UTILIZATION OF A TECHNOLOGY-BASED MACHOVER DRAW-A-PERSON TEST TO EXAMINE THE PSYCHOLOGICAL ASPECTS OF ADOLESCENTS' SOCIAL SUPPORT

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Abstract

The Draw-A-Person Test (DAP) is a projective psychological assessment tool used to understand personality dynamics, emotional conditions, and individuals' perceptions of themselves and others through the symbolism of human figure drawings. This study is motivated by the importance of understanding social support and emotional regulation among adolescents in the digital era, in which psychological pressure, social demands, and patterns of interaction are becoming increasingly complex. The purpose of this study is to examine the extent to which the Machover version of the Draw-A-Person Test (DAP) can be used to assess the level of social support among children and adolescents. The method employed is a literature study by analyzing three main scientific articles that discuss the application of DAP in classical symbolic contexts, modern approaches based on digital technology, and the construct of adolescent social support. The articles analyzed include studies by Santillo et al. (2025), Nurasiah et al. (2025), and a meta-analysis by Hidayati (2023). The findings indicate that DAP is able to illustrate interpersonal aspects, emotional stability, and the quality of individuals' social relationships through visual symbols in human figure drawings. In addition, the integration of technologies such as deep learning and digital image analysis has been shown to enhance the objectivity, efficiency, and reliability of test result interpretation.In conclusion, the Draw-A-Person Test (DAP) remains relevant as a projective assessment tool for depicting adolescents' psychological well-being and has the potential to be developed into a fast and accurate digital screening model oriented toward improving the quality of social support and mental health in the future.

Keywords: Draw-a-person test, social support, adolescents, mental health, digital technology.

1. INTRODUCTION

The contemporary business environment is undergoing a profound transformation driven by digitalization and the rapid growth of data generated from sources such as the *Internet of Things* (IoT), social media, and digital transactions. In response to this development, *Big Data Analytics Capabilities* (BDAC) have emerged as a critical organizational capability, referring to an organization's ability to acquire, integrate, analyze, and interpret large-scale data to support strategic decision-making (Mikalef, Krogstie, et al., 2020). However, prior studies indicate that the impact of BDAC on organizational performance is not direct. Instead, BDAC creates value through intermediate mechanisms, such as enhanced dynamic capabilities, operational capabilities, and improved managerial decision-making processes (Mikalef, Boura, et al., 2020; Thiraton et al., 2017)

Despite growing scholarly interest, the existing literature on BDAC remains fragmented and conceptually dispersed, with limited clarity regarding causal pathways, mediating and moderating mechanisms, and cross-sectoral applicability. This fragmentation underscores the need for a *Systematic Literature Review* (SLR) to synthesize empirical evidence, clarify theoretical linkages, and develop an integrative understanding of how BDAC influences managerial decision-making and organizational performance.

Human personality is an important aspect in psychology because it encompasses characteristic patterns of thinking, feeling, and behavior that influence how individuals interact with their environment. To understand this complexity, psychology has developed various assessments that evaluate both observable behavior and unconscious psychological processes. One in-depth approach to understanding personality is projective testing, which is rooted in Sigmund Freud's psychoanalytic theory of defense mechanisms, particularly projection.

According to Merida (2022), graphic tests are included as projective measurement tools that assess individuals' drawings in order to reveal personality characteristics and emotional dynamics. Several commonly used graphic tests include the Draw-A-Person Test (DAP), the Baum Test, the Drawing Completion Test (DCT), and the House-Tree-Person (HTP) Test. The development of graphic tests began in the early 20th century through the contributions of Goodenough, Machover, Kinget, Moch, and Wartegg, who introduced image-based projection methods.

One of the most well-known graphic tests is the Draw-A-Person Test (DAP), an individual test that asks participants to draw a human figure in order to assess cognitive and personality aspects. Machover (1949), in her work Personality Projection in the Drawing of the Human Figure, explained that human figure drawings reflect self-projection and an individual's personality dynamics. Each body part has symbolic meaning: the head represents the center of control and thought, the hands symbolize social interaction, while the legs reflect stability and a sense of security.

Dwi Nastiti (2019) added that graphic tests depict individuals' self-image and ideal self-image, which reflect self-perception, emotions, and social relationships. In a clinical context, the DAP is used not only to identify psychological disorders but also to assess emotional maturity, adaptive ability, and mental well-being. The human figure that is drawn represents the self of the person who creates it, while the paper field symbolizes the environment (Machover, 1949).

Along with technological advancements, this classical projective approach has begun to be combined with artificial intelligence. Nurasiah (2025) developed a model based on the YOLOv8 algorithm to analyze DAP results as a tool for rapid and objective adolescent mental health screening. This innovation demonstrates the potential integration of traditional psychological assessment with modern digital technology.

Adolescents' mental health conditions are strongly influenced by the effectiveness of emotional regulation and the social support they receive. Support from family and peers has been shown to strengthen psychological resilience and reduce stress(Alarcón-Espinoza et al., 2022; Sangkota, 2021; Solehah, 2025). These findings are consistent with Machover's theory that emotional balance and the quality of social relationships can be reflected in the symbolism of human figure drawings. However, research that specifically assesses social support through DAP interpretation remains limited, particularly among adolescent populations in the digital era.

Therefore, based on this background, this study was conducted with the aim of identifying whether the Machover version of the Draw-A-Person Test (DAP) can be used to assess the level of social support among children and adolescents. This study seeks to examine the extent to which interpretations of human figure drawings can reflect the quality of social relationships and individuals' emotional support.

The findings of this study are expected to be beneficial in expanding the understanding of adolescents' mental health conditions in the digital era, particularly in terms of emotional regulation and the utilization of social support. This research may also serve as a basis for the development of technology-based psychological assessments that are adaptive to the needs of today's adolescents.

The hypothesis of this study is that social relationships, which include interpersonal relations and social support, influence individuals' emotional stability, and that this can be reflected through the interpretation of the Draw-A-Person Test (DAP) as a tool for assessing personality and socio-emotional dynamics.

2. METHODOLOGY

This study employed a literature review approach by examining three main scientific articles relevant to the research topic. The articles included "Projective in Time: A Systematic Review on the Use of Construction Projective Techniques in the Digital Era – Beyond Inkblots" by Santillo et al. (2025), "Development of a Deep Learning Model for Mental Health Classification and Early Screening through Draw-A-Person (DAP) Test Images" by Nurasiah et al. (2025), and a meta-analysis on adolescent social support by Hidayati (2023). These three articles were selected because they represent the classical symbolic, digital innovation, and social support perspectives relevant to the objectives of this study.

According to Snyder (2019), a literature review approach is a research method conducted systematically and structurally to collect, evaluate, and synthesize previous studies in order to generate comprehensive conceptual understanding. This approach is relevant when research aims to evaluate theories, identify relationships among variables, and review conceptual developments in a scientific manner. Therefore, a literature review was considered appropriate to integrate findings from different methodological traditions and theoretical frameworks related to the Draw-A-Person Test (DAP) and adolescent social support.

The analysis aimed to identify methodological differences, instruments, and analytical approaches used in the application of the Draw-A-Person Test (DAP) and its relationship with adolescent social support. This objective was addressed by comparing classical symbolic approaches with digital innovation based on artificial intelligence. The analysis also focused on how each study conceptualized and operationalized psychological assessment and social support in adolescents.

The article by Santillo et al. (2025) employed a systematic review method following PRISMA guidelines and covered 25 articles published between 2010 and 2024. These articles involved children and adolescents undergoing assessments using construction projective techniques. Meanwhile, the article by Nurasiah et al. (2025) applied an experimental quantitative method based on deep learning using the DAP test and the YOLOv8 model for image analysis. In addition, the article by Hidayati (2023) used a meta-analytic approach to examine the relationship between social support and adolescent mental health in Indonesia.

Data analysis in this study employed qualitative content analysis with a descriptive–inductive approach to develop a thematic synthesis between classical DAP theory, digital innovation, and the construct of adolescent social support. According to Lyhne et al. (2025), qualitative content analysis is conducted through a process of repeated interpretation between parts and the whole text (hermeneutic circle) in order to build consistent and in-depth conceptual meaning. This approach enables researchers to understand thematic relationships between classical theory and modern research systematically and to construct a conceptual synthesis relevant to the research objectives.

3. FINDINGS AND DISCUSSION

The results of the literature study are presented in the form of tables containing the analysis of two main book sources and several recent scientific journals. The first table presents a conceptual comparison between the basic theory proposed by Karen Machover (1949) and its development in modern sources, such as the projective test textbook by Merida et al. (2022). The second table contains the results of the review of journals relevant to the research topic.

Table 1. Conceptual Comparison Analysis Results

Category	Machover (1949)	Merida et al. (2022)
Primary Theoretical Purpose	Exploring personality through human figure drawings as projections of unconscious conflicts.	A projective test (DAP) to reveal motives, emotions, and hidden needs.

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Theoretical Foundation	Freudian psychoanalysis: projection as a defense mechanism.	Freud, Jung, Murray: the need–press concept in projective testing.
Analytical Approach	Symbolic-holistic: interpretation of lines, shapes, sizes, positions, and pressure.	Systematic: based on guidelines and objective interpretation and scoring.
Purpose of Use	Assessing inner conflicts and individuals' intrapsychic dynamics.	Clinical, educational, and research analysis for psychology students.
Procedural Focus	Focus on symbolic meaning and interpretation of drawing elements.	Explains technical steps: instructions, time, scoring techniques, and interpretation.
Context of Application	Individual clinical context.	Academic and practical contexts.

Source: Adapted from Machover (1949) and Merida et al. (2022)

Table 2. Results of the Literature Analysis of Main Articles

Aspect	Santillo et al., 2025	Nurasiah et al., 2025	Hidayati et al., 2023
Type of Study	Systematic review	Quantitative experimental study (deep learning)	Meta-analysis
Subjects	Children and adolescents aged 4–18 years	Adolescents aged 12–16 years	32 studies conducted in Indonesia (mixed population)
Instruments	DAP, HTP, KFD	DAP + YOLOv8	Correlational data from previous studies

Variables	Validity, effectiveness, and relevance	Visual features of drawings (independent), mental condition classification (dependent)	Social support and mental health
Analysis Techniques	Content analysis	Quantitative analysis, YOLOv8 model	Meta-analytic techniques (effect size, heterogeneity, Egger's test)
Main Findings	High diagnostic value; strong inter-rater reliability; detection of ADHD, epilepsy, and sexual abuse	High diagnostic value; reliable assessment; mAP50 = 0.88; rapid and efficient screening.	Significant negative correlation ($r = -0.566$; $p < 0.001$)
Strengths	High diagnostic validity	Precise DAP interpretation; recall = 0.799; efficient screening	High reliability
Limitations	Interpretation standards need improvement	Limited age coverage; not yet statistically tested with rule-based clinical diagnosis	High subject and indicator variability

Source: Authors' analysis based on Santillo et al. (2025), Nurasiah et al. (2025), and Hidayati et al. (2023).

Future research on *Big Data Analytics Capabilities* (BDAC) should prioritize the development of integrative, multi-level models that capture the interaction between technological infrastructure, organizational culture, and individual cognition to better explain holistic value creation (Aslam et al., 2025). Greater attention is also needed for context-specific and comparative studies, particularly in underexplored settings such as SMEs, non-profit organizations, and developing economies, to strengthen contingency-based explanations of BDA success and failure. Methodologically, the field should move beyond cross-sectional designs toward longitudinal and mixed-method approaches to capture capability evolution over time and incorporate human-

centered insights (Franke, 2021). Finally, adopting Design Science Research is recommended to develop and validate practical analytical artifacts that enhance the real-world effectiveness of BDAC, such as decision-support frameworks and advanced analytical tools (Elgendy & Elragal, 2016; Simsek et al., 2020). Based on Table 2, the three articles analyzed indicate that the Draw-A-Person Test (DAP) remains diagnostically relevant in the context of child and adolescent psychology, both through the classical symbolic approach and digital innovation. The study by Santillo et al. (2025) confirms the symbolic validity and empirical consistency of the DAP, whereas Nurasiah et al. (2025) demonstrate the development of the DAP into a standardized quantitative instrument that strengthens interpretive reliability and reduces examiner subjectivity through the integration of deep learning. Meanwhile, the meta-analysis by Hidayati (2023) reinforces the relationship between social support and adolescent mental health, as well as the relevance of the DAP in assessing emotional regulation and social support.

Based on the review of Machover (1949) and Merida et al. (2022), a development can be observed from a symbolic approach toward a more systematic approach. Machover emphasized human figure drawings as projections of unconscious conflicts through visual symbols, whereas Merida updated the DAP with more objective interpretation guidelines and scoring procedures. Both approaches view drawings as reflections of personality dynamics, but Merida added aspects of reliability, ethics, and modern methodology, making the DAP more standardized without abandoning its psychoanalytic theoretical foundations. The findings of Santillo et al. and Nurasiah et al. also indicate continuity between the classical symbolic approach and digital innovation, in which Santillo et al. emphasized the theoretical foundations and symbolic validity of the DAP, while Nurasiah et al. added value in terms of objectivity and efficiency through deep learning. These findings indicate that the DAP can retain its symbolic meaning while simultaneously producing standardized quantitative data, thereby strengthening interpretive reliability and reducing examiner subjectivity.

The integration of these findings with the literature on adolescence highlights the role of the DAP in assessing emotional regulation and social support. The expression of figures in DAP drawings reflects the quality of interpersonal relationships and emotional stability, which is consistent with the findings of the meta-analysis by Hidayati (2023) and adolescent developmental studies (Ashran, 2020; Santrock, 2016; Yolanda, 2018) In addition, digital innovations such as YOLOv8 open new opportunities for technology-based mental health screening by accelerating the early detection of emotional and behavioral disorders without eliminating the humanistic value of classical projective tests. In the context of the digital era, which is characterized by increasing social pressures, this technological integration indicates that the DAP continues to develop adaptively and remains relevant for use in psychological assessment of children and adolescents.

4. CONCLUSION

Based on the literature review, the Machover version of the Draw-A-Person Test (DAP) can be used to assess the level of social support among children and adolescents. This test is able to reveal aspects of personality, emotional conditions, and individuals' unconscious dynamics through visual symbols in the human figure drawings created by participants. Visual elements such as facial expressions, body posture, proportions, and other details reflect the quality of interpersonal relationships and the level of social support received. The integration of DAP with deep learning technology, such as the YOLOv8 model, enhances the objectivity of interpretation, reduces assessor bias, and enables more accurate detection of adolescents' emotions and social relationships. Thus, the Machover version of the DAP remains relevant and effective as a projective instrument that can be used to comprehensively assess social support and other psychological aspects, both in clinical assessment contexts and modern research.

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REFERENCES

Alarcón-Espinoza, M., Sanduvete-Chaves, S., Anguera, M. T., Samper García, P., & Chacón-Moscoso, S. (2022). Emotional self-regulation in everyday life: A systematic review. *Frontiers in Psychology*, *13*(1–11). https://doi.org/10.3389/fpsyg.2022.884756

Ashran, K. L. (2020). Perbedaan kematangan emosi ditinjau dari keutuhan keluarga pada remaja. *Psycho Holistic*, *2*(1), 118–128. https://journal.umbjm.ac.id/index.php/psychoholistic/article/view/617

Ballús, E., Comelles, M. C., Pasto, M. T., & Benedico, P. (2023). Children's drawings as a projective tool to explore and prevent experiences of mistreatment and/or sexual abuse. *Frontiers in Psychology*, *14*, 1–12. https://doi.org/10.3389/fpsyg.2023.1002864

Buck, J. N. (1948). *The House-Tree-Person technique: A qualitative and quantitative scoring manual.* Western Psychological Services.

Goodenough, F. L. (1926). *Measurement of intelligence by drawings.* World Book Company.

Haghighi, M. K., Khaterizadeh, M., Chalbianloo, G., Toobaei, S., & Ghanizadeh, A.(2014). Comparing the drawings of children with attention deficit hyperactivity disorder with normal children. *Iranian Journal of Psychiatry*, *9*(4), 222–227. https://pmc.ncbi.nlm.nih.gov/articles/PMC4361825/

Hamama, L., & Alshech, M. (2018). Children with epilepsy: Assessing state anxiety through drawings and a self-report questionnaire. *Arts & Health*, *11*(3), 197–210. https://doi.org/10.1080/17533015.2018.1534250

Harris, D. B. (1963). *Children's drawings as measures of intellectual maturity: A revision and extension of the Goodenough Draw-A-Man test*. Harcourt, Brace & World.

Herrmann, D. S. (2015). Distress screening in childhood cancer patients: A focused case study examination involving projective drawings. *Journal of Infant, Child, and Adolescent Psychotherapy, 14*(2), 129–142. https://doi.org/10.1080/15289168.2015.1014989

Hidayati, D. L., & Purwandari, E. (2023). Hubungan antara dukungan sosial dengan kesehatan mental di Indonesia: Kajian meta-analisis. J*urnal Ilmu Pendidikan, Psikologi, Bimbingan dan Konseling*, *13*(1), 270–283. https://doi.org/10.24127/gdn.v13i1.6536

Kang, W., Stefens, F., Pineda, S., Widuch, K., & Malvaso, A. (2023). Personality traits and dimensions of mental health. *Scientific Reports*, *13*(1). https://doi.org/10.1038/s41598-023-33996-1

Lyhne, C. N., Bjerrum, M., & Thisted, J. (2025). Qualitative content analysis: Framing the analytical process of inductive content analysis to develop a sound study design. *Quality & Quantity*, *59*, 5329–5349. https://doi.org/10.1007/s11135-025-02220-9

Machover, K. (1949). *Personality projection in the drawing of the human figure: A method of personality investigation.* Thomas Publisher.

Merida, S. C. (2022). *Buku ajar mata kuliah pemeriksaan psikologi tes proyektif.* Jakarta: Program Studi Psikologi Universitas Bhayangkara Jakarta Raya.

Nastiti, D. (2019). *Psikologi proyeksi: Pengantar memahami kepribadian secara akurat.* UMSIDA Press.

Nurasiah, N., Mutiara, A. B., Yusnitasari, T., & Asmarany, A. I. (2025). Development of a deep learning model for mental health classification and early screening through Draw A Person (DAP) test images. *Journal of Applied Data Sciences*, *6*(3), 1968–1984. https://bright-journal.org/Journal/index.php/JADS/article/view/700

Policarpio-Gutierrez, M. (2018). The Draw-a-Family Picture Test (DAFPT): A new projective test for children. *Open Journal of Social Sciences*, *6*(5), 171–178. https://www.scirp.org/journal/paperinformation?paperid=86810

Purnamasari, Y., Fitri, N., & Mardiana, N. (2023). Faktor-faktor yang memengaruhi gangguan mental emosional remaja SMA. *Jurnal Penelitian Perawat Profesional, 5*(2), 609–616. https://doi.org/10.37287/jppp.v5i2.1527

Rahayu, F. M. (2025). Analisis perbandingan tes kepribadian objektif dan proyektif dalam mengungkap kepribadian individu: Kelebihan, kekurangan, dan analisis waktu penggunaan tes yang ideal. *Semantik: Jurnal Riset Ilmu Pendidikan, Bahasa dan Budaya*, 133–145. https://doi.org/10.61132/semantik.v3i3.1839

Sangkota, H. (2021). Pengaruh teman sebaya terhadap kecerdasan emosional peserta didik di SMK Cokroaminoto Luwuk Banggai Sulawesi Tengah. *Journal of Tompotika: Social, Economics, and Education Science*, *2*(4), 149–159. https://scholar.google.com/scholar?hl=id&as_sdt=0,5&cluster=13913437357751187811

Santillo, G. M. (2025). Projective in time: A systematic review on the use of construction projective techniques in the digital era—Beyond inkblots. *Children*, *12*(4), 406. https://doi.org/10.3390/children12040406

Santrock, J. W. (2016). *Adolescence (16th ed.)*. McGraw Hill Education.

Santillo, G., Morra, R. C., Esposito, D., & Romani, M. (2025) Drawings of very preterm-born children at 5 years of age: A first impression of cognitive and motor development. *European Journal of Pediatrics*, *171*(1), 43–50. https://link.springer.com/article/10.1007/s00431-011-1476-8

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, *104*, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Solehah, R. U. (2025). Pengaruh dukungan sosial dari keluarga dan teman sebaya terhadap kesehatan mental remaja di era digital yang penuh tantangan. *PSIKIS: Jurnal Ilmu Psikiatri dan Psikologi*, *1*(1), 19–27. https://jurnalp4i.com/index.php/psikis/article/view/5182

Yolanda, G. K. (2018). Hubungan antara kualitas kelekatan orang tua dan kontrol diri dengan perilaku agresif pada siswa sekolah dasar negeri Kendalrejo Surakarta. *Jurnal Wacana*, *10*(2), 1–11. https://doi.org/10.13057/WACANA.V10I2.129