (Lipponen, 2013). Aesthetic experience refers to the experience that arises in response to works of art as well as any object, landscape or event. This experience may involve sensory-motor systems, emotion–reward systems, and meaning-knowledge systems (Chatterjee, 2014). In other words, aesthetic experience is a holistic act and as such involves mind, body, affect and intellect (White, 2013; Eaton & Moore, 2002). As White puts it: "To have an aesthetic experience is to be viscerally, cognitively, imaginatively, and emotionally attentive" (p. 101). Aesthetic experience refers to attention and receptiveness (White, 2013) and is generally composed of aesthetic reactions, that is the arousal phase in which the observer emerges from her/his indifference and has psychological responses. It is followed by aesthetic judgment that may involve an array of cognitive processes that vary from perceptual analysis to cognitive mastery (Leder, Belke, Oeberst & Augustin, 2004). Aesthetic experiences underlie psychological responses that can vary from pleasure, euphoria or even anger, disgust and a whole range of affective responses (Silvia & Brown, 2007) whilst aesthetic judgment refers to the sensory contemplation or appreciation of, as seen above, the world as it presents itself in all its complexity. Leder and Nadal (2014) refer to Shusterman's (1997) and Bergeron and Lopes' (2012) historical and conceptual analysis, to present aspects that confer the aesthetic quality of an experience:

> (1) An aesthetic experience has an evaluative dimension, in the sense that it involves the valuation of an object;
> (2) it has a phenomenological or affective dimension, in that it is subjectively felt and savored, and it draws our attention;
> (3) it has a semantic dimension, in that an aesthetic experience is a meaningful experience, it is not mere sensation. (p. 445)

Although aesthetic experience has been largely studied in adults, few studies are devoted to the child development of aesthetic judgment and the role played by empathy in its process.

The concept of empathy has linguistic roots in ancient Greek, but the first reference in the literature of the term "empathy" actually comes from aesthetics. It originates from the philosophical aesthetics of the 19th century German romanticism, and particularly in Novalis' writings (Hochmann, 2012). The term "empathy" translates the *Einfühlung*[1], an essential concept of romanticism, which defines the emotion prompted by the contemplation of nature (Hochmann, 2012). The art historian Worringer (1997) – inspired by his predecessor the philosopher Theodore Lipps – transferred the concept of *Einfühlung* from aesthetics to psychology (Hochmann, 2012). In the beginning of the 20th century, in 1908, Worringer regarded art as the manifestation of two essential inner impulses of the artist, that is an urge to empathise grounded on a relationship of confidence with the world and its appearances and the counter-pole, a need for "linear-inorganic abstraction" (p. 57), that is a perceptive impulse to discipline a chaotic world. Worringer (1997) writes that aesthetic experience is "to enjoy myself in a sensuous object diverse from myself, to empathise with it" (p. 5) or "[...] 'losing oneself' in the contemplation" (p. 24). Thus, following Worringer's line of thought, aesthetic pleasure is a by-product of a positive act of empathy that allows a connection between a given sensuous object and the perceptive activity it requires from the observer. It becomes clear that the conceptual link between empathy and aesthetic experience is long-standing. Nowadays' theoretical concept of "empathy" relates to our own feelings about the self and our feelings about another person, or object, event, or idea. Empathy is a fundamental part of the social component of emotion. It is a multidimensional construct – including affective and cognitive components – well defined in philosophy, aesthetics and psychology. Empathy was also metaphorically popularized by modern pop psychology as the ability to "put oneself into another's shoes"[2].

Empathy is also involved in the relatively recent neuropsychological concept called "theory of mind" (ToM). It is of particular interest because it implies both affective and cognitive aspects (Baron-Cohen, 2005), although, as it will be seen later, ToM is a more cognitively loaded concept than empathy (Reniers, Völlm, Elliott & Corcoran, 2014). We believe that its link with aesthetic experience still deserves investigation, thus making it our first variable of interest. This paper aims to gain insight on the role of ToM in aesthetic experience, particularly in relation to child development. To achieve this, we make an overview of existing studies and preferred models of aesthetic development in children. We argue that ToM permeates four identified models of the development of the aesthetic judgment, even though ToM is not being mentioned explicitly. We discuss the possible links of ToM with imagination and aesthetic development. Then, we present the identified models of aesthetic development and discuss the implicit manifestation of ToM through them. Finally, we argue that ToM is not only present throughout the process of aesthetic judgment

[1] Derivation of *hinein fühlen*, which means feeling from inside.
[2] We all have our very personal history, just like fingerprints. Thus, to a certain extent it is impossible "to walk in someone else's shoes".

but is also essential to an aesthetic experience. In other words, well-developed ToM might favour the development of aesthetic experience and vice versa.

**Theory of Mind: A Multidimensional Construct**

The theory called "theory of mind" or "ToM" was first proposed by ethnologists in the 1980s who observed empathetic behaviours in chimpanzees (Dennett, 1978; Premack & Woodruff, 1978). According to Carruthers (1996), the historical and philosophical background of ToM dates from the time of Descartes's *Second Meditation* and folk psychology. ToM refers to the ability to reason about one's own mental states as well as others' (meta-representation) or having a "representation of the internal state of another individual" (Reniers, Völlm, Elliott., & Corcoran, (2014), p. 51) while understanding that others have beliefs, desires, perspectives and intents that are different from our own.

ToM involves imagining and perspective-taking abilities[3], as well as interpreting, decoding and recognizing the expression of emotions (Baron-Cohen, 2005), all essential elements for cognitive empathy to take place (Dvash & Shamay-Tsoory, 2014; Bensalah, Caillies & Anduze, 2015). In other words, ToM-related skills can be used to interpret social cues, facilitating cognitive empathy. It follows that one might wonder what the difference is between ToM and empathy since both have affective and cognitive components. In fact, as raised by Rogers, Dziobek, Hassenstab, Wolf & Convit (2007), a lack of comparative studies on ToM and empathy – as well as similarities in definitions and interchangeable usage of both terms in many studies – make unclear how ToM differs from cognitive empathy. For some authors, empathy and ToM are closely but independently related to affect and cognition (Dvash & Shamay-Tsoory, 2014). Neuroscientists Reniers et al. (2014) make the following distinction in their study:

> The empathy condition involved imagining what another person is feeling while the more cognitively loaded ToM condition involved imagining what would make another person feel better. [... Although] cognitive empathy is likely to rely on many of the same underlying abilities that facilitate ToM, cognitive empathy involves the attribution of emotions as opposed to cognitions and this may dissociate the two constructs at psychological and neural levels. Consistent with this view, evidence shows that empathy and ToM engage common as well as distinct neuronal networks. (p. 50-51)

For the purpose of our own study, we consider ToM and empathy as overlapping concepts even though the first comes from philosophy/aesthetics/psychology (White & Costantino, 2013) and the second from neurosciences and neuropsychiatry (Baron-Cohen, 2005; Reniers et al., 2014). We adopt both concepts to widen the scope of available studies on aesthetic experience and empathy as well as to open up this subject to neurosciences, empirical studies of the arts/neuroaesthetics and aesthetic development in children.

The development of ToM in children begins to manifest between the ages of four and five (Gweon, Dodell-Feder, Bedny & Saxe, 2012; Saxe, 2013), but foundations for ToM start from the moment of birth when caring adults attend the needs of infants (Westby & Robinson, 2014).

ToM has both cultural and innate underpinnings (Baron-Cohen, 2005). Beyond biological or cultural considerations, ToM is also a manifestation of inner states dependent

[3] Perspective-taking abilities that require a leap of imagination, as we shall see, may be a key feature of ToM that also relates to aesthetic judgment.

on multiple contexts like culture, gender, life stress, nervous trauma or accidents. All may have a profound impact on individuals' ToM abilities (Nietlisbach, Maercker, Rössler & Haker, 2010). This multiplicity of factors involved makes ToM a challenging subject to study.

ToM plays a central role in human behaviour and experience, arising from initial interactions with caregivers and developing throughout adult relationships and human connections. The concept of "ToM" is not only related to emotion–reward systems but to meaning–knowledge systems as well, both relevant to aesthetic experience (Chatterjee, 2014). In other words, ToM encompasses both cognitive and affective perspective-taking, that is to say the affective components of the experience (Baron-Cohen, 2005; Hynes, Baird & Grafton, 2005). Cognitive ToM may be defined as an active attempt to get "inside" another's mind or to mentally approach someone through a deliberate intellectual effort in an attempt to read their intentions and understand their perspective. It involves a cognitive recognition of mental states of others and is meta-representational (representations of representations) (Wilson, 2000). The other aspect of ToM, that is to say, "affective ToM", may be regarded as an emotional reaction of the observer when perceiving that another person is experiencing an emotion. It is about how the emotion is experienced. In children, affective ToM develops later than cognitive ToM.

Our own approach follows the recent research on developmental aspects of ToM that generally agree on four dimensions of ToM: (1) cognitive interpersonal ToM; (2) cognitive intrapersonal ToM; (3) affective interpersonal ToM; (4) affective intrapersonal ToM. All four dimensions of ToM develop, interact and manifest at different ages or stages of development of the child (see Table 1) (Dvash & Shamay-Tsoory, 2014; Westby & Robinson, 2014).

Table 1

*Dimensions of ToM and their Development*

| Cognitive ToM | Affective ToM |
|---|---|
| • Develops between 4 and 5 years of age;<br>• Involves thinking about the thoughts, knowledge; beliefs, and the intentions of others. | • Emerges by age 7 years;<br>• Involves thinking about and experiencing the emotions of others. |
| Interpersonal & Intrapersonal (for both cognitive and affective ToM) | |
| Interpersonal | Intrapersonal |
| • Typically develops between 8 and 12 years of age;<br>• Involves thinking about the thoughts and emotions of others;<br>• Involves tasks that require recognizing lies, sarcasm, figurative language, idioms or understanding multiple embeddings. | • Intrapersonal ToM also typically develops between 8 and 12 years of age;<br>• ToM involves thinking about or reflecting on one's own thoughts and emotions. |

These four dimensions of ToM are in relation to mind, emotion (cognitive/affective) and social aspects (intra/inter) well outlined to allow the study of ToM in developmental contexts. Some researchers added a fifth dimension to ToM, which is the *i*-ToM or "interpretative ToM". This dimension is oriented towards interpretation abilities and symbol understanding related to aesthetic experience. Carpendale and Lewis (2006) argue that *i*-ToM underlies “a common sense understanding that knowledge is interpretative and that the mind itself influences how the world is experienced” (p. 193). *i*-ToM would be associated with cognitive and interpretative skills as well as social understanding (Luckett, Powell, Messer, Thornton & Schulz, 2002). Imagination and the interpretive aspects of *i*-ToM might be of particular interest to art education.

**ToM and Imagination**

As discussed above, ToM involves imagining and perspective taking abilities, which are attributes that have a strong impact within academic contexts (Craig & Baron-Cohen, 1999; Weimer, Dowds, Fabricius, Schwanenflugel & Suh, 2017; Wellman, 2018). Imagination is a cognitive process often attached to physical realities – a faculty of representing things mentally and forming new ideas, images or concepts of objects not necessarily present to the senses. The free play of imagination is also essential in aesthetic experience and judgment, thus in art activities in general. From actual sensory perceptions, the quality of attention and receptiveness of the observer will prompt an aesthetic reaction or arousal made up of the free play of imagination in which the mind is wandering in various directions. Mental images and ideas emerge and heighten affective reactions through conscious and unconscious feelings, even involving a possible momentary loss of self through deep attention or flow, thus focussing on cognitive and sensory perceptions and making the observer enjoy an aesthetic experience. One can see that imagination is inherent in aesthetic experience and such is the case in ToM, as well. It is precisely this same imagination "muscle" that, through ToM, can be tapped into and reinforced by activities such as visual arts (creation/appreciation), music, or even strategy games like chess (Goldstein & Winner, 2012; Ilaril, Fesjian & Habibi, 2018; Sigirtmac, 2016). In other words, both ToM and aesthetic experience have to do with the ability of mind to be creative, imaginative and resourceful. Recent studies have inquired about ToM development in children and its impact in educational contexts (Weimer et al., 2017). Understanding the influence of ToM within the aesthetic experience is of the utmost importance in the context of aesthetic education (Aguirre, 2004; Anderson, 2004; Danvers, 2003; Dineen & Collins, 2005) and notably in art appreciation activities and development.

It is quite safe to say that ToM and imagination are probably jointly interacting and developing. It also seems to be the case regarding imagination and rational thinking, which have been studied and compared by Archambault and Venet (2007). Their graphic (Figure 1) shows a joint development of imagination and rational thinking. One might ask where ToM and the development of aesthetic judgment would fit in such a graphic. A growing body of research evidence shows that language, imagination, rational thinking, ToM and aesthetic judgment may all be seen as joint components of child cognitive development. It means that all five components would jointly follow a similar curve pattern.

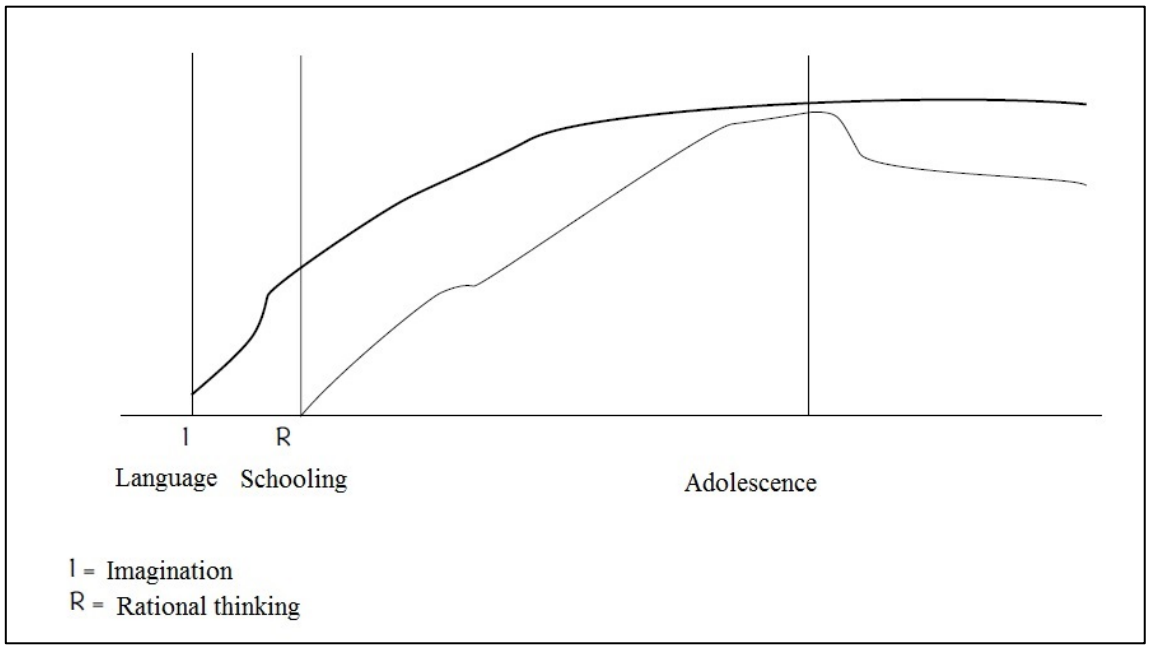


*Figure 1.* Development of imagination and rational thinking.
Source: Archambault and Venet (2007)

**ToM and aesthetic development**

As already mentioned, there is a growing body of research evidence that ToM processes are essential in aesthetic judgment abilities. In adults, the links between empathic responses and aesthetic experiences have been underlined by numerous studies (Freedberg & Gallese, 2007; Savazzi et al., 2014).

We conducted our own review by using keywords search. We specifically targeted the relationship between our two main concepts: ToM and aesthetic development. The results yielded the three studies that will follow, which have specifically studied the relationship between ToM concepts in the context of aesthetic development in children. The first identified study is from Rodway, Kirkham, Schepman, Lambert and Locke (2016). Their study involves the *i*-ToM (Interpretive-ToM) and aesthetic judgment. The 80 participants were children of 4, 6, 8 and 10 years old. They were shown ten figurative/representative and ten abstract artworks. Children were then invited to pass their aesthetic judgment on figurative and abstract works of art. The objective of the researchers was to test the semantic association and responses to stimuli in a developmental context (shared meaning). Their results suggest that around the age of 7, children develop an interpretative ToM (*i*-ToM) enabling them to understand that one image can be perceived differently by others. According to Rodway et al. (2016), "references to the artist as an agent increased between ages 4 and 6 and again between ages 6 and 8, following the development of Theory of Mind" (p. 1). Their research shows that children are capable of explaining their preferences at early ages, but shared appreciation appears around 8 years old and only for figurative artworks. Children's explanations become more and more complex, sophisticated and richer as they get older. It shows that the acquisition of cognitive and metacognitive abilities such as ToM are the product of general neurocognitive development and supplementary influences linked to education or exposure to culture.

The second identified research of Gilli, Ruggi, Gatti and Freeman (2016) questions how *i*-ToM enables children to understand the intentions of the artist. The research is based on the assumption that an "interpretative theory of mind enables young children to grasp that people fulfill varying intentions when making pictures" (p. 1). They conducted a double experiment with 30 children aged from 5 to 10 years old. Their results show that around age 5, children begin the construction of a conceptual universe that accounts for the artists' intentions. The processes that guide this construction navigate from inline fixation with beauty and morality towards more mentalist conceptions of the arts domain. "Children might call a picture that looks like a bird 'a bird' not merely because it looks like a bird, but because its appearance makes it likely that it was created with the intent to represent a bird" (p. 9). In that respect, it opens a two-way relationship between theory of mind and theory of art called visual communication. Around age 8, children widen their concept of interpretation of an artwork that takes into account other people's minds, perspectives, descriptions, and critical judgments. They are also unanimously stating that a person involved in the production of an artwork without the intention of showing it cannot be considered an artist.

In the same line of thought, the third identified research of Myers and Liben (2012) studied the implication of ToM in the understanding of abstract and concrete symbols. Their experiment included 80 children aged from 6 to 9 years old. The methodology was composed of several tests (Wechsler Intelligence Scale for Children) and tasks that assessed various aspects of children's understanding and success in implementing symbolic communication in the context of map production. The results suggest that symbol recognition is facilitated when symbols are iconic or concrete as well as attuned with children's knowledge rather than abstract. Children first used symbols as labels, matching individual referents with individual symbols, which later became more sophisticated as they learned to assign symbols to a group of referents that shared common features. There was a growing appreciation of alternative representations and intentional assignment of meaning from the children. "Children with more advanced *i*-ToM were more likely to display better symbol-communication behaviors" (Myers and Liben, 2012, p. 197). After accounting for age, intelligence, vocabulary and memory, ToM predicted children's success in communicating symbolic meaning. Furthermore, the results support the contention that ToM progresses beyond mastery of false beliefs, the latter being a challenge for young children who have to understand, for instance, *why mummy is searching for something that is, in fact... just over there*[4].

In sum, beyond fostering the development of ability in socializing and perspective taking, ToM may have important impacts on an understanding of the type of iconography that can be appreciated by children (Rodway et al., 2016; Myers & Liben, 2012). Research reveals important indicators in line with the development of children and their aesthetic preferences (Rodway *et al*., 2016). This could lead to better choices of artworks that are shown to children to favour ToM development. In that sense, because of its absence of iconic content, abstract art could be less recommendable to support the development of ToM abilities in children before the age of 7-8. Studies have shown that iconic content of artworks could have an impact on the general development of children. The iconography may facilitate

[4] To predict and explain the behavior of others, the child must understand that their actions are determined not by reality but by their beliefs about reality. One of the most important aspects of ToM development in children is gaining this ability to understand when others have a false belief. This aspect of ToM has been largely studied with the *Sally and Ann Test* created by Baron-Cohen, Leslie and Frith (1985).

ToM and language development (Brock, Kim, Gutshall & Grissmer, 2018; Rosenstiel, Morison, Silverman & Gardner, 1978).

**Developmental models of aesthetic judgment in children**

Our second thematic and variable of interest involves the concept of aesthetic judgment that usually follows aesthetic experience (Leder et al., 2004). Art plays a major role in human development as it improves the growth of psychomotor, emotional and cognitive processes (Goldstein & Winner, 2012; Ives & Pond, 1980; Sousa, 2010). We didn't find any developmental models of aesthetic judgment explicitly involving or mentioning empathy and ToM as such. The aim of the current section is to probe suggested models of development of the aesthetic judgment in children in order to identify implicit ToM manifestations. In other words, is it possible to find the manifestation of ToM through the models of development of aesthetic judgment? Through keywords research we identified and selected four studies that propose models of development covering over 40 years of research. The four identified models that we have investigated regarding the possible manifestations of ToM through them are from: Parsons (1976), Rosenstiel et al. (1978), Schabmann, Gerger, Schmidt, Wögerer, Osipov and Leder (2015) and Schepman, Kirkham, Rodway, Lambert and Locke (2018). Another staple model of aesthetic development was elaborated by Housen (1992; 2002). We have decided not to integrate it in our study because unlike the other four selected models, Housen's model doesn't specify age levels associated with development stages and doesn't especially focus on children – although it can be applicable to them.

The first selected model is from Parsons (1976) who constructed a theoretical developmental model starting with children 7 years of age and evolving through four stages: (1) objective judgments, linked to the content of the artwork ; (2) subjective judgments, linked to oneself ; (3) associative judgments, linked to previous knowledge on art history ; (4) judgments of character, linked to emotional responses triggered by the artwork.

- **Ages 7-9 (Stage 1)**
    - Strongly influenced by subject-matter and colour;
    - Does not distinguish between natural objects and art objects;
    - Strongly idiosyncratic perception, choices and preferences. In other words, the child perceives more easily shapes in their ensemble than in their details and his judgment is guided by favourites.

- **Ages 9 to 10 (Stage 2)**
    - Stage characterized by what Parsons (1976) refers to as conventions;
    - Favourite and syncretic perceptions are abandoned. Parsons supposes '[…] because it begins to conflict with the facts of perception and of social life' (p. 311);
    - Influenced by the notion of realism and rules as children comment more and more on formal qualities such as balance, harmony, contrast, repetition, grouping and so on. This type of observation directs attention away from idiosyncratic responses and towards qualities that can be observed;
    - Learns to distinguish judgments from preferences;
    - Children look for references or rules that guide their judgment.
- **Ages 11-12 (Stage 3)**

  - Children realize that it is possible to access a different and alternative set of rules to judge an artwork;
  - Children who had heretofore thought that realism was the main objective of artworks are confronted with artworks that deliberately display distortions of reality or are even abstract.

- **Ages 14 and beyond**
  - The fourth stage of development and questions that refers to contemporary art or art criticism remains difficult to analyze, but one can notice that answers and justifications become more complex and more rationalised.

The work of Parsons (1976) can be considered ground breaking in the study of the developmental aspects of aesthetic judgment. Although Parsons (1976) provides very complete detailed observations, levels start at stage 1 at age 7, rather than earlier.

Our second selected model of the development of aesthetic judgment is proposed by Rosenstiel et al. (1978). They studied children observing artworks, starting at age 5. Their sample included 45 students of different grades (1st, 3rd, 6th and 10th) from a Boston school (USA). The possible choices of responses were categorized in terms of subject, personal experience, colour, discrete surface elements, painterly surface elements, composition, cultural theme references and mood. The following points summarize the results of Rosenstiel et al. for each school level.

- **Ages 5-6 (grades 1, 2)**
  - Limited range of answers; focus on naming the subject matters and colours;
  - Many statements extremely general: "it's good" or "it's pretty";
  - Some comments about the 'appearance of the work': "It looks like it's not real" or "it would be hard to do".

- **Ages 7-8 (grade 3)**
  - Wider vocabulary for discussing their choices;
  - Subject matters and colours remain the most frequently mentioned topics;
  - Many general statements still invoked;
  - Mention surface features frequently (details, designs, shapes);
  - Mention artist's achievement (realism, hard to paint);
  - Occasional references to 'painterly' surface elements.

- **Ages 10-11 (grade 6)**
  - Responses parallel those of grade 3, but with additional use of terms from 'art history'.

- **Ages 14-15 (grade 10) Adolescents**
  - Increase in the variety and profile of the reasons justified;
  - Less centered on subject matter;
  - Less likely to consider a work better because it is 'hard to paint' or realized in oil rather than in pencil;
  - More likely to mention formal properties of the work;

- Use terms taken from art criticism;
- Mention and recognize specific artists or periods from art history;
- Increase in mention of discrete surface elements and in references to mood and theme;
- No dominating mode of response among adolescents. Tend to cite many factors in choosing and justifying their responses.

The investigation by Rosenstiel et al. shows an evolution in participants' critical thinking. There is a change in aesthetic preoccupations that evolve from subject matter and colour towards more specific elements of appreciation such as surface details, theme or felt emotions. In other words, just as in ToM, as they get older, the verbal responses of children concerning the artworks get more sophisticated and complex. One can ask whether the most complex responses are due to the fact that children have better perception or rather that they have better oral language development allowing them to express themselves. The relationship between ToM and language has been explored in recent years (Lockl, Ebert & Weinert, 2017; Atkinson, Slade, Powell & Levy, 2017; Wang, Ali, Fisson & Apperly, 2017; Weimer et al., 2017). Research provides insights on the many spheres of socialization development in which ToM may be involved and the central role that language occupies in the emergence of ToM.

Our third identified model is from the work conducted by Schabmann et al. (2015) who worked on the development of aesthetic judgment in Austrian children. Their study was conducted on two age groups, 4-7 (n=42) and 9-10 (n=52). Their model is structured around emotions, understanding, aesthetic reaction (arousal), aesthetic judgment and the type of artwork or stimuli (classical, modern, abstract) (Figure 2).

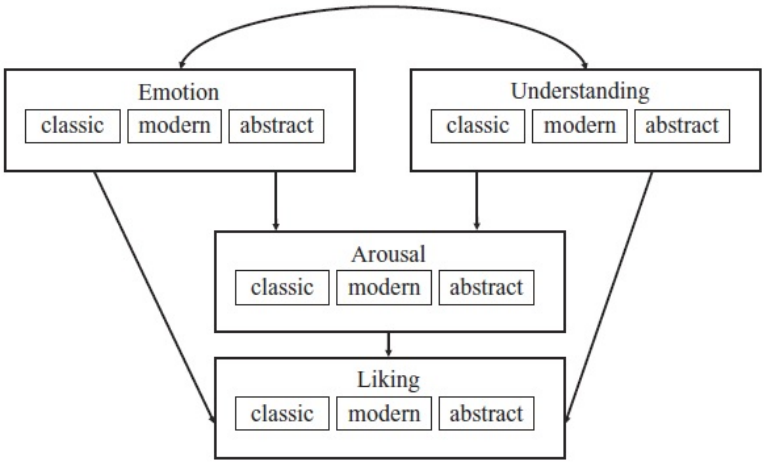


*Figure* 2. Image : Schabmann *et al*., 2015, p. 7

The results of Schabmann et al. (2015) suggest that the effects related to emotions are stronger in younger children (ages 4-7) for all styles of artworks, which is an indication that they strongly base their evaluation on emotion. This characteristic is more significant with classical artworks than abstract ones. In both styles, aesthetic judgment of modern art was dependent on both emotions and comprehension of the artwork.

- **Ages 4-7**
  - More references to colour and content;
  - Less references to atmosphere/impression, form/style realism and abstract statements.

- **Ages 9-10**
  - Slightly less references to colour and content;
  - More references to atmosphere/impression, form/style and abstract statements.

By comparing children's responses to different artworks, these researchers concluded that age is a determinant factor for differentiating and interacting with the different components of the artwork. As shown by previous research (Rosenstiel et al., 1978; Parson, 1976), Schabmann et al. (2015) underline that aesthetic judgment navigates from an affective and emotional universe towards a rational and cognitive universe as the child grows. Variations in taste and preferences expand with age while emotions play a crucial role in earlier stages of development.

The fourth identified model is from Schepman et al. (2018) who focus on shared meaning of figurative and abstract artworks. Meaning is defined as subjective, rather than as inherent in the stimulus (bottom up), but the researchers agree that previous findings reveal that the meaning of the subject matter depicted in representational artwork may be the root cause of the increase in shared liking (top down). The researchers reproduced the previously cited work conducted by Rodway et al. (2016). Schepman et al. (2018) research examined semantically based justifications given to aesthetic evaluations of abstract and representational artworks provided by 80 primary school children, aged 4, 5, 8, and 10 years. Just as for Rodway et al. (2016), their results showed evidence of shared meaning in response to representational but not abstract art and that shared meaning and lengthier responses increased with age. However, for Schepman et al. (2018), shared meaning starts at the age of 4, contradicting Rodway et al. (2016) findings of age 8. They suggest that the shared meaning is relatively superficial in younger children but becomes deeper in older children. They argue that meaning plays a key role in hedonic value and that the effort to find meaning potentially gives rise to an enhanced appreciation. There is no mention of ToM in Schepman et al. (2018) work, but one can imply that shared appreciation, meaning, or liking would not be viable without ToM processes involved (thinking about what someone else is thinking) (Rodway et al., 2016).

- **Ages 4-6**
  - Shared meaning is present but less convergent to that of other children;
  - Superficial meaning;
  - Diverse evaluations.

- **Ages 8-10**
  - Shared meaning is stronger, having accumulated more experiences, the emotional and associative aspects of their meanings converge more with those of other children, creating greater shared liking;
  - Deeper meaning.

The four identified models feature emotion-based judgments in their lowest stages and more rationalized and complex ones in their highest stages. Some characteristics of these four models are common or implicitly similar. Table 2 summarizes those characteristics.

Table 2

*Synthesis of Suggested Models of Aesthetic Development*

| Age | Parsons | Age | Rosenstiel et al. | Age | Schabmann et al. | Age | Schepman et al. |
|---|---|---|---|---|---|---|---|
| 7 | Idiosyncratic | 5-6 | Limited responses | 4-7 | Judgments based on emotions | 4-6 | Shared meaning present but less convergent and superficial |
| 9-10 | Adhesion to convention | 7-8 | Elaborated responses | 9-11 | Rationalized judgment | 8-10 | Shared meaning is deeper, convergent and generates shared liking |
| 11-12 | Alternative observation | 10-11 | References to art history | | | | |
| | | 14-15 | Wide variation in type of responses (complexity) | | | | |

There are slight differences in terminologies and ages related to each stage of the models. Somehow, a theoretical coherence emerges. As the child grows, he adheres to conventions and his judgment becomes more rationalized. His/her mind develops from a syncretic and emotive perspective to a more rationalized one, from simplicity to complexity, just as in ToM it develops from affective to cognitive and later to intrapersonal and interpersonal. In the mentioned models, language, knowledge and cognitive abilities play a central role in the organization of their different components.

ToM studies belong to cognition/psychology/neurosciences domains and often relate to people versus people interactions. Somehow, as for aesthetic judgment studies, ToM studies also belong to Empirical Studies of the Arts/Neuroaesthetics domains and thus also relate to people versus object interactions. Based on semantic relatedness (Ballatore, Bertolotto & Wilson, 2014) and theoretical similarity (Vander & Saybrook, 2017), it is possible to observe important links between these domains. In table 3, we synthesize and put together development key points of ToM, *i*-Tom and aesthetic judgment. We took into account the four different dimensions of ToM – cognitive interpersonal; cognitive intrapersonal; affective interpersonal; affective intrapersonal– and their characteristics. Then we compared these characteristics with those of *i*-ToM and aesthetic judgment as described in the four models that we identified, to enable similarities to emerge. Since all four studies do not use the same age split regarding stages of development, each feature or characteristic mentioned in table 3 is approximate relating to age.

Table 3

*Developmental Similarities of ToM, i-Tom and Aesthetic Judgment*

| Ages | ToM | *i*-ToM | Aesthetic Judgment |
|---|---|---|---|
| 4-5 | • Recognizes ambiguous figures | • Two-way relation between theory of mind and theory of art (visual communication - Children might call a picture that looks like a bird 'a bird' not merely because it looks like a bird, but because its appearance makes it likely that it was created with the intent to represent a bird | |
| | • Perspective taking; understands not only what people see but also how it appears to them | • Conceptual universe that accounts for the artists' intentions | • Shared meaning is present but divergent |
| | • Understands that imaginary objects are different from real objects | | • Comments about the 'appearance of the work': 'It looks like 'it's not real' or 'it would be hard to do' |
| | • Identifies character's feelings according to whether or not wishes are fulfilled | | • Emotional responses |
| | • Can describe a personal situation in which they were happy, sad, mad, scared, and surprised | | |
| 6-8 | • Predicts what one person is thinking about what another person is thinking | • Understands that one same image can be perceived differently by other | |
| | • Makes appropriate judgments of situations in which one knows, remembers, forgets, or guesses | | • Adhesion to conventions<br>• Mentions artist's achievement |

| | | | |
|---|---|---|---|
| | • Understands that one can have first one emotion and then a second emotion in response to a situation | | • Rationalized judgments |
| 8-10 | • Understands strategies to hide deceit and to detect deceit<br>• Emotional dissemblance (can hide emotions), use of white lies, presentational lies (to look good) and sarcasm | | • Complex judgments |
| | • Understands figurative language | • Assigns symbols to a group of referents that share common features | • Higher levels of agreement for figurative artworks<br>• Shared meaning is convergent |
| | • Uses metacognitive strategies for comprehending and monitoring comprehension | • Holds account for other people's minds, perspectives, descriptions and critical judgments | • Increased references to the artist as an agent |
| | • Understands that one can have two concurrent emotions of opposite type in response to a situation | • Understands the diversity of interpretative possibilities within imagery domains | • Wider concepts of exposition of an artwork that holds account for other people's minds, perspectives, descriptions and critical judgments |
| | • Recognizes cognitive lies | • Person involved in the production of an artwork without the intention of showing it cannot be considered an artist | • Children realize that it is possible to access a different and alternative set of rules to judge an artwork |

**ToM in Action Throughout the Process of Aesthetic Judgment**

We claim that ToM manifestations can be traced through all four identified models of aesthetic judgment (Parsons, 1976; Rosenstiel *et al*., 1978; Schabmann *et al*., 2015; Schepman *et al*., 2018). Somehow, as said before, none of these four models explicitly involves or mentions ToM or even empathy as such. The reason may be that the studies on ToM and its links to developmental aspects of aesthetic judgment only unfolded in more

recent years. We argue that ToM is not only present throughout the process of aesthetic judgment but is also essential for an aesthetic experience to happen.

ToM manifestations happen, for example when the viewer is trying to interpret the meaning or the message expressed in the work of art. ToM is permeating the interpretation and the judgment of the viewer who tries to put himself in the place of the artist in order to understand the artwork. This empathic behaviour actually meets the definition of ToM. It is also present when the viewer judges the artwork to be of no value because craft, skill, or technique are not highlighted, or when the child refers to the artist as an agent in the creative process. Furthermore, ToM may also arise when collective observations take place through joint attention, when an individual sees or feels what others don't and when observations are shared or confronted.

We claim that ToM, like empathic abilities, may have an important impact on aesthetic judgment and its development (Rodway et al., 2016; Taruffi & Koelsch, 2017; White & Costantino, 2013). Aesthetic experiences and arts domain at large may favour ToM development in children and adults and vice versa. In other words, well-developed ToM may favour stronger aesthetic experiences as well. In their comparison between artistic (painters, musicians and dancers) and non-artistic population, Guariglia et al. (2015) consistently found that artistic individuals have significantly stronger ToM related abilities compared to non-artistic ones ($F$ (1,98) = 43.09; $p$<0.001). Their results point out that high ToM might favour higher creativity and therefore favour aesthetic experiences related to varied artistic expression. Results also suggest that ToM and aesthetic experiences are indivisible.

**Conclusion**

As previously evoked, ToM and empathy have similar and overlapping grounds, even though ToM is a more cognitively loaded concept (Reniers et al., 2014). This is why we have strived to gain insight into the role of ToM within aesthetic experience, particularly in relation to child development. ToM concepts have the potential to widen the scope of available studies on aesthetic experience and empathy. While few existing developmental studies mention ToM when operationalizing the process of aesthetic judgment, there is a growing body of research evidence that ToM and empathy are essential in aesthetic judgment and shape developmental trajectories of children (Freedberg & Gallese, 2007; Savazzi et al., 2014; Wellman, 2018). The impact of ToM abilities on aesthetic judgment still needs to be investigated in all its ramifications. We contributed by making an overview of some existing models of aesthetic development in children. We argued that ToM permeates these models, even though ToM is not mentioned explicitly by the authors.

Research still needs to investigate the type of aesthetic experience potentially prompted by a specific art form and the impact that it may have on ToM development. Studies show that elements of art linked to aesthetic properties of objects such as colours or movement may have an impact in mobilizing cognitive resources and processes linked to attention (Righi, Gronchi, Pierguidi, Messina & Viggiano, 2017; Takacs & Bus, 2016). There would be much insight to be gained if these approaches were used in relation with ToM. As stated by Taruffi and Koelsch (2017), future directions of research may include elucidating the formal characteristics of the artwork that lead to mental stimulation. Questions based on concrete situations in the art class remain to be answered in future researches, such as: Do artworks depicting facial expressions have a possible impact on children's ToM development? Or how does emotional iconography influence the development of ToM? Which artworks are the most appropriate according to age levels? In art appreciation with children, one question among many others that still remains to

be investigated further is how certain types of figurative artworks may favour or encourage ToM development at different ages? (2017Myers & Liben, 2012; Rodway et al., 2016; Taruffi & Koelsch,) By comparing ToM abilities and the abilities involved in aesthetic judgment with different types of artworks, researchers might be able to further delve into how ToM development can be favoured through aesthetic experience.

Recent research in psychology may help us gain a better understanding of how different individuals may perceive the same object differently. In that sense, Zachi et al. (2017) have used techniques in ophthalmology to study the perception of colour in autistic individuals, who typically have very low ToM. They found that autistic individuals perceive colours differently than other individuals. They also established a link between low language abilities and low colour perception. This type of research leads to the idea that the study of the aesthetic experience could be subdivided into bottom-up and top-down processes and that other fields of research that are not directly linked to aesthetics may provide some answers regarding processes involved in aesthetic experience. Such examples are also explicit of the type of research found in neuroaesthetics and empirical studies of the arts. Yet, many of the neuronal and psychological mechanisms involved in mind reading (guessing what others are thinking) appear to be used when guessing what is going on in an artwork, in an image or when interpreting icons. This is an aspect that is being further investigated by neurosciences (Gernot, Pelowsky & Leder, 2017). Somehow, little is known about its developmental structure in children.

ToM could potentially become an indicator of aesthetic preferences of individuals. We consider it crucial that further studies on the development of aesthetic judgment and art appreciation not overlook the importance of ToM and empathic responses as central elements of the aesthetic experience in the context of child development.

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