

Children's Drawings: An Expression of the Psychological States Experienced by the Child

Najlaa Al Saadi

Art Education, Sultan Qaboos University, Oman, Muscat

Email: nagla@squ.edu.om

How to cite this paper: Al Saadi, N. (2025). Children's Drawings: An Expression of the Psychological States Experienced by the Child. *Open Journal of Social Sciences*, 13, 705-717. <https://doi.org/10.4236/jss.2025.1310040>

Received: September 7, 2025

Accepted: October 27, 2025

Published: October 30, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

The aim of the current research is to investigate how children's drawings provide insight into their psychological states. By analysing fundamental artistic elements such as shape, colour, and composition, the research seeks to uncover the cognitive, social, and environmental aspects reflected in their visual expressions. The methodology involves a qualitative examination of a collection of peer-reviewed journals and drawing. The findings indicate that distinct visual patterns and artistic characteristics are linked to emotions such as joy, anxiety, fear and distress, offering a deeper understanding of a child's inner world, whereas it has been seen warm colours are associated with positive feelings and dull colours such as black and blue reflect negative emotions. This study highlights the potential of art as a non-invasive tool for assessing and supporting children's emotional well-being. Furthermore, the results emphasise the importance of integrating creative expression into educational and clinical settings for the development of intervention.

Keywords

Children's Drawings, Psychological States, Expression

1. Introduction

From historic times, drawing has been seen as one of the surviving forms of human expression. In the book of Edwards (1997), "Drawing on the Right Side of the Brain, the author illustrates the objectivity of drawing not to show what was portrayed but to even indicate how the world is perceived by one (p. 23)".

Numerous psychological and experimental research draw a consensus on children's expressive drawing using three techniques, i.e., content, literal, and abstract expression (Baghdadi, Muhajarine, & Jabra, 2020). For instance, literal expression depicts the downward in mouth; likewise, content expression is conveyed through

weather themes, and abstract expression is communicated through colour and images (Farokhi & Hasemi, 2011). Nevertheless, this recognition of the unique outlook is increasingly acknowledged in the medical literature, particularly among those accustomed to discussing their health condition. Although in-depth research on the children's drawing existed in the 19th century, the potential and development of drawing in recognising the psychological pattern are still new; thereby, more and more work is needed in this direction to assess the emotional and cognitive development of children (Burkit, Watling, & Message, 2019). Since intensity and valence are considered two major components of psychological research, these two dimensions can also help in assessing children's drawings. Herein, valence refers to the pleasure-displeasure dimension, and intensity depicts the strength of arousal.

2. Aim

The present research aims to evaluate the cognitive and emotional dimensions reflected in the artistic expression embedded in children's drawings through analysis of elements such as shape, colour, and composition. Additionally, it endeavors to investigate societal and familial influences on children's artistic expression.

3. Methodology

This study employs a narrative literature review with a scoping orientation, aiming to map and synthesise how children's drawings have been used to infer psychological states, rather than to analyse primary drawings. A narrative/scoping approach is appropriate given the heterogeneity of designs, age ranges, tasks, and outcomes reported across this field (see Tenny et al., 2023).

Searches targeted peer-reviewed work published roughly between 2005 and 2025 across major databases (e.g., PsycINFO, PubMed, Scopus, Web of Science), supplemented by Google Scholar for citation chaining. Search terms combined population, medium, and outcome keywords (e.g., child*, drawing*/art*, emotion*/psycholog*/cognit*/well-being).

Inclusion criteria comprised empirical studies or reviews involving participants approximately 3 - 12 years that explicitly linked features of drawings (colour, shape/line/size, composition/symbols) to psychological, cognitive, social, or environmental indicators. Adult-only samples, papers lacking drawing analysis, and single-case reports without analytic detail were excluded. To ensure breadth, at least ten studies from diverse cultural contexts were included.

Data were extracted on study design, sample characteristics, drawing task, analytic approach, and key findings. Findings were synthesised thematically into domains covering artistic elements, psychological indications, and contextual influences, and interpreted in light of developmental and cognitive theories (e.g., Piagetian accounts; arousal-valence models).

Given methodological diversity, a descriptive appraisal of rigour and coherence was undertaken; no meta-analysis was attempted. Limitations include potential language bias, incomplete database coverage, and heterogeneity of tasks and scor-

ing frameworks that constrain direct comparisons.

4. Previous Studies

Across diverse designs and contexts, prior work converges on three themes: 1) children's drawings reliably encode affective states; 2) specific graphic features (e.g., colour palettes, composition, motifs) vary with task demands, audience, gender, and context; and 3) drawings can index broader well-being and adjustment.

Affective encoding and task/audience effects. Experimental and observational studies show that children adapt expressive strategies to the brief: self-portraits labelled “happy” elicit richer expressive devices than “sad”, and audience familiarity/authority modulates how openly emotions are depicted (Burkitt, Watling, & Message, 2019). Clinical and peri-procedural contexts corroborate this: post-treatment drawings highlight salient stressors (e.g., masks, odours, extractions) and chart recovery toward normalcy (Baghdadi et al., 2020). Longitudinal evidence during COVID-19 suggests shifts toward negative emotion language in narratives, with drawings showing a gradual reduction in negativity over time (Vettori et al., 2022).

Graphic features and individual differences. Studies characterise systematic variation in visual choices: females tend to use warmer colours and a wider palette, whereas males use cooler tones more frequently (Berti & Cigala, 2022). School-based cohorts link drawings to broader well-being—happiness, safety, relationships, and nature frequently appear as markers of “happy spaces” (Moula, Walshe, & Lee, 2021). Health-education interventions associate drawing-based activities with reduced dental anxiety in young children (Bulut et al., 2024). Community samples also highlight parents as both enablers and barriers to art engagement (Noonan et al., 2016).

Methodological limitations. The evidence base is heterogeneous: samples range from small convenience cohorts to classroom clusters; tasks vary (free draw vs. prompted self-portrait vs. peri-clinical reflection); and analytic approaches mix coding frameworks, content analysis, questionnaires, and statistical inference. Many studies have small samples, non-probability sampling, context-specific prompts, and limited cross-cultural comparability. Several rely on single-timepoint designs, constraining causal inference; reporting of blinding, inter-rater reliability, and preregistration is uncommon. These constraints limit generalisability and meta-analytic synthesis but collectively support the central proposition that children's drawings are a sensitive, non-invasive window into emotional experience and well-being.

5. Artistic Expression, Formal Elements, and Psychological Indications

5.1. What Children's Drawings Communicate

Children's drawings communicate feeling, stance, and perspective through compact visual choices. Faces, gestures, and scene selection often signal affect directly,

while page arrangement, colour selection, and recurring symbols suggest how the child perceives relationships, places, and events (Cannoni, Pinto & Bombi, 2023; Vettori et al., 2022). These signals are not random. They vary with age, task instructions, and audience. Very young children tend toward literal representation, whereas older children combine literal and symbolic devices. As experience grows, choices become more intentional and layered. Studies show that explicit prompts strengthen expressivity. When the task labels a target emotion, children tend to deploy clearer visual markers of that state. When the audience is familiar or authoritative, children calibrate disclosure accordingly, sometimes softening negative cues and amplifying positive ones. The communicative function is thus co-produced by the child, the prompt, and the viewing context.

5.2. Colour and Affective Tone

Colour is a salient but context-dependent carrier of mood. Warm hues often accompany pleasant states. Darker or cooler palettes can index worry, sadness, or threat, though these links are moderated by experience and culture (Pope et al., 2012; Burkitt, Watling, & Message, 2019). Very young children show weak or unstable colour-emotion associations, consistent with limited exposure to colour norms; associations consolidate with age and socialisation (Miles et al., 2021). Some studies report gender-typed tendencies in early school years, with girls more likely to choose lighter or warmer tones, though patterns are not universal and should be read cautiously (Pope et al., 2012; Burkitt, Watling, & Message, 2019). Palette breadth may itself inform interpretation. Restricted palettes can co-occur with constrained affect or narrow theming, whereas broader palettes may accompany exploratory scenes or positive arousal. Yet colour cannot stand alone as a diagnostic cue. Its meaning depends on content, setting, and the child's developmental stage. Across studies, colour becomes more theme-dependent around ages five to eight, aligning with realistic expectations of the world (Purchase, 2014). The sun tends to be yellow; grass tends to be green. This realism can mask emotion unless other visual elements point in the same direction.

5.3. Shape, Line, and Spatial Composition

Form and layout convey psychological information beyond colour. Small, fragmented shapes, heavy crowding, and disjointed spatial relations have been linked to distress or concern in qualitative work. Curvilinear and angular forms evoke different responses. Neurotypical children reacted more positively to a spiral stimulus, while children with ASD preferred a jagged-edged form; behaviour during exposure, including smiling and vocalisation, also diverged (Belin et al., 2017). These findings suggest that form preferences can reflect sensory profiles and information processing styles. Line pressure, repetitive over-tracing, erasure marks, and avoidance of page edges may reflect arousal, inhibition, or control. Composition also matters. Central placement, balance, and coherent spacing often read as secure. Scattered or marginal figures can signal unease or withdrawal. Symbols

anchor meaning by pointing to what is salient or troubling. Recurrent motifs, such as sharp animals or looming objects, may encode specific fears (Talu, 2019). Quantified features can be informative when tied to theory. For example, larger “heart” drawings were associated with greater illness concern and heart-specific anxiety in young children, linking size and area to perceived threat (Reynolds et al., 2007). Together, form, line, and spatial organisation help situate the tone suggested by colour and clarify whether an image signals joy, tension, or ambivalence.

5.4. Developmental Trajectory and Cognitive Signals

Drawing ability changes with cognitive growth. Children move from early mark-making to intentional depiction, adding detail, proportion, and symbolic devices across the preschool and early school years (Farokhi & Hashemi, 2011). Shape becomes a deliberate cue by about three and a half years, supporting object recognition and problem solving (Vivaldi & Salsa, 2021). Use of negative space and basic perspective typically strengthens from around nine years onward, enabling spatial coherence and depth cues that younger children struggle to manage (Lange-Küttner & Vinueza Chavez, 2022). These gains reflect broader changes in attention, working memory, and executive function. In large samples, richer graphic representation relates to memory and executive processes at ages five to six, suggesting that visual planning and inhibition shape what gets on the page (Morra, 2005). Digital analyses provide converging evidence. Children aged seven to thirteen can show limits in object control and spatial handling that affect composition, line quality, and the distribution of elements, with implications for interpretation (Yu & Nagai, 2020). Development also changes the emotion repertoire. Studies report that happiness is common in early drawings, with sadness, anger, fear, and mixed emotions appearing more frequently as children age (Cannoni, Pinto, & Bombi, 2023). The shift reflects growing emotion knowledge, theory of mind, and exposure to wider social contexts. As representational skill improves, children can encode ambivalence through subtle colour shifts, divided scenes, or conflicting symbols.

5.5. Task, Audience, and Setting

Expressivity is shaped by instructions and audience. In self-portraits, “happy” prompts often elicit more devices—smiles, bright palettes, and central placement—than “sad” prompts. Familiarity and authority modulate disclosure; children vary how openly they render negative feelings when an adult viewer is salient (Burkitt, Watling, & Message, 2019). Clinical and peri-procedural settings foreground salient stressors. After dental treatment under general anaesthesia, children’s drawings highlight masks, odours, and extractions; subsequent drawings chart a return toward routine and control (Baghdadi et al., 2020). Intervention tasks that embed drawing within health education can reduce specific anxieties, with pre-post changes visible in both content and tone (Bulut et al., 2024). School-based cohorts reveal well-being through themes of happiness, safety, relation-

ships, and nature. These themes can appear as open spaces, green elements, smiling figures, and proximity between peers or family (Moula, Walshe, & Lee, 2021). Audience and prompt thus act as levers. They raise or lower thresholds for disclosure, sharpen focus on particular stressors, and change how children organise space and select colour.

5.6. Social and Environmental Moderators

Context shapes what children draw and how they draw it. Access to nature, the built environment, and local hazards influences scenes, palettes, and symbols. Environmental education programmes reveal wide differences between urban and rural children's depictions of places and ecological elements, indicating distinct understandings shaped by experience (Labintah & Shinozaki, 2014). Cultural and community norms add recognisable iconography. Religious symbols, community landmarks, and clothing motifs often mark belonging, values, and identity (Zlat-eva, 2019). School type can matter for thematic content. In drawings of God by six- to eight-year-olds, expressive features were consistent, with many samples drawn from religious schools, suggesting institutional context as a filter for imagery and emotion (Jolley & Dessart, 2023). Family involvement and policy frames also influence opportunity and motivation. Where art is valued in the curriculum and supported at home, children may attempt broader palettes and more complex scenes. Conversely, limited materials or constrained time can narrow expression. Cross-sectional work also notes gender-linked tendencies in palette choice, with girls showing broader colour diversity and warmer tones and boys selecting cooler tones more often, although such patterns intersect with culture and are not deterministic (Berti & Cigala, 2022). Context therefore moderates both content and style, shaping the visual vocabulary available to encode psychological states.

5.7. Indications: Linking Visual Features to Psychological States

Across studies, the same elements that define artistic expression—colour, form, line, and composition—also indicate emotional and cognitive states. Happiness is common in early drawings and tends to be rendered with upright postures, balanced layouts, and lighter palettes; with age, sadness, anger, fear, and mixed states appear more often, supported by darker tones, angular forms, or spatial fragmentation (Cannoni, Pinto, & Bombi, 2023). Recurrent motifs can mark salient concerns; animal threats and sharp-edged objects are frequent fear carriers (Talu, 2019). Size and placement add nuance. Expansive central figures can index agency or confidence, while small marginal figures may suggest withdrawal. In clinical samples, object size and area can track specific anxieties, as seen in enlarged hearts linked to illness concern (Reynolds et al., 2007). Developmental gains enable subtler indications. Perspective and negative space permit distancing, enclosure, or exposure effects that younger children cannot produce reliably (Lange-Küttner & Vinueza Chavez, 2022). Social environments provide additional filters. During collective stress, such as pandemic lockdowns, narratives and drawings initially

skew negative, then soften as routines return, indicating adaptation over time (Vettori et al., 2022). Together these findings support a simple chain: visual choices reflect capacities and concerns; capacities and concerns are filtered by context; the resulting image encodes a readable, if probabilistic, psychological state.

5.8. Reading Drawings in Practice and Limits of Inference

Interpretation should use multiple cues in combination. Colour provides fast signals but must be read with form, line, and spatial organisation. Age and motor control matter for line quality. Prompt and audience shape what is shown and how directly it is shown. Recurrent symbols across drawings carry more weight than single instances. Where possible, drawings should be triangulated with child narratives, caregiver reports, and observation. Indicators are probabilistic, not diagnostic. Colour-emotion links vary with culture and socialisation (Pope et al., 2012; Vettori et al., 2022). Task wording and adult expectations can prime responses and shift content (Burkitt, Watling, & Message, 2019). Samples are often small or convenience-based, and many studies rely on single time points, limiting causal inference. Analytic frameworks differ in coding granularity and reliability. Digital tools can quantify features at scale but may miss nuance or context (Yu & Nagai, 2020). These constraints counsel caution. Yet the convergence across designs and settings is notable. Drawings consistently function as a sensitive, non-invasive window into affect, cognition, and lived environment. Read with theory and context, they can support screening, communication, and intervention in educational and clinical settings.

6. Presentation of Children's Drawings with Scientific Explanation of These Indication

6.1. Emotional Expression in Children's Drawing

Psychological research accumulated has demonstrated that children use colours and draw different shapes to express emotions. **Figure 1**: Children drawing reflects the hell and heaven theme; herein children do not use the range of colours and even draw otherworldly places, as demonstrated by Angel and God. This is noteworthy; this picture employed a range of emotions for specific mood-based drawing tasks. In addition to this, studies suggest warm colours, such as yellow or orange linked to positive images, and dark colours, such as black or blue, indicate fear or anxiety. **Figure 2** had shown fear or loss of control frequently found with increased anxiety (Baghdadi et al., 2020).

6.2. Cognitive and Development Reflection

Drawing is a cognitive tool that encompasses several activities, such as shaking or creating graphics. Research indicates that negative space drawing was used by a 7 - 9-year-old child that is more capable of grasping the spatial representation (Berti, Cigala, & Severgnini, 2021) (**Figure 3**).



Figure 1. Children drawing reflects the hell and heaven theme, source: Bulut et al., 2024.



Figure 2. Fear or loss of control. Source: Baghdadi et al., 2020.



Figure 3. Artistic development of child (7 - 9 years old) and its spatial arrangement.

6.3. Social and Environmental Reflections in Drawings

One of the main indicators of social and environmental reflection in artistic chil-

dren's drawings is reported digital image processing, which is increasingly used by children to draw symmetrical pictures (Weng et al., 2024). Zlateva (2019) described the level of saturation and distinction of colour between different objects in 6 - 7-year-olds predicting the children's increasing understanding of the social environment. Using the kid expression, the self in the society makes it clear the positioning of children's relationship with the society (see Figure 4). In contrast, environmental and cultural factors reflected distinct symbols and themes relevant to their upbringing, such as religious symbols (Zlateva, 2019).

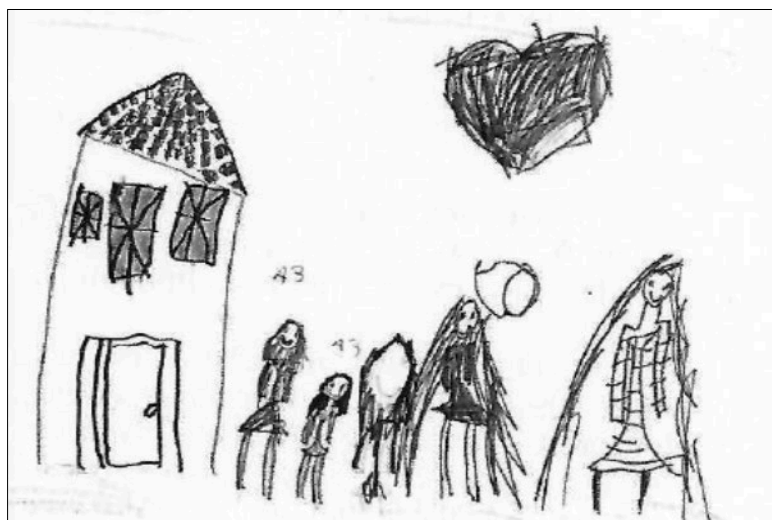


Figure 4. Community perspective of children. Source: Zlateva, 2019.

7. Role of Society and the Family in Understanding the Value of Art for Children

The family is recognized as a fundamental unit of society, playing a crucial role in the socialization and development of children. Scholars investigated children who face difficulties in adhering to society's culture and are not interested in explaining nature when their family is not involved in the artwork. Robb et al. (2021) found some of the visual arts to get particular insights into the level of cultural and parent influence on children's learning. In contrast, Melnick (2011) investigated the influence of higher parental culture on inhibiting children's interest in the level of artwork. Likewise, children whose parents are actively involved in the artistic work develop a strong sense of well-being and appreciate art.

Beyond the family perspective, society and cultural background tremendously influence shaping children's artistic work; for instance, educational policies which integrate artwork in the curriculum help in improvement in cognitive abilities, emotional intelligence and problem-solving skills (Burkitt et al., 2019). Research has demonstrated that art therapy programmes in schools and community centres positively impact children's mental health. Studies indicate that structured art activities contribute to reduced anxiety, improved emotional regulation, and enhanced social interaction among children (Vettori et al., 2022).

8. Synthesis of Findings

Interpretation of children’s drawings is shaped by interactions among age, gender, and culture rather than any single factor. With age, colour-emotion links and symbolic use typically strengthen as experience and cognitive control grow (Miles et al., 2021; Farokhi & Hashemi, 2011). Apparent gender patterns (e.g., broader/warmer palettes among girls, cooler tones among boys) can emerge in some samples but are neither universal nor static; they likely reflect socialisation and classroom norms that themselves vary by culture (Pope et al., 2012; Burkit, Watling, & Message, 2019; Berti & Cigala, 2022). Culture and community shape iconography, meaning, and acceptability of display (e.g., religious symbols, landscape motifs, local colours), so the same symbol—or the same colour—may signal quite different states across contexts (Zlateva, 2019; Jolley & Dessart, 2023; Labintah & Shinozaki, 2014). Neurodiversity and setting add further layers (Belin et al., 2017; Vettori et al., 2022). Practically, this means readings should combine multiple cues (colour + form + composition + symbols), be benchmarked against the child’s own prior work, and be interpreted through local cultural lenses and developmental expectations rather than fixed, one-size-fits-all mappings.

9. Conclusion

This review underscores that children’s drawings provide a sensitive, non-invasive window into affect, cognition, and lived context. Visual elements—colour, form/line, spatial composition, symbols—and their development over time can inform how adults recognize and respond to children’s needs. Beyond this core insight, several actionable implications follow for educators, clinicians, and researchers.

For educators (classroom/practice):

- Low-stakes check-ins: Integrate 5 - 10 minute drawing prompts (e.g., “My day as a weather map”, “A place I feel calm”) monthly. Scan for changes in palette breadth, crowding, figure size/placement, and recurring symbols. Use shifts—not single drawings—to flag students who may benefit from gentle follow-up.
- Prompt design: Use open, non-leading prompts first; add targeted prompts only when needed (e.g., “Draw a worry with a helper”). Avoid pathologising literal colour choices in early years.
- Documentation routine: Photograph (or scan) work, date it, and add one-line teacher observations tied to a small set of cues (colour range, layout, key symbols). This enables developmental comparison across terms.
- Culturally responsive reading: Calibrate expectations to local iconography and norms; invite brief child narratives (“Tell me about this part”) before interpreting.
- Universal SEL integration: Pair drawing with short regulation strategies (breathing, movement) and sharing circles; drawings become conversation starters rather than judgments.

For therapists/clinicians (assessment/intervention):

- Multi-method assessment: Use drawings alongside observation, play, and caregiver report. Look for convergence across cues (e.g., dark palette + marginal placement + constricted figure size).
- Goal-linked tasks: Select prompts aligned to treatment targets (safety, agency, coping). For anxiety, try “Draw the problem, the helper, and the next step”, then rehearse coping in vivo.
- Progress monitoring: Repeat the same prompt at set intervals (e.g., every 4 - 6 sessions). Track structured indicators (palette diversity, spatial coherence, symbol transformation) to visualize change and share progress with families.
- Trauma-informed safeguards: Offer choice (materials, topic, opt-out), avoid detailed probing of distressing content without containment plans, and close sessions with grounding imagery (e.g., “safe place” drawings).
- Caregiver involvement: Use brief parent sessions to explain what drawings can and cannot show; co-create home prompts (“Draw a challenge and who helped”).

For schools/systems (policy/programming):

- Tiered supports: Embed drawing screens within MTSS/RTI frameworks as universal (Tier 1) wellness activities, with clear referral paths to Tier 2/3 supports when patterns persist.
- Materials equity: Ensure access to varied, non-toxic media and ample paper sizes; constrained materials can artificially limit expression.
- Training: Provide short workshops for staff on reading multiple cues (colour + form + composition + symbols), developmental expectations, and ethical boundaries.

For researchers (standards and next steps):

- Reporting standards: Specify prompts, audience, timing, coder training, and inter-rater reliability; share exemplar images (with consent) and coding rubrics.
- Longitudinal designs: Prioritize within-child trajectories to separate developmental gains from intervention effects.
- Cross-cultural validity: Examine how colour/form meanings vary across settings; build culturally adaptable coding schemes.
- Tech responsibly: Use digital analysis to augment—not replace—clinical judgment; pair automated metrics (e.g., palette range, crowding indices) with child narratives.

Bottom line: Drawings can surface what children struggle to say aloud. When adults read multiple visual cues, respect developmental stage and culture, and pair interpretation with supportive action, drawings become practical tools for screening, communication, and guided intervention—enhancing emotional well-being in classrooms and clinics alike.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- Baghdadi, Z. D., Jbara, S., & Muhajarine, N. (2020). Children's Drawing as a Projective Measure to Understand Their Experiences of Dental Treatment under General Anesthesia. *Children*, 7, Article No. 73. <https://doi.org/10.3390/children7070073>
- Belin, L., Henry, L., Destays, M., Hausberger, M., & Grandgeorge, M. (2017). Simple Shapes Elicit Different Emotional Responses in Children with Autism Spectrum Disorder and Neurotypical Children and Adults. *Frontiers in Psychology*, 8, Article No. 91. <https://doi.org/10.3389/fpsyg.2017.00091>
- Berti, S., & Cigala, A. (2022). DRAW.IN.G.: A Tool to Explore Children's Representation of the Preschool Environment. *Frontiers in Psychology*, 13, Article ID: 1051406. <https://doi.org/10.3389/fpsyg.2022.1051406>
- Berti, S., Cigala, A., & Severgnini, L. (2021). Effects of the COVID-19 Pandemic in ECEC Centers: Social and Psychological Impact on Children and Teachers. *Psychology Hub*, 38, 47-60.
- Bulut, G., Kiliç, G., Güney, S., & Açıkbay, E. (2024). Evaluation of Children's Drawings as a Measure of Dental Anxiety before and after Oral Health Education. *Nigerian Journal of Clinical Practice*, 27, 983-989. https://doi.org/10.4103/njcp.njcp_241_24
- Burkitt, E., Watling, D., & Message, H. (2019). Expressivity in Children's Drawings of Themselves for Adult Audiences with Varied Authority and Familiarity. *British Journal of Developmental Psychology*, 37, 354-368. <https://doi.org/10.1111/bjdp.12278>
- Cannoni, E., Pinto, G., & Bombi, A. S. (2023). Typical Emotional Expression in Children's Drawings of the Human Face. *Current Psychology*, 42, 2762-2768. <https://doi.org/10.1007/s12144-021-01558-1>
- Edwards, B. (1997). Drawing on the Right Side of the Brain. In *CHI'97 Extended Abstracts on Human Factors in Computing Systems Looking to the Future* (pp. 188-189). ACM Press. <https://doi.org/10.1145/1120212.1120336>
- Farokhi, M., & Hashemi, M. (2011). The Analysis of Children's Drawings: Social, Emotional, Physical, and Psychological Aspects. *Procedia—Social and Behavioral Sciences*, 30, 2219-2224. <https://doi.org/10.1016/j.sbspro.2011.10.433>
- Jolley, R. P., & Dessart, G. (2023). Emotional Expression in Children's Drawings of God. In P.-Y. Brandt, et al. (Eds.), *When Children Draw Gods: A Multicultural and Interdisciplinary Approach to Children's Representations of Supernatural Agents* (pp. 247-284). Springer International Publishing. https://doi.org/10.1007/978-3-030-94429-2_10
- Labintah, S., & Shinozaki, M. (2014). Children Drawing: Interpreting School-Group Student's Learning and Preferences in Environmental Education Program at Tanjungpiai National Park, Johor Malaysia. *Procedia—Social and Behavioral Sciences*, 116, 3765-3770. <https://doi.org/10.1016/j.sbspro.2014.01.838>
- Lange-Küttner, C., & Vinuesa Chavez, X. (2022). The Space Paradox in Graphic Representation. *Frontiers in Psychology*, 13, Article ID: 968918. <https://doi.org/10.3389/fpsyg.2022.968918>
- Miles, E., Goodmon, L. B., Del Monte, G. M., & Saunders, T. (2021). The Relationship between Color Shade and Emotion Association in Pre-School Aged Children. *Modern Psychological Studies*, 27, Article No. 6.
- Morra, S. (2005). Cognitive Aspects of Change in Drawings: A Neo-Piagetian Theoretical Account. *British Journal of Developmental Psychology*, 23, 317-341. <https://doi.org/10.1348/026151005x27182>
- Moula, Z., Walshe, N., & Lee, E. (2021). Making Nature Explicit in Children's Drawings of Wellbeing and Happy Spaces. *Child Indicators Research*, 14, 1653-1675.

- <https://doi.org/10.1007/s12187-021-09811-6>
- Noonan, R. J., Boddy, L. M., Fairclough, S. J., & Knowles, Z. R. (2016). Write, Draw, Show, and Tell: A Child-Centred Dual Methodology to Explore Perceptions of Out-of-School Physical Activity. *BMC Public Health*, *16*, Article No. 326. <https://doi.org/10.1186/s12889-016-3005-1>
- Pope, D. J., Butler, H., & Qualter, P. (2012). Emotional Understanding and Color-Emotion Associations in Children Aged 7-8 Years. *Child Development Research*, *2012*, Article ID: 975670. <https://doi.org/10.1155/2012/975670>
- Purchase, C. (2014). *Subjective Emotion and Colour Use in Drawings*.
- Reynolds, L., Broadbent, E., Ellis, C. J., Gamble, G., & Petrie, K. J. (2007). Patients' Drawings Illustrate Psychological and Functional Status in Heart Failure. *Journal of Psychosomatic Research*, *63*, 525-532. <https://doi.org/10.1016/j.jpsychores.2007.03.007>
- Robb, A., Jindal-Snape, D., & Levy, S. (2021). Art in My World: Exploring the Visual Art Experiences in the Everyday Lives of Young Children and Their Impact on Cultural Capital. *Children & Society*, *35*, 90-109. <https://doi.org/10.1111/chso.12392>
- Talu, E. (2019). Reflections of Fears of Children to Drawings. *European Journal of Educational Research*, *8*, 763-779. <https://doi.org/10.12973/eu-jer.8.3.763>
- Tenny, S., Brannan, J. M., & Brannan, G. D. (2023). *Qualitative Study*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK470395/>
- Vettori, G., Ruffini, C., Andreini, M., Megli, G., Fabbri, E., Labate, I. et al. (2022). Investigating Children's Ability to Express Internal States through Narratives and Drawings: Two Longitudinal Studies during Pandemic. *Children*, *9*, Article No. 1165. <https://doi.org/10.3390/children9081165>
- Vivaldi, R. A., & Salsa, A. M. (2021). When Color Takes Shape: Young Children Use Object Information from Their Own Drawings to Solve a Task. *The Journal of Genetic Psychology*, *182*, 102-115. <https://doi.org/10.1080/00221325.2021.1876622>
- Weng, H. C., Huang, L. Y., Imcha, L., Huang, P. C., Yang, C. T., Lin, C. Y., & Li, P. H. (2024). Drawing as a Window to Emotion with Insights from Tech-Transformed Participant Images. *Scientific Reports*, *14*, Article No. 11571. <https://doi.org/10.1038/s41598-024-60532-6>
- Yu, L., & Nagai, Y. (2020). An Analysis of Characteristics of Children's Growth through Practical Art. *Healthcare*, *8*, Article No. 109. <https://doi.org/10.3390/healthcare8020109>
- Zlateva, A. (2019). Reflecting the Level of Social Adaptation in the Drawings of Children Aged 6-7. *Pedagogy*, *91*, 687-695.