Children with Autistic Spectrum Disorders in China

Research report

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Authencity Statement

This is to certify that to the best of my knowledge, the content of this report is my own work. This report has not been submitted for any subject or for other purposes. I certify that the intellectual content of this report is the product of my own work and that all the assistance received in preparing this report and sources have been acknowledged.

Xuanxuan Ke
Date: 07/09/2025

AI Statement

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00 Executive Summary

This report investigates the critical challenge of fostering safety and independence for children aged 2-7 with Autism Spectrum Disorder (ASD) in China. The research was driven by the question: "*How might we protect children with Autism Spectrum Disorder in China to stay safe and be independent during unsupervised situations?*"

The methodology combined secondary research (literature review and product benchmarking) with primary research (surveys with 36 Chinese parents and 16 Chinese experts, and 5 interviews with Australian and Chinese stakeholders). The analysis reveals a complex interplay of socio-cultural stigma, high parental stress, and a significant gap in the market for affordable, effective, and culturally appropriate safety products.

Key findings indicate that while parental concern for child safety is extremely high (78%), over half (52.78%) have not purchased any safety products due to a lack of suitable options. Existing products are either designed for the general population, lacking ASD-specific considerations, or not affordable. Stigma remains a significant barrier, limiting community engagement and opportunities for children to practice independence skills.

The discussion synthesizes these insights, highlighting that an effective design must not only address the functional need for safety through accurate tracking and durability but must also combat stigma through a universal, non-stigmatizing aesthetic. The proposed design implications call for an affordable, wearable, and customizable device that fosters independence and reducing parental anxiety, ultimately enabling greater participation in community life.

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Contents

Section 1

01

01 Introduction

The development of safety awareness and independent living skills is a critical concern for parents of young children with Autism Spectrum Disorder (ASD). For children aged 2-7 in China, this challenge is shaped by a unique socio-cultural context characterised by significant stigma and a lack of public awareness and resources (Cohen, 2021, Gou, 2021). Parents, often mothers bearing the dual burden of care and financial pressure, struggle to find the time and support needed to teach these vital skills (Ng et al., 2021, Gou, 2021). Consequently, there is a pressing need for effective, affordable safety products designed specifically for children with ASD to ensure their protection across all environments.

The purpose of this report is to explore the research question: “How might we protect children with Autism Spectrum Disorder (ASD) in China to stay safe and be independent during unsupervised situations?” This will be achieved by first synthesising existing literature and product benchmarking to establish the current knowledge and market landscape. Subsequently, primary research from end-users and experts will reveal firsthand perspectives. Finally, the findings from both research streams will be discussed to form actionable design implications for a targeted product solution.

01 Background

This section reviews existing literature on ASD, the impact of socio-cultural factors in China, and the specific challenges related to safety and independence for young children. It also explores current intervention strategies and tools.

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by differences in social communication, interaction, and behaviour. It is a spectrum, meaning each child has a unique profile of strengths and challenges. Common characteristics relevant to safety are displayed in Figure 1.

01 ***Tendency to wander or elope:*** Children with ASD may bolt from a safe environment without warning.

02 ***Difficulties with social interaction:*** This can impair their ability to recognise threats or seek help appropriately.

03 ***Variable cognitive and developmental rates:*** Safety awareness may develop slower than in neurotypical peers.

04 ***Sensory sensitivities:*** Certain sounds, textures, or lights can be overwhelming, influencing their tolerance for wearable devices.

Figure 1, the potential challenges that impacts the safety of children with ASD in public (Tekin-Iftar et al., 2020).

The impact of socio-cultural factors and stigma

A predominant theme in the Chinese literature is the immense influence of socio-cultural factors on the opportunities available for children with ASD to develop safety and independence skills. Deeply rooted cultural stigma presents a formidable barrier. Historically, disabilities have been linked to low social status, and autism is often referred to as “Gu Du Zheng” (lonely disease), which perpetuates negative stereotypes and social isolation (Cohen, 2021). This public stigma results in families often hiding their child’s condition to avoid shame and discrimination, severely limiting the child’s real-world experiences necessary for learning (Cohen, 2021; Gou, 2021).

This external stigma fuels a cycle of internal family stress. Parents face significant pressure from financial burdens, the challenges of raising a child with ASD, and a widespread lack of knowledge about effective rehabilitation (Gou, 2021). Research identifies that cultural factors, parents’ psychopathology, children’s problem behaviours, and caregiver burden all contribute to high parenting stress (Ng et al., 2021). This stress can create a negative home environment, further impacting the child’s emotional regulation and development (Gou, 2021). Consequently, parents may be less inclined to engage in community activities or practice safety skills in public, not only due to public reaction but also due to their own internalised stigma and embarrassment (Sun, 2023).

01 Background

Safety and independence: challenges and parental roles

There is a recognised absence of Chinese research focusing directly on safety for children with ASD. The existing literature emphasises that these children often have a low natural ability to recognise threats, a skill that develops with maturity, experience, and targeted teaching (Li, 2022). Achieving basic independence, such as self-care, is also highlighted as a prerequisite for school enrolment, posing a significant hurdle for many families (Yang, 2022).

The responsibility for teaching these skills falls heavily on parents and educators, who must work closely (Du, 2025). However, this is complicated by parental stress and lack of resources. Schools are urged to create an inclusive environment to prevent bullying, as children with ASD often struggle to make friends and may only maintain one or two familiar relationships (Yang, 2022). Before enrolment, parents are advised to critically assess their child's independence and adjust their own mentality to actively cooperate with the school (Yang, 2022).

Strategies and tools for intervention

To overcome these challenges, several studies propose specific intervention strategies. A strong consensus exists on the effectiveness of visual tools for engaging children and teaching safety concepts. Literatures recommend using visual aids like storybooks and artbooks to help children identify and understand threats (Li, 2022). This approach is complemented by the need to monitor and teach within real-world simulations to ensure skills generalise beyond a clinical or home setting (Zhang, 2020).

Technology presents a promising avenue. Assistive Technology (AT) and smart wearables are noted for their potential to enhance learning, improve socio-cognitive functioning, and increase independence in using public services (Klavina et al., 2024; Rahman et al., 2024). A significant advantage of mainstream portable devices (e.g., tablets, smartphones) is that they can mitigate stigma by blending in with what neurotypical peers use, thereby promoting social participation and a sense of normalcy (Klavina et al., 2024). Furthermore, co-design methodologies, where children and parents help plan activities are implied as an effective way to ensure interventions are engaging and meet the community's actual interests, fostering development and meaningful relationships (Elbeltagi et al., 2023).

The literature establishes that children with ASD in China face significant safety challenges exacerbated by socio-cultural stigma and a lack of targeted resources. Parents are under immense pressure, and while visual strategies and technology show promise, there is a clear gap in practical, accessible, and effective solutions. One of the significant limitations of this research the limited amount of existing Chinese literature that investigates the safety for children with ASD.

01 Benchmarking

This section analyses existing safety products in the Chinese and international markets to evaluate their applicability for children with ASD, identify gaps, and uncover opportunities for design innovation.

Outline of Existing Products

A desktop review of popular Chinese platforms like Tmall revealed no products specifically marketed for ASD safety. The top products identified were:

- Chinese Market: Ou Bao Bears' Anti-Lost Belt, Little Genius' Kids Smartwatch, Qi An Wireless CCTV.
- International Market: AlertMe Bands, AngelSense GPS tracker, Toddler Monitor door alarm.
- These products mentioned are displayed in Table 1.

These products were evaluated against six criteria, also displayed in Table 2.

	Category	Definitions
A	Affordability	The cost of these products in AUD.
B	Functionality	The number of functions that the product offers.
C	Customisability	The level of customisability for the way it attached to the user.
D	Durability	The product's ability to sustain in water, chewing, sharp objects.
E	Effectiveness	The product's ability to effectively protect the user's safety.
F	Portability	The level of ease this product could be portable.

Table 2, evaluation criteria for existing safety products.

The product benchmarking analysis, displayed in Table 3, evaluates six existing safety solutions against six critical criteria. The results indicate that no single product excels across all areas, but the Kids Smart Watch achieved the highest total score (23/30), ranking strongly in Functionality, Durability, Effectiveness, and Portability due to its multi-feature design and wearable nature. AngelSense followed closely (21/30), scoring highest in Customisability and Portability, yet its low Affordability score presents a significant barrier to adoption. In third place, Alert Me Bands (20/30) scored well on Affordability and Portability but lagged in Functionality and Effectiveness, as its passive design offers no active tracking. The analysis reveals a critical market gap: products with high technical effectiveness (AngelSense, Kids Smart Watch) suffer from low affordability or sensory-unfriendly designs, while affordable, simple options (Alert Me Bands) lack proactive safety functions.

Product	Anti-lost belt	Kid's smart watch	Wireless home CCTV	Alert me bands	AngelSense	Toddler Monitor
A	5	2	5	5	1	4
B	1	5	3	1	2	1
C	2	2	1	4	5	1
D	3	5	4	2	4	5
E	3	4	5	3	4	4
F	5	5	1	5	5	1
Total (out of 30)	19	23	19	20	21	16

Table 3, the existing products evaluated against the criteria.

01 Benchmarking

Product	Description	Strength	Limitations
 (Ou Bao Bears, n.d.)	- Brand: "Ou Bao Bears" - Product name: Children's anti-lost belt with traction rope - Descriptions: Physical cords with sensors that connects the parent and the child - Price: $38 CNY (~$8.12 AUD) (Ou Bao Bears, n.d.)	- Waterproof - Sensor with alarm systems that is secured - Prevention towards accidents - Neon coloured - Offers varies length and colours	- Not suitable for all children with ASD due to sensory overstimulation - Potential safety hazards using this product in public - Sweaty during summer - Heavy - Cannot be used by the child independently
 (Little Genius, n.d.)	- Brand: "Little Genius" - Product name: Phone watch Z11 Junior edition - Descriptions: Smart watches that monitors health aspects (heart rates, blood pressure, temperature, mood, sleep, energy levels, BMI, focus, menstrual cycles). - Price: from $949 to $2349 CNY (~$202.87 to 502.14 AUD) (Little Genius, n.d.)	- Tracks specific locations down to different levels of a building - NFC payments - Includes a camera - Assists with homework - Popular safety product for kids	- Expensive - Overstimulate due to attachment method - Designed intended for young teenagers - Short battery life, needs to be charged over night - Signals loss can impact accuracy
 (Qi An, n.d.)	- Brand: "Qi An" - Product name: Wireless home CCTV - Descriptions: Home CCTV with 2 cameras with WiFi and - Price: $108 CNY (~$23.09 AUD) (Qi An, n.d.)	- Tracks the home activity of the child - The app sends alerts when the child is outside the set safe zone - Allows voice calls - SOS buttons for the child - Long battery life	- Only could be used indoors - Limited vision depending on its placement
 (Alert Me Bands, 2016)	- Brand & product name: Alert me bands - Description: supports the child to receive help in public when they are lost with parent contact details - Cost: $25 USD (~$38.11 AUD) (Alert Me Bands, 2016)	- Affordable - Difficult to remove by the child - Displays important information of the child with vibrant colours	- Requires another person to help the child to reach out - Would not indicate the location of the child -
 (*GPS Tracker for Kids - Order Now!*, n.d.)	- Brand & product name: "AngelSense" - Descriptions: GPS device in the form of a wearable and watch - Price: ranges from $44.99 to $64.99 USD per month depending on subscription plans (~$68.59 to 99.08 AUD) (*GPS Tracker for Kids - Order Now!*, n.d.)	- Real time GPS tracking on iOS, Android, Web - Detailed time history for the whole day - Voice feature - Customisable accessories (e.g. magnetic keys and fasteners or belts)	- High monthly fees - Additional fees for activation and accessories - Short battery life, needs to be charged over night - Signals loss can impact accuracy - Designed for older kids and adults - Limited voice minutes per month - Unflexible subscription options
 (*Toddlermonitor*, 2021)	- Brand: "toddlermonitor" - Product name: Toddler monitor - Descriptions: door alarms to prevent the child to leave the room - Price: 139.99 USD for one (~$213.43 AUD) (*Toddlermonitor*, 2021)	- It is paired with an app - No overstimulation - The functionalities are simple and dedicated - Splash proof and secure - Clear indicator that demonstrates the distance between the child and the product	- No real time location tracking - Needs multiple products for tracking their activity around the whole house - Could only be used at home - Relies on the parents to remember to active this product before they leave

Table 1, product matrix table.

01 Benchmarking

Gaps & opportunities

The analysis revealed a gap in the market:

- Chinese products are designed for the general population and lack considerations for ASD-specific needs (e.g., sensory sensitivities, anti-removal features).
- International products designed for ASD (e.g., AngelSense) are often prohibitively expensive and can be stigmatising in design.
- Major limitations: No product effectively balances affordability, functionality, useability, and ASD-specific customisation. Most products are reactive (tracking after elopement) rather than proactive, and none are designed to "grow" with the child as they develop independence skills.

The benchmarking confirms a clear opportunity for a new product: an affordable, durable, and targeted wearable device designed specifically for the sensory and safety needs of young children with ASD, with a focus on proactive prevention and fostering independence.

Section 2

02

02 Research

To validate and expand upon the secondary research, primary data was collected from target users and experts. This section outlines the methodology and processes used to gather firsthand insights into the real-world challenges faced by families.

Methodology & methods

A mixed-methods approach was employed to grasp the complexity of the topic. The research process began with a literature review. Following an initial interview that highlighted “safety” and “independence” as critical gaps, survey and interview questions were refined.

Interview processes

Duration: approximately 40 minutes to 1 hour
Total participants: 5

Five in-depth semi-structured interviews were conducted, providing a strong foundation for understanding the needs and challenges of a diverse range of stakeholders (see Figure 2).

01 ***Chinese expert:*** Firsthand local perspective on socio-cultural factors and current user challenges.

02 ***Asian Australian sibling:*** A comparative view of socio-cultural factors within the community, bridging research between Chinese and Australian participants.

03 ***Australian sibling:*** The perspective of a primary carer, highlighting Australian stigmas.

04 ***Australian parent:*** Insights into parental philosophies, values, beliefs, and Australian cultural factors.

05 ***Australian academic expert:*** Expertise in inclusive education and using digital games to engage children with ASD.

Figure 2, the five different interview participants and their diverse perspectives.

Prior to each session, participants received and reviewed the interview questions, participant information sheet, and consent form. Verbal consent was confirmed at the start of each interview after ensuring participants had understood the information sheet and signed the consent form. Interviews were conducted flexibly, either in person or online. Specifically for the online interviews, Chinese participants were engaged via WeChat call, while Australian interviews were held on Zoom. To ensure comprehensive data capture, each session was recorded using two independent methods: primary transcription via Microsoft Word’s transcribe function, backed by an audio recording on a mobile device.

02 Research

Survey processes

Number of questions asked in both surveys: 15 questions
Durations: approximately 5 to 15 minutes
Total participants: 36 (Chinese parents) + 16 (Chinese experts) = 52 respondent in total (see Figure 3)

01 *36 Chinese parents*

02 *16 Chinese experts*

Figure 3, the two groups of participants for the survey.

To quantify the concerns, experiences, and preferences of the primary user group, two separate digital surveys were designed and distributed: one for parents and another for industry experts within China.
The parent survey captured demographics, levels of safety concern across home and public contexts, challenges in monitoring child activities, current use of safety products, and preferences for wearable device design and functionality. The expert survey established professional backgrounds, gathered observations on primary care dynamics, assessed safety risks like elopement, and solicited recommendations on communication strategies, existing products, and optimal design principles for ASD children (See the full surveys in Appendix 7&8).

The surveys were translated into Mandarin using Deepseek and entered in China's prevalent Survey platform (Wenjuanxing). The QR code of each survey (see Figure 4) was distributed through WeChat to a national special needs institute representative on August 21, 2025, who circulated it to franchise networks across major urban centres. The survey remained open for eight days, closing on August 29, 2025, ultimately gathering responses from 36 parents and 16 experts to provide foundational quantitative insights.

Figure 4, the two Chinese survey posters.
*raw data has been removed for privacy protection

The primary research successfully gathered quantitative data from 52 survey respondents in China and qualitative data from five interviews, providing a strong foundation for understanding the needs and challenges of the target users.

02 Analysis & Findings

This section presents the key findings from the analysed data without interpretation. The qualitative interview data was analysed through inductive manual coding to identify emergent themes. The quantitative survey data is presented visually.

Interview Findings (Qualitative Data)

The analysis of the qualitative data gathered from the five semi-structured interviews followed a systematic process of thematic analysis. The initial phase involved cleaning the raw transcripts and annotating of the cleaned transcripts (see Figure 5). This was achieved through manual coding within Microsoft Word, utilising the comment function to identify and highlight key phrases and significant statements made by participants. These annotations served as the preliminary codes, which were then extracted and organised.

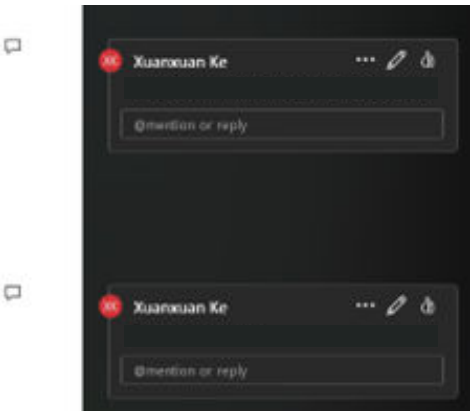

Figure 5, annotations in Microsoft word.

*raw data has been removed for privacy protection

In the subsequent phase, these initial codes were aggregated and grouped under broader thematic headings. This process involved reviewing all coded excerpts to identify patterns and relationships, thereby coalescing specific codes into potential overarching themes (see Figure 6). The final stage involved refining these themes into a coherent coding hierarchy, complete with clear definitions and illustrative quotes. This structured approach culminated in the identification of seven central themes that encapsulate the core insights from the participants. These themes are: (1) Social Cultural Ecosystem, (2) Carer Dynamic and Wellbeing, (3) Safety and Vulnerability, (4) Pathways to Independence, (5) Regulation and Engagement Strategies, (6) The Role of Play, and (7) Systemic Support and Barriers (see the full coding table in Figure 7 and Appendix 1).

Themes	Codes	Sub codes	Definitions	Examples	Quantity/mentions
Social cultural factors	Stigma	Lack of communities	○ We are so separated from each other ○ Bridging that gap ○ Reducing embarrassment ○ Exposure to NT children ○ Kids reflecting the parent's values and perceptions		

Figure 6, organising codes and sub codes under different themes.

02 Analysis & Findings

Theme	Code	Sub-code
Socio-cultural ecosystem	Experiences of stigma	Public reaction & judgement
		Familial stigma & misunderstanding
		Evolving societal awareness
	Community & inclusion	Lack of community
		Role of NT peers in inclusion
	Neurodiversity vs. Assimilation	
Carer dynamics & wellbeing	Carer roles & distribution	Primary carer(s)
		Sibling carer roles & impact
	Emotional journey	Uncertainty about the future
		Fear of the unknown & vulnerability
	Lack of support for siblings	
Safety & vulnerability	Elopement/wandering	
	Concept of safety	
Pathways to independence	Empowerment philosophy	Undoing reliance
		Focusing on their abilities, not disability
	Challenges & skill building	Daily living skills
		Social interaction & communication
Regulation & engagement strategies	Foundational strategies	Visual & sensory tools
		Routines & special interests
	Child-centred approach	Deep understanding
		Motivation & patience
		Customized learning
The role of play	Digital play (e.g., Minecraft)	
	Functions of play	Engagement & motivation
		Social & educational bridge
Systemic support & barriers	Formal systems	Education system
		NDIS & policy

Figure 7, all the themes, codes and sub codes.

02 Analysis & Findings

Social Cultural Ecosystem

A pivotal finding across interviews was the pervasive experience of stigma encountered by families with neurodivergent (ND) children in both Chinese and Australian contexts. This stigma, manifesting as both public discrimination and internalised shame, was consistently attributed to a fundamental lack of public understanding and empathy, which in turn fosters a reluctance towards inclusivity. A significant barrier identified was the absence of inclusive community spaces where neurotypical (NT) and ND children can interact naturally. Participants proposed that such spaces would be mutually beneficial, allowing NT children to develop patience and ND children to practice social skills naturally. However, as an education academic emphasised, integration must not necessitate assimilation; neurodiversity must be recognised as "just one difference" among many (Interview 5). Notably, the interpretation of stigma itself varied. One Australian father reframed it constructively, viewing social stigma as a mechanism that communicates "what society expects of you…without punishment", provided it represents a fair "community-wide standard" (Interview 4).

Safety and Vulnerability

The analysis revealed that concerns for safety and the journey toward independence are deeply intertwined. While participants expressed confidence in supervised environments like schools, the anxiety centred on moments of elopement or wandering in public spaces. The emotional toll on parents was profound. One father described the experience of his child wandering off as something that "sticks with you for the rest of my life," characterising it with words like "dread" and "terrible" (Interview 4). This highlights the intense vulnerability parents feel. Participants acknowledged that children with ASD can learn safety and independence skills through maturity, time, and patient teaching (Interview 3 and 4). However, the central challenge for parents is balancing the instinct to protect their child with the need to foster independence. This process, as described, involves a difficult emotional journey of "letting go" and "undoing the reliance," which contributes significantly to parental mental and physical strain (Interview 4).

Regulation, Engagement, and Carer Dynamics

A strong consensus emerged regarding the effective strategies for engaging children with ASD. Participants identified a strong preference for routines and visual communication tools, noting that many children communicate more effectively through facial expressions, hand gestures, and body language than through speech (Interview 1). The structured, predictable nature of digital games like Minecraft was cited as particularly engaging, as one participant noted ND children's brains are "organised" and thrive with clear systems (Interview 3). An education academic confirmed its value, noting that children can "represent themselves as avatars in game," which fosters communication and friendship building (Interview 5).

Beyond the child, the analysis uncovered critical insights into carer dynamics. The role of the primary caregiver, overwhelmingly the mother, was characterised by significant burden. In addition to managing in person care, mothers often shared financial responsibilities, a pressure acutely felt in China where systemic support is lacking (Interview 1). This significantly impacts the whole family dynamic, interviews with siblings revealed they often refuse seeking support for themselves to avoid adding to their parents' overwhelming "plates" (Interview 2). This finding underscores a broader ecosystem of need, where support interventions must consider the entire family unit.

02 Analysis & Findings

Survey Findings (Quantitative Data)

Parent survey demographics and core concerns
Survey responses were gathered from 36 Chinese parents of children with ASD, all under the age of eight (see Appendix 7). The educational placement of these children was distributed across three primary settings: 40% attended special needs education schools, 25% were enrolled in public schools, and 25% remained at home (Figure 8). This distribution highlights the varied educational approaches and challenges faced by families. The data establishes that the burden of care falls overwhelmingly on mothers, who were identified as the primary carer in 83.33% of responses. Finding emerges around safety concerns, the parents reported an average concern level of 4.5 out of 5 regarding their child's safety in public spaces, specifically citing risks of wandering or meltdowns. This indicates a high level of pervasive anxiety among caregivers.

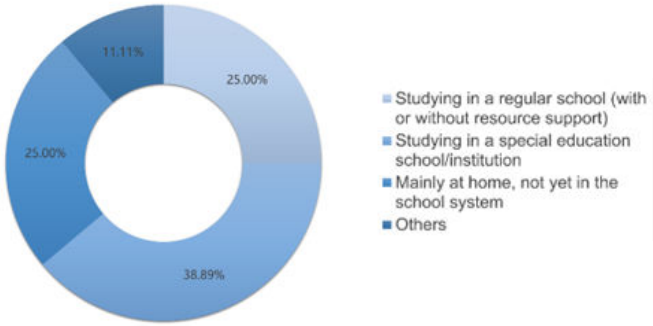

Figure 8, the current form of education that the participants' children receives.

The safety product

A paradoxical disconnect is evident between expressed concern and product purchasing rates. Despite the severe safety anxieties, 52% of parents reported not having purchased any safety product (Figure 9). Among those who had, the most common purchase was home CCTV systems (41%), followed by window/door alarms (8%). Wearable technology saw very low adoption, with only 8% purchasing smart watches (Figure 9).

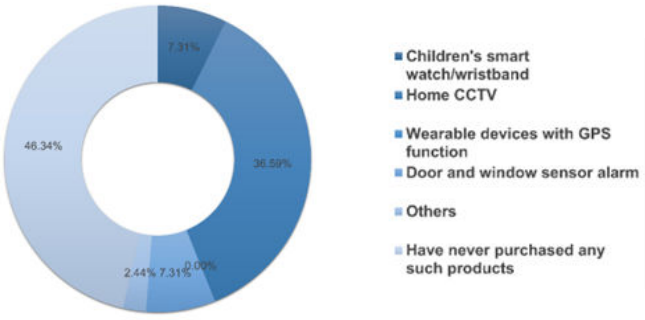

Figure 9, the existing safety products that the parents have brought to protect the safety of their children.

Parent and expert preferences for product design

When questioned on ideal product attributes, parents prioritized sensory comfort and durability. Their preferred methods for a wearable device were clipping onto clothing, watches, and clothing accessories (Figure 10). The top three design features they valued were comfortability, durability, and a low-profile appearance that would not draw attention (Figure 11). This aligns with the qualitative findings regarding the desire to avoid stigma.

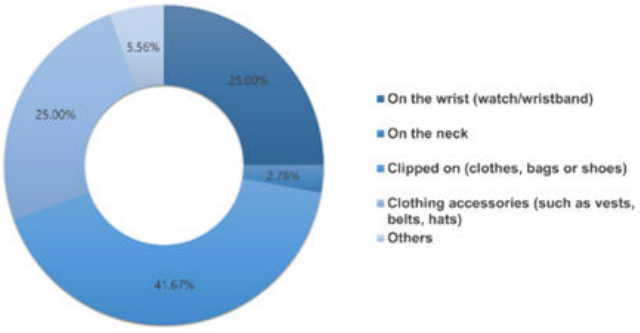

Figure 10, the most preference method of wearing a portable product ranked by Chinese parents based on their children's preferences.

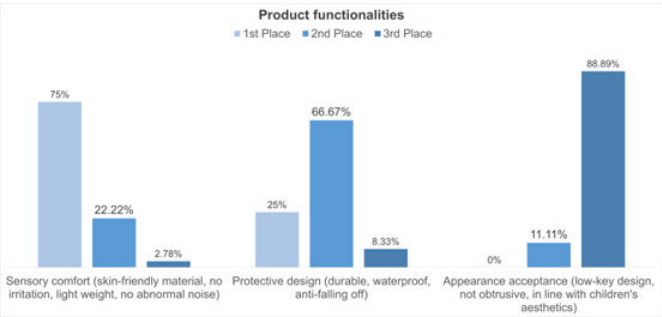

Figure 11, the most important functionalities of a safety product ranked by Chinese parents.

02 Analysis & Findings

A parallel survey of 16 Chinese experts (including Applied Behaviour Analysis (ABA) therapists, Speech-Language Therapists (SLTs), and TEACCH practitioners) provided a professional corroboration of these needs (see Appendix 8). Experts confirmed that mothers are most frequently the main caretakers and overwhelmingly agreed that wandering in public represents a major concern (56.25%). Regarding communication, they identified PECS (Picture Exchange Communication System), hand gestures, and body language/ facial expressions as the most effective non-verbal strategies (Figure 12).

In terms of product recommendations, experts most frequently suggested home CCTV, followed by GPS devices and safety education apps (Figure 13). Their design priorities for a safety device were clear, number one was anti-removal design, followed by GPS accuracy and ease of use (Figure 14). Their views on wearability differed slightly from parents, ranking neck-worn items first, followed by clips on clothing and integration into backpacks (Figure 15).

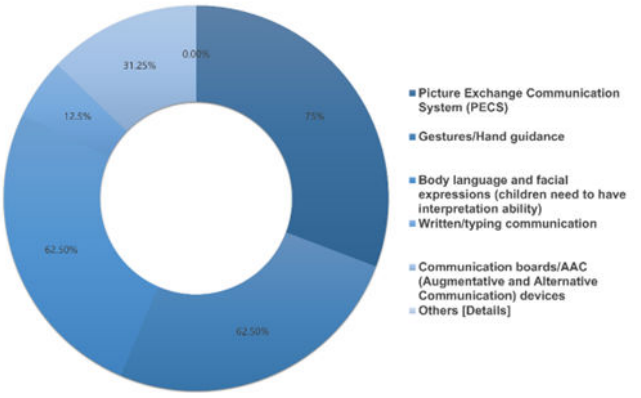

Figure 12, the most effective form of communication for children with ASD rated by the Chinese professionals.

Finally, experts identified that a parent's willingness to engage with their child's school activities is not a simple matter of access but is heavily influenced by the parent's mindset and awareness (37.5%), their limited time due to work pressures (25%), and the child's own ability to communicate (25%). This underscores the complex, multifaceted barriers that extend beyond mere product availability.

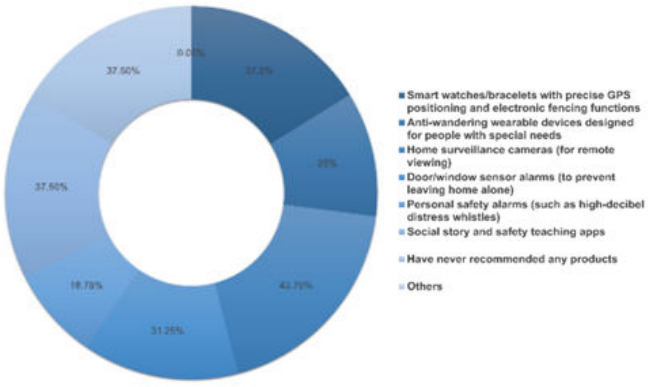

Figure 13, the existing safety products that has been recommended to parents by the Chinese professionals.

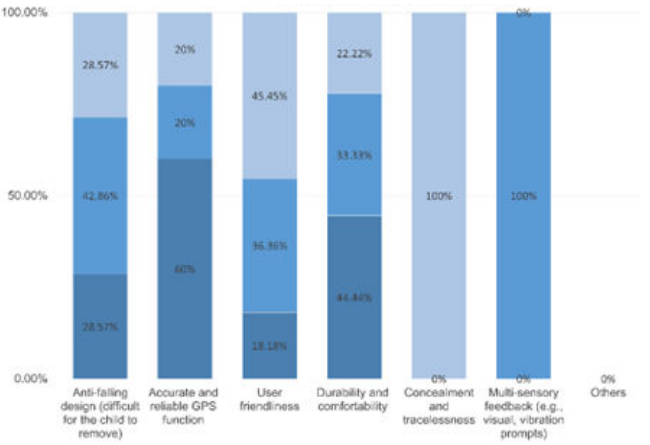

Figure 14, the functionality ranked by the Chinese experts.

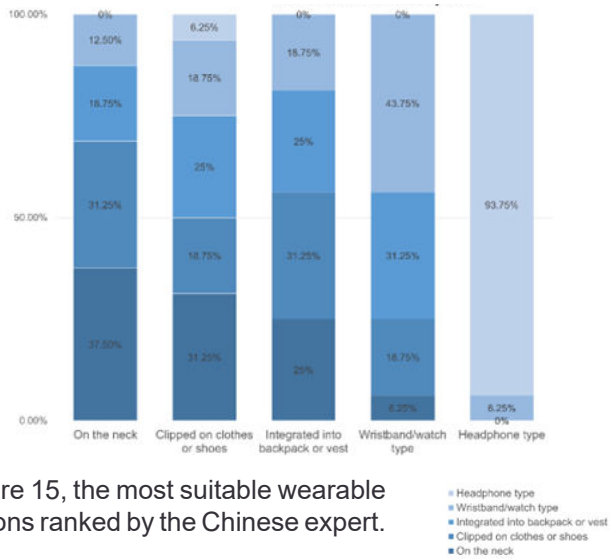

Figure 15, the most suitable wearable options ranked by the Chinese expert.

Brief Summary of the Section

The data presents a clear picture: high concern for safety, a reliance on mothers as primary carers, a significant gap in the adoption of safety products, and a strong preference for durable, comfortable, and discreet devices that are difficult to remove.

Section 3

03

03 Discussion

The research confirms that socio-cultural stigma represents a pervasive barrier in China, creating a self-perpetuating cycle of isolation and stress that substantially limits opportunities for children to develop safety awareness and independence skills. This finding aligns with existing literature and is reflected in the high parental stress levels observed in the surveys. The stigma cycle manifests through a limited public understanding, leading to social stigmatisation, which causes families to withdraw from community engagement and, in turn, reduces opportunities for public education and awareness. This environment consequently constrains children's natural opportunities for social learning and exploration.

A critical finding emerging from this study is the striking disconnect between high parental concern (78%) and remarkably low product adoption rates (52.78%). The benchmarking research provides crucial context for this paradox, demonstrating that the current market lacks products that simultaneously address affordability, effectiveness, and ASD-specific needs such as sensory sensitivities and anti-removal features. Parents consequently resort to general-purpose solutions like CCTV (41%) that prove ineffective outdoors, or they refrain from products entirely, relying instead on constant supervision, which as a result a strategy that generates significant anxiety and emotional strain.

The qualitative interviews reveal that independence represents a learnable skill, but parents' legitimate fears, compounded by the absence of trustworthy safety tools, prevent them from providing essential practice opportunities. This situation creates a challenging scenario. The children cannot develop independence without practical experience, yet parents cannot risk allowing such experience without reliable safety measures. This dynamic is particularly pronounced in the Chinese context, where limited systemic support exacerbates the substantial pressures on caregivers who must balance employment demands with extensive care responsibilities.

The convergence of these factors, stigma limiting community engagement, and inadequate product solutions exacerbates safety concerns. And systemic barriers restricting developmental opportunities create a complex challenge that cannot be addressed through single-focus interventions. The research demonstrates that effective solutions must acknowledge and address this interconnected ecosystem of factors to genuinely support both children with ASD and their families in achieving greater safety and independence. The design opportunity, therefore, extends beyond creating merely a tracking device to developing a comprehensive tool that builds parental confidence and enables gradual skill development within a protected framework.

03 Design Implications

The research findings lead to the following core design implications for a safety product for children with ASD in China:

01

Build confidence, not just tracking

The primary goal is to reduce parental anxiety to a level where they feel confident engaging in community activities, thus creating opportunities for their child to learn.

02

Universal design

To combat stigma and promote adoption, the product must not look like a medical or special needs device. It should be aesthetically neutral or appealing to blend in with what neurotypical children use, addressing the high value parents and experts placed on a “low-profile” design.

03

ASD-specific customisation

- Sensory-Friendly: Made from soft, hypoallergenic, and comfortable materials.
- Secure and Difficult to Remove: Prioritising anti-removal mechanisms is paramount, as indicated by experts.
- Customisable Attachment: Offer multiple wearability options (clip, wristband, integrated into clothing) to suit individual sensory preferences.

04

Accuracy and affordability

The product must feature highly accurate GPS tracking independent of internet connectivity and must be offered at an accessible price point for Chinese families, considering the lack of government support.

05

Foster independence and inclusion

Consider designs that evolve with the child (e.g., from a tracking-focused device for a young child to a communication-focused tool for an older child) or that incorporate elements to encourage interaction with peers.

06

Co-design with the child and carers.

This ensures the product minimizes disruption to family dynamics, considers the needs and preferences of all members, and avoids adding to the cognitive load of already overwhelmed parents. This approach leads to solutions that are more readily adopted and integrated into daily life.

03 Conclusion

This research project set out to explore how to protect children with ASD in China during unsupervised situations. The investigation revealed a complex problem deeply intertwined with socio-cultural stigma, high parental stress, and a non-existent market for appropriate safety products.

The findings consistently showed that parents are deeply concerned but lack the tools to act, resulting in restricted lives for both them and their children. The proposed design implications call for a paradigm shift: from a purely functional tracking device to a confidence-building tool that is affordable, discreet, sensory-friendly, and secure. Such a product has the potential to break the cycle of fear and isolation, enabling children with ASD to safely explore their world and develop the independence skills they need to thrive.

Section 4

04

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Section 5

05

05 Appendix

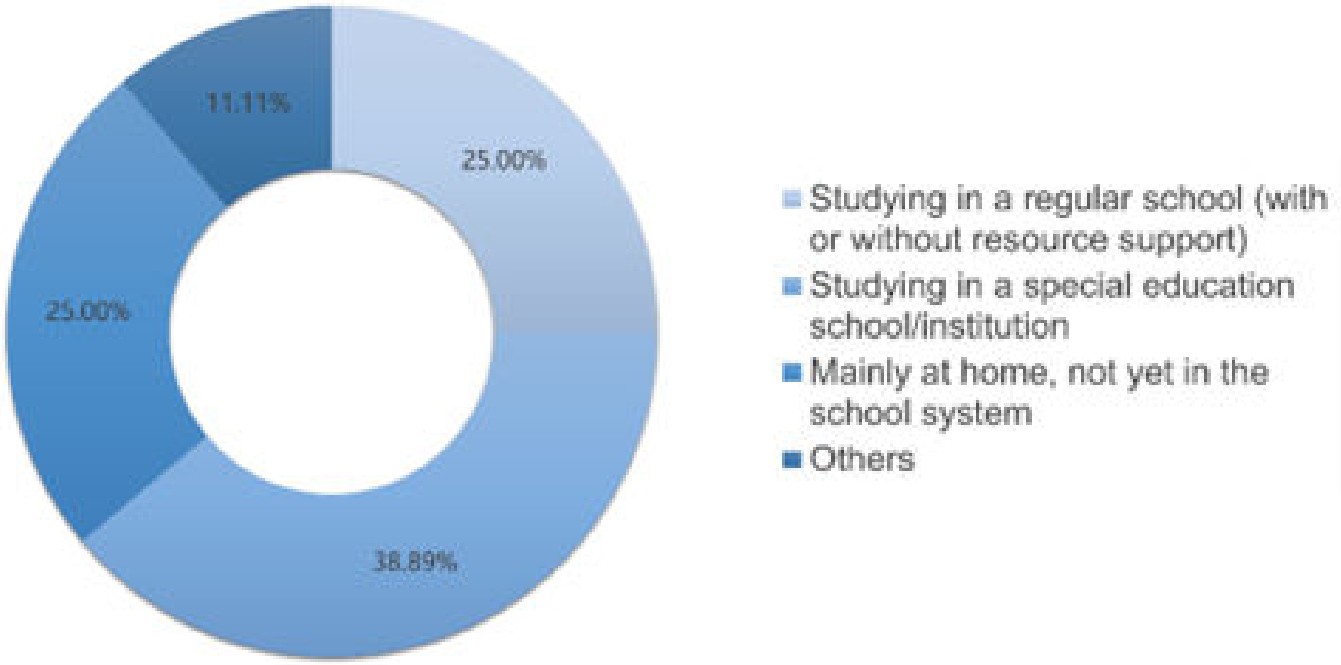

Figure 8, the current form of education that the participants' children receives.

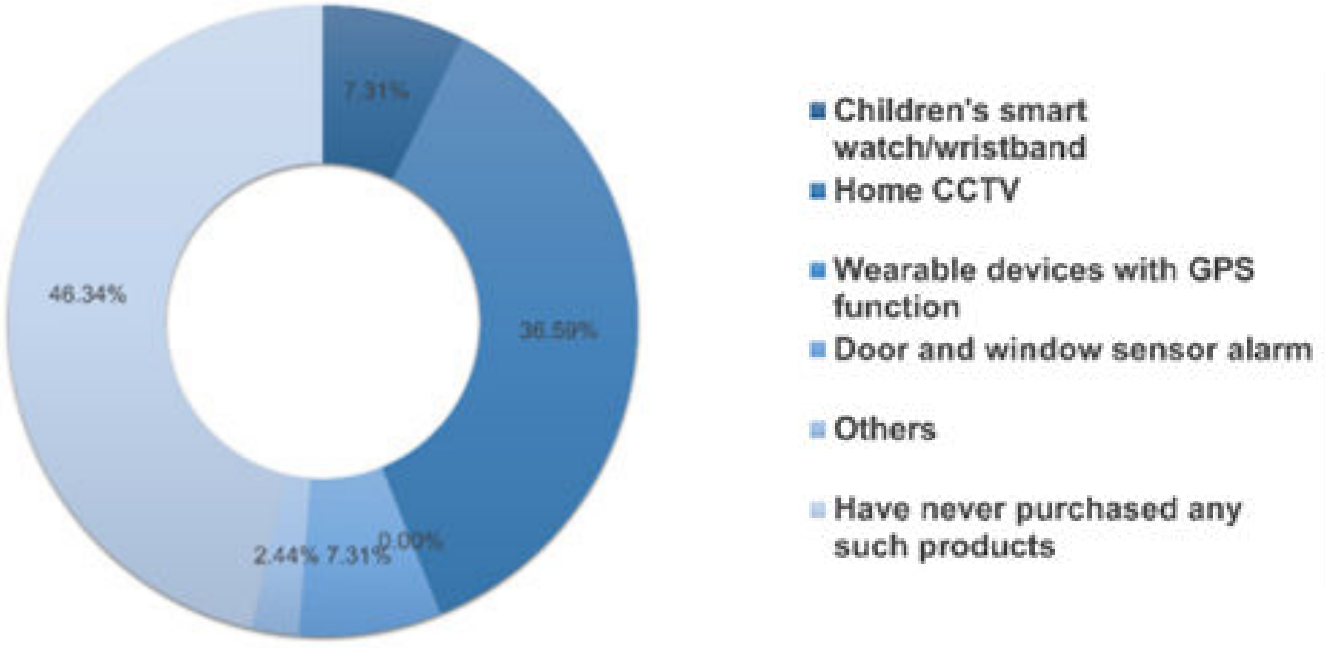

Figure 9, the existing safety products that the parents have brought to protect the safety of their children.

05 Appendix

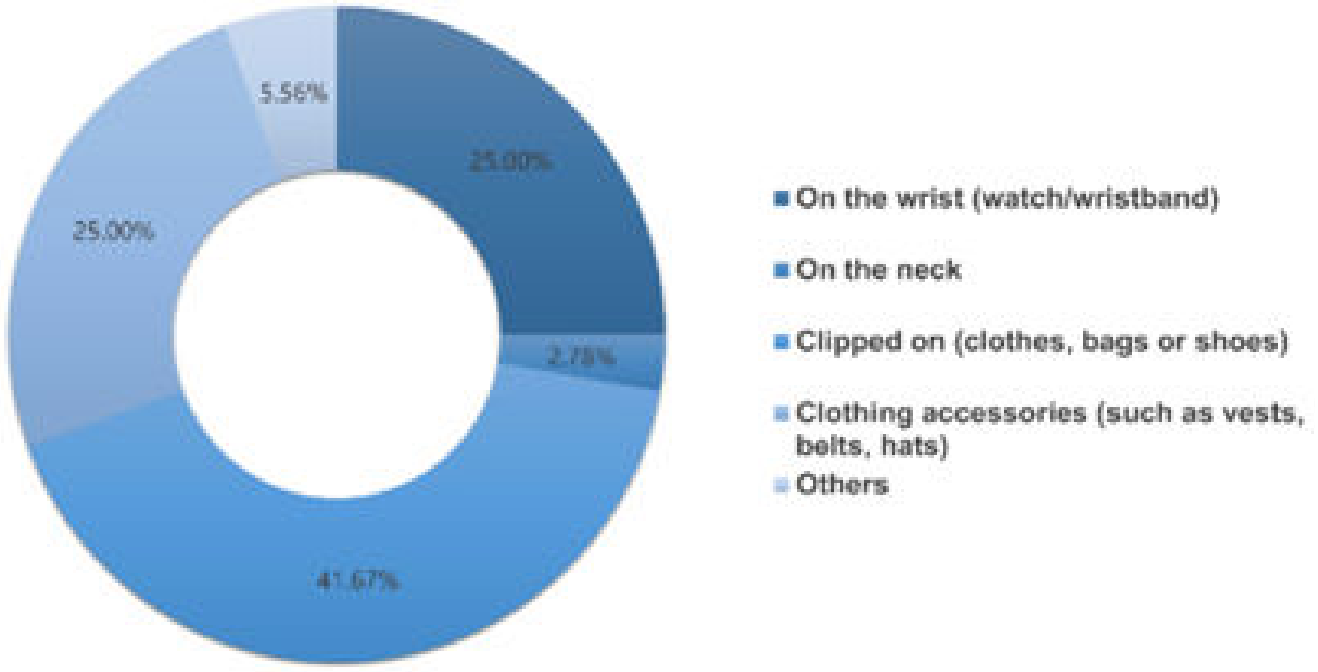

Figure 10, the most preference method of wearing a portable product ranked by Chinese parents based on their children's preferences.

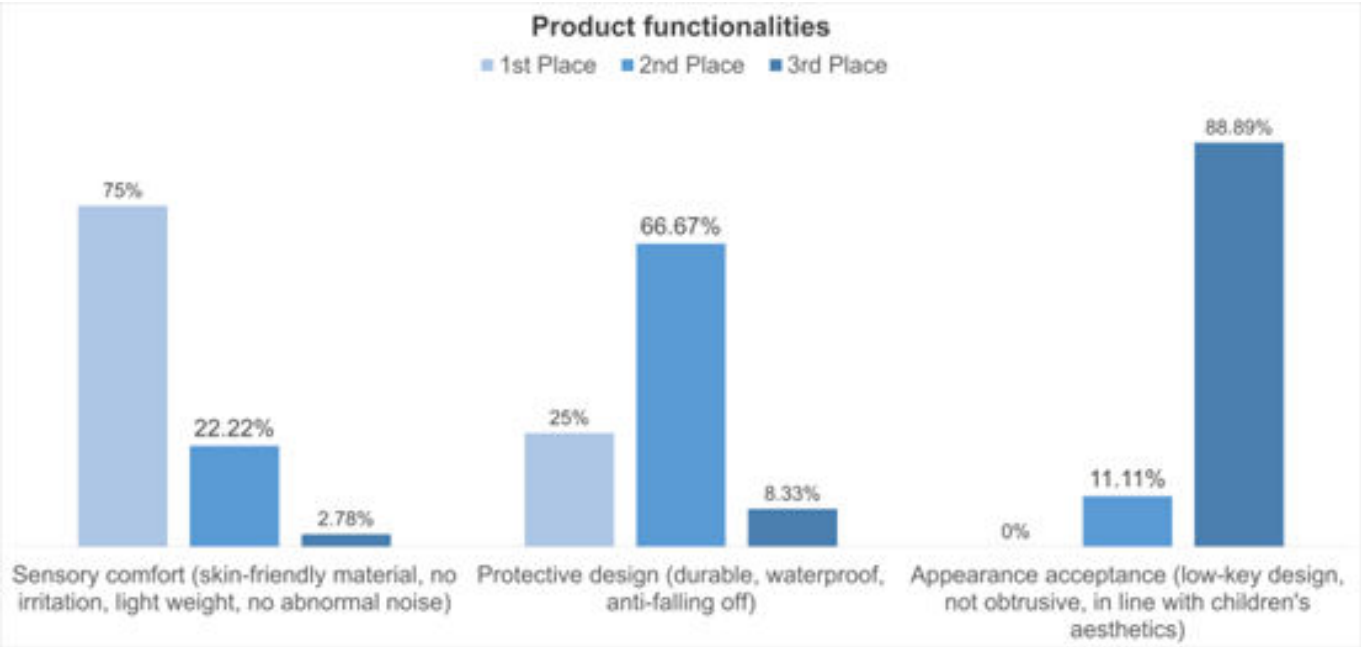

Figure 11, the most important functionalities of a safety product ranked by Chinese parents.

05 Appendix

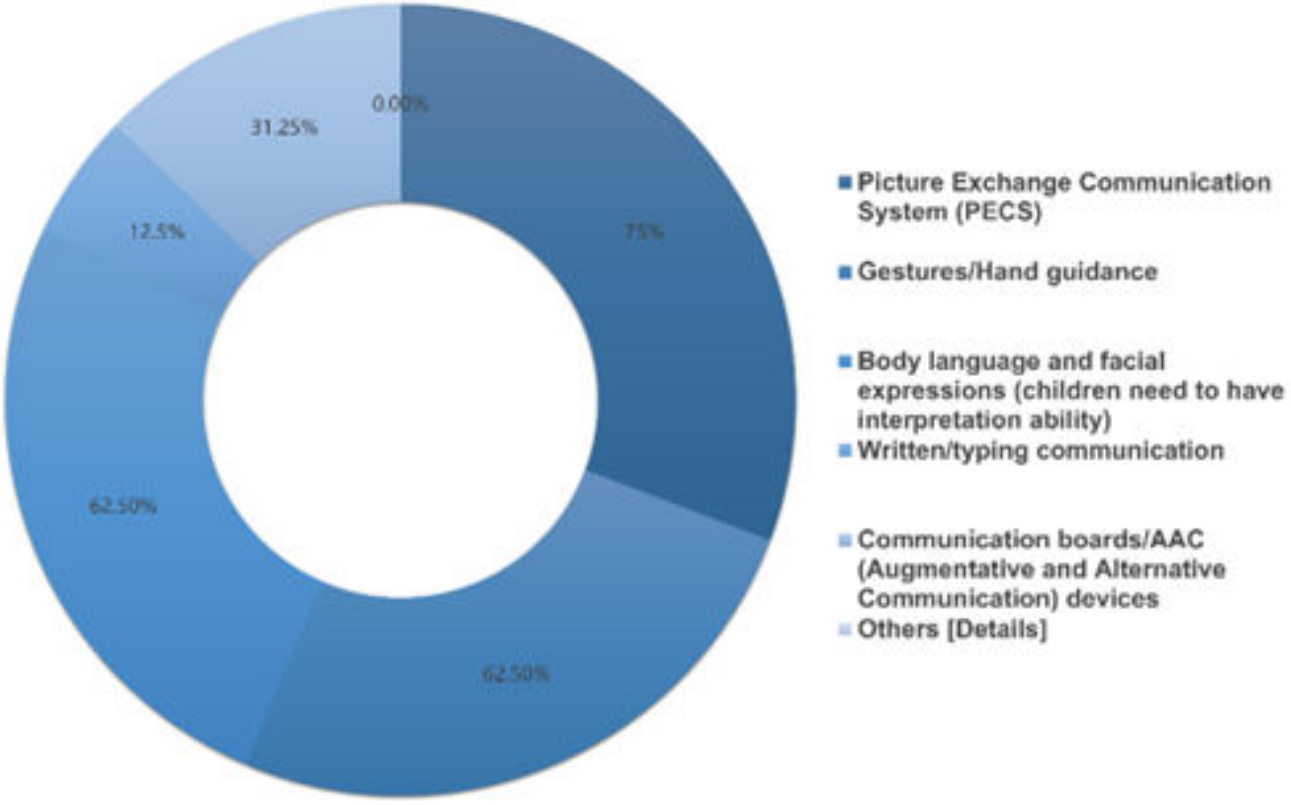

Figure 12, the most effective form of communication for children with ASD rated by the Chinese professionals.

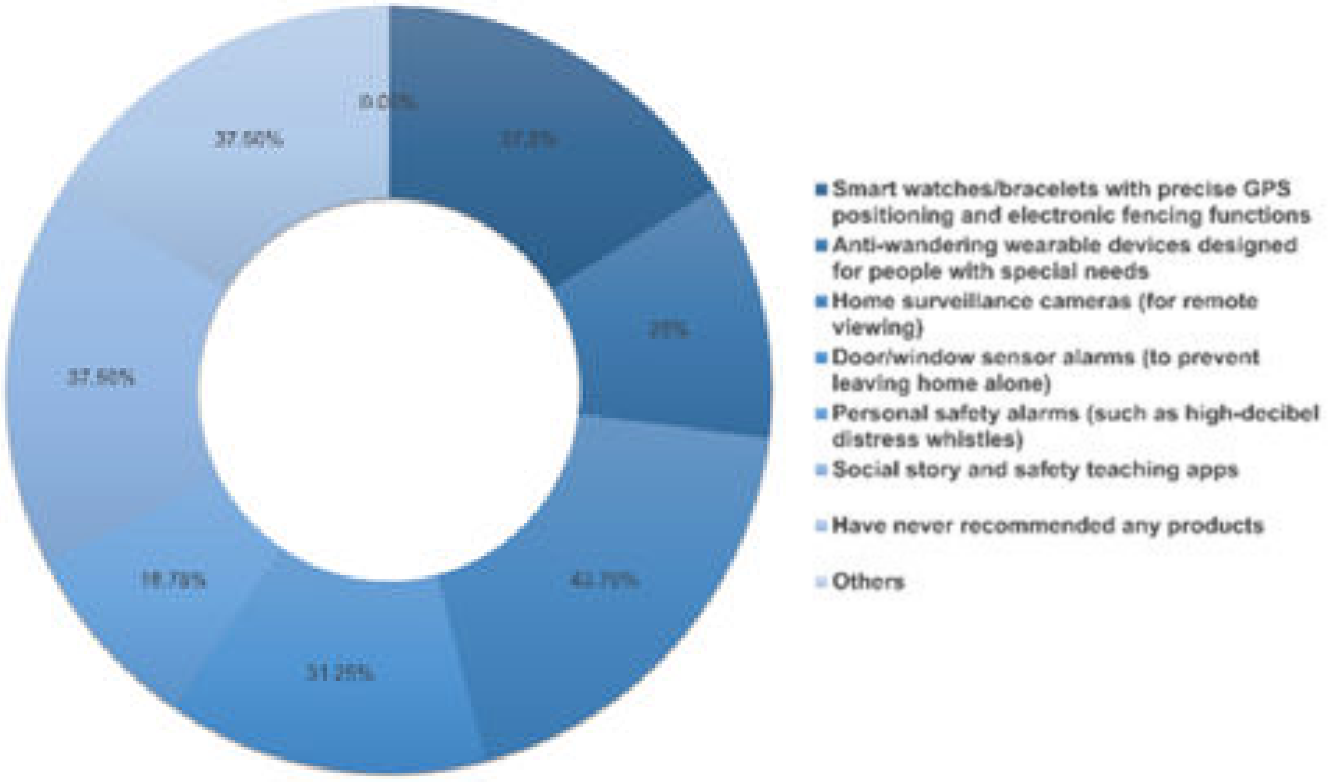

Figure 13, the existing safety products that has been recommended to parents by the Chinese professionals.

05 Appendix

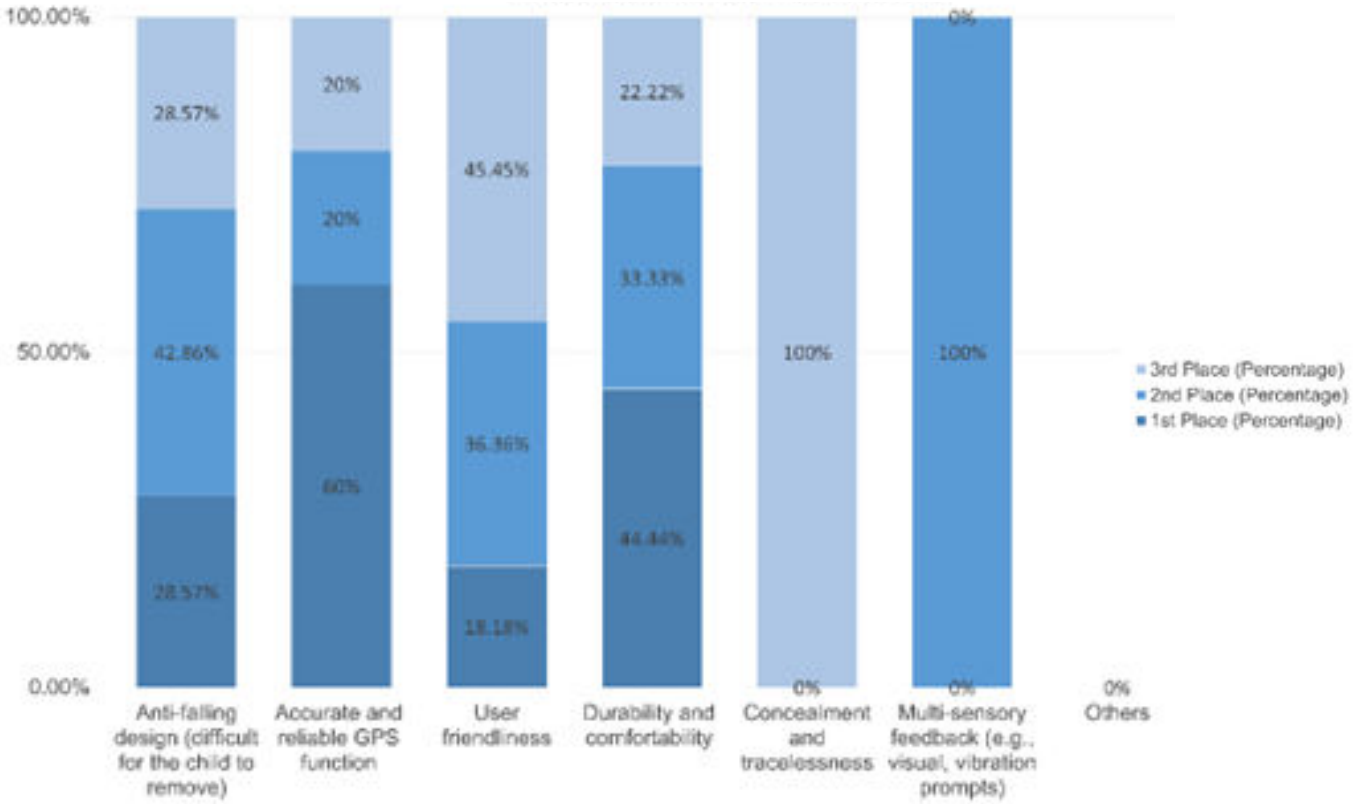

Figure 14, the functionality ranked by the Chinese experts.

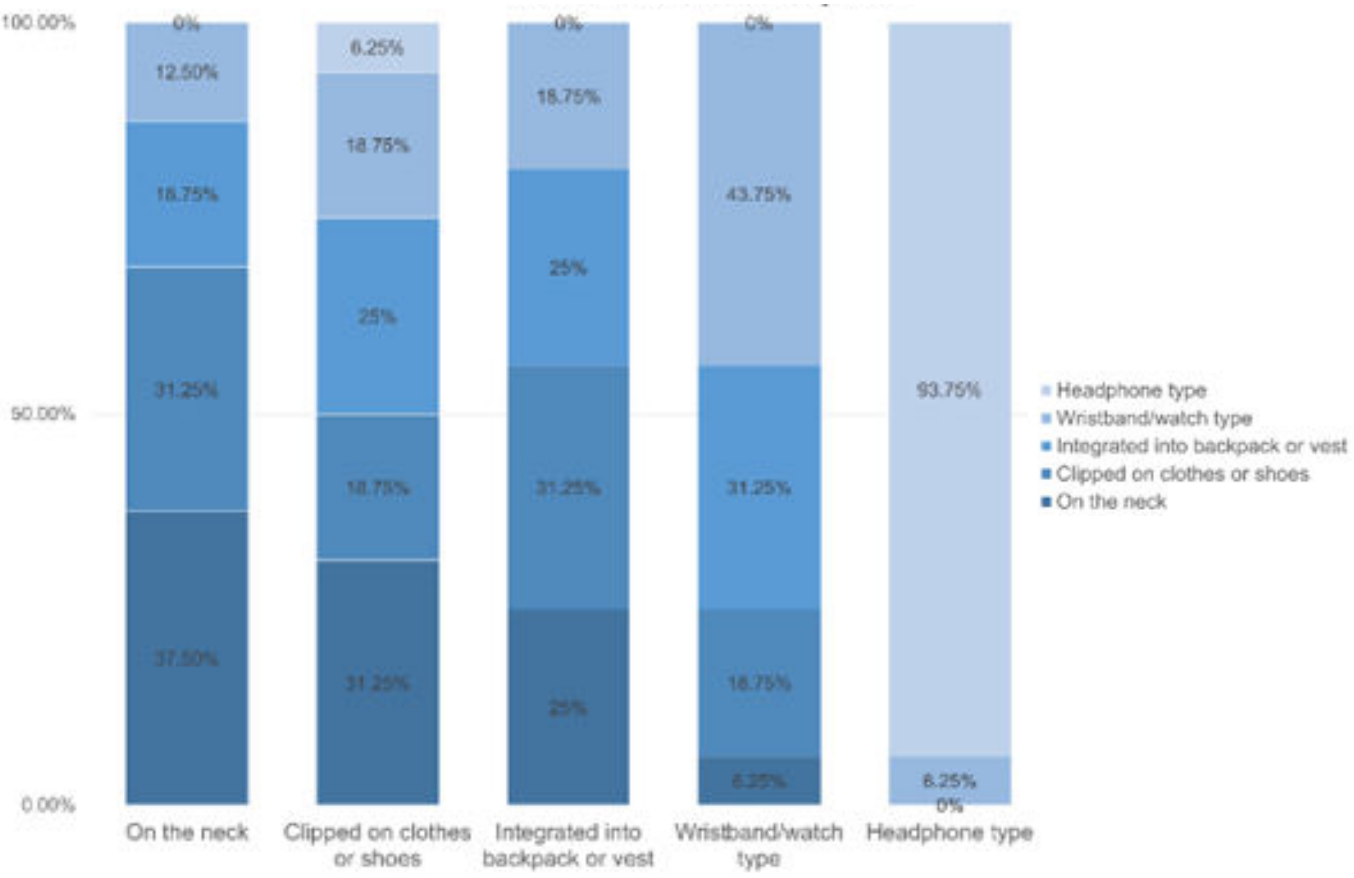

Figure 15, the most suitable wearable options ranked by the Chinese expert.