AutiHero: Leveraging Generative AI in Social Narratives to Engage Parents in Story-Driven Behavioral Guidance for Autistic Children

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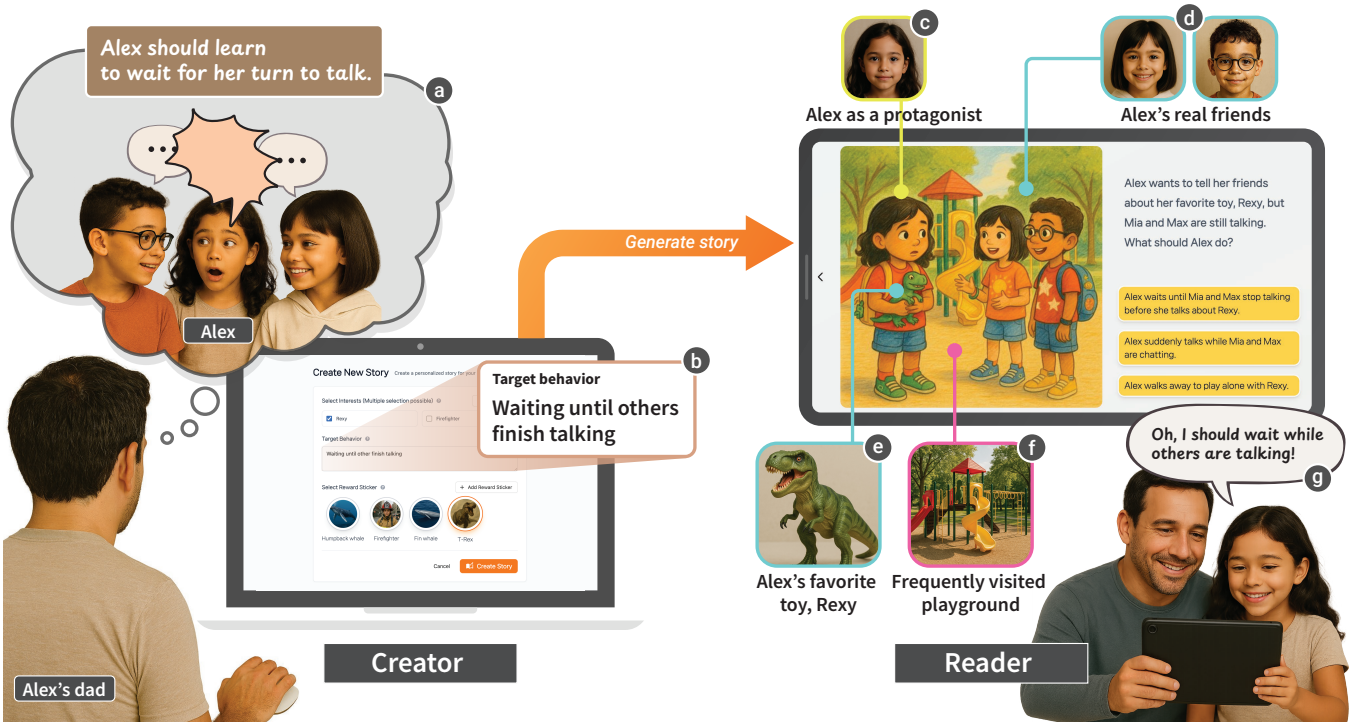

Figure 1: AutiHero helps parents create personalized stories to guide their children's behaviors, leveraging generative AI. Parents begin by identifying a specific target behavior for their child they want to address in daily life (ⓐ)—for example, waiting for her turn to talk—and enter it into the Creator app (ⓑ). The system then generates a story that features the child as the protagonist (ⓒ), incorporates their peers as characters (ⓓ), and situates the narrative within familiar contexts (ⓔ and ⓕ), which parents and the child read together on the Reader app (ⓖ). Note that the photorealistic images in this figure were synthetically generated using AI.

Abstract

Social narratives are known to help autistic children understand and navigate social situations through stories. To ensure effectiveness, however, the materials need to be customized to reflect each child's unique behavioral context, requiring considerable time and effort for parents to practice at home. We present AutiHero, a generative AI-based social narrative system for behavioral guidance, which supports parents to create personalized stories for their autistic children and read them together. AutiHero generates text and visual illustrations that reflect their children's interests, target behaviors, and everyday contexts. In a two-week deployment study with 16 autistic child-parent dyads, parents created 218 stories and read an average of 4.25 stories per day, demonstrating a high level of engagement. AutiHero also provided an effective, low-demanding means to guide children's social behaviors, encouraging positive change. We discuss the implications of generative AI-infused tools to empower parents in guiding their children's behaviors, fostering their social learning.

CCS Concepts

• **Human-centered computing** → **Accessibility systems and tools**; *Empirical studies in accessibility*.

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Keywords

autism, social narrative, story creation, behavioral guidance, large language model, LLM

1 Introduction

Autistic children[1] tend to rely on explicit and concrete information to interpret social situations, rather than on implicit nonverbal cues such as eye contact, facial expressions, or tone of voice [14, 55, 83]. As a result, they are prone to experience confusion in navigating social environments where unspoken rules and implicit expectations govern the interaction [3, 48]. In such situations, parents of autistic children often grapple with how to teach social norms, translating abstract signals into a concrete and comprehensible language. For example, questions such as "*Why do I have to wait?*" or "*Why do I have to say hello?*" necessitate not only the articulation of behavioral rules but also the interpretation of a broader social context in which these rules operate. This continual process of decoding and conveying social meanings can impose significant emotional exhaustion and stress on both parents and children [46, 69, 84].

Social narratives [65] are structured stories that depict specific social situations and guide expected behaviors for autistic children. These narratives provide explicit explanations of social expectations and allow children to practice appropriate responses through repeated practice [103]. Prior research highlights their widespread use in fostering social and behavioral skills in autistic children [22, 54, 70, 94]. Their successful adoption depends on consistent integration into everyday routines both at home and school [6, 53], as well as customization to each child's circumstances [27]. However, this continual demand imposes substantial time and psychological burden on parents [92]. Consequently, many parents occupy a passive role, while researchers and educators frequently assume primary responsibility for developing and delivering social narratives [15]. Moreover, existing social narratives have largely functioned as educational aids with fixed structures, prioritizing clarity and ease of creation over narrative richness [2]. While this design reduces the required effort to produce, it often sacrifices the engaging qualities of stories, highlighting the need for novel approaches that combine educational value with the narrative depth necessary to sustain children's interest.

Recently, the emergence of generative AIs, including Large Language Models (LLMs) and text-to-image generation models, has opened new opportunities for low-burden social narrative tools. LLM's versatile text generation capabilities allow flexible adaptation to individual target behaviors and situations in narrative materials. In addition, image generation models can leverage autistic children's strong visual preferences [45, 73, 85] to boost engagement and learning. While current efforts mainly focus on prototyping existing social narrative methods [30, 35], these developments open up promising opportunities to explore how generative AI can further empower parents in guiding children through social narratives in a more creative, personalized manner.

In this work, we aim to design a low-burden tool that harnesses generative AI to help parents navigate everyday social contexts with their autistic children through creating and reading personalized social narratives. To this end, we first conducted formative interviews with ten autism experts to understand the practice and challenges of using well-established social narrative tools in parenting. The interviews revealed several persistent challenges for parents, including the fatigue caused by repeated explanations and the burden to create concrete visual supports along with narrative materials to practice social narratives.

Based on these findings, we designed and developed AutiHero, a personalized social narrative system that supports the authoring and shared reading of stories depicting everyday social situations, tailored to the real-life contexts of autistic children (Figure 1). It consists of two main components. First, the Creator app for parents (Figure 1-left), which enables them to generate customized stories with text and visual illustrations by specifying a desired social behavior and incorporating the child's interests and daily life. Second, the Reader app for parents and children (Figure 1-right), which allows them to read these stories together on a tablet. During reading, parents can guide children through multiple paths in a story, using the branching scenarios to explain the consequences of actions and introduce strategies for managing them. Even undesirable paths lead to happy-ending, teaching children that mistakes can be repaired and used as chances to learn.

We conducted a two-week deployment study with 16 parent–child dyads to explore how parents use AutiHero for creating and reading the stories with their children, and to understand how AutiHero influences parenting and children's social behavior. A total of 218 stories was created, and an average of 4.25 stories was read per day, demonstrating high engagement. Quantitative and qualitative findings show that AutiHero supported parents in guiding social behaviors through stories and adopting constructive caregiving strategies. As for children, they also demonstrated increased engagement and positive behavioral changes.

The key contributions of this work are as follows:

(1) Findings from a formative study with ten autism experts, which revealed key considerations for AI-based social narrative tools, including personalization to children's interests and contexts as well as practical feasibility for parent use at home.

(2) The design and implementation of AutiHero[2], a generative AI-based social narrative system that helps parents create personalized stories that reflect children's interests and target behaviors.

(3) Empirical findings from a two-week deployment study involving 16 parent–child dyads, demonstrating that using AutiHero enables parents to deliver guidance in a more nuanced and positive manner, while promoting children's active participation and positive behavior change.

(4) Implications for designing AI-based social narrative technologies that support parental guidance and reflection for fostering effective social communication for autistic children.

2 Related Work

We consider prior work from two domains: research on supporting autistic children's social development and personalized story

[1] In this work, we use identity-first language (*e.g.*, autistic children) rather than person-first language (*e.g.*, child with autism), considering the preferences of autistic individuals [56] and recent academic trends [9].

[2] The source code of AutiHero will be publicly available soon.

creation systems for children. The former highlights structured interventions designed to improve social understanding, while the latter demonstrates how tailored narratives can enhance engagement and learning.

2.1 Social Communication Support for Autistic Children

Autistic children often struggle with social interactions due to differences in processing communication and interpreting social cues [33, 49]. Their literal style of thinking [44, 50] can make it hard for them to understand facial expressions, gestures, tone, or unwritten rules [34]. To address these challenges, various intervention strategies have been developed to support their understanding of social cues.

One example is social narratives, which depict desirable behaviors through stories and help autistic children respond appropriately in various social situations. These include Social Stories [40], power cards [36], Comic Strip Conversations [38], and cartooning [21]. Social Stories is a well-established method that focuses on clarifying what happens, what behavior people expect, and why, by presenting everyday situations in a narrative form. Power cards employ brief visual prompts connected to a child's special interests (*e.g.* superheroes or admired real people) to illustrate desirable behaviors in a highly engaging and personalized format. Comic Strip Conversations utilize visual dialogues between two or more individuals, represented through eight symbolic cues for fundamental conversational skills, along with the use of specific colors. Another widely used method is video modeling [23], which presents video demonstrations of target behaviors—such as greeting a peer or raising a hand—so that children can learn by repeatedly observing these behaviors in action.

Despite clinical evidence (*e.g.*, [12, 18, 37, 81, 91]) on the effectiveness of these methods, parents and experts still face barriers in practicing them. For instance, crafting compelling social narratives, even if in text only, is not straightforward and in case for Social Stories, it is required to comply with ten strict rules on content and format [40]. While video modeling is known to be more effective than others [18, 37, 81], it requires video production skills and resources.

Recent advances in generative AI have introduced online Social Story generators [1, 28, 99] which create brief narratives based on user input. Recent efforts also highlight a range of technology-supported interventions designed to foster social and cognitive development in autistic children. StarRescue [7] is a tablet-based game that aims to enhance turn-taking and collaborative skills. Amy [35], a chatbot based on Social Story, has shown potential in preparing Level 1 ASD children for social interaction and emotional regulation. While previous studies have demonstrated the promise of digital interventions, most primarily focus on child-centered interaction within the app environment. However, it is to note that parents play a critical role in bridging this gap by interpreting situations, modeling appropriate behaviors, and reinforcing learning in everyday interactions. Because parents know their children best, they are uniquely positioned to adapt guidance to their child's individual needs. Therefore, there is a pressing need for tools that support and empower parents in guiding their children by addressing the challenging situations that arise in each child's everyday contexts.

2.2 Personalized Story Creation Systems for Children

Parents' intimacy and knowledge of their children can be leveraged in designing and customizing the support their children need. In recent years, there has been a growing interest in personalized storytelling systems that adapt content to reflect children's individual characteristics, interests, and environments. People in Books [32] is one such system that allows parents to become characters in their children's storybooks. The use of a self-avatar—a character resembling the child—has been shown to enhance immersion [102]. Other studies have examined the impact of personalized digital books on language development [60, 61] and toddlers' verbal expression and engagement [62].

While many personalized systems effectively boost children's immediate interest and engagement [62, 102], research suggests that additional elements are required to ensure substantial outcomes, like purposeful narrative structures and active parental involvement [60]. Yet prior work has largely focused on systems that require users to manually construct stories [16, 32, 59], which imposes a significant cognitive and time burden, as the quality of personalization depends heavily on user effort.

In HCI, there is a growing body of research that utilizes LLMs to automate personalized content generation for children with special needs. Accompany Sleep [100] shows how generative AI can transform parents' daily experiences into bedtime stories, offering more emotionally resonant personalization. AIroad [17] supports autistic children by creating an LLM-driven immersive environment that helps them understand and respond to social affordances in traffic situations. Similarly, ASD-Chat [24] presents a conversational intervention system that guides children in social dialogues using ChatGPT, grounded on the clinically validated framework.

LLMs can offer a low-burden story generation system for parents of autistic children, for whom personalization is not just about engagement but about providing structured, concrete stories that map onto their real-life contexts and target behaviors. In this work, we propose an AI-based, low-burden social narratives tool that reflects autistic children's unique everyday contexts, fosters behavior change, and enhances parent–child interaction. To ground the design of such a system, this study draws on interviews with autism experts to understand and identify specific challenges that parents may face in implementing personalized social narratives for autistic children, and how AI may be harnessed to offload their burden and provide better personalized support.

3 Formative Study

To inform the design of AutiHero, we conducted formative interviews with professionals specializing in autism support and social communication development, who have experiences working with and/or as parents of autistic children. We aimed to gain an in-depth understanding of real-world strategies and challenges that parents may face in explaining social situations and expected behaviors to autistic children.

3.1 Procedure and Analysis

We recruited 10 autism experts (E1–10; see Table 1) through snowball sampling and an internal network, who have hands-on experience in practicing social narrative methods with autistic children and their parents. Four out of ten experts have children with developmental disabilities, which enriched their professional insights with personal experiences. They were from various professional settings, spanning from education to psychotherapy.

Each expert participated in a 1-hour interview on Zoom with two researchers. The interview consisted of three parts: (1) understanding the challenges parents face in teaching social communication to autistic children; (2) their hands-on experiences in implementing and customizing social narratives; and (3) feedback on AI-based story creation system prototype we provided. The prototype was a mock generative AI-infused story creation system in slides, designed based on our initial brainstorming of the system design and with the guidance of one of our authors, a licensed counselor with extensive experience (18 years) with autistic children and their families. We presented an example scenario where AI generates a personalized multi-page story based on parental input on the child's interests and target social behavior. Using the prototype as a probe, we explored their perspectives on the potential benefits and drawbacks, or risks, associated with using generative AIs for parents guiding social situations and desirable behaviors in autistic children. To compensate for their time and input, we offered a 100,000 KRW (approx. 73 USD) gift card.

The interviews were audio-recorded, anonymized and later transcribed. We analyzed the transcripts using thematic analysis [10]. One researcher produced initial codes, and the entire research team collaboratively refined the themes through weekly debriefing discussions. We report the key findings in the following sections.

3.2 Finding 1: Barriers to Parent-Driven Social Narrative Implementations at Home

Social narrative methods were initially introduced to enable both parents and educators to support autistic children's social and behavioral development [39]. Over time, however, their application has become especially common in professional settings (*i.e.*, during therapy sessions or at school), whereas parents often encounter a range of practical challenges when attempting to use them at home. For instance, they often struggle to explain picture-only cards in a way their child can understand. To address this, experts usually provide detailed guidelines for parents. However, as a majority of experts (E1, E3–4, E6, E8–9) pointed out, adherence to these guidelines is often limited. A key issue is that many parents are often physically and mentally exhausted from the demands of caregiving, which limits their capacity to engage with additional intervention strategies. E3 emphasized that the effectiveness of any guidance depends largely on parents' perceived self-efficacy; without this, even best-designed instructions may remain unused. In addition, one key pitfall of parents' using social narratives was that they frequently employ them at the wrong time. Many experts (E1, E3–4, E6–7, E10) highlighted that communication tools work best when introduced before challenging behaviors arise and integrated into the child's everyday routine.

3.3 Finding 2: Importance of Designing Personalized Materials that Reflect Children's Contexts

Consistent with the principles of many social narrative methods [36, 40], experts emphasized that when implementing social narrative materials, it is essential to create personalized content that not only aligns with children's linguistic abilities but also reflects their personal interests. To achieve this, they put significant effort in gathering detailed information about the child and in understanding their daily environment. For example, E4 explained: *"We ask parents to take pictures of places the child often visits, like a local playground, and use those photos in the materials."* Experts noted that without a thorough understanding of the child's daily life and routines, it is difficult to fine-tune the materials effectively. To ensure resonance, they iterate on the materials by actively incorporating parental feedback. As E1 described: *"We always get feedback from parents because they know their child best. Even if we include certain scenes or images, parents might point out something missing. For example, they say, 'My child always touches a specific signboard before crossing the street. That signboard has to be included in the picture.' These highly specific elements often make a real difference, so we review the*

Table 1: Demographic information of experts who participated in the formative interviews.

Alias	Job title	Years of experience	Age	Gender	Raising a child with developmental disability
E1	Licensed counselor	15 years	44	Female	Yes
E2	K-12 teacher (elementary school)	17 years	40	Female	Yes
E3	Clinical psychologist	5 years	47	Male	Yes
E4	Clinical psychologist	25 years	47	Female	No
E5	Art education specialist (special education)	14 years	52	Female	No
E6	K-12 teacher (special education)	28 years	55	Male	No
E7	K-12 teacher (special education)	4 years	28	Female	No
E8	Speech-language pathologist	10 years	45	Female	No
E9	ABA therapist	17 years	41	Male	No
E10	Child development specialist	10 years	53	Male	Yes

materials with parents and revise them before delivering them to the child."

3.4 Finding 3: Challenges in Creating and Refining Customized Materials

Experts have developed various visual aids to help autistic children better understand and navigate social situations. These include pre-assembled scenario cards and personalized Social Stories featuring the child's favorite characters or even their own faces. The creation and customization of these materials also employed tools such as Photoshop and generative AI. However, because resources for autistic children must be both individualized and culturally appropriate, experts agreed that the production process is highly demanding and time-consuming. Specifically, selecting suitable language and visuals that match the child's developmental level was a common challenge. Many experts have found that pre-scripted or AI-generated materials are often misaligned with cultural norms and are difficult to customize to a child's specific needs. As E6 remarked, *"The illustrations in most social storybooks come from foreign sources, so autistic children (in South Korea) don't really like them. Sometimes we spend more time learning Photoshop than working with the child. I also tried generating images with AI, but it's hard to adapt them to match our emotional and cultural setting."*

3.5 Reflection: Opportunities for Generative AIs to Create Parent-Directed Social Narratives

Our findings, coupled with feedback on our paper prototype, suggest a novel opportunity for the design of generative AI systems that support parents in creating social narratives. Experts especially appreciated that the initial prototype was easy to create, reducing the burden on parents. E5 remarked, *"There are so many different social situations, and it is difficult for parents to create story materials each time. Not only for challenging behaviors but also when they need to guide children in social activities, being able to create materials easily would be very helpful."* This underscores the need for intuitive user interfaces that leverage generative AI for the purposes of creating social narratives that can take into account the child's real-life context, while lowering barriers for parents who may not be technically proficient.

4 AutiHero

Building on the formative study, we designed and developed AutiHero, a generative AI-based social narrative system that helps parents create personalized stories for their children in guiding social behavior. In this section, we discuss the design rationales and story structure, describe the user interface and system components of AutiHero, outline generative pipelines that enable the creation of text and visual illustrations, and present implementation details.

4.1 Design Rationales

DR1. Set the Child as a Protagonist. The formative study prototype incorporated the child's preferred objects or characters as story protagonists. Given that autistic children often have intense preferences for specific objects or topics (*i.e.* circumscribed interests [4, 68]), experts responded positively to this approach for its ability to encourage engagement. However, they also raised concerns that some children might become overly fixated on these preferred elements, leading to reduced focus on the story's content or even triggering challenging behaviors. In response, we decided to make the child themselves the protagonist (*i.e.* hero) of the story. Research shows that children engage more when the main character closely resembles themselves [102]. Additionally, studies show that video self-modeling supports the acquisition of specific behaviors [8] and that autistic children often prefer it [71]. Experts in the formative study also recommended using characters in similar situations to the child's, noting that such representations could increase both interest and the likelihood of imitation—prompting thoughts such as "*Maybe I could try that too.*"

DR2. Personalize the Story to the Child's Interests and Contexts. Autistic children differ significantly in their preferences and environmental contexts [86, 89], which makes standardized story format insufficient for producing effective learning outcomes. Many experts raised concerns about the system's ability to generate personalized images and stories for each child. They also pointed out that autistic children often struggle to understand abstract rules or metaphorical situations, emphasizing that social norms should be taught through realistic and concrete contexts.

To address this, we designed a system that incorporates each child's interests (Interest), familiar people (Person), and frequently visited places (Place) into the stories. Considering that many autistic children are visual learners [93], we also emphasized the use of rich visual materials, allowing not only text but also concrete and realistic photos to be integrated into the story. In AutiHero, parents can input names, descriptions, and photos of these three categories, which are then automatically incorporated in story generation. Additionally, parents can create personalized stickers using photos of their child's preferred objects and provide them as rewards upon completing a story, to encourage active engagement.

DR3. Provide Interactive Elements for Behavioral Exploration. Expert highlighted the necessity of rehearsal and role play for social narratives. They pointed out that children often fail to transfer what they have learned into actual behavior because they lack opportunities for simulation. They also stressed the value of presenting autistic children with challenging situations, teaching them how others might feel, and guiding them toward appropriate responses. Prior research also consistently underscored the importance of behavioral simulation and role play [47, 57].

To integrate these elements of behavioral exploration, we introduced a multiple path structure in AutiHero. When the story reaches a challenge situation, AutiHero presents the child two to three options. One option reflects a desirable path with a socially appropriate behavior, while the others illustrate undesirable ones with less appropriate responses. The design of undesirable paths varies depending on the target behavior, as detailed in Section 4.2. After the child selects a path, AutiHero follows up with a corresponding outcome, allowing the child to feel out both emotional and social consequences.

4.2 Story Structure Design

As it is crucial to control the AI to generate concrete as well as ethically considerate stories, we imposed a carefully designed story

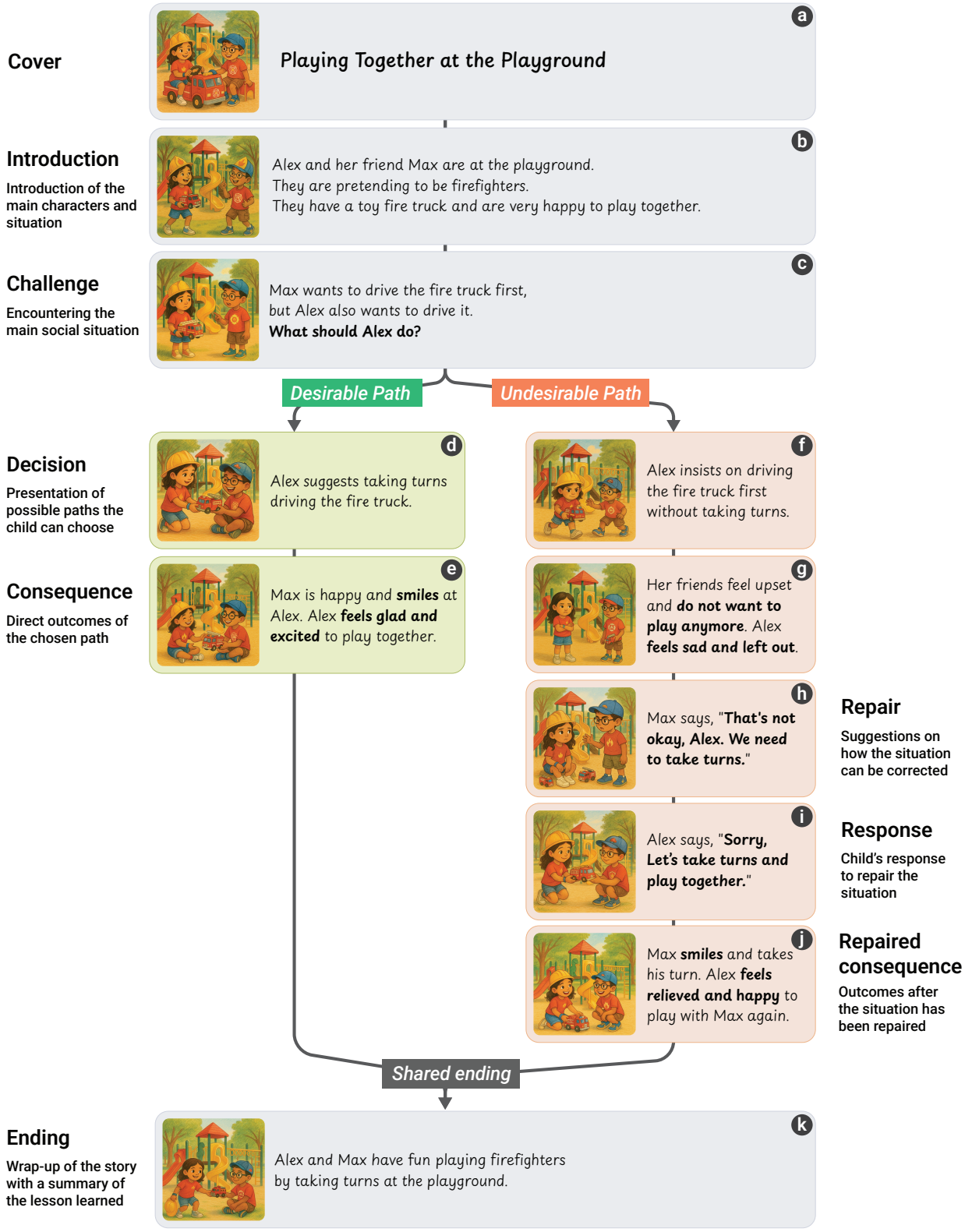


Figure 2: Example story structure with desirable and undesirable paths. In the Challenge page (ⓒ) the child is asked to select one of the given paths (ⓓ or ⓕ). The undesirable paths always have a turning point, Repair (ⓗ), which addresses the negative Consequence (ⓖ) and eventually leads the story to the positive Ending (ⓚ) same as the desirable paths.

structure for AutiHero. Four authors consisting of three HCI researchers and an autism expert collaborated to design and refine the structure. We first reviewed guidelines for Social Stories and example Social Stories and power cards from commercial materials. Although these rarely followed canonical plot structures, they often began by explaining the settings and situational contexts, followed by suggestions for addressing the situation. We then conducted multiple brainstorming sessions, keeping in mind common narrative structures such as 'set up–confrontation–resolution' and 'exposition–climax–resolution.' During this process, we used LLMs to generate example stories, as design probes, based on our interim structure, by incorporating target behaviors that frequently appear in autism-related books and social narrative examples. Given that Social Stories are recommended to contain no more than 12 sentences [40] for children, we structured the story sections to maintain conciseness.

4.2.1 Story Sections and Paths. Figure 2 illustrates the finalized story structure with an example story. Each story section is treated as a page and accompanied with an illustration. A story starts with a **Title** (Figure 2-ⓐ), and an **Introduction** (Figure 2-ⓑ) which describes the main characters and situational settings. Then the protagonist child encounters a **Challenge** (Figure 2-ⓒ) and reaches a branching point, where they can choose one of the paths described in the **Decision** (Figure 2-ⓓ and ⓕ) pages, each of which leads to either or desirable or undesirable **Consequences** (Figure 2-ⓔ and ⓖ). Each story contains one desirable path and one or two undesirable paths. Note that all paths share the same positive **Ending** (Figure 2-ⓚ);

The decision of the undesirable paths makes the situation worse and complicated (Figure 2-ⓖ) but the paths always offer an opportunity to **Repair** (Figure 2-ⓗ) the situation. In this section, another character in the story intervenes by offering advice or constructive suggestions that can alter the course of the situation. In **Response** (Figure 2-ⓘ), the child reacts positively to the suggestion and takes actions, such as agreeing, asking, or apologizing, depending on the situation. Then the **Repaired Consequence** (Figure 2-ⓙ) section then presents the positive outcomes resulting from this repair, after which the story organically leads to the positive **Ending** (Figure 2-ⓚ). This multi-path and shared ending structure constitutes a key feature of AutiHero. It goes beyond delivering a moral by allowing children to explore the possibilities of correcting mistakes as well as the alternative behavioral paths available to them.

Theory of mind—inferring the others' mental states—is a common difficulty that autistic individuals often face [5, 44]. To support children's comprehension of others' emotions, when describing the other characters' emotions, the story text provides both their emotions and the observable responses resulting from them. For example, the Consequence section of the positive path (Figure 2-ⓔ) describes that Max (friend) is *happy* (emotion) and *smiles* (response).

4.2.2 Path Composition Patterns by Story Topic. To ensure robust story flows, we defined three topic types—*Relationship*, *Social Rules*, and *Healthy Habits*—each with a unique flow and the composition of desirable and undesirable paths. We set the topics based on both theoretical and empirical evidence. Theoretically, prior social narrative methods provide substantial precedent for these categories [20]. Empirically, our formative study highlighted the importance of these categories, especially Social Rules, as school-related expectations were repeatedly emphasized by K-12 teachers.

The **Relationship** type addresses situations in which the child is required to communicate and cooperate with others, such as *asking a friend for permission to try their toy* or *asking a teacher for help when difficulties arise*. In this domain, each story contains one desirable path and two undesirable paths. The undesirable paths include both rule-breaking options (*e.g.*, taking away friend's toy) and solitary behaviors that bypass group participation (*e.g.*, leaving to play alone). Although the latter is not inherently negative, it is classified as undesirable within our framework, since the parental intention underlying these target behaviors is to encourage social engagement.

The **Social Rules** type involves behaviors governed by contextual or cultural expectations that are rarely negotiable and often have immediate negative impacts for others. Examples include *keeping calm during prayer at church* or *sitting down promptly when the school bell rings*. Stories in Social Rules consist of one desirable path aligned with the expected behavior and one undesirable path representing rule violation. When the child chooses the undesirable option, external agents (*e.g.*, teachers, peers, or authority figures) provide corrective feedback such as "*That's not okay.*", or "*Please wait for your turn.*", thereby prompting repair and encouraging compliance with social norms.

Finally, the **Healthy Habits** type concerns daily routines that support independence and the development of sustainable lifestyle practices, such as *washing hands before meals* or *going to bed on time*. Similar to Social Rules, the structure here consists of one desirable path and one undesirable path. The feedback in Healthy Habits comes primarily from parents or caregivers, who provide direct guidance to help the child repair undesirable behavior. This is because the target behaviors in this domain typically occur at home, where parents play a central role in shaping children's daily habits and guiding the acquisition of self-care skills.

4.3 System Design and User Interface

AutiHero consists of **Creator** for story creation on web and **Reader** for story reading on tablets. Creator allows parents to manage information related to their child's interests and everyday context and to create personalized stories that reflect the child's interests and the target behaviors parents would like to encourage. Parents and children can read the created stories in Reader together. We chose to support reading on tablet considering the importance of cultivating *joint attention* of autistic children [13, 67] and shared reading [66]. To illustrate how AutiHero works, we present a usage scenario featuring David and his daughter Alex: *David has an eight-year-old daughter, Alex, who is on the autism spectrum and considered high-functioning, with the ability to understand storybooks for kids. Alex often struggles with taking turns during playtime with her friends, which frequently leads to arguments. Wanting to help her understand the importance of waiting for her turn, David uses AutiHero to create a personalized story that can gently guide Alex.*

4.3.1 Profile Management. David begins by accessing the Creator system on the web. In the Profile Management menu, he uploads photo of Alex (Figure 3-①). AutiHero will use this photo to generate illustrations of a protagonist character resembling Alex. He

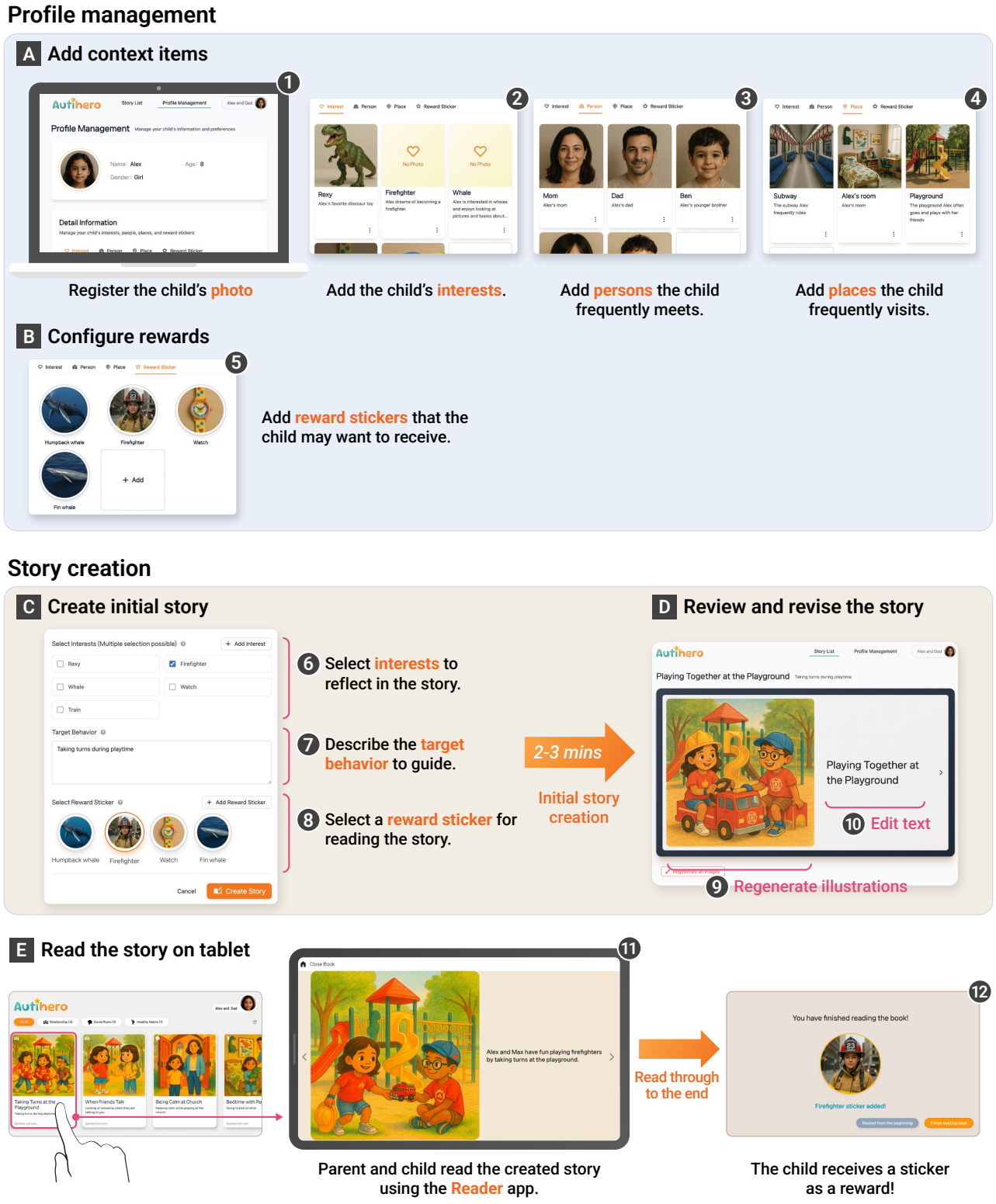


Figure 3: Overview of the usage flow of AutiHero, from profile management to story creation, and story reading.

continues to the Interest tab (Figure 3-②), where he can reflect Alex's favorite things to the story. Alex plays with her dinosaur toy Rexy every day, wears her wristwatch proudly, dreams of becoming a firefighter, and shows great curiosity about whales. Since Rexy and the wristwatch are specific objects, David also attaches their photos so the system can incorporate them directly in stories. In the Person tab (Figure 3-③), David adds people who regularly interact with Alex: her father, mother, younger brother Ben, and her close friends Mia and Max. Moving on to the Place tab (Figure 3-④), he registers familiar locations—Alex's bedroom, the playground she often visits, and the subway. He uploads both photos and short descriptions for each person and place. These entries later serve as characters and backgrounds within the story. Finally, in the Reward Sticker tab (Figure 3-⑤), David designs customized stickers using whale images that Alex loves as well as firefighter images that excite her. Note that next time David can skip this Profile Management step and directly begin at the Story Creation which is described next, unless a need arises later to add or change the information in Alex's profile.

4.3.2 Story Creation. David proceeds to create a new story. From the Story List menu, he clicks Create New Story and fills in the required information. First, he chooses *Firefighter* from Alex's registered interests (Figure 3-⑥). Next, he types *Taking turns during playtime* into the target behavior field (Figure 3-⑦). For the reward, he selects a firefighter sticker, knowing Alex would enjoy it after reading (Figure 3-⑧). David then clicks the Create Story button. Within three minutes, the system generates both text and visual illustrations. The resulting story, titled *"Playing together at the Playground,"* reflects the firefighter interest through a story about playing a firefighter game. The story takes place at Alex's familiar playground and features Alex along with her friend Max. Once the story is generated, David reviews it for quality. On one page, the main character's clothing pattern appears inconsistent, so he clicks the Regenerate page image button to create a new illustration (Figure 3-⑨). He also edits one of Max's dialogue lines to make it sound more natural and expressive (Figure 3-⑩).

4.3.3 Story Reading. In the evening, David chooses to read *Playing together at the Playground* to help her learn the importance of taking turns during playtime. Sitting together on the sofa, David opens the Reader app, selects the story, and begins reading it aloud to Alex (Figure 3-⑪).

Alex shows strong interest in the story, especially since she is the main character. She is also fascinated to see Max appear in the illustrations in a way that closely resembles her real friend, along with the familiar playground setting. When they reach the Challenge section, David explains the situation and asks Alex what she would do. After some thought, Alex chooses the option *"Alex insists on driving the fire truck first without taking turns"*. The story then shows Max becoming upset, while Alex feels frustrated and sad because the game does not go as planned. However, as Alex continues reading through the Repair, Response, and Repaired Consequence scenes, she learns how to apologize to her friend and resolve the conflict. At the end of the story, since she followed an undesirable path but read through the story, a star sticker appears as a way of praising her (Figure 3-⑫).

David gently encourages Alex to try again and consider a different choice. As rereading the story and reading the Challenge section once more, Alex now selects the desirable path: *"Alex suggests taking turns driving the fire truck."* This time, the story shows Max smiling as he enjoy playing with Alex. At the end, Alex happily receives the firefighter sticker that David had initially set as the reward (Figure 3-⑫), and David praises her for completing the story.

4.4 Generative Pipelines

Figure 4 illustrates the generative pipelines of AutiHero for generating a story and associated illustrations for the cover and the story sections.

4.4.1 Generating Story Text. When a parent requests new story creation (Figure 4-ⓐ), the **Topic type classifier** (Figure 4-ⓑ) first classifies the entered target behavior into one of Relationship, Social Rules, or Healthy Habits. Considering the classified topic type, selected interests, and all persons and places in the profile (Figure 4-ⓒ), the **Story generator** (Figure 4-ⓓ) produces an initial story for the target behavior, selecting suitable persons and places to involve in the story. Because each topic type incorporates distinct story patterns, we used a dedicated story generation instruction for each (see Appendix A for topic-specific instructions).

The story undergoes multiple steps of refinement. First, the **Content validator** (Figure 4-ⓔ) checks whether the *content* of the story satisfies our story principles and, if not, requests regeneration. We established the following three criteria: (1) Realistic and everyday grounding: autistic children often face difficulties in interpreting metaphorical or imaginary situations [87], so the story must remain closely connected to realistic and everyday contexts. (2) Consistent and logical integration of the child's interest: the child's interest should appear naturally and consistently throughout the story. (3) Prevention of misunderstandings: the story should avoid introducing misconceptions or misleading impressions; for instance, depicting firefighters taking an elevator during an emergency could cause a child to wrongly believe this happens in real life.

Next, the **Text refiner** (Figure 4-ⓕ) ensures that the story matches the reading level of elementary school children. For each section, the text is regenerated in simpler phrasing if it is assessed as difficult for U.S. Grade 5 children to read, based on Flesch-Kincaid Grade Level [31]. In addition, the vocabulary difficulty is evaluated using the Common European Framework of Reference for Languages (CEFR) [78], and if the section contains words above Level B2 (Upper Intermediate), these words are replaced with easier alternatives.

Finally, the **Story translator** (Figure 4-ⓖ) translates the refined English story into Korean, ensuring that all sections, from title to ending, remain intact. Due to the scarcity of established automated approaches to assess the reading difficulty of Korean texts, we refrained from adding a validation stage for translated outcomes. Instead, we created a set of 15 sample stories comprising 190 Korean-English sections, which were generated through our pipeline and manually reviewed and refined by four authors. Among these, 22 sections whose English texts show the highest vector similarity

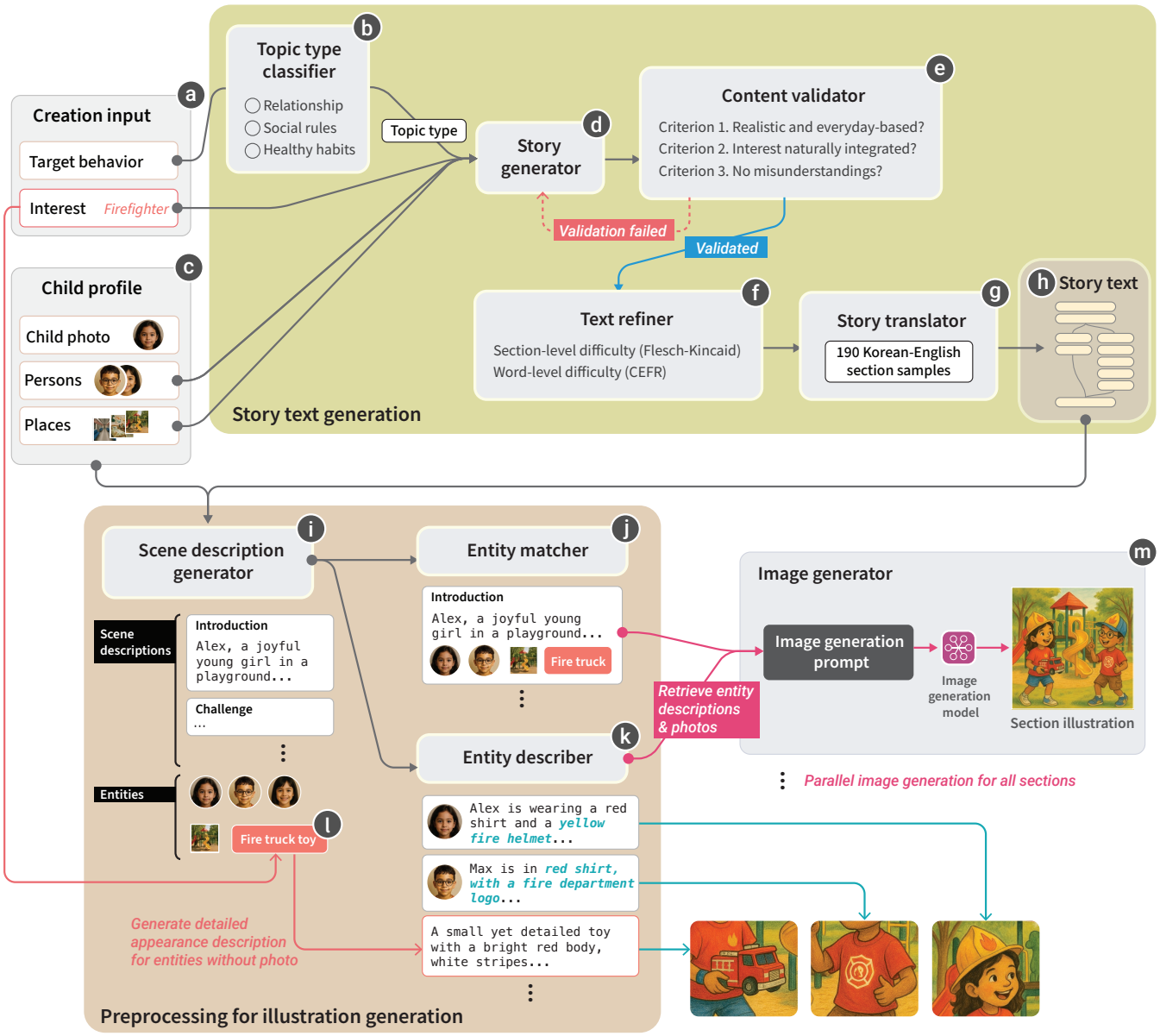


Figure 4: Pipelines for generating story text and visual illustrations. First, the Topic type classifier (ⓑ) determines the topic type based on the target behavior. The Story generator (ⓓ) produces an initial story, which is then validated and refined by the Content validator (ⓔ) and Text refiner (ⓕ). Next, the Scene description generator (ⓘ) creates scene descriptions for each section, taking into account the entities provided by users. Finally, with support from the Entity matcher (ⓙ) and Entity describer (ⓚ), the Image generator (ⓜ) produces illustrations for each section that remain consistent with the story's characters and settings.

to the input story, are used as few-shot samples for the translator LLM.

For the story generation pipeline, we employed OpenAI's `gpt-4o` for classification and generation tasks, while `gpt-4.1` handled the translation. The entire story text generation typically takes approximately 1-2 minutes.

4.4.2 Generating Visual Illustrations. To create illustrations that are coherent across the story pages, the **Scene description generator** (Figure 4-ⓘ) produces scene descriptions for the cover and story section images, taking the story text (Figure 4-ⓗ) as a whole into account. It also generates a list of persons, objects, and places that appear at least once in the illustrations. The **Entity matcher** (Figure 4-ⓙ) then assigns these entities to each scene according to

both the scene description and the entire story, while also considering the entities connected to the previous section. This step ensures coherence by including entities that are not explicitly mentioned in the text but are logically expected to appear in the scene (*e.g.*, Mom stood next to me in the previous scene should not disappear in the following page with the same scene, even if the section text does not mention her).

In parallel, the **Entity describer** (Figure 4-ⓚ) organizes the information that characterizes each entity; for entities corresponding to those in the child profile, the registered photos were also included as image inputs. For persons, the additional description of their appearance is generated by considering the story's context, ensuring that the outfit reflects the narrative setting (*e.g.*, wearing a swimsuit if the story involves swimming). For entities either without photos or not registered in the child profile, the Entity describer generates detailed text appearance descriptions for them. For example, the interest 'Firefighter' (Figure 4-ⓐ) is reflected as an object 'fire truck toy' (Figure 4-ⓛ) in the story. Since fire truck toy is not defined in the child profile, the Entity describer generates a description that describes the toy. This description is applied consistently across the story illustrations.

The **Image generator** (Figure 4-ⓜ) generates an illustration, using the scene description along with the descriptions and photos of the assigned entities as inputs. The image generation model is prompted to adopt the style of a classic children's storybook, evoking warmth, imagination, and emotional connection (see Appendix B for the image generation prompt). When the parent requests the regeneration of an illustration, the system retains preprocessed scene and entity descriptions, unless the section text has been modified.

We used OpenAI's `gpt-4o` for story text and `gpt-image-1` for image generation. The process of creating all required illustrations for a single story typically took about 2 minutes with parallel generation of the section images.

4.5 Implementation

We implemented the core system in Python running on a FastAPI [29] server that provides REST APIs for both Creator and Reader apps. The generative pipelines leverage OpenAI's Chat Completion and Image Generation APIs [80] on top of the LangChain [63] framework to run the underlying LLM inference and image generation. The generated storybooks and user data are stored in a PostgreSQL [41] database on the server.

We built Creator as a web application using React.js [75], and the Reader app using React Native [74] as a cross-platform tablet application running on both iPad and Android tablets. Both apps were written in TypeScript [76] and communicate with the server via REST API and WebSocket.

5 Deployment Study

We conducted a two-week field deployment study with 16 dyads of autistic children and their parents. We aimed to examine how parents leverage AutiHero to create stories and read them with their children, and how this experience influenced both parenting practices and children's social behaviors. Our Institutional Review Board approved the study protocol.

5.1 Participants

We advertised our study in online communities of parents of autistic children by sharing a flyer with a link to the screening questionnaire. Our inclusion criteria for child participants were: (1) a diagnosis of Autism Spectrum Disorder classified as Level 1 or 2 autism per CDC guideline and (2) the ability to read and comprehend short stories with images and limited text, as typically targeted toward preschool and early elementary school children; and (3) parental willingness to share photos of their child for image generation. One author who is a licensed counselor and authorized to diagnose autism, initially screened the respondents based on the description of the child's literacy and cognitive functioning. For the household, we ensured that they have (1) a stable Wi-Fi at home; (2) an internet-connected computer; and (3) no travel plans that may impact the use of AutiHero during the study period. Of the 69 respondents who met the criteria, 16 families living in proximity to our institution (our study required in-person delivery of the study equipment and setup) provided written informed consent and participated in the study.

Table 2 shows the demographic information of the 16 dyads (D1–16), along with the children's autism level and literacy of images and text. Of the 16 parents (P1–16), two were fathers and all but one father were primary caregivers of the child participant. Child participants (C1–16) were aged between 7 to 12 ($M = 8.56$) and included two girls. Twelve children were assessed as having Level 1 autism (formerly referred to as high-functioning autism). The remaining four were assessed as having Level 2 autism in terms of verbal communication, but they were also included in the study as they were considered to have potentially sufficient comprehension of images and text that AutiHero offers. To compensate their participation, we offered 200,000 KRW (approx. 144 USD) as a gift card after the study.

5.2 Procedure

The field deployment consisted of three phases: (1) introductory session, (2) deployment, and (3) debriefing. To each household, we deployed a Samsung Galaxy Tab S6 Lite Android tablet, which has a 10.4-inch (263mm) display with a 2000 × 1200 resolution (224 ppi). We installed the Reader app on the devices in advance.

Before the introductory session, we asked parents to submit their children's photo of their choice, a preliminary list of their interests, people they frequently interact with, and familiar places—optionally accompanied by images. These were reflected to each dyad's account prior to deployment to ensure that all participants begin the study with sufficient material for story creation. All personal information was handled according to IRB protocol post-deployment.

Introductory Session. One researcher visited participants' homes and connected the tablet device to the home Wi-Fi and set it up (See Figure 5). Upon explaining the goal of the study and the protocol, we provided a tutorial on how to create stories in Creator and read them in Reader, demonstrating example stories of a sample user account. We allowed parents to practice using Creator on the researcher's laptop and Reader on the tablet until they felt confident with the system. Parents also created one story on their own user account. The session took about 45 minutes in total.

Deployment. Immediately after the introductory session, a 14-day deployment period started. During this period, participants freely used AutiHero. As guidance for engagement, we advised parents to create at least one new story every three days and use the Reader app once a day, while emphasizing that their engagement would affect neither their compensation nor participation of the study. We did not set a mandatory condition for engagement to encourage and observe naturally occurring reading activities.

At 10 PM each evening, we sent parents a link to a survey asking about their daily experiences with AutiHero with both multiple choice and open-ended questions. In particular, the survey asked parents to rate their children's engagement to the day's reading activity on a 5-point Likert scale and report any noteworthy comments regarding the day's story creation and reading activities.

Debriefing. After deployment, we scheduled a debriefing session with each participant at their homes. We first asked them to complete an exit survey consisting of 7-point Likert scale questions across six subscales of the Technology Acceptance Model (TAM) [95]—*perceived usefulness*, *perceived ease of use*, *efficacy for self-use*, *perceived control*, *output quality*, and *intention to keep using our system*—for both the Creator and Reader apps, assessed separately. The

Table 2: Demographic information of deployment study participants with children's CDC autism level and literacy description provided by parents. The primary/secondary labels of parent type indicate whether the parents self-identify themselves as primary or secondary caregivers. *Four children were assessed as having Level 2 autism in verbal communication but were considered to have potentially sufficient comprehension of images and text to participate in our study.

Parents		Autistic Children					
Alias	Type	Alias	Age	Gender	Siblings	Level	Literacy of Short Stories
P1	Mother (primary)	C1	8	Boy		1	Enjoys nonfiction (*e.g.*, science, economics); finds story- and emotion-centered literature less engaging and harder to understand.
P2	Mother (primary)	C2	9	Boy		1	Listens to audiobooks at bedtime, memorizes content, and tends to fixate on interests.
P3	Father (secondary)	C3	9	Boy	A brother	2*	Enjoys picture books and can read words, but struggles to use content for reciprocal communication.
P4	Mother (primary)	C4	9	Boy		1	Reads and understands books better when pictures accompany text; struggles with text-only books.
P5	Mother (primary)	C5	8	Boy		1	Prefers Baek Hee-na's books (*e.g.*, Magic Candies)
P6	Mother (primary)	C6	9	Boy		2*	Can read independently and understand simple content; recalls explicit details but struggles with inference.
P7	Mother (primary)	C7	8	Boy		1	Reads independently but prefers when the mother reads aloud. Understands better with illustrations and shows stronger interest in personally relevant topics.
P8	Mother (primary)	C8	12	Boy	A brother	1	Has difficulty understanding long text longer than one page; can answer factual questions about short texts but struggles with abstract or implied meaning.
P9	Mother (primary)	C9	9	Boy	A brother	1	Enjoys recalling storylines and characters; can answer general questions but struggles with questions requiring interpretation of intent.
P10	Mother (primary)	C10	8	Girl		1	Fairy tales and classics may be overstimulating; prefers realistic moral or leadership stories. Requires guided reading to understand character emotions and implied meanings. Finds books without illustrations difficult; struggles with metaphor, symbolism, and emotional nuance.
P11	Mother (primary)	C11	7	Boy		1	Understands simple passages but struggles with long or complex language. Reads kindergarten-level books with comprehension; can read knowledge-based books but has difficulty understanding them due to cognitive demands.
P12	Mother (primary)	C12	7	Boy		1	Enjoys independent reading, particularly with pictures to aid comprehension.
P13	Mother (primary)	C13	8	Boy	A sister	2*	Understands short phrases or sentences, but comprehension decreases with longer or abstract text. Answers to content-related questions are limited, even when text is understood.
P14	Mother (primary)	C14	8	Boy	A sister	2*	Prefers joint reading with mother or sibling; repeats favorite character content; struggles with overall story comprehension.
P15	Father (primary)	C15	8	Girl	A brother	1	Reads simple sentences but struggles with abstract concepts, long sentences, and "when/why/how" questions.
P16	Mother (primary)	C16	10	Boy	A sister	1	Sensitive to audio (autism trait); dislikes audio-only stories but enjoys visual story media (e.g., YouTube Pinkfong stories). Remembers stories well after repeated reading; previously read 1–3 storybooks per week.

Figure 5: Our deployment study participants using AutiHero at home during the introductory session.

survey also asked parents to rate their perception of changes in their child's behavior as well as the corresponding shifts in parental response strategies, for each target behavior they had entered into the system, using a 5-point Likert scale (from "Changed very negatively" to "Changed very positively" with "Not changed' as neutral). After the survey, we conducted a semi-structured interview with parents. We asked about their overall experience of creating and reading stories with AutiHero, their child's reactions to created stories and engagement in the reading activities, and the system's impact on parenting. We also posed follow-up questions related to their survey responses focusing on the drawbacks of the system and opportunities for improvement. Each debriefing session took about an hour.

5.3 Analysis

We analyzed all target behaviors and interests represented in the stories. For target behaviors, three researchers independently coded a subset of 30 out of the total 218 behaviors, compared their results, and reached consensus on the semantics and categories. Based on this agreed coding scheme, the remaining behaviors were coded by a single researcher. For interests, one researcher conducted the initial coding, after which the other two researchers reviewed the codes and, through discussion, reached consensus on the final categories. All debriefing interviews were audio-recorded, anonymized and transcribed. We conducted a thematic analysis [10], whereby the first author generated initial code themes using Miro [77]; these were then iteratively discussed and refined with two other researchers until consensus was reached on the final set of themes.

6 Results

In this section, we present findings from our two-week deployment study. We first present parents' story creation activities, including how they produced, edited, and customized stories. We then cover story reading, focusing on parents' and children's shared reading practices and children's reactions to personalized content. Finally, we illustrate the impact of AutiHero on parenting, highlighting observed behavioral changes in children and parents' reflections on guiding behavior through storytelling.

6.1 Story Creation

We begin by examining how parents engaged in creating stories with AutiHero. This includes their overall creation patterns, the types of stories and target behaviors, their reactions to the creation process, and how they customized stories.

6.1.1 Creation Activities. During the two-week deployment period, parent participants actively created stories with AutiHero. In total, they created and read 218 stories, which corresponds to an average of 13.63 stories per parent ($SD = 5.78$, $min = 6$ [P3], $max = 26$ [P14]). In terms of story type, parents produced 54 stories of Relationship ($M = 3.38$, $SD = 2.39$ per participant; $min = 0$ [P11], $max = 9$ [P5]), 99 of Social Rules ($M = 6.19$, $SD = 4.61$ per participant; $min = 0$ [P5], $max = 17$ [P14]), and 65 of Healthy Habits ($M = 4.06$, $SD = 2.91$ per participant; $min = 0$ [P6], $max = 10$ [P12]) in total. As shown in Figure 6, with a few exceptions, most parents created stories gradually over the course of the study rather than producing many at once. This suggests that they engaged with the system consistently throughout the deployment. The debriefing interviews further supported this observation: parents reported that they created stories whenever they thought of behaviors they wanted to teach. Some parents also mentioned that they continued to make new stories because their children requested new stories.

Parents also engaged in editing: Titles or page texts of 27% (58 out of 218) of the stories were revised after their initial generation. Reported edits included adjusting vocabulary that did not align with a conversational tone (P2, P6–8, and P15) and revising expressions that are not typically found in children's literature (P8–9, P13, and P16). P5 also regenerated illustrations when they did not align with the input photo of the character. In addition, P12 suggested that having the option to directly specify desired image modifications would be helpful. These findings suggest that parents were not only active in creating stories but also attentive in tailoring them, ensuring the outcomes reflected their preferences and values.

6.1.2 Created Stories. Parent participants created stories on a wide variety of topics and target behaviors. From the target behaviors of 218 stories parents created, we identified 18 behavior categories and grouped them into six higher-level semantics: *social norms*, *self-care & daily living*, *social interaction & exchanges*, *safety*, *emotion & self-regulation*, and *challenges and new experiences* (Table 3). Each participant created stories of 7.38 unique categories on average ($SD = 2.00$, $min = 5$ [P1, P3, P6–7], $max = 11$ [P12]).

Parents created the largest number of stories about **social norms** (76 out of 218; 35%), such as following rules in shared spaces or norms for interacting with others. Most parents (13 out of 16; 81%) created and read stories about social norms at shared space, such as

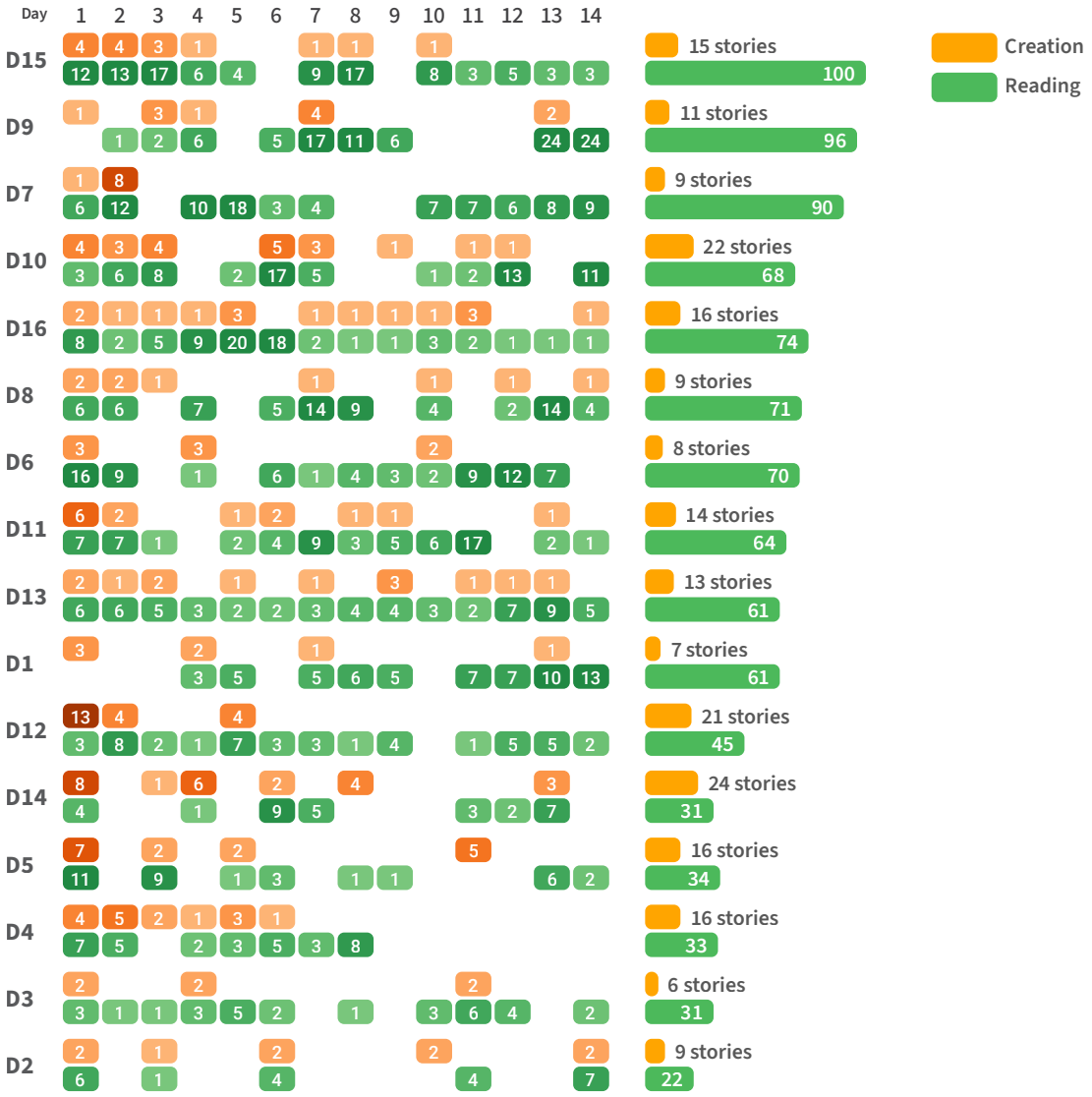


Figure 6: Distribution of story creation and reading sessions on a daily basis over the course of 14-day deployment period. Orange cells denote the number of created stories on the day whereas the green cells denote the number of reading sessions in which participants completed a story path. Note that since AutiHero is divided into two platforms, Creator and Reader, some participants read stories using Creator. As a result, certain reading behaviors were not captured in the system reading logs. P1 reported reading through Creator during the first three days, and P4 during the last six days, which were therefore not recorded in the Reader logs.

keeping quiet in the library, indicating their awareness of minimizing disruptions to others. Parents also frequently created stories guiding **self-care and daily living** skills (54 stories out of 218; 25%), such as personal hygiene and eating habits. This aligns with literature that reports autistic individuals' challenges in adaptive functioning and daily living skills [72, 101]. Thirteen stories (14%) contained guidance on **social interaction and exchanges**. Notably, half of the parents created 16 stories that encourage their children to **self-express** their needs, preferences, or feelings, in verbal communication instead of non-verbal actions. Given that autistic children tend to stay within familiar routines [64], several parents created stories encouraging their child to engage in **challenging or new activities**, such as completing demanding tasks like assembling toy bricks (Lego) or trying new activities.

Some stories addressed challenges associated with autism-specific traits. For example, 18 stories included topics regarding **stimming**, self-stimulatory behaviors—such as wiggling fingers—that autistic individuals commonly demonstrate [26, 51, 90]. Of these, 14 stories explicitly guided regulating such behaviors in relation to its disruption of social norms (*c.f.*, 'Stimming in public' in Table 3),

while the remaining four encouraged the regulation of stimming itself (*c.f.*, 'Stimming' in Table 3). Although few, two parents created three stories guiding the regulation of socially inconsiderate behaviors—such as persistently talking about a particular topic with friends—that may stem from **fixated interests** [42].

These categorizations illustrate what parents focused on; we next look at how they derived such target behaviors in practice. They reported that, beyond reinforcing general desirable behaviors (*e.g.*, getting along well with siblings–P9 [relationship]), they often tailored stories to their child's immediate experiences. These included specific past incidents (*e.g.*, peeing in the bathwater–P12 [hygiene]) as

Table 3: Categorization of target behaviors parents entered to create stories, number of stories and dyads, and example target behaviors and story titles created from them.

Semantics	Categories	Definition	Count		Dyads	Example Target Behaviors / (Story Titles)
Social norms (76)	**Shared space**	Following rules at home, school, and in community settings	33	15%	13	Keeping quiet in the library (Quiet Time at the Library) [D4]
	Interpersonal norms	Following rules for interacting with people	17	8%	10	Not interrupting when others are talking (Waiting to Speak) [D10]
	Stimming in public	Managing stimming in situations where it may disturb others	14	6%	7	Clapping at appropriate times, such as celebrations (Clapping at the Right Time) [D8]
	Pragmatic language	Using polite and context-appropriate words	8	4%	5	Speaking politely to adults (Speaking Politely to Adults) [D4]
	Respect for life	Acting ethically toward animals and living beings	4	2%	4	Not killing ants in the park (Respecting Nature in the Park) [D9]
Self-care & daily living (54)	**Hygiene**	Practicing personal care for cleanliness and health	19	9%	9	Washing hands upon arriving home (Wash Hands Before Pizza) [D11]
	Eating habit	Following healthy routines and manners during meals	13	6%	9	Eating side dishes without picky eating (Trying New Foods with Friends) [D9]
	Screen time control	Limiting and balancing use of digital devices	11	5%	9	Watching mukbang YouTube videos in moderation (Mukbang Time Management) [D8]
	Daily living skill	Performing basic self-care and household tasks independently	11	5%	7	Doing homework independently (Homework Time) [D12]
Social interaction & exchanges (30)	**Self-expression**	Expressing needs, preferences, or feelings	16	7%	8	Asking "Can I borrow it?" when lending something from friend (Is It Okay to Touch?) [D7]
	Relationship	Building and maintaining social bonds	14	6%	9	Not fighting with younger brother (Playing Together Peacefully) [D15]
Safety (26)	**Safety for self**	Acting to prevent harm to oneself	23	11%	8	Crossing the street after checking the green light (The Green Light Guide) [D13]
	Safety for others	Acting to prevent harm to others	3	1%	2	Not pushing friends when going down the slide (Playing Safely on the Slide) [D14]
Emotion & self-regulation (24)	**Emotion regulation**	Recognizing and controlling one's emotional responses	17	8%	9	Calming oneself quickly when feeling upset (Calming Down with Lulu) [D1]
	Stimming	Regulating self-stimulatory behaviors	4	2%	2	Not wiggling fingers while reading books (Studying Calmly with Pinkfong) [D15]
	Fixated interests	Regulating excessive focus on a specific object, activity, or topic	3	1%	2	Not telling monster stories that friends dislike (Choosing the Right Story) [D12]
Challenges and new experiences (8)	**Engaging in activities**	Encouraging effortful yet rewarding activities	4	2%	3	Completing a lego project (Building Together) [D2]
	Trying new activities	Encouraging new or previously-avoided activities	4	2%	2	Trying underwater diving (Exploring the Ocean Waves) [D5]

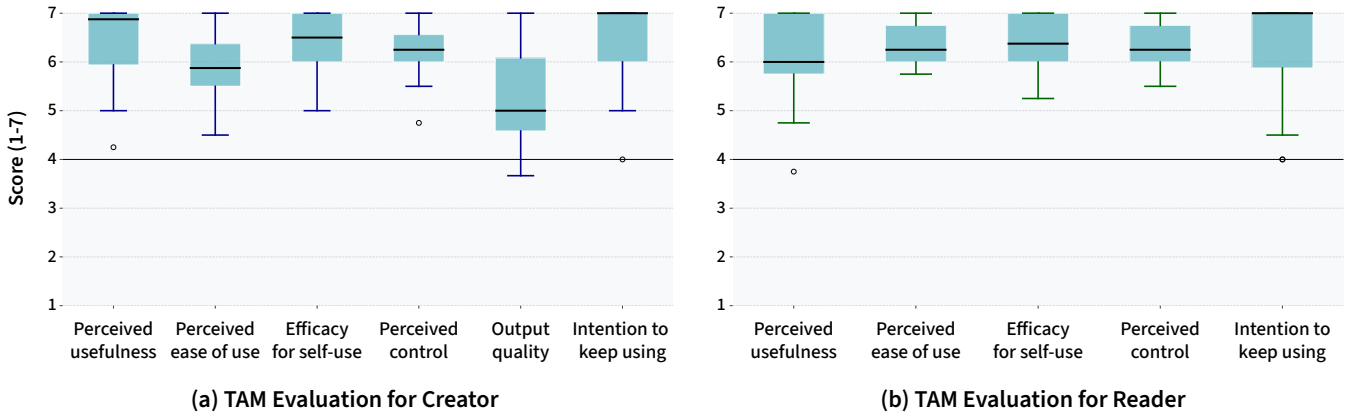


Figure 7: Post-study ratings of parent participants on the technology acceptance model (TAM) subscales, evaluating the Creator and Reader apps separately. Note that we revised the original subscale names to be more relevant: Efficacy for self-use (Computer self-efficacy), Perceived control (Perception of external control), and Intention to keep using (Behavioral intention).

well as anticipated future events (*e.g.*, attending a wedding–P1 [interpersonal norms]). This indicates that parents used AutiHero not only to convey abstract norms but also to address concrete, situational needs that arose in daily life.

6.1.3 Parental Reaction to the Creation Activity. Parents generally found the system intuitive and easy to use. This perception was also reflected in the post-study evaluation ratings for *Perceived ease of use*, with average scores of 5.94 for Creator and 6.33 for Reader on a scale of 1 to 7 (See Figure 7). In the debriefing, P1 noted, *"I usually get overwhelmed by technology like self-service kiosks, but this was much easier than I expected. It gave me the confidence that even someone like me, who is not tech-savvy, could do it."* Parents with prior experience in creating Social Stories reported that the tool was significantly more convenient than their previous methods. In particular, they highlighted the short time required for story creation and the mobile web support as major advantages, enabling them to make use of spare moments to create content on smartphones (*e.g.*, while waiting for their child during the therapy session).

At the same time, parents pointed out areas where the process could be further supported. While the story creation process was received straightforward, some parents reported challenges in deciding what topics to address. For example, P2 and P15 mentioned difficulties in coming up with appropriate topics, suggesting that the system could be improved by recommending new themes or automatically generating stories around suitable subjects.

Overall, parents expressed satisfaction with the current story design and structure, while also suggesting directions for improvement. Five parents (P1, P3, P11, P12, P15) noted that the narrative pattern often felt monotonous and repetitive, and they expressed a desire for greater variety in story structures. In addition, some parents emphasized the importance of depicting more concrete consequences of children's actions. For instance, P3 and P13 suggested that for risky behaviors, the stories should present more dramatic outcomes, such as injuries or hospital visits. Others proposed the inclusion of expressions commonly used by children (P5) and richer portrayals of emotional states (P7) to make the narratives more relatable and engaging.

6.1.4 Personalization Through Children's Interests. One notable aspect of AutiHero was its ability to reflect parents' inputs about their children's interests, leading to highly personalized stories. Across all created stories, we identified a total of 98 interests, which we grouped into ten categories (see Table 4), including **activity**, **character**, **object**, **sports**, **food**, **place**, **vehicle**, **person**, **animal**, and **other**. The most common category was activities (18%), followed by characters (15%) and objects (15%). On average, each dyad registered interests from 3.69 categories ($SD = 1.96$, $min = 1$ [P10], $max = 8$ [P14–15]). Figure 8 includes some examples excerpted from the participants' stories.

Each parent used an average of 6.13 interests for creating their books, with high variance across dyads ($SD = 4.05$, $min = 3$ [P6–7, P10], $max = 17$ [P14]). Some children seemed to have a wide variety of interests across domains, while others focused narrowly on a small set. According to the debriefing, parents developed their own strategies of what and how to integrate interests to their stories. For example, P4 explained that because C4's interests were relatively narrow, instead of inserting only what the child already liked, she selected story elements that fit the target behavior and contextualized them in ways that would still feel engaging to the child.

Parents also mentioned that not all interests were equally suitable for integration. In some cases, when parents chose an interest that was not typically related to the target behavior, its incorporation went superficial. For instance, P6 described how C6 requested a story set in a haunted house while working on the behavioral goal of "not shouting indoors in public places." Although the haunted house was included as a background illustration, P6 felt that it did not meaningfully shape the storyline and appeared only briefly, limiting its perceived impact.

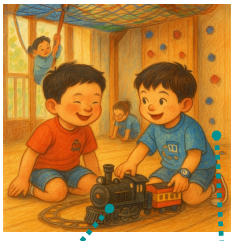
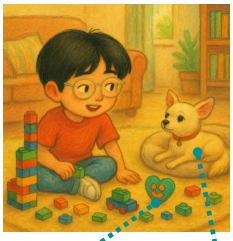
	  No photo The trampoline park is an expansive indoor space vibrantly decorated with … and provide grip while bouncing. **Tranpoline** (Interest) → Tranpoline park	   **Train** (Interest) **Living room** (Place)	   **Lego bricks** (Interest) **[the pet]** (Person)
Title	Playing together peacefully [P15]	Using Words instead of Hands [P7]	Playing with Lego Bricks and [the pet] [P12]
Target Behavior	Do not fight with your younger sibling.	When [the child] doesn't want to do something, instead of hitting his friend, he will say "I don't want to do it."	Do not bother or tease [the pet].

Figure 8: Illustrations excerpted from participants' stories, seamlessly blending the interests, places, and persons chosen by parents.

6.2 Story Reading

We next turn to how parents and children engaged with the stories while reading. Here, we highlight when and how reading occurred, children's reactions to personalized content, and their interactions with the branching story paths.

6.2.1 Reading Activities. Bedtime reading is widely recognized as a common parent–child routine [43, 98], and our interaction logs also reflect that. Figure 9 shows the distribution of story reading durations by hour of day. Participants typically read stories early in the morning before 10AM, around lunchtime, and most prominently in the evening after 6:00 PM; 66% of the reading sessions took place after 6PM and most reading time occurred between 9PM and 10PM. Most parents reported engaging in shared reading with their children in the evening, typically after work and before bedtime. Throughout the study period, participants read stories on a regular basis. On average, parents spent 5.21 minutes per day reading (SD = 3.67, min = 0.57 [D2], max = 16.8 [D15]) and completed 4.25 stories per day (SD = 1.75, min = 1.57 [D2], max = 7.14 [D15]).

The majority of parents observed that their children greatly enjoyed these reading activities and participated proactively. Daily survey results further confirmed this, with children's engagement rated at an average score of 4.02 on a 5-point Likert scale, indicating a high level of engagement. For example, P9 shared, *"When it was our scheduled reading time, my child would bring the tablet to me*

Table 4: Categories of children's interests reflected in created stories, with representative examples and frequency of appearance.

Category	Examples	Count
Activity	Bubble play [C3], Hotel trip [C8], Drawing [C12], Hanging [C14], Janggu (Korean drum) playing [C15]	18 (18%)
Fictional/symbolic characters	Poli [C1], Korean Traditional wedding bride [C10], Pororo [C11], TiniPing [C14], Pinkfong [C15]	15 (15%)
Object	Toy car [C1], Lego [C2], Comic book [C3], AI robot [C7], Circle (object) [C14]	15 (15%)
Sports	Soccer [C6, C9], Swimming [C4, C12, C13, C14], Running [C14], Inline skating [C14, C15]	11 (11%)
Food	Tteokbokki (spicy rice cakes) [C3], Pork cutlet [C11], Kimchi stew [C14], Cucumber [C15], Hamburger [C16]	10 (10%)
Place	Judo gym [C2], Water park [C2, C5], Haunted house [C6], Escalator [C14], Fish cafe [C15]	8 (8%)
Vehicle	Kickboard (scooter) [C2], Train [C3, C7, C9], Bicycle [C4, C5, C14], Subway [C7]	8 (8%)
Person	Friend [C4, C8, C9, C14], Younger brother [C9, C15], Younger sister [C14]	7 (7%)
Animal	Pet dog [C1, C15], Cat [C8], Stingray [C15], Pet cat [C15], Shark [C15]	5 (5%)
Other	Disaster (*e.g.*, earthquake, tornado) [C5]	1 (1%)

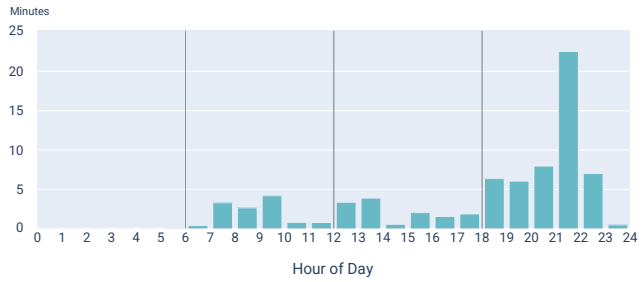


Figure 9: Distribution of story reading durations by hour of day, averaged across dyads. Participants typically read stories in the morning, around lunchtime, and most prominently in the evening. Most reading time occurred between 9:00 PM and 10:00 PM.

and ask me to read the story." Overall, since children greatly enjoyed the stories created with AutiHero and actively participated in the reading sessions, most parents reported that they did not need to employ additional strategies to sustain their child's engagement.

Since many children were either not yet able to read independently or had only just begun to do so, reading was often carried out collaboratively between parents and children. For example, when a child attempted to read aloud but encountered a dialogue, the parent would step in to read those parts (P1), or the parent would read the available options while the child made the choices (P9). Some parents also adapted their reading strategies in response to their child's reactions. P14, for instance, initially focused on presenting only the desirable path but, after noticing that her child paid closer attention to the undesirable path, shifted to emphasizing that aspect instead.

6.2.2 Children's Reaction to Personalized Content. In debriefing, parents reported that having their child's personal interests and contexts in the stories engaged the child in the reading activity. Many children showed heightened interest when they encountered characters that resembled themselves or familiar people. For instance, P6 reported, *"Because people around him appeared and it was a situation he had experienced, he showed much interest."* Children often reacted positively when the story's protagonist, modeled after themselves, engaged in desirable behaviors, smiling in response. Conversely, they showed reluctance when the undesirable path depicted embarrassing scenarios, such as toileting behaviors. Some children also experienced confusion when a character's behavior or appearance diverged from reality. P3 noted, *"No one in our family wears glasses, but the story depicted the father with glasses, and my child seemed unable to recognize the character as his father".*

In addition, P10 observed that her child became overly fixated on specific interests, insisting on repeatedly viewing and discussing only those particular scenes. This tendency was also noted as a potential concern in expert interviews, suggesting that while personalization can enhance engagement, it may also reinforce narrow focus if not carefully managed. P10 noted that in the later part of the study, she created stories without incorporating C10's specific interests, and observed that this allowed C10 to concentrate better.

6.2.3 Children's Interaction with the Story Paths. Most parents found the multi-path story design helpful for parental guidance. They appreciated that the branching structure enabled children to participate proactively (P7), encouraged them to pause and reflect while reading (P10), allowed them to experience the narrative flow of considering the other's emotions alongside their own (P6), and emphasized that there was no single correct answer (P2).

At the same time, several parents suggested the need for greater variety in the story paths. Parents' suggestions included increasing the number of branching paths (P6) as well as providing more varied interactive features beyond multiple choices, such as "*thought-provoking questions before showing the answer*" (P11) and "*puzzles or connect-the-dots activities*" (P15).

Some parents also observed that their child consistently chose only one type of path—either the desirable (P2, P4, P8, P13, P16) or the undesirable (P1, P10) option. This tendency was attributed to factors such as a compulsion to select the correct answer or the stimulating nature of the undesirable paths. In response, most parents encouraged their children to explore the alternative path by prompting them with statements such as, "*Let's see the other path, too,*" thereby helping them recognize the consequences of different choices.

6.3 Impact of AutiHero on Parenting

In the exit survey, participants rated the extent of changes in the children's behaviors related to the target behaviors that were created and read as stories, as well as changes in the parents' responses (see Figure 10). Combining these results with the qualitative feedback in debriefing, we discuss the impact of AutiHero on the dyads.

6.3.1 Behavioral Changes Observed in Children. Despite the relatively short two-week period, many parents reported observable positive behavioral changes in their children (see Figure 10a). These changes were noted across various domains, such as trying a new ride at the playground (P5), overcoming fear of rain (P7), and getting along better with a younger sibling (P9). Every parent participant reported at least one positive behavioral change, and 72% of the target behaviors were reported to have improved. Such a high rate of improvement can be attributed not only to the act of reading the stories but also to the effort parents invested in the process of creating them, during which they reflected on how best to support their children. For instance, P8 shared, *"While making the story, I thought about how I could help my child become more aware, and I decided to use a timer for time management. By setting a limit of 30 minutes, my child was able to turn off YouTube after the time was up."*

Parents cited these tangible outcomes—along with the ease of use of the system—as a key reason for their high ratings on the *Intention to keep using* of the TAM survey (6.34 for Creator, 6.19 for Reader; See Figure 7). As P7 reflected, *"Honestly, I was skeptical about how much my child would change in just two weeks from reading this, but it was helpful because my child did adopt the target behavior. And since it wasn't a burden for me to create, I want to continue using it."* Similarly, P9 remarked, *"My child, who used to be a picky eater, suddenly said they wanted to eat broccoli! I was so surprised because the change was so unexpected."* However, 24% of the target behaviors

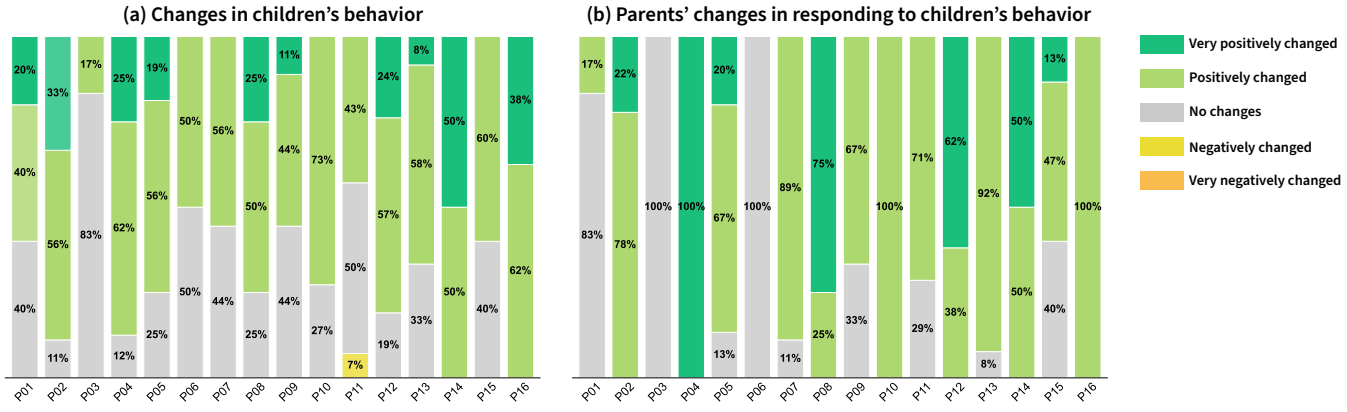


Figure 10: Reported changes in children's behaviors (a) and parental behaviors (b) in response to children's behaviors, based on the exit surveys with parents. The y-axis denotes the ratio of target behaviors against total number of behaviors per each participant.

were reported to be unchanged. In debriefing, participants shared behaviors that were not easily affected, most of which were related to stimming or impulsivity. P10 noted: *I didn't really see any change in the areas where she needs to regulate her emotions on her own. Like, when she's happy she still kind of bounces off the walls, and when she's upset she still throws tantrums. That part just wouldn't get better.*" P12 also shared, *"Talking about monsters is like his biggest challenge to work through. It just comes out of him. It's something we really have to watch over a long period of time, so with just this short story it doesn't really sink in."* Only P11 reported one negative behavioral change, which was associated with screen time. She noted that because the reading was conducted on a tablet, her child expressed a desire to watch videos while reading the story.

6.3.2 Parental Reflections in Responding to Children's Behaviors. Many parents reported that creating and reading stories with AutiHero positively influenced their approach to addressing their child's challenging behaviors. According to the survey on changes in parent behavior, parents reported that in 82% of the cases, their own responses to the behaviors became more positive (See Figure 10b). P8 described, *"The process of creating the story became an opportunity to reflect on my child's behavior and think more from their perspective."* Similarly, P10 noted, *"The story served as a reminder of how I should act as a parent."*

Because children were able to naturally learn desirable behaviors while reading the stories, many parents appreciated being able to address challenging behaviors through storytelling rather than through scolding or nagging. Several parents (P3–4, P6, P10) noted, *"Normally, I would have nagged, but we could talk about what is right and what is wrong as part of the story, which was really helpful."* Similarly, P10 reflected, *"Instead of getting angry, yelling, and scolding like I usually do, I could put those situations into the story and teach indirectly. That way, I felt I didn't have to scold as much."* Parents also reported that the stories encouraged them to reconsider behaviors they had previously overlooked or simply accepted because of autism. As P4 stated, *"Since I didn't expect much in terms of social behaviors, I often just left things alone. But realizing that I could create a story about it changed my thinking, and that was positive."* Likewise, P9 shared, *"I started to look at my child with a longer-term perspective, and I realized that behaviors I used to simply accept as part of autism could, in fact, be changed."* This shift in perspective further extended to parents' overall mindset, highlighting the importance of focusing on what the child enjoys and does well rather than on what they cannot do. For example, P14 reflected, *"Even beyond the story, I made a commitment to talk together while engaging with the things my child likes and is good at."*

7 Discussion

In this section, we discuss findings from our two-week deployment, linking parents' story practices to children's engagement and outcomes. We highlight how co-creation supports children's agency, identify needed safeguards and long-term support for generative AI–based systems, and conclude with limitations and future directions.

7.1 Supporting Children's Agency through Co-Creation with Parents

During our deployment, we observed the potential for parents and children to collaborate by co-creating the stories. Although most parents created stories when their child was not present, we observed several instances in which parents and children collaborated on story creation, with children taking an active role. For example, P8 described eliciting C9's input while creating a story together, and P1 noted that C1 spontaneously expressed a desire to participate: *"After I told my child that I had made the story, he became very enthusiastic and said he wanted to try making one as well. I felt it was significant that my child took the initiative, offering his own ideas for possible lessons and even requesting that I create a story with the content he suggested."* As prior work has noted [16, 59], if the system were to support child participation—for instance, by allowing children to directly select the interests or characters to

be included in a story—it should not only reduce the burden on parents but also promote children's agency, self-expression, and more active engagement in reading.

Several factors require attention. When children become overly fixated on particular interests, story diversity may be limited, or connections to the intended learning goals may weaken. Moreover, not all autistic children may show the same level of interest or ability in participating in creating stories, highlighting the need for flexible design that accommodates varying levels of engagement. In this regard, the system could play a supportive role by recommending topics tailored to children's developmental levels, encouraging diversification of interests, and scaffolding the collaboration process to facilitate positive co-creation experiences without overwhelming either parent or child.

7.2 Comprehensive Coverage of Autistic Children's Core Behavioral Challenges

Although mapping out autistic children's challenging behaviors was not the primary aim of our study, the target behaviors collected comprehensively covered the characteristic domains often observed in autistic children. For instance, the Autism Diagnostic Interview-Revised (ADI-R) [58], a widely used assessment tool for autism, includes 93 items across three core domains: language/communication, reciprocal social interactions, and restricted, repetitive, and stereotyped behaviors and interests. All three domains were prominently represented in the stories created by parents with AutiHero. As illustrated in Table 3, self-expression corresponds to the communication domain, interpersonal norms onto the social interaction, and stimming aligns directly with the restricted and repetitive behaviors domain. This alignment indicates that, even without explicitly referencing clinical taxonomies, parents' choices of story topics based on their everyday experiences with their children naturally overlapped with clinically defined domains of autism. Such comprehensiveness underscores that AutiHero effectively reflected the real challenges faced by autistic children, indicating that it can provide tailored support for their distinctive developmental and behavioral difficulties.

7.3 Considerations on Parent-driven Story Creation

One distinctive feature of AutiHero is that parents themselves take the lead in the entire story creation process—from selecting target behaviors to reflecting child's interests, and reading the stories to their children. This approach offers several advantages. It empowers parents to participate as active agents in the intervention process, ensures that the stories are relevant to children's everyday contexts, and allows parents to address both immediate challenges and broader developmental goals. Parents also reported that the process of creating, reviewing, and reading stories served as an opportunity to reflect more deliberately on their parenting strategies and communication styles.

At the same time, parent-driven selection of behaviors raises important considerations regarding appropriateness and safety. Parents may sometimes prioritize behaviors based on personal values or situational frustrations rather than evidence-based intervention priorities [11], potentially leading to misalignment with the child's developmental needs. In some cases, parents may attempt to modify behaviors closely tied to autism-specific traits (*e.g.*, stimming), where overly controlling or punitive framing could impose emotional burdens or stress on the child [52]. Moreover, variability in parents' knowledge of child development and autism may lead to the varied effectiveness of the stories.

These risks highlight the need for system design that respects parental autonomy while also providing appropriate guidance and safeguards. For example, AutiHero could incorporate scaffolding mechanisms or topic recommendations tailored to developmental levels, drawing on ADI-R. The system could also provide model stories that demonstrate how to address sensitive behaviors in supportive and constructive ways, enabling parents to create content that is both safe and effective. In this way, parent-driven story creation can retain its advantages of personal relevance and practical applicability, while minimizing the risk of misdirection and more responsibly supporting the developmental and behavioral growth of autistic children.

7.4 Considerations for Long-term Engagement

Through our two-week deployment, we were able to observe behavioral changes in both children and parents. However, longer-term use of the system would likely reveal richer patterns and effects. To foster sustained engagement, several additional directions and design considerations can be explored.

First, the system could support selecting target behaviors. Following the two-week deployment, some parents reported that they had an abundance of behaviors they wished to address while others found it challenging. To assist parents who struggle, future systems could automatically recommend target behaviors. Similar to prior work which tracked daily speech to extract target words to be integrated into storybooks [66], our system could be extended to automatically detect target behaviors from parents' and children's speech and embed them into narratives. Building on research on recognition of social behaviors [25], the system could also leverage everyday audio-visual data of children to identify relevant behaviors and suggest them as target goals.

Second, the system would support stories with varying levels of difficulty and narrative structures. Currently, the stories generated by AutiHero are fixed to a single level of reading difficulty. In our study, we calibrated difficulty to an elementary school level using Flesch-Kincaid Grade Level [31] and CEFR [78]. However, the literacy skills of autistic children vary widely and will continue to evolve as they grow. Providing options to adjust vocabulary complexity, sentence structure, and story length would allow better alignment with each child's needs. Furthermore, the current stories follow a uniform structure. For sustained engagement, structural variation would be needed. For example, serialized narratives [82] could help children develop deeper attachment to characters and scenarios. Supporting alternative formats such as diary-style or dialogue-based stories could also help maintain children's interest over time.

7.5 Design Considerations for Generative AI-driven Story Creation to Support Autistic Children

This study highlights important design considerations for leveraging generative AI to support parents in creating and reading stories with their autistic children. Parents reported that the story creation process encouraged them to reflect not only on their child's behaviors but also on their own parenting approaches. This suggests that story creation tools should go beyond efficient content generation to serve as reflective aids for parents. Parents also noted that storytelling allowed them to guide their children without relying on scolding or discipline. Generative AI can reinforce this shift by suggesting calm, supportive language, modeling constructive dialogue styles. Such design choices can support both children's learning and the cultivation of positive parenting attitudes.

Because the stories were grounded in everyday life, parents could naturally use them as a medium for conversation, transforming them from educational tools into medium for family communication. For example, P16 reflected, *"My child's expressive language is implicit and limited, so I often struggled with what topics to bring up. The story became a good conversation starter, enabling questions and responses."* This testifies to the potential that parent-driven story creation systems should incorporate personalization features not only grounded in children's lived realities but also parents' relational goals. In other words, stories should be carefully designed and generated to reflect parent-child dynamics.

Taken together, our work suggests design considerations that go beyond personalized social narrative generation tool for parents—alongside the content-generating AI, a systemic element should accompany to embrace reflective parenting, developmental appropriateness, and guardrails against potential risks to ensure and encourage better behavioral guidance and positive change.

7.6 Limitations and Future Work

Our work is not without limitations. In deployment study, the child participants were dominated by boys, with only two girls, which limits our ability to examine potential gender differences in children's engagement and the patterns of target behaviors and topics. Nonetheless, we note that this gender imbalance may be partly consistent with the male-to-female ratio of autism population in Korea (approximately 4:1) for children aged 7–12 [79].

Also, we relied primarily on parent reports and system logs to assess children's reactions and behavioral changes. While parents provided valuable perspectives, we were unable to directly observe children's in-situ interactions with the stories. This reliance may have introduced bias, as parents might interpret children's engagement or progress in ways that align with their expectations. Prior work has likewise attempted, but struggled, to capture such interactions [19]. As noted in earlier work [88, 96, 97], future research should incorporate complementary methods—such as direct observation, video recordings, or child-centered measures of engagement—to provide a more holistic understanding of how children themselves experience and respond to story-based interventions.

8 Conclusion

In this work, we present AutiHero, a generative AI–based social narrative system that helps parents create and read personalized stories with their autistic children. Drawing from formative interviews with autism experts, AutiHero is designed to reflect the children's personal interests and target behavior, and incorporate multi-path story structure that allows the children to rehearse behavioral options in reading. A two-week deployment study with 16 parent–child dyads showed that AutiHero eased parents' burden of repeatedly explaining social norms, encouraged more constructive caregiving practices, and fostered children's engagement and positive behavioral changes. Based on our findings, we discuss design considerations that respect child agency, ensure safety and better support long-term parent-child engagement.

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References

[1] 2025. Social Story Creator. Retrieved Jul. 04, 2025 from https://www.socialstorycreator.app/

[2] Faihan Alotaibi, Yota Dimitriadi, and Anthony E Kemp. 2016. Perceptions of teachers using social stories for children with autism at special schools in Saudi Arabia. *Journal of education and Practice* 7, 11 (2016), 85–97.

[3] Michael Argyle, Veronica Salter, Hilary Nicholson, Marylin Williams, and Philip Burgess. 1970. The communication of inferior and superior attitudes by verbal and non-verbal signals. *British journal of social and clinical psychology* 9, 3 (1970), 222–231.

[4] Tony Attwood. 2003. Understanding and managing circumscribed interests. *Learning and behavior problems in Asperger syndrome* 126 (2003), 147.

[5] Simon Baron-Cohen, Alan M Leslie, and Uta Frith. 1985. Does the autistic child have a "theory of mind"? *Cognition* 21, 1 (1985), 37–46.

[6] Leasha M Barry and Suzanne B Burlew. 2004. Using social stories to teach choice and play skills to children with autism. *Focus on Autism and Other Developmental Disabilities* 19, 1 (2004), 45–51.

[7] Rongqi Bei, Yajie Liu, Yihe Wang, Yuxuan Huang, Ming Li, Yuhang Zhao, and Xin Tong. 2024. StarRescue: the Design and Evaluation of A Turn-Taking Collaborative Game for Facilitating Autistic Children's Social Skills. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*. 1–19.

[8] Scott Bellini and Jennifer Akullian. 2007. A meta-analysis of video modeling and video self-modeling interventions for children and adolescents with autism spectrum disorders. *Exceptional children* 73, 3 (2007), 264–287.

[9] Brian A. Boyd. 2002. Examining the Relationship BetWeen Stress and Lack of Social Support in Mothers of Children With Autism. *Focus on Autism and Other Developmental Disabilities* 17, 4 (2002), 208–215. arXiv:https://doi.org/10.1177/10883576020170040301 doi:10.1177/10883576020170040301

[10] Virginia Braun and Victoria Clarke. 2006. Using thematic analysis in psychology. *Qualitative research in psychology* 3, 2 (2006), 77–101.

[11] Lauren Brookman-Frazee, Aubyn Stahmer, Mary J Baker-Ericzén, and Katherine Tsai. 2006. Parenting interventions for children with autism spectrum and disruptive behavior disorders: Opportunities for cross-fertilization. *Clinical child and family psychology review* 9, 3 (2006), 181–200.

[12] Mike D Brownell. 2002. Musically adapted social stories to modify behaviors in students with autism: Four case studies. *Journal of music therapy* 39, 2 (2002), 117–144.

[13] Yvonne Bruinsma, Robert L Koegel, and Lynn Kern Koegel. 2004. Joint attention and children with autism: A review of the literature. *Mental retardation and developmental disabilities research reviews* 10, 3 (2004), 169–175.

[14] Björn Callenmark, Lars Kjellin, Louise Rönnqvist, and Sven Bölte. 2014. Explicit versus implicit social cognition testing in autism spectrum disorder. *Autism* 18, 6 (2014), 684–693.

[15] Louis John Camilleri, Katie Maras, and Mark Brosnan. 2024. Supporting autistic communities through parent-led and child/young person-led digital social story

interventions: an exploratory study. *Frontiers in Digital Health* 6 (2024), 1355795.
[16] Xiang Cao, Siân E Lindley, John Helmes, and Abigail Sellen. 2010. Telling the whole story: anticipation, inspiration and reputation in a field deployment of TellTable. In *Proceedings of the 2010 ACM conference on Computer supported cooperative work*. 251–260.
[17] Yancheng Cao, Yangyang He, Yonglin Chen, Menghan Chen, Shanhe You, Yulin Qiu, Min Liu, Chuan Luo, Chen Zheng, Xin Tong, et al. 2025. Designing LLM-simulated Immersive Spaces to Enhance Autistic Children's Social Affordances Understanding in Traffic Settings. In *Proceedings of the 30th International Conference on Intelligent User Interfaces*. 519–537.
[18] Marjorie H Charlop-Christy, Loc Le, and Kurt A Freeman. 2000. A comparison of video modeling with in vivo modeling for teaching children with autism. *Journal of autism and developmental disorders* 30, 6 (2000), 537–552.
[19] Dasom Choi, SoHyun Park, Kyungah Lee, Hwajung Hong, and Young-Ho Kim. 2025. AACessTalk: Fostering Communication between Minimally Verbal Autistic Children and Parents with Contextual Guidance and Card Recommendation. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*. 1–25.
[20] Dominique H Como, Margaret Goodfellow, Delaney Hudak, and Sharon A Cermak. 2024. A scoping review: social stories supporting behavior change for individuals with autism. *Journal of Occupational Therapy, Schools, & Early Intervention* 17, 1 (2024), 154–175.
[21] Christan Grygas Coogle, Siddiq Ahmed, Mohammed Abdulaziz Aljaffal, Manal Yousef Alsheef, and Hamad Ali Hamdi. 2018. Social narrative strategies to support children with autism spectrum disorder. *Early Childhood Education Journal* 46, 4 (2018), 445–450.
[22] Monica Delano and Martha E Snell. 2006. The effects of social stories on the social engagement of children with autism. *Journal of positive behavior interventions* 8, 1 (2006), 29–42.
[23] Monica E Delano. 2007. Video modeling interventions for individuals with autism. *Remedial and Special Education* 28, 1 (2007), 33–42.
[24] Chengyun Deng, Shuzhong Lai, Chi Zhou, Mengyi Bao, Jingwen Yan, Haifeng Li, Lin Yao, and Yueming Wang. 2024. ASD-Chat: An innovative dialogue intervention system for children with autism based on llm and vb-mapp. *arXiv preprint arXiv:2409.01867* (2024).
[25] Shijian Deng, Erin E Kosloski, Siddhi Patel, Zeke A Barnett, Yiyang Nan, Alexander Kaplan, Sisira Aarukapalli, William T Doan, Matthew Wang, Harsh Singh, et al. 2024. Hear me, see me, understand me: Audio-visual autism behavior recognition. *IEEE Transactions on Multimedia* (2024).
[26] Linda J. Eason, Martha J. White, and Crighton Newsom. 1982. Generalized reduction of self-stimulatory behavior: An effect of teaching appropriate play to autistic children. *Analysis and Intervention in Developmental Disabilities* 2, 2 (1982), 157–169. doi:10.1016/0270-4684(82)90016-7 Special Issue: Educational Interventions and Analyses.
[27] Kelly AM Edwards, Elizabeth LW McKenney, Nick Niekra, Stephen DA Hupp, and Gregory E Everett. 2021. Personalization of social narratives for students with Autism Spectrum Disorder: Brief experimental analysis. *Research in Autism Spectrum Disorders* 89 (2021), 101877.
[28] LLC. Ella Software. 2025. Ella. Retrieved Jul. 04, 2025 from https://www.ella.kids/
[29] FastAPI. 2025. FastAPI framework, high performance, easy to learn, fast to code, ready for production. Retrieved Sep 1, 2025 from https://fastapi.tiangolo.com/
[30] Yi Feng, Mingyang Song, Jiaqi Wang, Zhuang Chen, Guanqun Bi, Minlie Huang, Liping Jing, and Jian Yu. 2025. SS-GEN: A Social Story Generation Framework with Large Language Models. In *Proceedings of the AAAI Conference on Artificial Intelligence*, Vol. 39. 1300–1308.
[31] Rudolph Flesch. 1948. A new readability yardstick. *Journal of applied psychology* 32, 3 (1948), 221.
[32] Sean Follmer, Rafael Ballagas, Hayes Raffle, Mirjana Spasojevic, and Hiroshi Ishii. 2012. People in books: using a FlashCam to become part of an interactive book for connected reading. In *Proceedings of the ACM 2012 conference on Computer supported cooperative work*. 685–694.
[33] Leilani Forby, Nicola C Anderson, Joey T Cheng, Tom Foulsham, Bradley Karstadt, Jessica Dawson, Farid Pazhoohi, and Alan Kingstone. 2023. Reading the room: Autistic traits, gaze behaviour, and the ability to infer social relationships. *Plos one* 18, 3 (2023), e0282310.
[34] Uta Frith. 2003. *Autism: Explaining the enigma*. Blackwell publishing.
[35] Isser Troy Gagan, Maria Angela Mikaela Matias, Ivy Tan, Christianne Marie Vinco, and Ethel Ong. 2023. Preparing children with Level 1 ASD for social interactions through storytelling with Amy: An exploratory study. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–7.
[36] Elisa Gagnon. 2001. *Power cards: Using special interests to motivate children and youth with Asperger syndrome and autism*. AAPC Publishing.
[37] Roopa Gandhi, Jennifer Jackson, and Chaitanya P Puranik. 2024. A comparative evaluation of video modeling and social stories for improving oral hygiene in children with autism spectrum disorder: A pilot study. *Special Care in Dentistry* 44, 3 (2024), 797–803.
[38] Carol Gray. 1994. *Comic strip conversations: Illustrated interactions that teach conversation skills to students with autism and related disorders*. Future Horizons.
[39] Carol Gray. 2000. *The new social story book*. Future Horizons.
[40] Carol A Gray and Joy D Garand. 1993. Social stories: Improving responses of students with autism with accurate social information. *Focus on autistic behavior* 8, 1 (1993), 1–10.
[41] The PostgreSQL Global Development Group. 2025. PostgreSQL: The World's Most Advanced Open Source Relational Database. Retrieved Sep 1, 2025 from https://www.postgresql.org/
[42] Kerry CM Gunn and Jonathan T Delafield-Butt. 2016. Teaching children with autism spectrum disorder with restricted interests: A review of evidence for best practice. *Review of Educational Research* 86, 2 (2016), 408–430.
[43] Lauren Hale, Lawrence M Berger, Monique K LeBourgeois, and Jeanne Brooks-Gunn. 2011. A longitudinal study of preschoolers' language-based bedtime routines, sleep duration, and well-being. *Journal of Family Psychology* 25, 3 (2011), 423.
[44] Francesca GE Happé. 1997. Central coherence and theory of mind in autism: Reading homographs in context. *British journal of developmental psychology* 15, 1 (1997), 1–12.
[45] Linda Quirk Hodgdon. 1995. Solving social-behavioral problems through the use of visually supported communication. *Teaching children with autism: Strategies to enhance communication and socialization* (1995), 265–286.
[46] Suzannah Iadarola, José Pérez-Ramos, Tristram Smith, and Ann Dozier. 2019. Understanding stress in parents of children with autism spectrum disorder: A focus on under-represented families. *International journal of developmental disabilities* 65, 1 (2019), 20–30.
[47] Mega Iswari, Elsa Efrina, Arisul Mahdi, et al. 2019. Developing Social Skills of Autistic Children through Role Play. In *1st Non Formal Education International Conference (NFEIC 2018)*. Atlantis Press, 64–68.
[48] Heike Jacob, Benjamin Kreifelts, Carolin Brück, Michael Erb, Franziska Hösl, and Dirk Wildgruber. 2012. Cerebral integration of verbal and nonverbal emotional cues: impact of individual nonverbal dominance. *NeuroImage* 61, 3 (2012), 738–747.
[49] Tjeerd Jellema, Jeannette Lorteije, Sophie van Rijn, Mascha van t'Wout, Edward de Haan, Herman van Engeland, and Chantal Kemner. 2009. Involuntary interpretation of social cues is compromised in autism spectrum disorders. *Autism Research* 2, 4 (2009), 192–204.
[50] Therese Jolliffe and Simon Baron-Cohen. 1999. A test of central coherence theory: linguistic processing in high-functioning adults with autism or Asperger syndrome: is local coherence impaired? *Cognition* 71, 2 (1999), 149–185.
[51] Steven K Kapp, Robyn Steward, Laura Crane, Daisy Elliott, Chris Elphick, Elizabeth Pellicano, and Ginny Russell. 2019. 'People should be allowed to do what they like': Autistic adults' views and experiences of stimming. *Autism* 23, 7 (2019), 1782–1792. arXiv:https://doi.org/10.1177/1362361319829628 doi:10.1177/1362361319829628 PMID: 30818970.
[52] Steven K Kapp, Robyn Steward, Laura Crane, Daisy Elliott, Chris Elphick, Elizabeth Pellicano, and Ginny Russell. 2019. 'People should be allowed to do what they like': Autistic adults' views and experiences of stimming. *Autism* 23, 7 (2019), 1782–1792.
[53] Alicia Ann Karwal. 2007. Use of social stories for students with autism spectrum disorders. (2007).
[54] Katharine Keeling, Brenda Smith Myles, Elisa Gagnon, and Richard L Simpson. 2003. Using the power card strategy to teach sportsmanship skills to a child with autism. *Focus on Autism and Other Developmental Disabilities* 18, 2 (2003), 105–111.
[55] Cara M Keifer, Amori Yee Mikami, James P Morris, Erin J Libsack, and Matthew D Lerner. 2020. Prediction of social behavior in autism spectrum disorders: Explicit versus implicit social cognition. *Autism* 24, 7 (2020), 1758–1772.
[56] Lorcan Kenny, Caroline Hattersley, Bonnie Molins, Carole Buckley, Carol Povey, and Elizabeth Pellicano. 2016. Which terms should be used to describe autism? Perspectives from the UK autism community. *Autism* 20, 4 (2016), 442–462. arXiv:https://doi.org/10.1177/1362361315588200 doi:10.1177/1362361315588200 PMID: 26134030.
[57] Muhammad Usman Khalid, Hina Fazil, and Maria Shoaib Qureshi. 2023. Development of Social Skills by Using Simulation Method for Children with Autism Spectrum Disorder. *Journal of Development and Social Sciences* 4, 3 (2023), 459–478.
[58] So Hyun Kim, Audrey Thurm, Stacy Shumway, and Catherine Lord. 2013. Multisite study of new autism diagnostic interview-revised (ADI-R) algorithms for toddlers and young preschoolers. *Journal of autism and developmental disorders* 43, 7 (2013), 1527–1538.
[59] Natalia Kucirkova. 2019. Children's agency by design: Design parameters for personalization in story-making apps. *International Journal of Child-Computer Interaction* 21 (2019), 112–120.
[60] Natalia Kucirkova, Merideth Gattis, Thomas P Spargo, Beatriz Seisdedos de Vega, and Rosie Flewitt. 2021. An empirical investigation of parent-child shared reading of digital personalized books. *International Journal of Educational*

Research 105 (2021), 101710.

[61] Natalia Kucirkova, David Messer, and Kieron Sheehy. 2014. Reading personalized books with preschool children enhances their word acquisition. *First Language* 34, 3 (2014), 227–243.

[62] Natalia Kucirkova, David Messer, and Denise Whitelock. 2013. Parents reading with their toddlers: The role of personalization in book engagement. *Journal of Early Childhood Literacy* 13, 4 (2013), 445–470.

[63] Inc. LangChain. 2025. LangChain: Applications that Can Reason. Retrieved Sep 1, 2025 from https://www.langchain.com/

[64] Elizabeth Larson. 2006. Caregiving and autism: How does children's propensity for routinization influence participation in family activities? *OTJR: Occupation, participation and health* 26, 2 (2006), 69–79.

[65] Justin B Leaf, Julia L Ferguson, Joseph H Cihon, Christine M Milne, Ronald Leaf, and John McEachin. 2020. A critical review of social narratives. *Journal of Developmental and Physical Disabilities* 32, 2 (2020), 241–256.

[66] Jungeun Lee, Suwon Yoon, Kyoosik Lee, Eunae Jeong, Jae-Eun Cho, Wonjeong Park, Dongsun Yim, and Inseok Hwang. 2024. Open Sesame? Open Salami! Personalizing Vocabulary Assessment-Intervention for Children via Pervasive Profiling and Bespoke Storybook Generation. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*. 1–32.

[67] Susan R Leekam, Beatriz Lopez, and Chris Moore. 2000. Attention and joint attention in preschool children with autism. *Developmental psychology* 36, 2 (2000), 261.

[68] Susan R Leekam, Margot R Prior, and Mirko Uljarevic. 2011. Restricted and repetitive behaviors in autism spectrum disorders: a review of research in the last decade. *Psychological bulletin* 137, 4 (2011), 562.

[69] Fēi Li, Mingyu Xu, Danping Wu, Yun Tang, Lingli Zhang, Xin Liu, Li Zhou, Fei Li, and Liping Jiang. 2022. From child social impairment to parenting stress in mothers of children with ASD: The role of parental self-efficacy and social support. *Frontiers in Psychiatry* 13 (2022), 1005748.

[70] Peggy A Lorimer, Richard L Simpson, Brenda Smith Myles, and Jennifer B Ganz. 2002. The use of social stories as a preventative behavioral intervention in a home setting with a child with autism. *Journal of positive behavior interventions* 4, 1 (2002), 53–60.

[71] Alonna Marcus and David A Wilder. 2009. A comparison of peer video modeling and self video modeling to teach textual responses in children with autism. *Journal of applied behavior analysis* 42, 2 (2009), 335–341.

[72] Goldie A McQuaid, Kevin A Pelphrey, Susan Y Bookheimer, Mirella Dapretto, Sara J Webb, Raphael A Bernier, James C McPartland, John D Van Horn, and Gregory L Wallace. 2021. The gap between IQ and adaptive functioning in autism spectrum disorder: Disentangling diagnostic and sex differences. *Autism* 25, 6 (2021), 1565–1579. arXiv:https://doi.org/10.1177/1362361321995620 doi:10.1177/1362361321995620 PMID: 33715473.

[73] G Mesibov and Victoria Shea. 2008. Structured teaching and environmental supports. *Learners on the autism spectrum: Preparing highly qualified educators* (2008), 114–137.

[74] Meta. 2025. React Native - Learn Once, Write Everywhere. Retrieved Sep 1, 2025 from https://reactnative.dev/

[75] Meta. 2025. React: The library for web and native user interfaces. Retrieved Sep 1, 2025 from https://react.dev

[76] Microsoft. 2025. TypeScript. Retrieved Sep 1, 2025 from https://www.typescriptlang.org

[77] Miro. 2025. Miro. Retrieved Sep 1, 2025 from https://miro.com/

[78] Council of Europe. Council for Cultural Co-operation. Education Committee. Modern Languages Division. 2001. *Common European framework of reference for languages: Learning, teaching, assessment.* Cambridge University Press.

[79] Korean Ministry of Health and Welfare. 2025. Ministry of Health and Welfare, Status of Persons with Disabilities, 2024, 2025.09.11, Number of Registered Persons with Disabilities Nationwide by Age, Disability Type, and Gender. Retrieved Sep 1, 2025 from https://kosis.kr/statHtml/statHtml.do?orgId=117&tblId=DT_11761_N003&conn_path=I2

[80] OpenAI. 2025. OpenAI API. Retrieved Sep 1, 2025 from https://openai.com/api/

[81] Roderick D O'Handley, Keith C Radley, and Heather M Whipple. 2015. The relative effects of social stories and video modeling toward increasing eye contact of adolescents with autism spectrum disorder. *Research in Autism Spectrum Disorders* 11 (2015), 101–111.

[82] Sean O'Sullivan. 2019. Six elements of serial narrative. *Narrative* 27, 1 (2019), 49–64.

[83] Michael Alexander Pelzl, Gabrielle Travers-Podmaniczky, Carolin Brück, Heike Jacob, Jonatan Hoffmann, Anne Martinelli, Lea Hölz, Dominik Wabersich-Flad, and Dirk Wildgruber. 2023. Reduced impact of nonverbal cues during integration of verbal and nonverbal emotional information in adults with high-functioning autism. *Frontiers in psychiatry* 13 (2023), 1069028.

[84] Angelo Picardi, Antonella Gigantesco, Emanuele Tarolla, Vera Stoppioni, Renato Cerbo, Maurizio Cremonte, Guido Alessandri, Ilaria Lega, and Franco Nardocci. 2018. Parental burden and its correlates in families of children with autism spectrum disorder: a multicentre study with two comparison groups. *Clinical practice and epidemiology in mental health: CP & EMH* 14 (2018), 143.

[85] Kathleen A Quill. 1997. Instructional considerations for young children with autism: The rationale for visually cued instruction. *Journal of autism and developmental disorders* 27, 6 (1997), 697–714.

[86] Caroline E Robertson and Simon Baron-Cohen. 2017. Sensory perception in autism. *Nature Reviews Neuroscience* 18, 11 (2017), 671–684.

[87] Gabriella Rundblad and Dagmara Annaz. 2010. The atypical development of metaphor and metonymy comprehension in children with autism. *Autism* 14, 1 (2010), 29–46.

[88] Katta Spiel, Christopher Frauenberger, Os Keyes, and Geraldine Fitzpatrick. 2019. Agency of autistic children in technology research—A critical literature review. *ACM Transactions on Computer-Human Interaction (TOCHI)* 26, 6 (2019), 1–40.

[89] Mary E Stewart, Natalie Russo, Jennifer Banks, Louisa Miller, and Jacob A Burack. 2009. Sensory characteristics in ASD. *McGill Journal of Medicine: MJM* 12, 2 (2009), 108.

[90] Shyam Sundar Rajagopalan, Abhinav Dhall, and Roland Goecke. 2013. Self-Stimulatory Behaviours in the Wild for Autism Diagnosis. In *Proceedings of the IEEE International Conference on Computer Vision (ICCV) Workshops*.

[91] Kathy S Thiemann and Howard Goldstein. 2001. Social stories, written text cues, and video feedback: Effects on social communication of children with autism. *Journal of applied behavior analysis* 34, 4 (2001), 425–446.

[92] David Trembath, Mandeep Gurm, Nichole E Scheerer, Dominic A Trevisan, Jessica Paynter, Gal Bohadana, Jacqueline Roberts, and Grace Iarocci. 2019. Systematic review of factors that may influence the outcomes and generalizability of parent-mediated interventions for young children with autism spectrum disorder. *Autism Research* 12, 9 (2019), 1304–1321.

[93] David Trembath, Giacomo Vivanti, Teresa Iacono, and Cheryl Dissanayake. 2015. Accurate or assumed: Visual learning in children with ASD. *Journal of Autism and Developmental Disorders* 45, 10 (2015), 3276–3287.

[94] Hatice Ulu Aydin, Ilknur Cifci Tekinarslan, and Yesim Gulec Aslan. 2024. The power card strategy: Strength-based intervention against bullying for children with autism spectrum disorder. *Journal of autism and developmental disorders* 54, 12 (2024), 4408–4431.

[95] Viswanath Venkatesh and Hillol Bala. 2008. Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences* 39, 2 (2008), 273–315. arXiv:https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1540-5915.2008.00192.x doi:10.1111/j.1540-5915.2008.00192.x

[96] Cara Wilson, Margot Brereton, Bernd Ploderer, and Laurianne Sitbon. 2019. Co-Design Beyond Words: 'Moments of Interaction'with Minimally-Verbal Children on the Autism Spectrum. In *Proceedings of the 2019 CHI conference on human factors in computing systems*. 1–15.

[97] Cara Wilson, Laurianne Sitbon, Bernd Ploderer, Jeremy Opie, and Margot Brereton. 2020. Self-expression by design: Co-designing the expressiball with minimally-verbal children on the autism spectrum. In *Proceedings of the 2020 CHI conference on human factors in computing systems*. 1–13.

[98] Sharon Writer. 2018. The bedtime story: A new chapter. *Indian Journal of Health and Wellbeing* 9, 1 (2018), 155–57.

[99] Writify.AI. 2025. Writify.AI: AI Social Story Creator. Retrieved Jul. 04, 2025 from https://writify.ai/tool/ai-social-story-creator

[100] Wenjie Xu, Zhoutong Yu, Yikun Liu, and Fangtian Ying. 2025. Accompany Sleep: Using GenAI to Create Bedtime Stories for Mediating Parent-Child Relationships in LBC Families. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*. 1–19.

[101] Nuria Yela-González, Montserrat Santamaría-Vázquez, and Juan Hilario Ortiz-Huerta. 2021. Activities of Daily Living, Playfulness and Sensory Processing in Children with Autism Spectrum Disorder: A Spanish Study. *Children* 8, 2 (2021). doi:10.3390/children8020061

[102] Niloofar Zarei, Sharon Lynn Chu, Francis Quek, Nanjie'Jimmy' Rao, and Sarah Anne Brown. 2020. Investigating the effects of self-avatars and story-relevant avatars on children's creative storytelling. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–11.

[103] Kathleen N Zimmerman and Jennifer R Ledford. 2017. Beyond ASD: Evidence for the effectiveness of social narratives. *Journal of Early Intervention* 39, 3 (2017), 199–217.

A Appendix: Story Text Generation Prompt

```
[Role]
You are a story writer for children with Autism Spectrum
Disorder (ASD).

[Task]
Your goal is to write a short, realistic, and socially
meaningful story for a child with ASD. Write a complete story
using the structure and rules above. Use the child information
to guide the content. Let the child's information guide the
content, and make the story engaging by meaningfully
incorporating one or more of the child's interests. Select
interests that can be naturally integrated into the story.

[Inputs]
= Child Information:
    {child_information_structure}

= Story Parameters:
    {story_parameters_structure}

= Candidate Characters:
    {candidate_characters_structure}

= Candidate Places:
    {candidate_places_structure}

[Story Structure]
The data structure of the story is defined in the following:
    {story_structure}

Write the story that complies with the following structure
with 9 sections. Each section should include up to 2 sentences:

1. Title: A clear title for the story. When creating a title,
prioritize the main topic of the story with additional
consdierations:
  - Avoid the format of "[child_name] and adventure".
  - Consider implying the target behavior
  - Make the title concise; either a phrase or a simple
sentence.
  - e.g., When playing together, Subway, Let's play, In the
hallway, Go to the pool, Walk to the right, Do you want to be
my friend?
2. Introduction: Briefly introduce the situation or context.
3. Challenge: Present a social challenge the child faces. End
with a question that invites the child to consider what to do.
```

Topic - Relationship

```
4. Decision: Provide 3 possible actions the child can choose
from. Each option should be written clearly in one sentence.
   - One choice must be desirable and follow expected behavior.
   - One choice must be undesirable and break a rule or disrupt
others (e.g., interrupting or skipping a line).
  - One choice must be undesirable and avoid the situation.
(e.g., walking away to play alone).
5. Consequence: Describe the consequence of the selected
action.
  - Include both:
    (1) External situations (e.g., "Friends smile and nod.")
    (2) The child's emotions observed from the outside. (e.g.,
"{child_name} looks nervous.")
 - Do not include self-reflection, or realization.
 - Do not include character's saying or quote here.
 - Include only immediate results prior to Repair, so that
there is no overlap with Repair.
6. Repair: If the choice is not desirable, describe the moment
where the child is given a chance to fix the situation.
 - Include the explicit feedback from someone (e.g., "That's
not okay," "Please wait your turn.").
7. Response: Provide a simple, most desirable response that
the child can choose in the repair situation.
 - Examples: "Sorry." / "I got it."
8. Repaired Consequence: consequence after the child uses the
suggested response
9. Ending: In one sentence, wrap up the story by highlighting
the benefit the child got from doing the target behavior.
```

```
[Story Generation Guidelines]
Follow all of these rules when writing the story:

1. The main character of the story must be the child
themselves (use the child's name).
2. Use third-person narration.
3. Keep a calm, supportive, and positive tone throughout.
4. Use literal language. Do not include metaphors, idioms, or
figurative expressions. Do not use expressions such as "just
like...".
5. The story should be based on realistic and everyday social
situations—not fantasy or fictional scenarios. Do not include
any metaphorical, fantastical, or imagination-based elements.
Do not attribute emotions or thoughts to non-living objects.
6. Use sentence structures and vocabulary that are appropriate
for elementary school students.
7. The full story should be under 400 words.
8. Write the story in English.
9. When describing someone's emotions, use only the following
words: joyful, glad, happy, excited, sad, angry, upset, scared,
afraid, surprised, amazed, bored, worried, uncomfortable,
tired, stressed, sorry, shy, satisfied, relieved, relaxed,
regretful, puzzled, proud, overwhelmed, nervous, guilty,
grateful, frustrated, exhausted, embarrassed, disappointed,
content, comfortable, calm, brave, and anxious.
10. You may select characters from the provided list of
candidate characters to include in the story.
11. You may select places from the provided list of candidate
places to include in the story.
```

Topic - Social Rules

```
4. Decision: Provide 2 possible actions the child can choose
from. Each option should be written clearly in one sentence.
   - One choice must be desirable and follow expected behavior.
   - One choice must be undesirable and break the rule, doing
what the child wants right now.
5. Consequence: Describe the result of the selected action.
  - Include both:
    (1) External situations (e.g., "Friends smile and nod.")
    (2) The child's emotions observed from the outside. (e.g.,
"{child_name} looks nervous.")
 - Do not include self-reflection, or realization.
 - Do not include character's saying or quote here.
 - Include only immediate results prior to Repair, so that
there is no overlap with Repair.
```

Topic - Healthy Habits

```
4. Decision: Provide 2 possible actions the child can choose
from. Each option should be written clearly in one sentence.
   - One choice must be desirable and follow expected behavior.
   - One choice must be undesirable and break the rule, doing
what the child wants right now.
5. Consequence: Describe the result of the selected action.
  - Include both:
    (1) Parent's expected behavior (e.g., "Mom scolds
{child_name}.")
    (2) The child's emotions observed from the outside. (e.g.,
"{child_name} looks nervous.")
 - Do not include self-reflection, or realization.
 - Do not include character's saying or quote here.
 - Include only immediate results prior to Repair, so that
there is no overlap with Repair.
```

Figure 11: Prompt for generating story text per topic.

B Appendix: Story Illustration Generation Prompt

```
Create a colorful and engaging illustration based on the
following scene description.
The image should be in the warm, friendly, and imaginative
style of a children's storybook.

[style]
The illustration is in the style of a classic children's
storybook, evoking warmth, imagination, and emotional
connection.
It features flat coloring with a hand-drawn, colored pencil
texture that gives the image a soft, tactile feel. Shading is
subtle and delicate, enhancing volume without harsh contrasts.
Colors are warm, inviting, and gently saturated — with an
emphasis on cozy tones like warm reds, golden yellows, soft
greens, and sky blues. Line work is clean but organic, as if
sketched with colored pencils or crayons, adding a sense of
authenticity and childlike wonder.
The overall composition is clear and uncluttered, designed to
be easily readable for young children, while still rich in
detail that rewards closer inspection.

[contents]
Focus on showing the child's expressions and actions clearly,
along with a richly detailed environment that feels cozy and
playful.
Include relevant characters, objects, and background elements
that help bring the scene to life in a way that is easy for
young children to understand and enjoy.
Do not include any text in the image.

Use the provided reference images as the primary visual guide
when creating the illustration.
- The first image shows the main child character; closely
match their facial features, hairstyle, and appearance.
- The following images, in order, show other characters who
appear in the story; reflect their appearances accurately.
- Additional images provide references for the locations where
the story takes place; maintain consistency with these
environments throughout the illustration.

Ensure that the illustration integrates these reference images
naturally and consistently into the scene, maintaining the
original storybook style while faithfully representing the
provided characters and settings.
```

Figure 12: Prompt for generating story illustrations.

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