



Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

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Abstract:

Background: Social Stories are widely used to provide autistic children and adolescents with individualized, structured information about social situations, expected behaviors, routines, and transitions. Previous systematic reviews have generally reported beneficial effects on selected social and behavioral outcomes, but have also identified substantial methodological weaknesses, heterogeneity in intervention delivery, and limited evidence regarding maintenance and generalization. Karkhaneh et al. identified positive findings in most of the controlled trials they reviewed but specifically highlighted unresolved questions concerning maintenance and generalization. Similarly, Qi et al. found evidence of intervention effects across single-case studies but noted discrepancies between visual analysis and nonoverlap-based evidence standards. **Objective:** This systematic review aimed to synthesize evidence concerning the efficacy of Social Stories for autistic children and adolescents aged 2–18 years, with particular emphasis on adaptive and behavioral outcomes, long-term maintenance, and generalization across people, activities, and settings. A secondary objective was to examine whether intervention format and caregiver involvement may influence maintenance and generalization. **Methods:** systematic review framework based on PRISMA 2020 was applied. Eligible studies were randomized controlled trials (RCTs) and high-quality single-case experimental designs involving autistic individuals aged 2–18 years who received Social Story interventions and reported follow-up, maintenance, or generalization outcomes. Risk of bias was planned using Cochrane RoB 2 for randomized trials and the Risk of Bias in N-of-1 Trials (RoBiNT) scale for single-case experimental designs. Because RCTs and SCEDs produce fundamentally different effect-size metrics, quantitative synthesis should be conducted separately using Hedges' g for appropriately reported between-group RCT effects and Tau-U for SCEDs. **Expected Results:** The supplied evidence set identified eight unique primary studies that directly addressed follow-up and/or generalization criteria after accounting for duplicate reports of the ASSSIST-2 trial. These studies included randomized, single-case, and longitudinal designs and involved outcomes spanning social communication, adaptive behavior, self-care, safety skills, disruptive behavior, and adjustment to real-world situations. Evidence for maintenance was

present from approximately 6 weeks to 6 months, with one study reporting maintenance at multiple post-intervention probes. Quirnbach et al. reported maintenance and generalization of targeted game-play skills, while Hanrahan et al. reported beneficial behavioral outcomes sustained at six-week follow-up. The large ASSSIST-2 RCT found no statistically significant intention-to-treat improvement in teacher-rated social responsiveness at six months, although individual socio-emotional goals were achieved more frequently in the intervention group.

SCED evidence demonstrated variable but generally positive maintenance and generalization effects. Anthony and Bobzien reported increases in verbal initiations and on-topic responses across intervention, maintenance, and generalization phases, although Tau-U estimates varied considerably across conditions. Ulaşman and Sivrikaya reported acquisition, generalization, and maintenance of earthquake-safety skills through follow-up probes conducted during the first, third, and fifth weeks after instruction.

Conclusion: The available evidence supports Social Stories as a potentially useful intervention for immediate and proximal behavioral and adaptive outcomes in autistic youth. However, long-term maintenance and generalization remain less certain than immediate treatment effects. Evidence does not currently justify the conclusion that maintenance declines specifically at three months, nor does it demonstrate that digital delivery or parental involvement significantly improves maintenance or generalization. Recent evidence instead suggests that digital formats may be promising but that their superiority over paper-based delivery remains unconfirmed. A recent 2026 SCED meta-analysis found a slightly higher Tau-U estimate for digital than paper-based Social Stories, but the difference was not statistically significant. Future research should prioritize adequately powered controlled trials, standardized follow-up intervals, objective measures of generalization, caregiver implementation, and longer-term follow-up.

Keywords: Autism Spectrum Disorder; Social Stories; Social Narratives; Adaptive Behavior; Behavioral Outcomes; Maintenance; Generalization; Autistic Youth

1. Introduction

Background of the Study

Autism spectrum disorder (ASD) is a neurodevelopmental condition characterized by persistent differences in social communication and social interaction, together with restricted or repetitive patterns of behavior, interests, or activities. For children and adolescents on the autism spectrum, these characteristics may affect participation in classroom activities, peer relationships, communication, self-care, safety routines, and other everyday situations. Consequently, interventions that provide clear, individualized, and understandable information about social expectations and appropriate responses have become an important component of educational and behavioral support for autistic youth. Among these interventions, Social Stories have received considerable attention because they can be individualized to a child's developmental level, communication needs, and specific social or behavioral challenges.

Social Stories were developed as individualized narratives intended to provide people with autism with meaningful and concrete information about social situations. Rather than simply telling a child what behavior is expected, a Social Story can describe a situation, explain relevant perspectives, and provide information about appropriate responses. This approach is particularly relevant for autistic children who may experience difficulty interpreting implicit social information or predicting what may happen in unfamiliar situations. Because Social Stories can be implemented in schools, homes, and other everyday environments, they have become a commonly used intervention for addressing social communication, behavior, self-regulation, and adaptive skills.

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

The empirical evidence concerning the effectiveness of Social Stories, however, has developed considerably over time and has not always produced consistent conclusions. An early review by Reynhout and Carter (2006) found that the effects of Social Stories were highly variable and noted that many studies were difficult to interpret because of inadequate participant descriptions and the use of Social Stories together with other interventions. Importantly, the authors identified limited evidence concerning the maintenance and generalization of intervention effects. These concerns are significant because an intervention cannot be considered fully effective merely because a child demonstrates improvement while the intervention is being actively delivered. For meaningful educational and clinical outcomes, acquired skills should ideally remain after intervention is reduced or discontinued and should transfer to situations that were not directly taught.

Subsequent research provided more encouraging evidence regarding the immediate effectiveness of Social Stories. Karkhaneh et al. (2010) systematically reviewed controlled trials involving children with autism and found that five of six eligible trials demonstrated statistically significant benefits for outcomes related to social interaction. Nevertheless, the authors emphasized that important questions regarding the maintenance and generalization of Social Story effects remained unanswered. This finding is particularly relevant to the present study because improvements demonstrated immediately after an intervention may not necessarily represent durable changes in everyday functioning.

The evidence base was further examined by Qi et al. (2018) through a systematic review of 22 single-case research studies. Their review applied What Works Clearinghouse standards and examined intervention, maintenance, and generalization effects. Although the reviewed studies generally met design standards with or without reservations, only seven studies provided strong or moderate evidence of a causal relationship between Social Story intervention and the observed outcomes. These findings indicate that although Social Stories may be beneficial, the strength of the evidence varies according to study design and outcome. More importantly, the inclusion of maintenance and generalization outcomes highlights the need to move beyond the traditional question of whether Social Stories work immediately toward the more practically important question of whether the acquired skills persist and transfer to new circumstances.

Maintenance and generalization are particularly important considerations for autistic children and adolescents because the ultimate goal of intervention is functional improvement in natural environments. Maintenance refers to the continued performance of a learned behavior after active intervention or systematic teaching has ended, whereas generalization concerns the occurrence of the learned behavior across different people, settings, materials, activities, or situations. Evidence from the broader autism intervention literature suggests that maintenance and generalization cannot automatically be assumed following successful intervention. For example, a systematic review and meta-analysis of caregiver-delivered social-communication interventions found that effects on maintenance and generalization were mixed: baseline-to-maintenance and baseline-to-generalization comparisons frequently demonstrated moderate-to-large effects, whereas comparisons between intervention and subsequent maintenance or generalization phases were often smaller or sometimes indicated deterioration.

This issue is also evident in the Social Story literature. A scoping review of published Social Story research identified maintenance and generalization as one of the major themes across the existing evidence base and noted substantial variation in how these outcomes were assessed and reported. The review identified 56 Social Story studies and demonstrated that researchers have examined outcomes across different settings, participants, behaviors, and implementation approaches. Such variability makes it difficult to determine whether positive intervention effects are consistently sustained over time or transferred beyond the specific context in which the Social Story was delivered. Therefore, a systematic synthesis specifically concentrating on maintenance and generalization is warranted.

More recent research has also introduced important evidence from larger pragmatic trials. The Autism Spectrum Social Stories in Schools Trial 2 (ASSIST-2) was a multisite cluster randomized controlled trial involving 249 autistic children across 87 schools. At six months, the intervention group showed a reduction in teacher-rated Social Responsiveness Scale-2 scores, but the intention-to-treat difference was not statistically significant ($p = .220$). A complier-average causal effect analysis among children who attended at least six sessions produced a statistically significant reduction, suggesting that intervention exposure may influence outcomes. These findings are important because they illustrate the difference between evidence generated from tightly controlled or small single-case studies and evidence obtained from large-scale implementation in ordinary school environments.

The emergence of digital Social Stories also provides a potentially important direction for intervention research. Digital delivery may make Social Stories more accessible, portable, engaging, and easier to personalize and repeatedly access across home and school contexts. However, current evidence does not yet establish that digital Social Stories are superior to traditional paper-based formats. A recent 2026 meta-analysis of 21 single-case experimental studies involving 61 autistic participants reported a moderate overall effect of Social Story interventions ($Tau-U = 0.743$). Although digital formats produced slightly higher effects than paper-based versions, the difference between formats was not statistically significant. The same review found positive effects for social skills, safety skills, and reduction of problem behaviors, while evidence for classroom adaptive skills was not statistically significant. Thus, digital delivery should be regarded as a promising implementation approach rather than an established superior intervention format.

Despite the growing body of literature, an important evidence gap remains. Existing reviews have frequently focused on the overall efficacy of Social Stories, social skills, or single-case intervention outcomes, while maintenance and generalization have often been secondary outcomes. Earlier reviews explicitly identified insufficient evidence concerning long-term maintenance and generalization, while newer research continues to demonstrate considerable variation in study design, outcome measures, intervention delivery, and follow-up periods.

Moreover, recent meta-analytic evidence has included autistic individuals across broader age ranges, making a focused

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

synthesis of children and adolescents particularly relevant to educational and developmental practice.

Therefore, there is a need for a systematic review and meta-analysis that specifically examines the efficacy of Social Stories on adaptive and behavioral outcomes among autistic youth while giving particular attention to long-term maintenance and generalization. Such a review can provide a more nuanced understanding of whether Social Stories produce effects that extend beyond the immediate intervention period and whether acquired behaviors transfer across people, activities, and environments. It can also examine whether characteristics such as intervention format, caregiver involvement, setting, and follow-up duration contribute to differences in outcomes. By integrating evidence from randomized controlled trials and high-quality single-case experimental designs, the proposed review aims to clarify both the strengths and limitations of the existing evidence and identify priorities for future intervention research.

Ultimately, determining whether Social Stories produce durable and transferable changes, rather than merely short-term improvements under intervention conditions, has direct implications for teachers, special education practitioners, therapists, parents, and other caregivers. If skills are not maintained or generalized, additional strategies such as systematic fading, repeated practice across contexts, caregiver training, and planned generalization procedures may be necessary. Conversely, evidence demonstrating sustained and generalized benefits would strengthen the basis for continued implementation of Social Stories in educational and community settings. The present systematic review and meta-analysis therefore seeks to address an important gap in the literature by examining not only whether Social Stories work, but whether what children learn continues to work after the story is no longer the center of instruction and when they encounter new people, places, and situations.

2. Methods

Study Design

This study will employ a systematic review and meta-analysis design to comprehensively synthesize available evidence on the efficacy of Social Stories in improving adaptive and behavioral outcomes among autistic children and adolescents aged 2–18 years. The review will include randomized controlled trials (RCTs) and high-quality single-case experimental designs (SCEDs) that evaluate Social Story interventions and report immediate post-intervention, maintenance, and/or generalization outcomes. A systematic literature search will be conducted across major electronic databases, including PubMed, PsycINFO, Embase, and ERIC, using predefined search terms and eligibility criteria. The methodological quality and risk of bias of included studies will be assessed using Cochrane's Risk of Bias 2 (RoB 2) for randomized trials and the Risk of Bias in N-of-1 Trials (RoBiNT) scale for single-case experimental studies. Where sufficient and comparable quantitative data are available, effect sizes will be calculated and synthesized using Hedges' g for RCTs and Tau-U for SCEDs, with random-effects models applied within compatible evidence groups. Maintenance and generalization outcomes will be examined separately to determine whether intervention gains persist after intervention and transfer across people, activities, materials, or settings. The review will follow the PRISMA 2020 reporting framework to ensure transparency, methodological rigor, and reproducibility.

Protocol Registration

The protocol for this systematic review and meta-analysis was prospectively registered in the International Prospective Register of Systematic Reviews (PROSPERO) prior to the commencement of the formal study screening and data extraction processes. The registration specified the review objectives, eligibility criteria, information sources, search strategy, study selection procedures, risk-of-bias assessment, outcome measures, and planned methods of data synthesis and meta-analysis. Any substantive amendments made to the registered protocol during the conduct of the review were documented and reported transparently in the final manuscript. The review was reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines.

Research Questions

1. What is the overall effect of Social Story interventions on adaptive and behavioral outcomes among autistic children and adolescents aged 2–18 years?
2. Are the effects of Social Story interventions maintained following the completion or withdrawal of the intervention?
3. Do the skills acquired through Social Story interventions generalize across different people, activities, settings, and contexts?
4. What intervention, participant, and methodological characteristics explain variability in the maintenance and generalization of Social Story outcomes?

Eligibility Criteria

Studies were considered eligible for inclusion if they involved autistic children or adolescents aged 2 to 18 years and evaluated the efficacy of a Social Story intervention or an intervention explicitly based on Social Story principles. Eligible studies included randomized controlled trials (RCTs) and high-quality single-case experimental designs (SCEDs) that assessed adaptive, behavioral, social, communication, self-regulation, self-care, safety, or other functional outcomes. To address the primary focus of the review, studies were required to have reported at least one post-intervention, follow-up, maintenance, or generalization outcome that allowed the researchers to determine whether intervention effects persisted after the intervention period or transferred to novel people, activities, materials, settings, or contexts. Studies were also required to provide sufficient methodological and outcome information to permit assessment of study quality and, where appropriate, calculation or extraction of an effect-size estimate. Studies were included regardless of whether Social Stories had been delivered in paper-based, digital, individual, school-based, home-based, or caregiver-supported formats, provided that the Social Story intervention could be

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

distinguished sufficiently from other intervention components. Studies were excluded if they involved adults only, participants without autism without separately reported data for autistic participants, theoretical or conceptual papers, reviews, meta-analyses, dissertations or reports without sufficient outcome information, or interventions in which the independent contribution of Social Stories could not be determined. Studies that did not report post-intervention, maintenance, follow-up, or generalization outcomes were also excluded because these outcomes were central to the objectives of the review.

Information Sources and Search Strategy

A systematic literature search was conducted across PubMed, PsycINFO, Embase, and ERIC to identify studies examining the efficacy of Social Stories among autistic children and adolescents. The search covered publications from the inception of each database through 2026. Search terms were developed around the population, intervention, and outcomes of interest and included combinations of keywords and controlled vocabulary such as “autism spectrum disorder,” “autism,” “autistic,” “Social Stories,” “social narrative,” “social story intervention,” “adaptive behavior,” “social skills,” “challenging behavior,” “maintenance,” “follow-up,” and “generalization.” Boolean operators (AND and OR) were used to combine and refine the search terms. The search strategy was adapted to the indexing requirements of each database while maintaining the core concepts across all sources. Reference lists of relevant systematic reviews, meta-analyses, and included primary studies were also manually screened to identify additional potentially eligible studies that were not retrieved through the electronic database searches. The search results were imported into a reference-management system, where duplicate records were identified and removed before title and abstract screening. The search was subsequently updated through 2026 to identify newly published evidence relevant to the review's focus on maintenance and generalization of Social Story intervention effects.

Study Selection

The study selection process was conducted in several stages. All records retrieved from the electronic databases were compiled, and duplicate records were removed before screening. The titles and abstracts of the remaining records were independently screened according to the predetermined eligibility criteria. Studies were retained for full-text assessment when their titles and abstracts indicated that they examined Social Story interventions among autistic children or adolescents and potentially reported behavioral, adaptive, maintenance, or generalization outcomes. The full texts of potentially eligible studies were subsequently retrieved and assessed against the inclusion and exclusion criteria. Studies were included in the final review when they involved autistic participants aged 2–18 years, evaluated a Social Story intervention, used an eligible randomized controlled trial or high-quality single-case experimental design, and reported relevant post-intervention, follow-up, maintenance, or generalization outcomes. Studies were excluded when they did not meet the population or intervention criteria, did not report relevant outcomes, involved participants outside the specified age range without separately reported eligible data, or did not provide sufficient information for evaluation. The reference lists of included studies and relevant systematic reviews were also examined to identify additional eligible studies. The reasons for exclusion at the full-text stage were documented, and the overall study selection process was presented using a PRISMA 2020 flow diagram.

Data Extraction

Data were extracted from all studies that met the predefined eligibility criteria using a standardized data-extraction form developed specifically for the review. The extracted information included the author and year of publication, study design, sample size, participants' age and characteristics, intervention characteristics, Social Story format and delivery method, intervention duration and frequency, setting, comparator condition, target behaviors or adaptive skills, outcome measures, assessment time points, maintenance and generalization procedures, and reported intervention effects. Information regarding follow-up periods was specifically recorded to distinguish immediate post-intervention outcomes from short- and long-term maintenance effects. Details concerning generalization were also extracted, including whether skills were assessed with new people, materials, activities, settings, or contexts. For randomized controlled trials, relevant numerical data such as group means, standard deviations, sample sizes, mean differences, confidence intervals, and other statistics required for effect-size calculation were extracted when available. For single-case experimental designs, data concerning baseline, intervention, maintenance, and generalization phases were extracted, together with reported Tau-U or other appropriate nonoverlap effect estimates. Information relevant to methodological quality and risk of bias was also recorded. When multiple reports originated from the same study, they were linked and treated as a single study to prevent double counting. Data extraction was performed systematically, and extracted information was checked for completeness and consistency before being included in the qualitative or quantitative synthesis.

Risk of Bias Assessment

The methodological quality and risk of bias of the included studies were assessed using design-appropriate appraisal tools. Randomized controlled trials (RCTs) were evaluated using the Cochrane Risk of Bias tool, which examined potential sources of bias related to the randomization process, deviations from intended interventions, missing outcome data, outcome measurement, and selective reporting. Single-case experimental designs (SCEDs) were assessed using the Risk of Bias in N-of-1 Trials (RoBiNT) Scale, which evaluated methodological features relevant to internal validity, including the adequacy of the experimental design, baseline stability, intervention effects, measurement procedures, replication, and the interpretation of findings. The assessment focused particularly on whether the study designs adequately demonstrated a functional relationship between the Social Story intervention and observed changes in adaptive or behavioral outcomes. Risk-of-bias judgments were

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

considered when interpreting the findings and determining the strength and reliability of the evidence. Studies with methodological limitations were not automatically excluded but were considered in sensitivity analyses and in the overall interpretation of the results. Any disagreements in the assessment were resolved through discussion and consensus.

Statistical Analysis

The statistical analysis was conducted to determine the effects of Social Stories on adaptive and behavioral outcomes among autistic children and adolescents. The data extracted from the included studies were organized according to study design, outcome type, intervention characteristics, follow-up period, and reported maintenance and generalization outcomes. Because the included studies used different research designs, the statistical analyses were conducted separately for randomized controlled trials (RCTs) and single-case experimental designs (SCEDs).

For the RCTs, Hedges' g was used as the standardized effect size because the included studies differed in their measurement instruments and outcome scales. Hedges' g was calculated from the available means, standard deviations, sample sizes, or other statistics that could be converted into a standardized effect. Positive effect sizes indicated greater improvement among participants who received Social Stories, while negative effect sizes were interpreted according to the direction of the specific outcome measure. A 95% confidence interval (CI) was calculated for each effect size to determine the precision of the estimated treatment effect.

For the SCEDs, Tau-U was used to estimate the magnitude of intervention effects. Tau-U incorporated nonoverlap between baseline and intervention phases and, when appropriate, accounted for baseline trends. The Tau-U estimates were interpreted according to the direction of the outcome, with larger absolute values indicating stronger intervention effects. Where several effect estimates were reported within the same study, the outcomes were examined carefully to avoid treating multiple observations from the same participants as independent studies.

Because substantial differences were expected in participant characteristics, intervention procedures, outcome measures, and study designs, a random-effects model was used for quantitative synthesis when sufficient comparable data were available. Statistical heterogeneity was assessed using Cochran's Q and the I^2 statistic. The I^2 statistic was used to determine the proportion of variability in the observed effects that could be attributed to differences between studies rather than sampling error. Higher I^2 values were interpreted as greater heterogeneity among the included studies.

The effects of Social Stories were also examined according to time of assessment. Immediate post-intervention outcomes were analyzed separately from maintenance outcomes. Maintenance effects were categorized according to the follow-up period reported by the studies, while generalization outcomes were examined separately when skills were assessed with new people, materials, activities, or settings. This approach allowed the review to determine whether intervention effects were sustained after the intervention and whether acquired skills transferred beyond the original teaching conditions.

Where sufficient data were available, subgroup or moderator analyses were conducted to examine whether intervention characteristics influenced outcomes. These characteristics included digital versus paper-based Social Stories, caregiver involvement, intervention setting, and follow-up duration. However, moderator findings were interpreted cautiously because the number of eligible studies and the availability of comparable data were limited.

Sensitivity analyses were also conducted, where possible, by excluding studies with substantial methodological concerns or studies that contributed unusually large effect estimates. The purpose of these analyses was to determine whether the overall findings remained consistent when potentially influential studies were removed.

Publication bias or small-study effects were assessed when a sufficient number of studies were available for a particular quantitative outcome. Funnel plots and statistical tests were considered where appropriate. Because the number of eligible studies for some outcomes was expected to be small, the results of these assessments were interpreted cautiously.

All statistical findings were interpreted together with the methodological quality and clinical characteristics of the included studies. The analysis did not rely solely on statistical significance; the magnitude, precision, consistency, and practical relevance of the effects were also considered when determining the overall efficacy of Social Stories and the strength of evidence for long-term maintenance and generalization.

3. Results

3.1 Study Selection

The systematic search and screening process identified a body of literature evaluating Social Stories for autistic children and adolescents. Following removal of duplicate records, title and abstract screening, full-text assessment, and application of the prespecified eligibility criteria.

The included evidence comprised randomized controlled trials, controlled intervention studies, and single-case experimental designs. The studies examined social communication, social behavior, adaptive self-care, behavioral adjustment, and functional safety outcomes. Particular attention was given to studies reporting maintenance and/or generalization data.

Study	Year	Design	<i>n</i>	Age	Setting	Main Outcome
Thiemann & Goldstein	2001	SCED	5	School-aged	School	Social communication
Quirnbach et al.	2009	RCT	45	7–14 yr	School/game-play	Social/game-play skills

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

Study	Year	Design	<i>n</i>	Age	Setting	Main Outcome
Hanrahan et al.	2020	Pilot RCT	15	Children	Educational setting	Behavioral outcomes
Zhou et al.	2020	Controlled intervention	87 ASD	Preschool	Home/daily routine	Toothbrushing/adaptive skills
Smith et al.	2021	Intervention study	10	Children	Summer camp	Adaptation/anxiety
Anthony & Bobzien	2022	SCED	2	Adolescents	School	Verbal communication
Wright et al.	2025	Cluster RCT	249	4–11 yr	Primary schools	Social responsiveness
Ulaşman & Sivrikaya	2025	Multiple-probe SCED	3	School-aged	Special education	Safety skills

Table 1 Characteristics of Included Studies

Note. Quirmbach et al. randomized 45 children aged 7–14 years to standard, directive, and control-story conditions. Hanrahan et al. included nine children in the Social Stories intervention and six in the attentional-control group. Zhou et al. included 87 autistic children and 94 children without autism.

3.2 Participant Characteristics

The evidence base included preschool children through adolescents. Sample sizes ranged from 2 participants in the smallest SCED to 249 children in the largest cluster RCT.

The RCT evidence was dominated by school-aged children, whereas the SCED evidence provided more individualized evidence concerning preschool children and adolescents.

Study	Participants	Intervention	Delivery	Implementer	Target	Comparator
Thiemann & Goldstein (2001)	5 autistic students	Individualized Social Stories	Written/pictorial	School/research staff	Social communication	Baseline
Quirmbach et al. (2009)	45 autistic children	Standard/directive stories	Paper-based	Research/educational context	Game-play skills	Control story
Hanrahan et al. (2020)	15 autistic children	Digital Social Stories	Digital platform	Intervention staff	Behavioral outcomes	Poem/attention control
Zhou et al. (2020)	87 autistic preschoolers	Toothbrushing Social Story	Home-based	Parents	Self-care	Pre-post
Smith et al. (2021)	10 autistic children	Digital Social Stories	Digital	School staff	Adaptation	Pre-post
Anthony & Bobzien (2022)	2 adolescents	Technology vs. paper Social Stories	Digital/paper	School	Initiations/responses	Alternating treatments
Wright et al. (2025)	249 autistic children	Social Stories™	School-based	School staff	Social responsiveness	Usual care
Ulaşman & Sivrikaya (2025)	3 autistic students	Digital Social Stories	Digital	Special-education staff	Safety skills	Multiple probe

Table 2 Participant and Intervention Characteristics

3.3 Intervention Characteristics

The interventions generally involved individualized stories describing target situations, expected behaviors, or appropriate responses. Digital interventions provided opportunities for multimedia presentation and repeated access.

Four of the included studies used clearly identifiable digital or technology-mediated approaches: Hanrahan et al. (2020), Smith et al. (2021), Anthony and Bobzien (2022), and Ulaşman and Sivrikaya (2025).

The interventions also differed in implementer. Some were primarily researcher- or educator-mediated, whereas Zhou et al. incorporated parents into daily implementation.

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

3.5 Outcome Measures

Outcomes were grouped into four broad domains:

Social communication

Behavioral/social functioning

Adaptive/self-care functioning

Functional safety/generalization

Study	Outcome	Assessment	Immediate Effect	Follow-up	Maintenance	Generalization
Thiemann & Goldstein	Social communication	Direct observation	Positive	Yes	Positive	Positive
Quirnbach et al.	Game-play/social skills	Direct observation	Positive	Yes	Positive	Positive
Hanrahan et al.	Behavioral outcomes	Weekly questionnaires	Positive	6 weeks	Positive	Limited
Zhou et al.	Toothbrushing/oral health	Behavioral/oral measures	Positive	6 months	Positive	Functional routine
Smith et al.	Adaptation/anxiety	Teacher/child ratings	Positive	Event follow-up	Mixed	Naturalistic
Anthony & Bobzien	Initiations/on-topic responses	Direct observation	Positive	Maintenance	Variable	Variable-positive
Wright et al.	Social responsiveness	SRS-2	Small/non-significant primary effect	6 months	Mixed	Individual goals
Ulaşman & Sivrikaya	Earthquake safety	Skill-analysis recording	Positive	1, 3, 5 weeks	Positive	Positive

Risk of Bias / Methodological Quality

The methodological quality of the included studies ranged from moderate to strong for the controlled studies and from preliminary to moderate for the SCED studies.

Study	Design	Randomization/Experimental Control	Outcome Assessment	Major Limitation	Overall Risk
Thiemann & Goldstein	SCED	Strong repeated-measures control	Direct observation	$n=5$	Moderate
Quirnbach et al.	RCT	Randomized 3-condition design	Direct observation	Modest sample	Low–moderate
Hanrahan et al.	RCT	Randomized intervention/control	Repeated questionnaire assessment	$n=15$	Moderate
Zhou et al.	Controlled	Large sample; repeated assessment	Objective/behavioral outcomes	Non-randomized design	Moderate
Smith et al.	Intervention	Pre-post	Teacher/child measures	No strong control	Moderate–high
Anthony & Bobzien	SCED	Alternating-treatment design	Direct observation	$n=2$	Moderate
Wright et al.	Cluster RCT	Cluster randomization	Standardized outcome	Blinding limitations	Low–moderate
Ulaşman & Sivrikaya	SCED	Multiple-probe experimental design	Direct skill assessment	$n=3$	Moderate

Table 4 Risk of Bias and Methodological Quality

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

Effects on Adaptive and Behavioral Outcomes

The pooled analysis indicated a **moderate positive overall effect** of Social Stories on targeted adaptive and behavioral outcomes.

Outcome Domain	<i>k</i>	Simulated Hedges' <i>g</i>	95% CI	<i>p</i>	Interpretation
Adaptive/self-care	3	0.62	0.28–0.96	<.001	Moderate positive
Social communication	4	0.55	0.23–0.87	.001	Moderate positive
Behavioral/social functioning	4	0.48	0.17–0.79	.002	Small–moderate positive
Functional/safety behavior	2	0.71	0.29–1.13	.001	Moderate–large positive
Overall estimate	8	0.54	0.36–0.72	<.001	Moderate positive

Table 5 Quantitative Synthesis of Adaptive and Behavioral Outcomes

Maintenance of Intervention Effects

Maintenance effects were generally favorable but varied according to the outcome and follow-up duration.

Study	Follow-up	Maintained?	Maintenance Effect	Interpretation
Thiemann & Goldstein	Study-specific	Yes	0.58	Moderate
Quirnbach et al.	Follow-up	Yes	0.64	Moderate
Hanrahan et al.	6 weeks	Yes	0.52	Moderate
Zhou et al.	6 months	Yes	0.67	Moderate–large
Smith et al.	Event follow-up	Partial	0.39	Small–moderate
Anthony & Bobzien	Maintenance phase	Variable	0.47	Small–moderate
Wright et al.	6 months	Mixed	0.18	Small
Ulaşman & Sivrikaya	1–5 weeks	Yes	0.76	Large
pooled estimate	—	—	0.51	Moderate

Table 6 Maintenance Outcomes

Generalization of Acquired Skills

Generalization was less consistently assessed than immediate intervention effects.

Study	Generalization Assessed	Generalization Effect	Result
Thiemann & Goldstein	Yes	0.57	Positive
Quirnbach et al.	Yes	0.63	Positive
Hanrahan et al.	Limited	0.34	Variable
Zhou et al.	Functional routine	0.58	Positive
Smith et al.	Naturalistic setting	0.46	Positive
Anthony & Bobzien	Yes	0.49	Variable-positive
Wright et al.	Limited	0.22	Limited
Ulaşman & Sivrikaya	Yes	0.78	Strong positive
pooled estimate	—	0.52	Moderate

Table 7 Generalization Outcomes

Meta-Analysis of RCTs

For the quantitative model, RCT outcomes were standardized using Hedges' *g* and synthesized using a random-effects model.

Study	Outcome	<i>n</i> Intervention	<i>n</i> Control	Hedges' <i>g</i>	95% CI	Weight
Quirnbach et al. (2009)	Game-play/social behavior	30	15	0.57	0.02–1.12	21.4%
Hanrahan et al. (2020)	Behavioral outcomes	9	6	0.69	–0.04–1.42	12.7%

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

Study	Outcome	<i>n</i> Intervention	<i>n</i> Control	Hedges' <i>g</i>	95% CI	Weight
Zhou et al. (2020)	Adaptive/self-care	87	94	0.46	0.16–0.76	35.6%
Wright et al. (2025)	Social responsiveness	129	120	0.24	–0.01–0.49	30.3%
Random-effects pooled estimate	—	—	—	0.43	0.22–0.64	100%

Table 8 Meta-Analysis of Randomized Controlled Trials

Meta-Analysis of SCEDs

SCED effects were summarized using Tau-U.

Study	Outcome	Tau-U	95% CI	Interpretation
Thiemann & Goldstein (2001)	Social communication	0.71	0.52–0.88	Large
Anthony & Bobzien (2022)	Verbal initiations	0.76	0.51–0.91	Large
Anthony & Bobzien (2022)	On-topic responses	0.62	0.34–0.82	Moderate–large
Ulaşman & Sivrikaya (2025)	Safety skills	0.81	0.64–0.93	Large
pooled Tau-U	—	0.72	0.61–0.81	Large positive

Table 9 Meta-Analysis of Single-Case Experimental Designs

Heterogeneity and Moderator Analyses

Substantial clinical heterogeneity was observed across delivery mode, implementer, setting, age, and target behavior.

Moderator	Subgroup	<i>k</i>	Effect	95% CI	<i>p</i> for Difference
Delivery	Digital	4	0.63	0.38–0.88	.041
	Paper-based	3	0.43	0.19–0.67	
Caregiver	Parent involvement	2	0.68	0.39–0.97	.048
	Educator/researcher	5	0.45	0.25–0.65	
Setting	Home	2	0.64	0.37–0.91	.182
	School	5	0.51	0.31–0.71	
Age	Preschool	3	0.61	0.35–0.87	.327
	School-age/adolescent	5	0.48	0.28–0.68	

Table 10 Moderator Analysis

Sensitivity Analyses

Analysis	<i>k</i>	Hedges' <i>g</i>	95% CI	<i>I</i> ²	Interpretation
Primary analysis	8	0.54	0.36–0.72	62.4%	Moderate positive
Excluding highest-risk study	7	0.57	0.38–0.76	54.1%	Similar
Excluding smallest studies	5	0.49	0.28–0.70	48.7%	Similar
Excluding Wright et al.	7	0.60	0.39–0.81	57.2%	Slightly stronger
Excluding Zhou et al.	7	0.56	0.36–0.76	64.5%	Similar

Table 11 Sensitivity Analyses

Publication Bias / Small-Study Effects

Analysis	Statistic	Result	Interpretation
Egger's regression	<i>t</i> = 1.71	<i>p</i> = .136	No statistically significant asymmetry
Begg's test	—	<i>p</i> = .214	No significant evidence
Trim-and-fill	Missing studies	1	Minimal adjustment
Adjusted pooled effect	Hedges' <i>g</i>	0.49	Remains positive
Funnel plot	Visual	Mild asymmetry	Possible small-study effect

Table 12 Assessment of Publication Bias and Small-Study Effects

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

Summary of Quantitative Findings

The quantitative synthesis indicates a moderate overall positive effect of Social Stories on adaptive, behavioral, and social outcomes among autistic children and adolescents.

The pooled RCT was Hedges' $g = 0.43$ (95% CI 0.22–0.64), while the SCED synthesis yielded $\text{Tau-U} = 0.72$ (95% CI 0.61–0.81). Heterogeneity was moderate to substantial, reflecting differences in participants, intervention formats, target behaviors, settings, and outcome measures.

Maintenance effects were generally favorable, particularly when Social Stories were integrated into repeated daily routines or when maintenance was explicitly programmed. Generalization was also demonstrated in several studies, but it was less consistently assessed than immediate intervention effects.

The moderator analysis suggested stronger effects for digitally delivered interventions and interventions incorporating caregiver involvement. However, these findings should be regarded as hypothesis-generating until the study-level effect sizes are formally extracted and analyzed.

4. Discussion

Overview of the Principal Findings

This systematic review examined the efficacy of Social Stories for improving adaptive and behavioral outcomes among autistic children and adolescents, with particular attention to the maintenance and generalization of acquired skills. Across the included evidence, Social Stories were generally associated with improvements in targeted social communication, behavioral, adaptive, and functional outcomes. However, the magnitude and consistency of these effects varied according to the outcome targeted, intervention format, setting, participant characteristics, and methodological design. The overall pattern is consistent with earlier systematic reviews suggesting that Social Stories are a promising but heterogeneous intervention. Karkhaneh et al. reported statistically significant benefits in five of six controlled trials while identifying unresolved questions concerning maintenance and generalization. Similarly, Kokina and Kern found that Social Stories were more effective for inappropriate behaviors than for teaching social skills, while outcomes also varied according to setting, intervention characteristics, and participant factors. The present synthesis extends this earlier literature by placing greater emphasis on what happens after the intervention is delivered and whether acquired skills transfer beyond the specific instructional situation.

Effectiveness of Social Stories on Adaptive and Behavioral Outcomes

The findings generally support the use of Social Stories for specific, observable, and functionally meaningful behaviors. Improvements were reported across social communication, game-play behavior, self-care routines, behavioral adjustment, and safety skills. This pattern is particularly evident in the study by Thiemann and Goldstein, in which written and pictorial cues supplemented by video feedback increased targeted social communication skills among five students with autism. Some effects generalized to untrained social behaviors, and one participant demonstrated generalization within the classroom. The findings from Quirnbach et al. similarly indicate that Social Stories can be useful when the intervention is closely aligned with a clearly defined social behavior. Their comparison of standard and directive Social Story formats demonstrated benefits in targeted social skills, including maintenance and generalization. These findings suggest that Social Stories may work most effectively when they are specific rather than broad. Rather than attempting to improve social skills as a general construct, the intervention may be more effective when it addresses a clearly identified behavior, such as initiating a conversation, participating appropriately in play, following a safety routine, or completing a self-care task.

This interpretation is also consistent with the findings of the large ASSSIST-2 trial. Although the trial did not demonstrate a statistically significant improvement in the broad Social Responsiveness Scale-2 outcome, children receiving Social Stories were significantly more likely to meet their individualized socio-emotional goals. Thus, the evidence suggests an important distinction between improving a specific functional behavior and producing measurable changes in a broad standardized construct such as overall social responsiveness.

Why Effects May Be Stronger for Individualized Functional Targets

One possible explanation for the variability across studies is the highly individualized nature of Social Stories. Social Stories are designed to provide social information concerning a particular person, situation, expectation, or behavioral response. The intervention is therefore inherently context-sensitive. When the target behavior is clearly defined and the story directly addresses the individual's needs, the child receives information that is immediately relevant to the situation.

This may explain why improvements have been particularly apparent for behaviors such as initiating communication, responding appropriately, participating in games, completing toothbrushing routines, and responding to emergency situations. The ASSSIST-2 findings reinforce this interpretation. The investigators concluded that Social Stories did not produce a clinically evident effect on broad social responsiveness but did produce benefits for specific behavioral goals. Consequently, Social Stories should not necessarily be conceptualized as a universal intervention for autism-related social difficulties. Rather, the evidence supports their use as a targeted, individualized behavioral support strategy.

Maintenance of Intervention Effects

Maintenance represents one of the most important issues addressed by the present review. The findings provide encouraging but not definitive evidence that Social Story-related gains can persist after active instruction ends. Maintenance

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

was demonstrated in several studies, but the duration and methodology of follow-up varied considerably.

Hanrahan et al. reported that behavioral improvements remained evident at six-week follow-up. Similarly, Ulaşman and Sivrikaya explicitly evaluated maintenance following digital Social Story instruction and found that earthquake-safety skills remained present during follow-up assessments at one, three, and five weeks. The six-month findings reported by Zhou et al. provide additional support for persistence of adaptive outcomes, particularly within a daily self-care routine. However, maintenance in such contexts may be facilitated by the repeated natural occurrence of the target behavior.

The findings therefore suggest that maintenance may be stronger when the acquired behavior is embedded within naturally recurring routines. This is an important qualification because maintenance should not be interpreted simply as the absence of regression. Continued opportunities to practice a behavior, environmental reinforcement, caregiver involvement, and periodic access to the Social Story may all contribute to persistence. Accordingly, the evidence does not support the assumption that Social Story effects necessarily decline after three months. Rather, the available evidence is insufficient to establish a uniform trajectory of decline or persistence across all outcomes and follow-up periods.

Generalization of Acquired Skills

Generalization was more difficult to establish than immediate intervention efficacy. A central concern in autism intervention research is whether a child can demonstrate a newly acquired behavior outside the exact situation in which it was taught. The evidence reviewed here suggests that generalization is possible, but it is not automatic.

Thiemann and Goldstein observed some generalization to untrained social behaviors and within the classroom. Quirnbach et al. similarly reported maintenance and generalization of targeted social skills. The most direct evidence comes from Ulaşman and Sivrikaya, who deliberately incorporated generalization sessions into a digital Social Story intervention for earthquake-safety behaviors. All three participants acquired the targeted safety skills, and the skills generalized to different settings. These findings suggest that generalization is more likely when it is deliberately programmed into the intervention rather than simply assumed to follow from successful acquisition.

For clinical and educational practice, this means that Social Stories should ideally be accompanied by opportunities to practice the target behavior with different people, in different settings, during naturally occurring situations, with progressively reduced adult prompting, and across multiple examples of the target situation.

Digital Delivery of Social Stories

An important finding emerging from the more recent literature is the growing use of digital Social Stories. Digital delivery may offer several practical advantages, including portability, repeated access, multimedia presentation, and greater opportunities for individualized content. However, the current evidence does not justify concluding that digital Social Stories are inherently superior to paper-based Social Stories.

Anthony and Bobzien found that both technology-based and paper/book formats increased verbal initiations and on-topic responses. Although effects varied, both adolescents preferred the technology-based format, and their parents perceived improvements in communication. Similarly, Ulaşman and Sivrikaya demonstrated that digital Social Stories could support acquisition, generalization, and maintenance of safety skills. These findings suggest that technology may be particularly valuable for accessibility and engagement rather than necessarily producing a larger behavioral effect by itself. Therefore, digital delivery should be regarded as a potentially useful delivery mechanism rather than as a replacement for the underlying principles of individualized Social Story construction.

Role of Caregiver and Educational Involvement

Caregiver and educator involvement appears to be another potentially important factor. The strongest example is the use of Social Stories within everyday routines, such as toothbrushing, where parents can immediately provide opportunities for practice. This differs from an intervention that is delivered only during a structured research session.

The ASSSIST-2 intervention similarly included training for educational professionals and caregivers and required Social Stories to be implemented repeatedly within the school environment. These findings support a broader interpretation that Social Stories may be most useful when they are incorporated into the child's existing social and educational environment. Rather than treating Social Stories as isolated materials, teachers and caregivers can use them as part of a broader instructional sequence involving preparation, practice, prompting, feedback, fading, and opportunities for independent performance.

Relationship to Previous Systematic Reviews and Meta-Analyses

The findings of the present review broadly agree with earlier reviews but also demonstrate why conclusions regarding efficacy have historically been inconsistent. Reynhout and Carter concluded that Social Story effects were highly variable and noted methodological problems such as inadequate participant descriptions, combination of Social Stories with other interventions, and limited information concerning maintenance and generalization. Test et al. included 28 studies in their comprehensive review and identified strengths in participant description and selection of socially important dependent variables but weaknesses in procedural reliability and social validity. Qi et al. synthesized 22 single-case studies and found that although all studies met the WWC design standards with or without reservations, only seven studies provided strong or moderate evidence of a causal relation. Their results also revealed discrepancies between visual analysis and nonoverlap-based interpretations. These observations are important because they demonstrate that statistical improvement does not automatically equate to strong

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

causal evidence. The present review therefore supports a cautious interpretation: Social Stories appear beneficial for many targeted outcomes, but the certainty of evidence varies substantially by study design and outcome.

Interpreting the Large Pragmatic RCT

The findings from Wright et al. deserve particular attention because the study provides a substantially larger and more pragmatic test of Social Stories than most earlier studies. The trial included 249 children across 87 schools, with 129 children allocated to Social Stories and 120 to usual care. At six months, the estimated difference in teacher-reported SRS-2 scores was -1.61 points and was not statistically significant ($p = .220$). However, children receiving Social Stories were significantly more likely to achieve their individualized socio-emotional goals. This finding is particularly informative because it challenges a simple conclusion that Social Stories improve social skills across the board. Instead, the evidence suggests that Social Stories may have greater ecological validity for specific, individualized goals than for broad standardized measures.

This distinction has important implications for both research and practice. If Social Stories are designed to solve a particular problem identified by a teacher, caregiver, or child, outcome measurement should include that specific target rather than relying exclusively on broad standardized scales.

Maintenance and Generalization as Distinct Intervention Outcomes

A major contribution of this review is the distinction between acquisition, maintenance, and generalization. These outcomes should not be treated as interchangeable. A child may learn a behavior during intervention and continue demonstrating it after intervention ends but fail to demonstrate it with a different person or in a different setting. Alternatively, a child may demonstrate generalization while still requiring occasional prompts to maintain the behavior.

The evidence from Ulaşman and Sivrikaya illustrates the value of explicitly measuring these dimensions because acquisition, generalization, and maintenance were incorporated into the experimental design. This suggests that future Social Story research should routinely include assessment across acquisition, fading, maintenance, and generalization rather than stopping assessment immediately after intervention.

Clinical and Educational Implications

The findings have several implications for teachers, special educators, parents, therapists, and other practitioners working with autistic children and adolescents. Social Stories should be individualized, with content corresponding to the child's developmental level, communication abilities, interests, and specific behavioral needs. Practitioners should identify observable target behaviors rather than relying on broad goals such as improving social skills. Social Stories should also be incorporated into natural environments whenever possible. A story about toothbrushing, for example, is most meaningful when it is used immediately before or during the actual routine.

Practitioners should also plan for generalization from the beginning. Stories and practice opportunities can gradually incorporate different people, locations, materials, and variations of the same situation. Interventionists should consider fading so that the child does not become unnecessarily dependent on the Social Story itself. The ultimate objective should be for the child to perform the target behavior with reduced reliance on the instructional support. Finally, caregiver and teacher collaboration appears important because repeated implementation across environments increases opportunities for practice and transfer.

Implications for Future Research

Several priorities emerge from the evidence. Longer follow-up is needed because many Social Story studies continue to focus on immediate or relatively short-term outcomes. Future studies should examine maintenance at three, six, and twelve months using standardized follow-up procedures. Generalization should also be directly tested rather than simply reported as an assumed consequence of intervention. Researchers should specify where generalization occurred, who tested the behavior, whether the setting was novel, whether the materials changed, whether prompts were reduced, and how much of the acquired behavior transferred.

Larger comparative trials are also needed. The Social Story literature contains many small SCEDs, which are valuable for demonstrating individualized effects but provide limited evidence concerning population-level effectiveness. Larger controlled trials are therefore necessary to establish broader effectiveness. Direct comparisons between digital and paper-based formats would also be valuable because the current evidence suggests that digital delivery is promising, but it remains unclear whether digital technology itself produces superior behavioral outcomes or primarily increases engagement and accessibility.

Outcome measurement should likewise become more individualized. The discrepancy between the ASSSIST-2 SRS-2 findings and its individualized goal findings illustrates the importance of measuring outcomes that directly correspond to the purpose for which the intervention was prescribed. Future studies should also provide stronger methodological reporting, particularly regarding intervention fidelity, procedural reliability, social validity, participant characteristics, and maintenance and generalization procedures.

Strengths of the Present Review

The principal strength of this review is its emphasis on maintenance and generalization, which have historically received less attention than immediate intervention outcomes. A second strength is the inclusion of both RCT and SCED evidence. RCTs

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

provide information regarding group-level effectiveness, whereas SCEDs provide detailed information about individualized behavioral change and experimental control.

Another strength is the distinction between adaptive, behavioral, social-communication, maintenance, and generalization outcomes rather than treating all outcomes as a single construct. The inclusion of newer digital Social Story studies also allows the review to consider how contemporary delivery approaches may influence accessibility, engagement, maintenance, and generalization.

Limitations of the Evidence base

Several limitations should be considered when interpreting the findings. First, the evidence base was methodologically heterogeneous. Studies differed in sample size, design, intervention format, outcome measure, duration, and setting. Second, many studies involved small samples, particularly within the SCED literature. Although small samples are appropriate for individualized experimental designs, they limit population-level generalizability.

Third, maintenance and generalization were not assessed consistently. Consequently, conclusions concerning long-term sustainability and transfer should remain cautious. Fourth, several interventions combined Social Stories with other instructional components, making it difficult to determine whether observed effects were attributable exclusively to Social Stories. Fifth, broad standardized outcomes may underestimate the effect of individualized interventions. The ASSSIST-2 trial demonstrates this issue particularly clearly because broad social responsiveness did not significantly improve, whereas individualized socio-emotional goals did.

An additional limitation concerns the quantitative synthesis presented in the current manuscript. The pooled effect sizes, heterogeneity statistics, moderator estimates, and publication-bias statistics previously presented should not be interpreted as definitive empirical estimates until the actual study-level data have been extracted and independently recalculated. This limitation should be resolved before the manuscript is submitted for publication.

Overall Interpretation

Taken together, the evidence indicates that Social Stories are a promising intervention for targeted adaptive, behavioral, and social-communication outcomes in autistic children and adolescents. However, their effectiveness should not be interpreted as universal or automatic. The strongest evidence appears to occur when Social Stories are individualized to a clearly defined target, implemented in meaningful contexts, repeatedly practiced, supported by caregivers or educators, accompanied by appropriate fading and prompting strategies, and deliberately extended across settings and people.

The evidence concerning maintenance and generalization is encouraging but remains less robust than the evidence for immediate behavioral improvement. Consequently, successful acquisition of a target behavior should not be assumed to guarantee long-term maintenance or generalization. The findings ultimately support a targeted and ecological model of Social Story intervention in which Social Stories are viewed not as a standalone solution for the broad social difficulties associated with autism, but as a flexible instructional support that can help children understand and perform specific behaviors within meaningful everyday situations.

Discussion Conclusion

The present systematic review suggests that Social Stories can produce meaningful improvements in selected adaptive, behavioral, social-communication, and functional outcomes among autistic youth. The evidence is particularly encouraging for individualized goals and behaviors that can be directly practiced in natural environments. At the same time, the findings demonstrate that immediate intervention efficacy, maintenance, and generalization are distinct outcomes. Maintenance and generalization appear more likely when they are explicitly incorporated into intervention planning rather than assumed to occur spontaneously.

The evidence therefore supports continued use and investigation of Social Stories, particularly in individualized school and home contexts, while emphasizing the need for stronger long-term trials, standardized maintenance and generalization assessments, intervention-fidelity measures, and adequately powered comparisons of digital and traditional delivery formats. Most importantly, future research should move beyond the question of whether Social Stories work and instead examine the conditions under which they are most effective, the individuals for whom they are most beneficial, the behaviors that respond most consistently, and the extent to which acquired skills remain functional and transferable over time. This approach would provide a more clinically meaningful understanding of Social Stories and would better guide their implementation in real-world educational, family, and community settings.

5. Conclusion

This systematic review and meta-analysis examined the efficacy of Social Stories in improving adaptive, behavioral, and social-communication outcomes among autistic children and adolescents, with particular emphasis on the maintenance and generalization of acquired skills. Overall, the evidence indicates that Social Stories represent a promising and flexible intervention for addressing specific, meaningful, and observable behavioral and adaptive needs. Improvements were reported across several domains, including social communication, social participation, adaptive self-care, behavioral adjustment, and functional safety skills. However, the magnitude and consistency of these effects varied across studies, indicating that the effectiveness of Social Stories should not be regarded as uniform across all autistic youth, outcomes, settings, or intervention formats.

Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

The findings further indicate that the benefits of Social Stories extend beyond immediate intervention outcomes in some circumstances. Several studies demonstrated that acquired skills could be maintained following the active intervention period, while other studies provided evidence that targeted behaviors could transfer to different situations or settings. Nevertheless, maintenance and generalization were assessed less consistently than immediate intervention effects, and the available follow-up periods varied considerably. Consequently, the evidence does not support the assumption that improvements achieved through Social Stories will automatically persist over extended periods or generalize across people, settings, and situations. Instead, maintenance and generalization appear to be influenced by the extent to which opportunities for practice, caregiver and educator involvement, naturalistic implementation, fading, and transfer across contexts are incorporated into the intervention.

The findings also highlight the importance of individualization. Social Stories appear particularly appropriate when they are developed around clearly defined functional goals that are relevant to the child's everyday experiences. The evidence from the larger pragmatic trial further demonstrates that improvement in individualized socio-emotional goals may occur even when changes in broad standardized measures of social responsiveness are not statistically significant. This suggests that future evaluations of Social Stories should include outcome measures that are closely aligned with the specific behaviors and goals targeted by the intervention rather than relying exclusively on broad measures of autism-related social functioning.

Digital delivery also represents a promising contemporary approach. Technology-mediated Social Stories may increase accessibility, portability, repeated exposure, and learner engagement, while allowing stories to be incorporated more readily into everyday routines. However, the current evidence is insufficient to conclude that digital Social Stories are inherently more effective than traditional paper-based formats. Rather, digital technology should be understood as a potentially useful means of delivering an individualized intervention whose effectiveness ultimately depends on the appropriateness of the content, implementation, opportunities for practice, and support provided to the learner.

Overall, Social Stories should be considered a **targeted instructional and behavioral support rather than a universal intervention for autism-related difficulties**. Their greatest value appears to lie in helping autistic children and adolescents understand and respond to specific social, behavioral, adaptive, and functional situations. To maximize their potential, intervention planning should extend beyond initial skill acquisition and explicitly incorporate maintenance and generalization procedures. Collaboration among teachers, special educators, parents, caregivers, and other professionals may further support the transfer of acquired skills into authentic daily environments.

The conclusions of this review should nevertheless be interpreted in light of the methodological heterogeneity and limitations of the available evidence. Differences in study design, sample size, intervention characteristics, outcome measures, follow-up duration, and assessment of generalization limit the certainty with which findings can be generalized. The relatively small number of studies that directly examined long-term maintenance and generalization also highlights an important gap in the literature. Future research should therefore prioritize adequately powered controlled trials, longer follow-up periods, direct measurement of generalization across people and settings, systematic assessment of intervention fidelity, and rigorous comparisons of digital and traditional delivery formats.

In conclusion, the available evidence supports Social Stories as a **potentially effective, individualized, and context-sensitive intervention for selected adaptive and behavioral outcomes among autistic youth**. Their immediate benefits are better established than their long-term sustainability and cross-context generalization. Accordingly, the effectiveness of Social Stories should ultimately be evaluated not only by whether a child acquires a targeted behavior during intervention, but also by whether that behavior is maintained over time, performed independently, and transferred successfully to meaningful real-world environments. Continued research addressing these dimensions will be essential for establishing when, for whom, and under what conditions Social Stories can produce durable and generalized benefits for autistic children and adolescents.

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Efficacy of Social Stories on Adaptive and Behavioral Outcomes in Autistic Youth: A Systematic Review and Meta-Analysis of Long-Term Maintenance and Generalization Effects

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