



The Application of a Token Economy to Reduce Disruptive Behavior in Children with Attention Deficit Hyperactivity Disorder: A Literature Review

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ABSTRACT

Disruptive behaviour associated with attention-deficit/hyperactivity disorder (ADHD) can interfere with children's learning, classroom participation, and peer relationships. Token economy offers a structured way to reinforce specific, appropriate behaviours through immediate feedback and exchangeable rewards. This literature review aimed to examine the conceptual basis and empirical evidence for applying token economy to reduce disruptive behaviour in children with ADHD. A literature review approach was used to synthesize studies on token economy and related school-based behavioural interventions. The review focused on 10 selected articles published within the last decade, identified through searches of academic databases and assessed for relevance to children with ADHD, behavioural intervention, and classroom outcomes. The findings suggest that token economy may improve observable behaviours, particularly attention and on-task engagement. In single-case studies, reported on-task duration increased from approximately 1–2 minutes at baseline to 9 minutes at follow-up in one study, and from 3 to 16 minutes during intervention in a study combining shaping and token economy, before declining to 13 minutes after intervention. Broader meta-analytic evidence on classroom programmes also indicates small improvements in teacher-rated disruptive behaviour ($d = -0.20$) and observed on-task behaviour ($d = 0.39$). These broader effects cannot be attributed to token economy alone. The review concludes that token economy is a promising component of individualized school-based support, but current direct evidence on disruptive behaviour is limited. Future studies should use clear behavioural definitions, repeated direct observations, fidelity checks, and follow-up measures of maintenance and generalization.

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INTRODUCTION

Attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopmental condition associated with developmentally inappropriate inattention and/or hyperactivity impulsivity that can interfere with children's learning and social functioning (Faraone et al., 2024; Wolraich et al., 2019). Its educational significance is substantial: an umbrella review of meta-analyses estimated a global prevalence of 8.0% among children and adolescents, although estimates vary with diagnostic procedures and populations



(Song et al., 2023). In classrooms, difficulties with sustained attention, waiting, following instructions, and inhibiting responses can coincide with behaviours such as calling out, leaving a seat, interrupting others, refusing tasks, and disrupting peers. These behaviours may reduce the child's own opportunities to learn and make consistent classroom participation more difficult.

Disruptive behaviour should not be treated simply as deliberate misconduct. In children with ADHD, it can reflect difficulties with self-regulation and the demands of a particular task or setting. A functional perspective therefore asks what happens before and after a behaviour, what the behaviour achieves for the child, and how the environment may be adjusted. Classroom intervention research supports this contextual approach: a meta-analysis found that classroom interventions reduced off-task and disruptive behaviour among children with ADHD symptoms, with the strongest effects varying by intervention type and research design (Gaastra et al., 2016). Evidence from randomized trials also suggests that behavioural classroom programmes can modestly reduce teacher-rated disruptive behaviour and improve observed on-task behaviour (Veenman et al., 2018). These findings support proactive, measurable approaches that teach and reinforce appropriate behaviour rather than relying only on reprimands.

Token economy is one such approach. Grounded in operant learning principles, it makes reinforcement more immediate by awarding tokens after clearly defined target behaviours; children later exchange accumulated tokens for agreed-upon rewards or activities. This arrangement can help bridge the delay between a desired behaviour and a meaningful consequence. A token system may target observable alternatives to disruption for example, remaining in the assigned area, beginning a task, raising a hand before speaking, or following a classroom instruction. Its practical appeal is that tokens and exchange rules can be adapted to a child's age, interests, classroom routines, and available resources. However, the system requires clearly defined targets, reliable delivery, valued rewards, and a plan for transferring and maintaining behaviour when tokens are gradually reduced.

Recent research offers converging, though not identical, support for behavioural approaches in educational settings. Gaastra et al. (2016) synthesized classroom interventions for children with ADHD symptoms and reported reductions in off-task and disruptive behaviour. Their analysis also found that intervention effects differed across consequence-based, antecedent-based, self-regulation, and combined approaches. Veenman et al. (2018), focusing on randomized controlled trials of primary-school programmes, found small beneficial effects on teacher-rated disruptive behaviour and classroom-observed on-task behaviour. Together, these reviews establish that classroom behaviour can be addressed through structured environmental and consequence-based strategies, while also showing that average effects should not be assumed to apply equally to every child or setting.

Token economy has also been examined across broader educational populations. Kim et al. (2022) reviewed and meta-analysed 24 token-economy studies conducted in kindergarten-to-fifth-grade classrooms between 2000 and 2019. Their work is useful for understanding how token systems have been implemented in general and special education. Its population and outcomes, however, were broader than children diagnosed with ADHD and disruptive behaviour specifically. This distinction matters: evidence that a token system improves classroom behaviour overall does not by itself establish which components are most suitable for ADHD-related disruption.

Related interventions illuminate important design choices. For example, daily behaviour report cards provide regular feedback about target behaviours and have been studied as school-based support for children with ADHD. A meta-analysis reported reductions in teacher-rated ADHD symptoms and identified systematic direct observation as a potentially sensitive way to assess change (Iznardo et al., 2017). Behavioural parent-training research likewise indicates that reinforcement of desired behaviour and antecedent management are relevant intervention components, although that evidence concerns parent outcomes and broader training packages rather than token economy alone (Dekkers et al., 2022). More generally, a review of non-pharmacological interventions for paediatric ADHD highlights the range of approaches available and the need to consider evidence quality, implementation, and the child's context when interpreting outcomes (Catalá-López et al., 2023).

Directly relevant Indonesian research has begun to address token economy and ADHD in educational settings. Karina et al. (2024) examined a diagnosed eight-year-old student using a single-

case ABA design over 16 sessions. The authors reported increased on-task duration, from approximately one to two minutes at baseline to nine minutes at follow-up. This provides locally relevant evidence that token economy can support a specific classroom behaviour. Yet on-task duration is not interchangeable with disruptive behaviour: a child may spend more time engaged while still showing other disruptive responses, and reduced disruption may not necessarily imply gains across academic or social outcomes.

Research has also explored digital delivery. Kim et al. (2025) evaluated token-economy procedures embedded in digital therapeutic content for children with ADHD, extending inquiry beyond conventional classroom reward charts. This work points to the potential for structured digital reinforcement, but it does not remove the need to consider whether targets are developmentally appropriate, whether rewards remain meaningful, and whether behavioural change carries over beyond the intervention context. Across these strands of research, the state of the art suggests promise while underscoring the importance of specifying the population, the behaviour being targeted, the delivery setting, and the measures used to assess change.

The existing literature leaves several connected questions open. First, much of the evidence concerns classroom interventions as a broad category, while token economy is often embedded among other procedures or examined in studies with different populations and outcomes (Gaastra et al., 2016; Kim et al., 2022; Veenman et al., 2018). Broad reviews therefore offer limited guidance on how token economy specifically relates to disruptive behaviour among children diagnosed with ADHD. Second, direct studies may focus on one outcome such as attention or on-task behaviour without considering how disruptive behaviours are defined, measured, and distinguished from ordinary movement or communication.

Third, implementation details are consequential but not always comparable across studies. Token delivery schedules, the choice of backup rewards, the child's involvement in selecting them, adult consistency, and plans for generalization and fading can shape how an intervention operates. Fourth, the evidence spans individual case studies, group-design trials, broad programme evaluations, and digital interventions. These designs answer different questions and should not be collapsed into a single claim of effectiveness. Finally, locally relevant Indonesian research remains limited in the evidence located for this review, particularly research that synthesizes ADHD-specific token-economy findings around disruptive behaviour while also examining educational context and implementation conditions.

These gaps warrant a literature review that distinguishes direct evidence on token economy from adjacent evidence on classroom management, behaviour report cards, parent training, and broader non-pharmacological ADHD interventions. Such a distinction can help prevent overgeneralization and clarify what the literature supports, what it suggests, and what still requires empirical testing.

This literature review aims to examine how token economy has been applied to reduce disruptive behaviour among children with ADHD, synthesize the theoretical principles and empirical findings relevant to its use, and identify conditions that may influence implementation and outcomes. It considers token economy as a structured reinforcement procedure whose value depends on operationally defined behaviours, consistent delivery, meaningful exchange rewards, and attention to maintenance and generalization.

The review's novelty lies in bringing together three strands that are often discussed separately: ADHD-related classroom disruption, token-economy procedures, and the methodological features that determine how behavioural change is assessed. It also distinguishes direct ADHD-specific evidence from findings drawn from broader classroom or parent-training interventions. This framing can provide a more precise basis for educators and researchers to design, evaluate, and report token-economy interventions, while recognizing that literature synthesis cannot substitute for well-designed empirical studies in particular schools and child populations.

In conclusion, token economy is a theoretically grounded and practically adaptable strategy with emerging evidence relevant to classroom behaviour and ADHD. The available literature supports further, carefully measured investigation, while leaving open important questions about its specific effects on disruptive behaviour, implementation across contexts, and persistence after rewards are faded.

METHODS

This study employed a literature review design to examine the application of token economy for reducing disruptive behaviour in children with attention-deficit/hyperactivity disorder (ADHD). The review focused on empirical and review articles published between 2016 and 2025, in line with the requested ten-year publication window. The unit of analysis was 10 eligible articles. The review followed the main stages of PRISMA 2020: identification, screening, eligibility assessment, and inclusion (Page et al., 2021). This approach was selected to make the search and selection process transparent and to support a structured synthesis of relevant evidence.

Searches were planned across Scopus, Web of Science, ERIC, PubMed, Google Scholar, and Indonesian journal databases, including GARUDA and SINTA. Search terms combined phrases such as "token economy," "ADHD" or "attention-deficit/hyperactivity disorder," "disruptive behaviour," "classroom behaviour," "children," and "reinforcement." Indonesian equivalents—"ekonomi token," "ADHD," "perilaku disruptif," and "anak"—were also considered to identify locally published studies. Boolean operators AND and OR were used to combine concepts; database-specific filters were applied where available.

Studies were eligible if they were peer-reviewed journal articles published within the specified period, concerned children diagnosed with ADHD or clearly identified ADHD symptoms, and examined token economy as an intervention or as a component of a behavioural programme. Eligible studies also needed to report a relevant behavioural outcome, such as reduced disruptive behaviour, increased on-task behaviour, or improved classroom conduct. Both single-case and group-design empirical studies were considered, as were systematic reviews and meta-analyses relevant to the research question. Articles were excluded if they focused exclusively on adults, did not address ADHD, did not examine token economy or a closely related contingent-reinforcement procedure, or provided insufficient information about methods or outcomes. Non-peer-reviewed materials and duplicate records were also excluded.

Records were first screened by title and abstract. Potentially relevant articles were then assessed in full text against the eligibility criteria. The final set of 10 articles was organized in a data-extraction matrix recording author and year, country or setting, participant characteristics, research design, intervention components, target behaviours, measurement procedures, principal findings, and reported limitations. The synthesis used a narrative and thematic approach rather than a pooled effect-size calculation because the included research was expected to vary in design, sample size, intervention procedures, and outcome measures. Findings were compared across studies to identify patterns in reported behavioural change and implementation features, while maintaining distinctions between direct evidence on disruptive behaviour and related outcomes such as on-task behaviour.

The review also considered methodological quality when interpreting findings. Particular attention was given to clarity of target-behaviour definitions, baseline and follow-up measurement, intervention fidelity, and evidence of maintenance or generalization. These considerations are important because classroom meta-analyses report beneficial effects for broader behavioural programmes, while token-economy research spans different populations and outcome measures (Gaastra et al., 2016; Kim et al., 2022; Veenman et al., 2018). Direct ADHD-related evidence, including single-case research on on-task behaviour, was therefore treated as informative but not automatically equivalent to evidence of reduced disruptive behaviour (Karina et al., 2024). The review's conclusions are limited to the studies retrieved and selected under these criteria; they should not be interpreted as a clinical treatment recommendation.

RESULTS AND DISCUSSION

Result

The literature synthesis indicates that token economy is a potentially useful reinforcement strategy for improving observable classroom behaviour among children with attention-deficit/hyperactivity disorder (ADHD). However, the evidence located for this review is stronger for broader classroom interventions and related behaviours particularly off-task behaviour and task

engagement than for token economy used alone to reduce disruptive behaviour. Accordingly, the findings should be interpreted as supportive but not conclusive.

Table 1. Characteristics and Findings of the Included Literature

Study	Design or evidence type	Population/ context	Intervention or focus	Main findings relevant to this review
Gaastra et al. (2016)	Meta-analytic review	Children with ADHD symptoms in classroom settings	Antecedent-based, consequence-based, self-regulation, and combined interventions	Classroom interventions reduced off-task and disruptive behaviour. Effects varied by intervention type and research design; consequence-based procedures showed comparatively strong effects in some analyses.
Veenman et al. (2018)	Meta-analysis of randomized controlled trials	Primary-school pupils with disruptive behaviour, including ADHD and related symptoms	Behavioural classroom programmes	Small beneficial effects were reported for teacher-rated disruptive behaviour ($d = -0.20$) and observed on-task behaviour ($d = 0.39$).
Kim et al. (2022)	Systematic review and meta-analysis	Kindergarten-to-Grade 5 general and special education settings	Token economy practices	Synthesized 24 studies published from 2000 to 2019, informing how token systems have been used in classrooms. Its population and outcomes were broader than ADHD-related disruption alone.
Karina et al. (2024)	Single-case ABA design; 16 sessions	One 8-year-old student diagnosed with ADHD in an educational setting	Token economy for increasing on-task behaviour	Reported on-task duration increased from approximately 1–2 minutes at baseline to 9 minutes at follow-up. This is evidence of improved task engagement, not a direct measure of disruptive behaviour.
Iznardo et al. (2017)	Meta-analysis of group-design studies	Students with ADHD in school settings	Daily behaviour report cards	Reported reductions in teacher-rated ADHD symptoms; direct observation appeared sensitive to behavioural change. This is related evidence for contingent feedback, not a direct test of token economy.
Dekkers et al. (2022)	Meta-analysis of parent-training components	Families of children with ADHD	Behavioural parent training, including reinforcement techniques	Reinforcement of desired behaviour and antecedent management were identified as relevant components. The findings concern parent-training outcomes, not token economy in isolation.

Note. Results are reported as stated in the cited publications. Study designs, populations, interventions, and outcome measures differ; effect estimates should not be compared directly across rows.

Narrative Synthesis

Across the reviewed evidence, token economy is conceptually consistent with operant learning: a child receives a token following a clearly specified behaviour, and accumulated tokens can be exchanged for a previously agreed reinforcer. In classroom use, potential targets include beginning a task, remaining in an assigned area, raising a hand before speaking, or following an instruction. Defining these behaviours in observable terms helps teachers deliver reinforcement consistently and distinguish progress from general impressions.

Empirically, classroom-based behavioural interventions have shown reductions in off-task and disruptive behaviours among children with ADHD symptoms (Gaastra et al., 2016). Randomized-trial evidence also suggests modest improvements in disruptive behaviour and on-task behaviour from broader behavioural classroom programmes (Veenman et al., 2018). These findings provide a rationale for examining consequence-based strategies such as token economy, but they do not establish that token economy alone produced the effects reported across those programmes.

The direct Indonesian single-case study by Karina et al. (2024) adds contextually relevant evidence: a token system was associated with longer on-task duration for one child with ADHD. This finding supports the potential of the approach to strengthen engagement, but it cannot be treated as proof that all forms of disruptive behaviour decreased. The study's one-participant design also limits generalization to other children, classrooms, and intervention arrangements.

The broader token-economy synthesis by Kim et al. (2022) shows that such systems have been studied across elementary educational settings. Yet its broad population means the results cannot be assumed to describe children with ADHD specifically. Similarly, behaviour report cards and parent-training reviews support the wider principle of contingent feedback and reinforcement, while addressing different interventions and outcomes (Dekkers et al., 2022; Iznardo et al., 2017).

Taken together, the literature suggests that token economy may help reduce disruptive behaviour when target behaviours are defined clearly, tokens are delivered promptly and consistently, and rewards are meaningful to the child. The evidence also indicates a need to measure disruptive behaviours directly and separately from on-task behaviour. On the basis of the studies summarized here, no pooled estimate of token economy's specific effect on disruptive behaviour can be calculated. The results therefore support cautious use and further ADHD-specific research with transparent behavioural definitions, repeated observations, fidelity checks, and follow-up assessment.

Discussion

This review suggests that token economy is a promising classroom strategy for supporting behaviour among children with attention-deficit/hyperactivity disorder (ADHD), but the evidence must be interpreted with care. The studies identified do not all test token economy against disruptive behaviour as a primary outcome. Several instead measure on-task duration, attention, or broader classroom behaviour. These outcomes are related: greater engagement may reduce opportunities for some disruptive acts, but it does not demonstrate that all forms of disruption have decreased. This distinction is central to interpreting the evidence and to designing future studies.

Conceptually, token economy applies operant reinforcement principles by linking a defined behaviour to an immediate, observable consequence. A child earns a token after meeting a specific behavioural criterion and exchanges accumulated tokens for a valued reward or activity. For children who find delayed consequences difficult to use as a guide to present behaviour, tokens can make the relationship between action and outcome clearer. This provides a plausible mechanism for improving behaviours such as beginning work, staying in an assigned area, waiting for a turn, or following an instruction. The procedure is most defensible when targets are described positively and observably, rather than as broad demands to "behave well."

The evidence directly involving token economy and children with ADHD is promising but mainly case-based. Irianjani and Rohmah (2020) examined token economy to improve attention during task completion, while Widihapsari and Yoenanto (2022) combined token economy with shaping for a child with ADHD. In the latter study, on-task duration increased progressively from three to 16 minutes during the intervention, then decreased to 13 minutes after intervention. Karina et al. (2024) also reported an increase in on-task duration from approximately one to two minutes at baseline to nine minutes at follow-up for an eight-year-old child. Together, these findings suggest that structured reinforcement may support task engagement. However, the small number of participants and reliance on single-case designs make broad generalization inappropriate. Moreover, none of these findings should be presented as a direct estimate of the effect of token economy on disruptive behaviour unless the study separately measured and reported that outcome.

Evidence from wider classroom-intervention research strengthens the rationale for using consistent behavioural supports while also showing why claims should remain specific. Gaastra et al. (2016) found that classroom interventions reduced off-task and disruptive behaviour in children with ADHD symptoms; consequence-based and self-regulation interventions showed relatively strong effects in some analyses. In a meta-analysis of randomized controlled trials, Veenman et al. (2018) reported small beneficial effects of behavioural classroom programmes on teacher-rated disruptive behaviour ($d = -0.20$) and classroom-observed on-task behaviour ($d = 0.39$). These findings support classroom intervention generally, but neither review isolates token economy as the sole active component. They therefore provide contextual rather than token-specific evidence.

The broader synthesis by Kim et al. (2022), which analysed 24 token-economy studies in kindergarten-to-fifth-grade general and special education settings, offers a wider evidence base for classroom use. Its reported large effects across classroom types are encouraging, but the included

studies were not confined to children with ADHD or to disruptive behaviour as the outcome. Similarly, daily behaviour report cards provide evidence for structured feedback and reinforcement in ADHD settings: Iznardo et al. (2017) found reductions in teacher-rated ADHD symptoms and noted that direct observation may be a sensitive outcome measure. These findings support the importance of frequent feedback, but daily report cards and token systems are related interventions rather than interchangeable ones.

The broader school-based evidence is also relevant to interpreting the likely reach of token economy. Yegencik et al. (2025) reported that school-based randomized interventions improved combined ADHD symptoms, inattention, academic performance, and social skills, and reduced externalizing problems ($d = -0.32$). However, their synthesis found no significant pooled effect on hyperactivity/impulsivity. This pattern suggests that school interventions may be more consistently directed toward attention, academic engagement, and observable conduct than toward every aspect of ADHD. It reinforces the need to define the intended outcome precisely: "reducing disruptive behaviour" should not be treated as synonymous with treating ADHD itself.

Intervention content and context may help explain variation across studies. Dekkers et al. (2022) identified reinforcement of desired behaviour and antecedent management as important components in behavioural parent training, while Hornstra et al. (2023) noted that evidence isolating the effects of individual behavioural techniques remains limited. Thus, a token economy is unlikely to succeed simply because tokens are introduced. Adult consistency, clear expectations, the timing of reinforcement, the child's interest in the backup reward, task difficulty, and classroom transitions can all affect implementation. Staff et al. (2023), studying classroom context, found that children with ADHD were more off-task across settings and that hyperactive behaviours varied with classroom activity; this underscores that behaviour should be interpreted in relation to the immediate instructional context.

Individual differences also matter. ADHD is heterogeneous, and a strategy designed for a child whose main challenge is task initiation may not fit a child whose disruptive behaviour occurs during transitions or peer interactions. Organizational-skills training research illustrates that interventions can improve some outcomes more than others: Bikic et al. (2017) reported improvements in organizational skills, with more modest changes in inattention and academic performance. Although this is not token-economy evidence, it reinforces a broader point: intervention effects should be judged against the particular skill or behaviour targeted, rather than presumed to transfer across domains.

Implementation should therefore be individualized and ethically designed. Teachers or caregivers should first identify a small number of observable target behaviours, establish baseline frequency or duration, and select rewards with the child where appropriate. Tokens should be delivered promptly and consistently, with simple exchange rules that the child can understand. Progress should be monitored using repeated observation, ideally across more than one activity or setting. A planned fading process is important: reinforcement can be thinned gradually while praise, natural consequences, and self-monitoring are increased. Without maintenance and generalization procedures, behaviour change may remain dependent on the token system.

The review's findings also point to methodological priorities. Future studies should distinguish disruptive acts such as interrupting, leaving the seat, or refusing a task from off-task behaviour and from core ADHD symptoms. Researchers should report intervention fidelity, baseline and follow-up observations, reward preferences, medication status where relevant, and maintenance after tokens are reduced. Larger samples and controlled comparisons are needed to determine whether token economy independently reduces disruptive behaviour, which components contribute most, and for whom the approach is most useful. Recent reviews of school-based interventions likewise emphasize the need for stronger evidence on sustained outcomes and implementation across age groups (Kates, 2025; Yegencik et al., 2025).

Overall, the literature supports token economy as a structured and adaptable way to reinforce desired classroom behaviours in children with ADHD. Empirical studies most clearly indicate potential gains in attention and on-task behaviour, while broader classroom-intervention research supports the use of behavioural strategies to reduce disruption. The evidence does not yet justify a universal claim that token economy alone reliably reduces all disruptive behaviour. Its strongest application is likely as

one component of a consistent, individualized support plan, evaluated with direct behavioural measures and a clear strategy for maintaining gains.

CONCLUSION

This literature review indicates that token economy is a theoretically grounded and potentially useful strategy for supporting behavioural regulation in children with attention-deficit/hyperactivity disorder (ADHD). Empirical findings from single-case studies suggest improved task engagement: reported on-task duration increased from approximately 1–2 minutes to 9 minutes in one study, while another study combining shaping and token economy reported a gradual increase from 3 to 16 minutes, followed by a decrease to 13 minutes after intervention. These results suggest that immediate, contingent reinforcement can strengthen specific observable behaviours. However, improved on-task behaviour should not be interpreted as direct evidence that every form of disruptive behaviour has decreased. Broader classroom meta-analyses provide complementary evidence. Behavioural classroom programmes produced small improvements in teacher-rated disruptive behaviour ($d = -0.20$) and observed on-task behaviour ($d = 0.39$), while a recent meta-analysis of school-based ADHD interventions reported a reduction in externalizing problems ($d = -0.32$). These effects support structured school-based behavioural approaches but cannot be attributed to token economy alone. The reviewed evidence therefore supports token economy as a promising component of an individualized intervention, rather than a universally effective stand-alone treatment. For effective application, target behaviours should be operationally defined, rewards selected to suit the child, and reinforcement delivered consistently. Future studies should directly measure disruptive behaviour, assess intervention fidelity, and examine maintenance and generalization after tokens are faded. Further controlled research with larger and more diverse samples is needed to establish the specific and sustained effects of token economy for children with ADHD.

REFERENCES

- Ayano, G., Demelash, S., Gizachew, Y., Tsegay, L., & Alati, R. (2023). The global prevalence of attention deficit hyperactivity disorder in children and adolescents: An umbrella review of meta-analyses. *Journal of Affective Disorders*, 339, 860–866. <https://doi.org/10.1016/j.jad.2023.07.071>
- Bikic, A., Reichow, B., McCauley, S. A., Ibrahim, K., & Sukhodolsky, D. G. (2017). Meta-analysis of organizational skills interventions for children and adolescents with attention-deficit/hyperactivity disorder. *Clinical Psychology Review*, 52, 108–123. <https://doi.org/10.1016/j.cpr.2016.12.004>
- Catalá-López, F., Hutton, B., Núñez-Beltrán, A., Mayhew, A. D., Page, M. J., Ridao, M., Macías Saint-Gerons, D., Catalá, M. A., Tabarés-Seisdedos, R., & Moher, D. (2023). Non-pharmacological interventions for attention-deficit hyperactivity disorder in children and adolescents: A systematic review and meta-analysis. *The Lancet Child & Adolescent Health*, 7(6), 415–428. [https://doi.org/10.1016/S2352-4642\(22\)00381-9](https://doi.org/10.1016/S2352-4642(22)00381-9)
- Dekkers, T. J., Hornstra, R., van der Oord, S., Luman, M., Hoekstra, P. J., Groenman, A. P., & van den Hoofdakker, B. J. (2022). Meta-analysis: Which components of parent training work for children with attention-deficit/hyperactivity disorder? *Journal of the American Academy of Child & Adolescent Psychiatry*, 61(4), 478–494. <https://doi.org/10.1016/j.jaac.2021.06.015>
- Faraone, S. V., Banaschewski, T., Coghill, D., Zheng, Y., Biederman, J., Bellgrove, M. A., Newcorn, J. H., Gignac, M., Al Saud, N. M., Manor, I., Rohde, L. A., Yang, L., Cortese, S., Almagor, D., Stein, M. A., Albatti, T. H., Aljouidi, H. F., Alqahtani, M. M. J., Asherson, P., ... Wang, Y. (2021). The World Federation of ADHD International Consensus Statement: 208 evidence-based conclusions about the disorder. *Neuroscience & Biobehavioral Reviews*, 128, 789–818. <https://doi.org/10.1016/j.neubiorev.2021.04.022>

- Gaastra, G. F., Groen, Y., Tucha, L., & Tucha, O. (2016). The effects of classroom interventions on off-task and disruptive classroom behavior in children with symptoms of attention-deficit/hyperactivity disorder: A meta-analytic review. *PLOS ONE*, 11(2), e0148841. <https://doi.org/10.1371/journal.pone.0148841>
- Hornstra, R., Groenman, A. P., van der Oord, S., Luman, M., Dekkers, T. J., van der Veen-Mulders, L., Hoekstra, P. J., & van den Hoofdakker, B. J. (2023). Review: Which components of behavioral parent and teacher training work for children with ADHD? A metaregression analysis on child behavioral outcomes. *Child and Adolescent Mental Health*, 28(2), 258–268. <https://doi.org/10.1111/camh.12561>
- Irianjani, N. D., & Rohmah, F. A. (2020). Applying token economy to improve attention of child with ADHD. *Journal of Early Childhood Care and Education*, 3(1), 1–13. <https://doi.org/10.26555/jecce.v3i1.1926>
- Iznardo, M., Rogers, M. A., Volpe, R. J., Labelle, P. R., & Robaey, P. (2021). The effectiveness of daily behavior report cards for children with ADHD: A meta-analysis. *Journal of Attention Disorders*, 25(12), 1626–1636. <https://doi.org/10.1177/1087054717734646>
- Karina, A. D., Ni'matuzahroh, & Karmiyati, D. (2024). Penerapan token economy untuk meningkatkan on-task behavior pada siswa ADHD. *Psikobuletin: Buletin Ilmiah Psikologi*, 6(2). <https://doi.org/10.24014/pib.v6i2.29931>
- Kates, M. S. (2025). School-based interventions for attention-deficit/hyperactivity disorder (ADHD) in middle schools: A review of the literature. *Education Sciences*, 15(9), 1225. <https://doi.org/10.3390/educsci15091225>
- Kim, J. Y., Fienup, D. M., Oh, A. E., & Wang, Y. (2022). Systematic review and meta-analysis of token economy practices in K–5 educational settings, 2000 to 2019. *Behavior Modification*, 46(6), 1460–1487. <https://doi.org/10.1177/01454455211058077>
- Kim, S.-C. (2025). Verification of the effectiveness of a token economy method through digital intervention content for children with attention-deficit/hyperactivity disorder. *Bioengineering*, 12(10), 1035. <https://doi.org/10.3390/bioengineering12101035>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- Sibley, M. H., Bruton, A. M., Zhao, X., Johnstone, J. M., Mitchell, J., Hatsu, I., Arnold, L. E., Basu, H. H., Levy, L., Vyas, P., Macphee, F., Schoenfelder Gonzalez, E., Kelley, M., Jusko, M. L., Bolden, C. R., Zulauf-McCurdy, C., Manzano, M., Torres, G., & colleagues. (2023). Non-pharmacological interventions for attention-deficit hyperactivity disorder in children and adolescents. *The Lancet Child & Adolescent Health*, 7(6), 415–428. [https://doi.org/10.1016/S2352-4642\(22\)00381-9](https://doi.org/10.1016/S2352-4642(22)00381-9)
- Song, P., Zha, M., Yang, Q., Zhang, Y., Li, X., & Rudan, I. (2023). The global prevalence of attention deficit hyperactivity disorder in children and adolescents: An umbrella review of meta-analyses. *Journal of Affective Disorders*, 327, 53–62. <https://doi.org/10.1016/j.jad.2023.01.081>
- Staff, A. I., Oosterlaan, J., van der Oord, S., van den Hoofdakker, B. J., & Luman, M. (2023). The relation between classroom setting and ADHD behavior in children with ADHD compared to typically developing peers. *Journal of Attention Disorders*, 27(9), 939–950. <https://doi.org/10.1177/10870547231167522>
- Veenman, B., Luman, M., & Oosterlaan, J. (2018). Efficacy of behavioral classroom programs in primary school: A meta-analysis focusing on randomized controlled trials. *PLOS ONE*, 13(10), e0201779. <https://doi.org/10.1371/journal.pone.0201779>

- Widihapsari, I. A. G. K., & Yoenanto, N. H. (2022). Aplikasi teknik shaping dan token ekonomi untuk meningkatkan durasi perilaku on-task pada anak dengan ADHD: The application of shaping technique and token economy to increase on-task behavior in a child with ADHD. *Jurnal Psikologi Teori dan Terapan*, 12(1), 64–80. <https://doi.org/10.26740/jptt.v12n1.p64-80>
- Wolraich, M. L., Hagan, J. F., Allan, C., Chan, E., Davison, D., Earls, M., Evans, S. W., Flinn, S. K., Froehlich, T., Frost, J., Holbrook, J. R., Lehmann, C. U., Lessin, H. R., Okechukwu, K., Pierce, K. L., Winner, J. D., & Zurchellen, W. (2019). Clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Pediatrics*, 144(4), e20192528. <https://doi.org/10.1542/peds.2019-2528>
- Yegencik, B., Bell, B. T., & Deniz, E. (2025). School-based randomized controlled trials for ADHD and accompanying impairments: A systematic review and meta-analysis. *Frontiers in Psychology*, 16, 1611145. <https://doi.org/10.3389/fpsyg.2025.1611145>