

Drawing as a Process of Psychic Mediation Along the Child's Developmental Trajectory

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Abstract

Introduction: The intrapsychic process of resorting to the symbolic is innate and prepares the child for the organization of his internal world. Throughout the child's developmental trajectory, its playful projective expression, allows us to assess the psychographically internalized stages of development. The present study aims to evaluate the mental representation of the concept of symbolism, size, and perspective of designed percepts along the developmental trajectory (age range from 4 to 12 years).

Methods: Patients were invited to produce two drawings depicting a Healthy Tooth and an Unhealthy Tooth. The qualitative content grid for the analysis of the drawings was originally designed to study the pictorial representations found in the sample. However, in this article, we only intend to present the results obtained regarding Symbolism, Size and Perspective categories that are part of the content analysis grid.

Results: Regarding the Symbolism Category, most respondents between 4 and 6 years of age, pictorially represented an Unrealistic Tooth, and from 10 years onwards there is a marked decrease in this pictorial (Un)Realism. Regarding the Size of Teeth Category, from 8 years old onwards the drawings seem to increase in terms of their dimension. When it comes to Perspective Category, the percept drawn in a 2D perspective clearly prevails, regardless of age.

Conclusion: Results obtained in this study show that the mental representation of (Un)Healthy teeth are early internalized during childhood and the stages of psychographic development seem to be reliable indicators of the development of the mental representation of the child's symbolism.

Keywords: drawings, mental representation, symbolism, (Un)Healthy Teeth, child development trajectory

1. Introduction

Resorting to the symbolic is an innate intrapsychic process. It is active from birth, and it prepares children for the organization of its internal world throughout their life cycle (Fialho, 2019). Asking the child to draw freely, allows him/her to refer their psychic functioning to the *free transit* of their symbolic thinking, thus allowing to access their own conflicts, motivations, and aesthetic representations that populate their thoughts. Drawing as a projective and playful instrument will enable access to an external mental product/construct, but already codified because it is based on a codified/encrypted mental image that constitutes the target of an internalized interpretation of the external world (Di Leo, 1987; Dias & Neves, 2016; Do Rosário Dias et al., 2021; Do Rosário Dias, Dias dos Santos & Calejo Pires, 2022; Fialho, 2019; Luquet, 1987; Piaget, 1976; Tisseron, 1996; Widlocher, 2015).

Throughout the child's developmental trajectory, its playful-projective expression allows to assess, in a more concrete way, the psychographically internalized stages of development (Barros, 2003; Bloom, 1992; Bombonato & Farago, 2016; Clatworthy, Simon, & Tiedman, 1999a; Clatworthy, Simon, & Tiedman, 1999b; Greig, 2004; Hanauer, 2011).

In the present article, based on the Children's developmental trajectory, in combination with the stages of children's drawing, the *Symbolism* category was outlined as a - *research clipping* -, associated with the drawn percepts, based on the assumption that the drawing constitutes itself as a vehicle of symbolic representation (Bombonato & Farago, 2016; Clatworthy, Simon, & Tiedman, 1999; Goldberg, Yunes, & Freitas, 2005; Luquet, 1987; Meredieu, 2006;

Piaget, 1976).

The empirical idea that the first drawings up to 2 years of age can be considered a *fluke* (Lowenfeld, 1976; Luquet, 1987; Mèredie 2006; Piaget, 1976) was not found by Greig (2004). He stated that the child's intention and the use of the symbolic precedes his pictorial achievements, constituting a masterful denial of the old thesis of «*fortuitous realism*» (2008:183).

For some authors, the last year of preschool (Failed Realism and/or Pre-Schematic Figuration Phase) is configured as a mental time, at the level of the fullness of graphic expression, prelude to writing, and a true explosion of mental elaboration (Greig, 2004; Hammer, 1958; Luquet, 1987; Meredieu, 1990; Piaget, 1976; Pikunas, 1979). Later, the phases called by some authors of (Pre) Schematics, Realism (Intellectual and/or visual) and the Pseudo Naturalist phase allows to look at the stages of development of psychographics as reliable indicators for the level of development of the mental representation of child symbolism. Thus, with this article, we intend to evaluate the concept of *symbolism*, *size*, and *perspective* of the percepts drawn at the level of the intrapsychic representation of the subjects, throughout the development of their life cycle when framed in the range of 4- to 12-year-olds (Phase I and Phase II). The drawing percepts were obtained from the subjects at two distinct moments, where they were asked to draw a Healthy and an (Un)healthy Tooth.

2. Method

In the proposed model, a cross-sectional and descriptive approach is proposed. It presents an exploratory nature based on a qualitative assessment from a content analysis grid of the collected drawings, in combination with quantitative parameters.

2.1 Participants

The sample of the Phase I (4-9Y) was comprised of a total of 880 school-aged children of both genders (51.7% girls; 48.3% boys), scattered into six age-groups (4YG = 97; 5YG = 147; 6YG = 168; 7YG = 155; 8YG = 164; 9YG = 149). The Phase II Group comprehends a total of 793 school aged children of both genders (53.8% girl; 45.1% boys), distributed into seven age-groups (6YG = 48; 7YG = 71; 8YG = 122; 9YG = 121; 10YG = 179; 11YG = 115; 12YG = 137). These children attended at least one dental Appointment at *Egas Moniz University Dental Clinic*. In both studies, we have assumed the premise that the content analysis of the Drawings made by the children would elicit differences on the pictorial profiles of what constitutes a *Healthy Tooth* and an *Unhealthy Tooth* (Dias & Simões, 2016).

2.3 Procedure

Patients were invited to produce two drawings (pictorial representation protocols) depicting a *Healthy Tooth* (M1) and an *Unhealthy Tooth* (M2). Children drew their illustration with a graphite pencil in two A4 sheets. Moreover, all participants answered a social and demographic questionnaire (M3) regarding age, gender, and school grade.

A qualitative content grid for the analyses of the Drawings was originally designed to study the pictorial representations found in the sample, with seven categories: *Symbolism* (C1); *Details* (C2); *Size of the drawing* (C3); *Perspective of the drawing* (C4); *General appearance of the Tooth* (C5); *Anthropomorphized drawing* (C6) and *accessories* (C7) which encompassed 13 additional analytical subcategories. However, in the present study we only present the preliminary results regarding qualitative data which were analyzed through the content analysis of tree categories of the grid, namely, *Symbolism* (C1); *Size* (C3) and the *Perspective of the drawing* (C4) added with eight subcategories. The *Symbolism* category is divided into three subcategories: *Realistic*, *Less Realistic* and *Unrealistic*. The *Realism* subcategory is defined when the tooth is drawn, pictorially, in a very close representation of what a Tooth is. For *Less Realistic* are the percepts that clearly show the image of a Tooth, although some pictorial fragments are added that adulterate the real percept, namely, when they are represented using anthropomorphization (Do Rosário Dias et al., 2020). For *Unrealistic*, it is configured as a stylized percept, which is very far from the real appearance of a tooth, in terms of its shape (e.g. when the child draws (im)perfect geometric shapes) (Table 1 and 2). As for *Teeth Size*, the results vary between drawings of a *Large*, a *Normal* and a *Small* tooth (subcategories). As for *Perspective*, we considered *Two Dimensional* (2D) or *Three Dimensional* (3D) drawings (Table 3).

All the procedures were approved by the Ethics Committee of the Institution where the protocols were collected (670, 31/10/2018).













3. Discussion of Results

Regarding the *Symbolism Category* (Table 1), we observed a homogeneous character of the results when compared at the inter-age level (4 to 6 years old) with most respondents pictorially representing an *Unrealistic Tooth* (74%)

followed by a *Realistic Tooth* (15%) and a *Less Realistic Tooth* (11%).

In a descriptive study of exploratory character conducted by Dias and Simões in 2016, with the objective of determining the mental representation of a *healthy tooth* and an *unhealthy tooth*, the results confirm that a *healthy tooth* pictorial representation show a small sized (55%) and one-dimensional single tooth (92.6%). It presents a rectangular shape (58.4%). It is mostly a stylized tooth (82.1%) and it is not, in most cases, anthropomorphized (88.7%) (Table 1). When anthropomorphization is present, the drawings show happy faces (79.1%), with eyes and mouths. As was expected, it is a clean tooth, with the absence of spots, holes, fractures and vermin, that presents roots (59%) and whose surface is smooth (73.2%). The results for the unhealthy tooth profiles also present one-dimensional (93.6%) and single tooth (89.8%) characteristics. It also is of small size (51.6%) and of rectangular shape (58.6%). It is typically a stylized tooth (83%), with fragile investment (82.3%) and non-anthropomorphized (87.4%). The percentage that does anthropomorphized the tooth, draw sad faces (98.7%), with tears on the affected piece. The ill tooth is characterized by a smooth surface (73.8%) but one that shows the presence of spots and risks (54.3%), holes, fractures, vermin, and filling (13.7%) as a sign of the affected surface (Table 1). The results obtained in this study show that the mental representation of *unhealthy teeth* is early internalized during childhood. They also suggest that children cognitively perceive and/or associate a clean tooth to a *healthy tooth* and an *unhealthy tooth* that shows the presence of spots, grating or fractures as a sign of the affected surface.

Table 1. Drawn symbolism percepts of a *Healthy* and *Unhealthy Tooth*, obtained for Phase I in *Realistic*, *Less Realistic* and *Unrealistic* subcategories.













	Realistic	Less Realistic	Unrealistic		Realistic	Less Realistic	Unrealistic
Healthy Tooth				Sick Tooth			
							

In Phase II (Table 2), children between 7 and 9 years old represent an *Unrealistic Tooth* (33.1%), and less frequently a *Realistic Tooth* (16.1%) and a *Less Realistic Tooth* (15.2%). At 11 and 12 years old, there is already a greater tendency to represent the *Realistic Tooth* (8.5%) while *Unrealistic Tooth* (8.4%) is still a markedly present subcategory.

The results clearly reveal that, from the age of 10 and onwards, there is a marked decrease in pictorial *Unrealism*. The use of the symbolic seems to prevail, regardless of the drawn percept and follows the line of the developmental trajectory – that is, the use of pictorial *Realism* increases with age and the use of *Unrealism* decreases as the developmental trajectory evolves.

It must be emphasized that the visual/intellectual realism (Backett-Milburn & McKie, 1990; Luquet, 1987; Rodrigues, 2017) clearly takes its place around 10 years of age. This is also shown in an exploratory study performed by Rosário Dias et al. (2020) which tried to understand the mental representation of a healthy tooth and of an unhealthy tooth through anthropomorphization. In this work, the data from illustrations made by 6- to 12-year-old children (n=300), clearly show a discrepancy in the level of anthropomorphized teeth (less realistic teeth) according to age groups. Anthropomorphized teeth were predominant in drawings performed by children till 10 years of age (24.7%), in comparison to the reduced prevalence for 6-year-olds (4.7%). On the other hand, results point to an increase in subject's mental representation of reality (realistic teeth) in drawings, in accordance with the child's chronological age, most significantly from 10 years old. At this age, children seem to be able to (re) elaborate their thinking (Do Rosário Dias et al., 2020; Do Rosário Dias et al., 2021; Menezes, Moré & Cruz, 2008; Pridmore & Lansdown, 1997), as well as to resort to fundamental logic (intellectual /visual realism).

Table 2. Drawn percepts of a *Healthy* and *Unhealthy Tooth*, obtained for Phase II in *Realistic*, *Less Realistic* and *Unrealistic* subcategories of *Symbolism*.

	Realistic	Less Realistic	Unrealistic		Realistic	Less Realistic	Unrealistic
Healthy Tooth				Sick Tooth			
							

Regarding the category *Tooth Size*, the results vary between *Large*, *Medium* and *Small Teeth*, with most children aged between 4 and 6 years (Phase I) drawing *Small Teeth* (68%), followed by percepts with teeth considered *Medium* (21%) and 11% of the subjects drew teeth considered *Large* (Graph 1), both in the *Healthy Tooth Profile* and in the *(Un)Healthy Tooth Profile*.

In phase II from the age of 8 and onwards, the drawings increase in dimension/size, with 35.2% of the drawings obtained being *Medium* and *Large* (24.1%). However, the same does not happen in Phase II, in terms of the pictorial representation of the *(Un)Healthy Tooth*, since in all ages between 7 and 12 years old, the Teeth are mostly drawn as *Large* (23.6%), and, more frequently, *Medium* (40.9%) and *Small* (35.5%) (Figure 1). In a study made by Do Rosário Dias et al. (2019) and Dias, Santos, Naben e Ventura (2021), which aimed at understanding how children from age five to twelve, experience the mental representation of dental decay and its implications on the self-perception inherent to the loss of deciduous teeth, it was found that 66% of the pictorial representations of the face were drawn larger after the loss of the deciduous teeth, with bigger teeth with diastemas and without the presence of all teeth in the mouth. So, the definitive tooth can be conceptualized as a bigger tooth than the deciduous tooth. According to Figure 1, the *Medium* and *Large* Size of the drawn teeth is notoriously registered from 6/7 Years of age, thus coinciding with the beginning of the change of Deciduous Teeth.

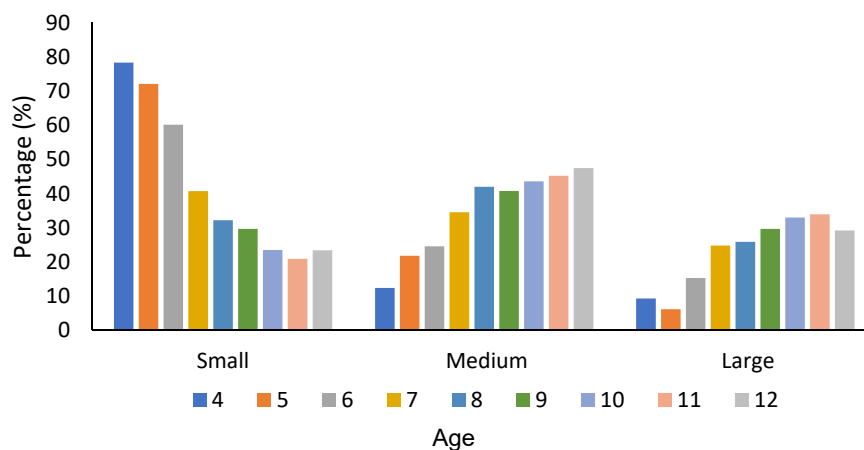


Figure 1. Distribution of the results obtained for the *size category*, for all ages (Phase I and Phase II), in relation to sample total

Regarding the *Perspective category* (Table 3), in both age groups (Phase I and II) and identified Profiles (*Healthy Tooth* vs. *(Un)Healthy Tooth*), the percept drawn in a two-dimensional perspective clearly prevails. However, we can see that at 7 years of age a greater number of subjects (children) emerge who graphically represent the drawing

of the percept Tooth in a three-dimensional way (Figure 2). These data seem to meet Greig's findings when he says that the first rebounds that constitute the syncretic set of planes, such as the organization of volumes and space, only appear at the beginning of the latency period, around 7 or 8 years old (Greig, 2001:233).

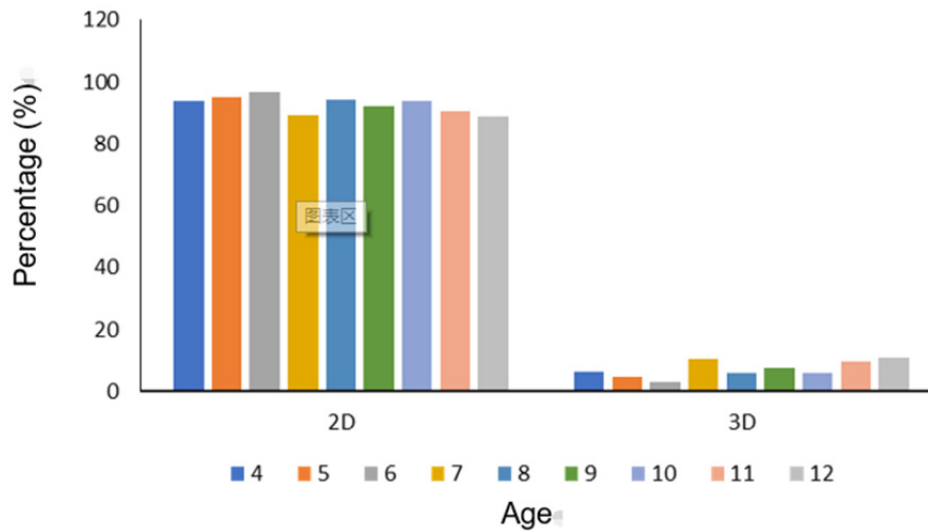
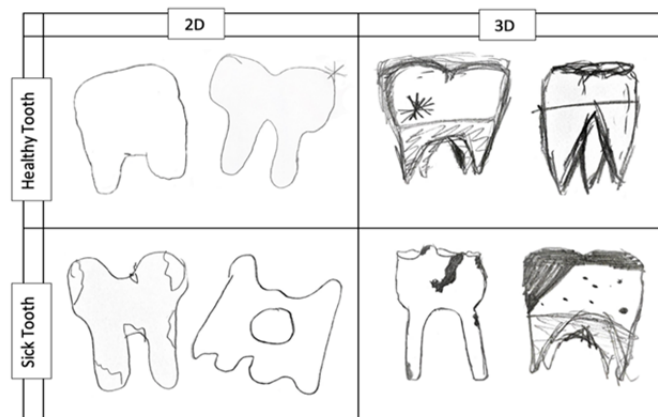


Figure 2. Distribution of the results obtained for the *perspective category*, for all ages (Phase I and Phase II), in relation to the sample total

It should be noted that in both Phases the percepts drawn in the figure of a Tooth denounce a «*correct spatial orientation*» (Di Leo, 1987) of the pictorial figure of a Tooth, which appears drawn loose or implanted in the jaw/gum (Table 3).

Interestingly, the percepts drawn in 3D evidence the use of shading (Di Leo, 1987: 26), possibly with the intention of the subjects (re)creating the perceptual illusion (Table 3) of a third Dimension (3D).

Table 3. Drawn percepts of *Healthy Tooth* and *Unhealthy Tooth*, in a *two-dimensional and three-dimensional perspective*



4. Conclusion

Teeth are early internalized during childhood. Although the results of the present study are preferentially focused on the results obtained in the *symbolism* category, associated with the reading of the designed percepts (content analysis), it is confirmed that the adopted methodological procedure - free design of a Percept – is a suitable choice for playful-projective expression to access the child's symbolic thinking.

It should be noted that the use of the symbolic seems to prevail, regardless of the percept drawn, and psychic development progresses with the advancement of the child's developmental trajectory. However, the results denounce that, from the age of 10A and onwards, there is a marked decrease in pictorial unrealism. At this age, children seem to be able to (re) elaborate their thinking, as well as to resort to fundamental logic (visual/intellectual realism). However, according to the studied categories and subcategories, the stages of psychographic development seem to be assumed as reliable indicators, in terms of the development of the mental representation of child symbolism.

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References

- Backett-Milburn, K., & McKie, L. (1990). A critical appraisal of the draw and write technique. *Health Education Research, 14*, 387-398. <https://doi.org/10.1093/her/14.3.387>
- Barros, L. (2003). *Psicologia pediátrica: perspectiva desenvolvimentista*. Lisboa: Climepsi
- Bloom, J. W. (1992). The Development of Scientific Knowledge in Elementary School Children: A context of meaning perspective. *Science Education, 76*(4), 399 - 413. <https://doi.org/10.1002/scs.3730760405>
- Bombonato, G. A., & Farago, A. C. (2016). As etapas do desenho infantil segundo autores contemporâneos. *Cadernos de Educação: Ensino e Sociedade, 3*(1), 171-95.
- Clatworthy, S., Simon, K., & Tiedman, M. (1999a). Child drawing: hospital - an instrument designed to measure the emotional status of hospitalized school aged children. *Journal of Pediatric Nursing, 1*, 2-9. [https://doi.org/10.1016/S0882-5963\(99\)80054-2](https://doi.org/10.1016/S0882-5963(99)80054-2)
- Clatworthy, S., Simon, K., & Tiedman, M. (1999b). Child drawing: hospital manual. *Journal of Pediatric Nursing, 1*, 10-18. [https://doi.org/10.1016/S0882-5963\(99\)80054-2](https://doi.org/10.1016/S0882-5963(99)80054-2)
- Di Leo, J. H. (1987). *A interpretação do desenho infantil*. Porto Alegre: Artes Médicas.
- Dias, M. D. R., & Neves, A. C. (2016). Mente Sã em Corpo São: Representação mental do corpo saudável e doente na criança. *Omnia: Revista Interdisciplinar de Ciências e Artes, 4*, 55-64.
- Dias, M. D. R., & Simões, N. P. (2016). On the mental representation of (un) healthy tooth:(un) healthy tooth profiles among children. *Journal of Educational and Developmental Psychology, 6*, 110-116. <https://doi.org/10.5539/jedp.v6n1p110>
- Do Rosário Dias, M., Ahmad, S., Santos, H. D., Pires, M. C., Alves, V., & Delgado, A. (2021, Junho). Is the emotional expression of the antropomorphized human face of the teeth fundamentally based on the curvature of the smile? Sessão de posters apresentada no 5º Congresso Internacional do CiEM - Reducing Inequalities in Health and Society, Monte de Caparica, Portugal.
- Do Rosário Dias, M., Ahmad, S., Santos, H. D., Calejo Pires, M., Ferreira, A., Alves, V., & Delgado, A. (2020). The Anthropomorphized Emotional Profile of a (Un)Healthy Tooth. *European Scientific Journal, 16*(26). <https://doi.org/10.19044/esj.2020.v16n26p1>
- Do Rosário Dias, M., Calejo Pires, M., Carvalho, M. R., Ferreira, A., Ahmad, S., Santos, H. D., & Grillo Evangelista, J. (2021). Art students: do they really draw what they know about the inner body?. *Journal of Educational and Developmental Psychology, 11*, 60-67. <https://doi.org/10.5539/jedp.v11n1p60>
- Do Rosário Dias, M., Santos, H. D. D., & Pires, M. C. (2022). Bug and the bacteria: are these the unique mental representation of tooth decay?. *EC Psychology and Psychiatry, 11*, 8-14.
- Do Rosário Dias, M., Santos, A. C., Nabem, L., & Ventura, I. (2019). Dental decay in the change of deciduous teeth: The child's self-perception. *EC Dental Science, 18*, 2214-2220.
- Do Rosário Dias, M., & Ventura, I. (2021, September) The Child's self-perception about dental decay in the change of deciduous teeth. *Annals of Medicine, 53*(sup1), S61-S61. <https://doi.org/10.1080/07853890.2021.1897393>
- Fialho, O. (2019). *Desenho infantil: espelho do mundo Interno da criança*. Lisboa: Edições Colibri.
- Goldberg, L. G., Yunes, M. A. M., & Freitas, J. V. D. (2005). O desenho infantil na ótica da ecologia do desenvolvimento humano. *Psicologia em estudo, 10*(1), 97-106. <https://doi.org/10.1590/S1413-73722005000100012>
- Greig, P. (2004). *A criança e seu desenho: o nascimento da arte e da escrita*. Porto Alegre: Artmed.

- Hanauer, F. (2011). Riscos e rabiscos: o desenho na educação infantil. *Revista de Educação do Ideau, Rio Grande do Sul*, 6(13), 1-13.
- Hammer, E. (1958). *The clinical application of protective drawings*. Springfield, IL: Charles C. Thomas.
- Lowenfeld, V. (1976). *A Criança e a sua Arte*. São Paulo: Mestre Jou.
- Luquet, G. H. (1987). *O desenho Infantil*. Porto: Livraria Civilização Editora.
- Menezes, M., Moré, C. L. O., & Cruz, R. (2008). O desenho como instrumento de medida de processos psicológicos em crianças hospitalizadas. *Avaliação Psicológica*, 2, 189-198.
- Mèredieu, F. (1990). *Le dessin d'enfant*. Paris: Blusson.
- Mèredieu, F. (2006). *O desenho infantil*. São Paulo: Cultrix.
- Piaget, J. (1976). *A equilibração das estruturas cognitivas: problema central do desenvolvimento*. Rio de Janeiro: Zahar.
- Pridmore, P., & Lansdown, R. (1997). Exploring children's perception of health: does drawing really break the barriers?. *Health Education Journal*, 58(3), 219-230. <https://doi.org/10.1177/001789699705600302>
- Pikunas, J. (1979). *Desenvolvimento Humano*. Uma ciência emergente. McGraw-Hill, São Paulo.
- Rodrigues, M. H. (2017). Análise do desenho infantil segundo as ideias de Luquet. *Revista da UNIFEFE*, 1(8), 19-34.
- Tisseron, S. (1996). Les premières traces: aux origines de la symbolisation. In A. Anzeiu et al. (eds.). *Le dissen de l'enfant* (pp. 239-252). Saint-Étienne: Editions La Pensée Sauvage.
- Widlöcher, D. (1998). *A interpretação dos desenhos infantis*. Bruxelas: Edições Mardaga.

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