



## **CPSC Staff's<sup>1</sup> Statement on Fors Marsh Group's Report, "Qualitative Research to Support Consumers with Intellectual and Developmental Disabilities (I/DD)"**

**January 2024**

The following contractor report titled, "Qualitative Research to Support Consumers with Intellectual or Developmental Disabilities (I/DD)," presents the results of research conducted by Fors Marsh Group (FMG) under a CPSC contract.

FMG, in collaboration with the National Association of Councils on Developmental Disabilities (NACDD), conducted primary qualitative research—specifically, in-home ethnographies (nine participating households) supplemented by focus groups (six groups averaging eight participants each)—to better understand how individuals with I/DD and their caregivers interact with everyday household products. Key topics of interest included risks and dangers associated with consumer products, what product purchases and adaptations were made to address risks, and caregivers' preferred sources of product safety information. Additionally, FMG highlighted in the report specific examples of products that were seen during the in-home ethnographies being used to assist with the needs of individuals with I/DD.

As noted in the research, the 7 million Americans living with an I/DD are a diverse population. The research focused on individuals with at least one of three diagnoses: autism spectrum disorders (ASD), Down syndrome (DS), or cerebral palsy (CP), as they are some of the most common in the United States and represent a broad range of abilities and different hazards in relation to consumer products. It is important to emphasize that the range of conditions and individual capabilities within the I/DD community varies widely, and this research is not meant to generalize the community. To address the needs of the most vulnerable segments of this community first, FMG prioritized participants who were reliant on caregiver support for at least 40 hours per week.

Based on the data, FMG found that product-related risks and challenges fell into two main categories: physical challenges and cognitive challenges. Physical challenges included issues with balance, dexterity, and mobility. Cognitive challenges often included issues with perception of abstract concepts such as time, differentiation (e.g., understanding the risks associated with various consumer products), sensory fixations (i.e., both sensory seeking and avoidance), and wandering away from the caregiver. Also, FMG identified three categories of products purchased: (1) products designed for the general population; (2) products designed for children; and (3) adaptive products designed for individuals with I/DD or other related conditions.

Caregivers shared that they use several techniques and strategies to provide safety and behavioral education to those they support. Some participants shared preventive strategies that they envisioned they would like to employ if they had the means. The data collected pinpoint

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<sup>1</sup> This statement was prepared by the CPSC staff, and the attached report was produced by FMG for CPSC staff. The statement and report have not been reviewed or approved by, and may not represent the views of, the Commission.



United States  
**Consumer Product Safety Commission**  
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opportunities for increased awareness of specific consumer product risks and appropriate safety measures among individuals with I/DD and their caregivers. Specifically, the data highlight a variety of tactics that can be useful when developing product safety education materials for the I/DD community; for example, using visual aids to illustrate key lessons and steps consumers can take to mitigate risk, and leveraging diverse content formats (including audio and video) to reach a broader audience. Further, the data support opportunities for evidence-based recommendations to product manufacturers; for example, age-appropriate designs and increased product durability for adult consumers with I/DD, as well as opportunities to adapt existing product safety information to electronic media and mobile communication technologies.

### Attachment

FMG Report: “Qualitative Research to Support Consumers with Intellectual and Developmental Disabilities (I/DD)”

**U.S. Consumer Product  
Safety Commission**

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Bethesda, MD 20814

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# **Consumer Product Safety Commission (CPSC) Qualitative Research to Support Consumers with Intellectual and Developmental Disabilities (I/DD)**

Overview Report

December 29, 2023

**ForsMarsh**

## Executive Summary

The Consumer Product Safety Commission (CPSC) protects consumers by reducing the risks of injuries and deaths associated with using consumer products. On behalf of CPSC, Fors Marsh previously conducted a systematic literature review and environmental scan to synthesize existing research on product hazards faced by individuals with intellectual and developmental disabilities (I/DD). We found that research on the specific topic was limited and therefore sought to gather primary data from people in the I/DD community with lived experience.

To build on the previous work, Fors Marsh conducted primary qualitative research—specifically, in-home ethnographies supplemented by focus groups—to better understand how individuals with I/DD and their caregivers interact with everyday household products. Key topics of interest included risks and dangers associated with products and what product purchases and adaptations were made to address risks. Additionally, we examined products that were purchased to assist with the needs of individuals with I/DD. For these studies, we focused on individuals with at least one of three diagnoses: autism spectrum disorders (ASD), Down syndrome (DS), or cerebral palsy (CP), and who required a significant amount of caregiver support due to physical or cognitive capabilities. We prioritized individuals with these three I/DD diagnoses, as they are some of the most common in the United States and represent a broad range of abilities and unique hazards with products (Fors Marsh Group, 2021). It is important to note that the range of conditions and individual capabilities within the I/DD community varies widely, and this research is not meant to generalize to the entire community. To address the needs of the most vulnerable segments of this community first, we prioritized participants who were reliant on caregiver support for at least 40 hours per week.

We conducted nine 2-hour, in-home ethnographies with individuals with I/DD as well as their caregivers to gather data about their home environments and day-to-day interactions with products. We were particularly interested in the viewpoints and capabilities of a wide range of individuals with I/DD; participants' ages ranged from 4 to mid-30s. Particular care was taken to ensure human subjects protection of this population, such as appropriate consent and assent procedures and conducting introductory meetings prior to onsite visits. To supplement the ethnographies, we conducted six virtual focus groups with caregivers of individuals with I/DD. Topics of the focus group discussion focused on challenges, product purchasing and decision-making, product use, product adaptations, desired products, strategies to increase safety, and preferred sources of information.

Based on the data, we found that product-related risks and challenges fell into two categories: physical challenges and cognitive challenges. Physical challenges included physical limitations such as issues with balance, dexterity, and mobility. Cognitive challenges often included issues

with perception of abstract concepts such as time, differentiation (e.g., understanding the risks associated with products), sensory fixations (i.e., both sensory seeking and avoidance), and wandering or eloping (i.e., “when someone leaves a safe area or a responsible caregiver” [Centers for Disease Control and Prevention, 2019]). Also from the data, we identified three categories of products purchased: (1) products designed for the general population; (2) products designed for children; and (3) adaptive products designed for individuals with I/DD or other related conditions.

Issues with balance and dexterity put some individuals with I/DD at higher risk of injury due to falls and burns. Products that were often associated with these risks included bathtubs, stairs, and kitchen appliances. To avoid the potential hazards associated with these products, items such as step-in bathtubs, anti-slip bathmats, silicone oven mitts, and stair and bath railings were purchased or modified. Participants also shared that dexterity and fine motor skill challenges make it harder for individuals with I/DD to use certain products, which may impact safety (e.g., clothing fasteners, shoes with laces, eating utensils, writing utensils). To address these challenges, participants discussed using clothing without fasteners (e.g., clothes that can be pulled on), hook-and-loop fastener or slip-on shoes, wider eating and writing utensils, and durable materials to avoid breakage (e.g., plastic cups).

As noted, some individuals with I/DD face product-related safety risks due to cognitive challenges. Reasoning and differentiation challenges put some individuals with I/DD at higher risk of injury from cuts and abrasions, burns, and poisoning from products such as knives and scissors, kitchen appliances, hot water from faucets, and chemicals. Common strategies to avoid these injuries included close supervision, substituting products with less-risky versions (e.g., dulled knives, natural cleaning products), and hiding or completely removing potentially dangerous items. Additionally, sensory fixations were noted to pose risks to safety. For example, a chewing fixation may lead to chewing on hazardous products (e.g., electronic cords). Finally, elopement (i.e., running away or wandering off) was a common safety concern that was often addressed by purchasing safety gates, locks, door alarms, and surveillance devices.

Other products were shared that assist individuals with I/DD in navigating their daily activities. Certain electronic devices (e.g., voice-command assistants), were used to provide reminders to individuals with I/DD about tasks or safety requirements. Additionally, electronic tablets were popular among many participants for receiving information because they were regarded as easy to use and capable of providing communication assistance for individuals who are nonverbal or who have other communication impairments.

In addition to products purchased for the home, many caregivers provided their perspectives about safety and accessibility concerns in public spaces. For example, caregivers shared insight that many public spaces are not equipped to support some members of the I/DD community (e.g.,

spaces are not navigable for wheelchairs, changing tables in public restrooms cannot accommodate larger children or adults). As discussed, caregivers also noted that they worried about individuals with I/DD eloping while out in public; some indicated that they use electronic trackers and neon clothing for visibility to reduce this risk.

Caregivers shared that they use several techniques and strategies to provide safety and behavioral education to those they support. Some of these strategies include modeling safe behavior and providing step-by-step instructions (teaching in person and with the assistance of audio or visual aids) and incorporating repetition and practice until the behavior is routinized. Caregivers also reported using several preventive strategies to address their safety concerns, including employing frequent in-home monitoring, “out of sight, out of mind” tactics, or removing products from the home.

Beyond caregiver support, some participants shared preventive strategies that they would like to employ, but do not have the means to. For example, participants indicated they want products to have written step-by-step instructions with visuals or videos physically on them to provide clear safety education. Specifically, several participants indicated that products could have QR codes to provide video or audio safety information. Additionally, many of the products they desired to increase or maintain safety were especially expensive; it is important to note that most of the participants in both the ethnographies and focus groups had means to provide and purchase desired products.

Most participants indicated that they trusted and valued the perspectives of other caregivers (e.g., parents of individuals with I/DD), particularly about what products to purchase and use. Caregivers also spoke positively about various advocacy organizations and communities and the resources they provide. Of note, caregivers expressed concern that despite what these communities recommend, some hesitate to purchase “safer” items because they may be designed for children rather than adults. Specifically, hesitation stemmed from concern about long-term durability as individuals with I/DD age, and age-appropriate designs and maintenance of dignity.

The data collected provide clear opportunities for CPSC to increase awareness of specific product risks and appropriate safety measures for individuals with I/DD and their caregivers. Specifically, the data highlights a variety of tactics to employ when developing product safety education materials for the I/DD community. For example, using visuals to illustrate key lessons and steps consumers can take to mitigate risk and leveraging diverse content formats would reach a broader audience. Further, the data may support CPSC in providing evidence-based recommendations to product manufacturers for increasing product durability for adult consumers with I/DD as well as for adapting existing product safety information.

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## Background

The Consumer Product Safety Commission (CPSC) understands the complexities and limitations surrounding the evaluation of safety hazards from consumer products that impact individuals with intellectual and developmental disabilities (I/DD). Given the limited evidence base focused on this consumer audience, in 2020, CPSC contracted Fors Marsh to conduct foundational research via a comprehensive literature review and environmental scan to better understand the types of consumer product safety hazards that consumers with I/DD encounter (Fors Marsh Group, 2021). As noted in the research, consumers with I/DD are a highly diverse population, with over 7 million Americans living with an I/DD (e.g., cerebral palsy [CP], autism spectrum disorder [ASD], Down syndrome [DS]) (Fors Marsh Group, 2021). Additionally, about three-quarters of injuries to children and young adults with I/DD occur within the home through interactions with food and consumer products including, toys, household appliances, and structural features (e.g., stairs, flooring) while carrying out daily activities such as eating, playing, and bathing. Even when used under the supervision of the most vigilant caregivers, consumer products frequently pose the risk of burning, falling, ingestion, or choking. However, most safety concerns do not stem from specific products, but from a convergence of an individual's ability and the product's potential hazard. For example, people with I/DD may have difficulties with balance, which could make them more likely than the general population to fall when walking up and down stairs or to slip when showering.

Therefore, to gauge the day-to-day hazards individuals with I/DD encounter from consumer products, it is crucial to hear the first-hand perspectives of both consumers with I/DD who are directly engaging with products and their caregivers (e.g., parents, teachers, residential facility staff) who may be providing support in safety-related evaluations. Fors Marsh, in collaboration with the National Association of Councils on Developmental Disabilities (NACDD), worked with CPSC to develop and implement formative qualitative research through primary data collection composed of nine ethnographies with individuals with I/DD and six focus groups with caregivers of individuals with I/DD. This direct research is intended to support CPSC's goals of engaging and educating consumers with I/DD and their caregivers, as well as evaluating product safety priorities among consumers with I/DD.

Understanding that the I/DD population is multifaceted and displays a spectrum of capabilities, it was vital that Fors Marsh work directly with our community partner, NACDD, to ensure that the qualitative study design for this contract was approached with respect, cultural competence, and appropriateness to understand hazards to safety from multiple perspectives.



## Research Objectives

Following recommendations derived from previous foundational research, Fors Marsh developed a research plan to hear directly from consumers in the I/DD community. We prioritized gathering insights from individuals with ASD, CP, and DS, as these are some of the most common I/DD diagnoses in the United States and represent a broad range of physical and cognitive abilities and unique hazards with products (Fors Marsh Group, 2021). To address the needs of the most vulnerable segments of this community first, we prioritized participants who were reliant on caregiver support for at least 40 hours per week.

Recognizing that it is important to understand the perspectives of both individuals with I/DD and their caregivers, Fors Marsh developed a tiered qualitative research approach to data collection, including: (1) ethnographies (i.e., in-person observation and interviews in a participant's environment) with community members; and (2) focus groups with caregivers of individuals with I/DD. This qualitative research provided a first-hand account of the various products that consumers with I/DD interact with daily (e.g., stoves, water faucets, refrigerators, flooring, toilets) and the risks of injuries they may encounter. Additionally, these discussions with consumers with I/DD and their caregivers provided more detailed and contextualized information about hazards and safety that have not been captured in academic literature or in the greater landscape of current research.

Our research questions, outlined in Table 1, guided the development of protocols for the ethnographies and focus groups. Specifically, the qualitative research conducted was intended to inform CPSC's development and dissemination of future product standards and communication materials for the I/DD community. Additionally, findings from this research will guide future efforts to engage with the greater I/DD community on potential product safety hazards.

**TABLE 1. RESEARCH QUESTIONS FOR ETHNOGRAPHIES AND FOCUS GROUPS**

Ethnographies	Focus Groups
<ul style="list-style-type: none"> <li>• What consumer products that pose an injury risk for the consumer with I/DD are in the surrounding setting, and how often do they interact with said products each day?</li> <li>• How does the consumer with I/DD interact with the products?</li> <li>• In what ways might the parent or caregiver try to reduce risk posed by the products to the consumer with I/DD?</li> <li>• What products, if any, have the parent or caregiver removed from the home or avoided purchasing due to the potential risk for the consumer with I/DD?</li> </ul>	<ul style="list-style-type: none"> <li>• What products do caregivers prefer the consumer with I/DD use to reduce risk?</li> <li>• What negative and positive experiences have caregivers and the consumer with I/DD had with products (e.g., flooring, stoves, water faucets, small toys with choking hazards, batteries)?</li> <li>• What products do caregivers and the consumer with I/DD perceive could cause them harm?</li> <li>• How do consumers with I/DD behave toward products that could potentially cause them harm?</li> <li>• What barriers reduce caregivers’ confidence that they can help the consumer with I/DD to avoid harm while using the products?</li> <li>• How do caregivers prefer to receive information and training on ways to reduce their children’s risk?</li> </ul>

## Methodology

### Implementation of Ethnographies

Fors Marsh drafted study materials in collaboration with our partner NACDD, which were reviewed and approved by CPSC. The ethnography protocol and materials (i.e., discussion guide, screener, informed consent form) were submitted to Advarra Institutional Review Board (IRB) and the Office of Management and Budget (OMB) to secure approvals for human subjects’ protection and federal data collection. Particular care was taken regarding human subjects’ protection due to the population involved. Ethnographies took place from April 12, 2023, to June 28, 2023, in settings where consumers with I/DD and their caregivers<sup>1</sup> typically spend their days (e.g., their home). Details about ethnography participant demographics are in Appendix A.

<sup>1</sup> In this context, a caregiver is defined as a parent or other guardian of a consumer with I/DD who provides support at their home, at their school, or at their residential facility, or another individual who purchases or uses products to support the consumer with I/DD for a minimum of 5 days or 40 hours a week (e.g., in-home care).

## ***Ethnography Recruitment***

Recruitment for the ethnographies occurred from March 28, 2023, to June 26, 2023. Eligibility to participate included individuals with an I/DD diagnosis who self-identified as “high need” (i.e., who required at least 40 hours per week of supportive care). Additionally, participants needed a specific I/DD diagnosis of ASD, CP, or DS, although individuals could have multiple comorbid diagnoses. Finally, participants were not eligible if they participated in a market research study within the previous 3 months.

To initiate the recruitment process, NACDD identified schools, housing facilities, and organizations in the Washington, DC, Maryland, and Virginia regions (DMV). NACDD also partnered with developmental disability councils in the DMV to identify potential participants with specific I/DD diagnoses and stakeholders and other individuals that receive services. Of note, recruitment for the ethnographies was received with eagerness; the keen interest expressed by the I/DD community highlights the dearth of research designed to understand the unique needs of individuals with I/DD. To assess eligibility for the ethnographies, NACDD conducted phone screenings to identify potential participants.

Prior to each ethnography, individuals from the research team conducted an introductory video call to introduce themselves to the participants. These calls provided participants and their caregivers the opportunity to establish familiarity with the team members leading the ethnography and ask questions to better prepare for the ethnography. Additionally, during the calls, the research team always inquired about preferences or “house rules” (e.g., removal of shoes upon entry, whether to expect any pets).

At the start of each ethnography, the moderator described the study purpose, the assent and consent process, and the planned procedures in plain language to ensure participants understood. Adult participants with I/DD and their caregivers both completed an informed consent form. Any other adult individuals who were in the household during the session who may have been recorded (but may not have directly participated in the study) also completed a general informed consent form. Minors with I/DD who were aged 7 years and older, completed an assent form. For those aged 6 and under, there was only a parental consent form. Ethnography participants received a \$175 honorarium as a token of appreciation for their participation in the study—specifically, \$125 for the individual with I/DD and \$50 for the caregiver. For participants who were minors, their parent/caregiver received the honorarium.

## ***Ethnography Fielding***

Ethnographies were conducted by a moderator who was trained at the Research in Values and Attitudes (RIVA) Training Institute. RIVA is considered by many in the qualitative research field to be a gold standard for moderator training. Moderators were supported by a notetaker and

the NACDD recruiter. Moderators were trained to be sensitive to the needs or restrictions of the participants (e.g., providing participants with breaks, using plain language). Ethnographies were audio recorded, and pictures of products were taken following assent and consent.

In sessions with individuals with I/DD who were 12 years or older, researchers prioritized speaking directly to them about their day-to-day experiences with household products, and caregivers could provide additional context and insights. Individuals with I/DD who were younger than 12 were asked to show researchers how they use different products, but caregivers often provided the bulk of verbal information. The notetaker photographed the discussed consumer products to capture their placement, taking care to avoid capturing any identifying features. Participants were provided breaks throughout the ethnography.

## Ethnography Analysis

Analysts derived key themes and insights from the structured notes taken during the ethnographies. The notes were sorted according to common hazards, challenges or safety concerns related to products, and strategies to mitigate those risks. After meeting regularly to discuss emergent themes, the analysis team determined that product safety and risk-related data would be further categorized by its impact on the individuals' physical, cognitive, and behavioral abilities. By focusing on the intersection of ability and consumer product safety, synthesis of the large volume of data was more streamlined and provided clear and actionable recommendations. Finally, analysts reconvened to corroborate the resulting organization of data to complete thematic analysis and finalize the categorization of the results.

Analysts supplemented the findings with photographs and referred to the transcriptions of the ethnographies to ensure that the described themes accurately reflected the perspectives and lived experiences of the participants. Illustrative photographs and tables are incorporated into this report to provide more detailed context about the emergent themes.

## Implementation of Focus Group

For the focus groups, caregivers (e.g., parents, guardians) of individuals with I/DD were recruited and segmented by the diagnosis of the individual with I/DD, specifically ASD, CP, or DS (Table 2 provides more detail about segmentation). Eligibility criteria for caregivers included: (1) providing care for an individual with I/DD for at least 20 hours each week; and (2) not having participated in a market research study within the previous 3 months. Focus groups were conducted between July 25 and July 27, 2023. Appendix A provides detailed focus group participant demographics.

**TABLE 2. FOCUS GROUP PARTICIPANTS**

Participant Group	Number of Groups	Number of Participants per Group	Total Number of Participants
Caregivers of an individual with ASD	2	8/8	16
Caregivers of an individual with CP	2	6/7	13
Caregivers of an individual with DS	2	8/9	17
<b>Total</b>	6		46

### ***Focus Group Recruitment***

Recruitment began following OMB and IRB approval. In partnership with panel providers L&E Research and Rare Patient Voices, 10 self-identified caregivers were recruited for each group to ensure eight participants per group. Planned over-recruitment accounted for potential no-shows or issues with connectivity. Participants who pushed the group over nine individuals (extraneous participants) were paid and excused after conferring with the research team. All participants received a \$120 incentive as a token of appreciation for their time.

### ***Focus Group Fielding***

Six virtual focus groups were conducted using Zoom videoconferencing software, each led by a RIVA-trained moderator using a semi-structured discussion guide to allow for flexibility with probes. The discussion probed on topics including: (1) what products individuals with I/DD interact with in the household; (2) associated challenges with those products; (3) what products they have purchased and used; (4) what products they have adapted or changed; (5) strategies they use to support the individual with I/DD in addressing challenges; (6) what products or communication materials they desire; and (7) what are trusted sources of information. CPSC team members observed the focus groups and shared follow-up questions with the moderator via a virtual chatroom. Sessions were audio and video recorded after participants provided consent. These recordings were transcribed for analysis. Transcripts were scrubbed to remove any potentially identifying personal information.

### **Focus Group Analysis**

A comprehensive codebook was developed to capture key sections of the focus group discussion and key themes. Two coders were trained and double-coded a single focus group transcript in NVivo software, reaching interrater reliability of  $\kappa = 0.70$ . The remaining transcripts were divided between the two coders. The coded transcripts were used to identify themes, de-identified quotes, and participant recommendations.

The analysis highlights consumer use of selected products—specifically, details on how consumers said they use products and what they expect from products (e.g., user hazard

perception, experience, behavior with the products) by individual capabilities, needs, and challenges. Additionally, strategies that caregivers use to educate individuals with I/DD about product safety and the preventive tactics they use to reduce hazard risk were analyzed.

Fors Marsh will provide recommendations related to: (1) best practices for working with the I/DD community; (2) audience-specific objectives and messages related to knowledge, attitudes, and perceptions to affect desired behaviors; (3) references to existing materials and resources from government agencies and nonprofit organizations; (4) communications channels and dissemination strategies to use; (5) recommended communications materials to develop; and (6) future research to conduct in a separate recommendations document.

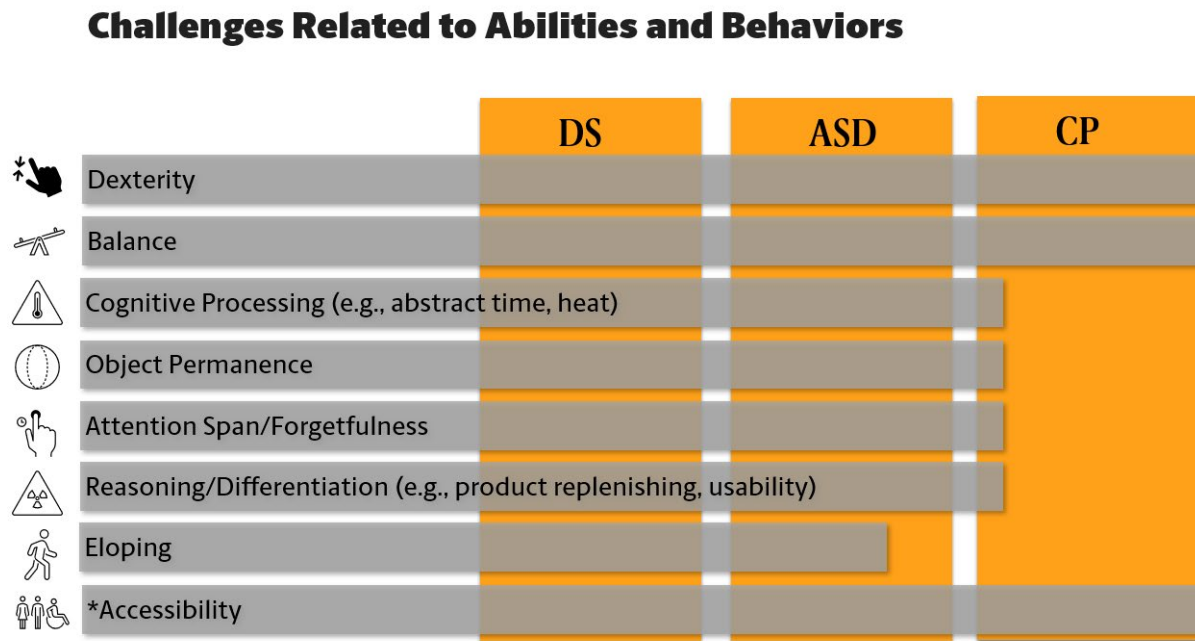
## Results: Overall Key Thematic Insights

### I. Introduction

Individuals with intellectual and developmental disabilities (I/DD) experience a wide variety of challenges and consumer product-specific hazards in their environments both inside and outside of the home. Additionally, as noted, the range of intellectual and developmental abilities within the community varies greatly. Although more research is needed to understand the breadth of consumer product-specific hazards that impact the I/DD community, the findings presented in this report focus solely on those individuals with I/DD who are characterized as being of high need (i.e., requiring substantial caregiver support). As described, ethnographies also included individuals who provided at least 40 hours of caregiving per week, whereas focus group participants were caregivers who provided at least 20 hours of caregiving per week. Although the research population represents only a small subset of the I/DD community, findings demonstrate the vast variation in abilities and challenges experienced across the specific populations of those diagnosed with ASD, DS, and CP. Notably, individuals with I/DD experience similar risks and safety hazards to those of the general population, particularly aging and youth populations.

As determined during analysis, individuals with I/DD experience risks related to consumer products based on their individual capabilities rather than I/DD diagnosis. Therefore, findings are aggregated by specific ability and related challenges rather than by I/DD diagnosis (e.g., dexterity challenges vs. challenges related to ASD). The following sections highlight specific behaviors, environments, and risk categories experienced by high-need individuals with I/DD (see Figure 1).

**FIGURE 1. CHALLENGES RELATED TO ABILITIES AND BEHAVIORS**



Notably, multiple participants with I/DD and their caregivers shared that medical comorbidities could exacerbate physical and cognitive challenges; for example, a vision disorder may introduce or intensify issues with dexterity or balance. However, for the following observations, each challenge is described independently, understanding that the intersection of multiple physical and cognitive challenges may impact interactions with potentially hazardous products and influence behaviors that may expose the individual to additional risk.

In this report, we have organized our findings about challenges within the home into two major categories: (1) physical challenges; and (2) cognitive challenges. Overall, products observed or described fall into three categories: (1) products intended for general population consumption; (2) products designed for child consumption; and (3) products designed for use by individuals with I/DD or with specific medical conditions. In this report, we distinguish between products that are medical in nature (e.g., CPAP machine, wheelchair) and those designed for other consumer needs (e.g., toothbrush, oven).

In addition to consumer products used in the home, we briefly discuss findings regarding accessibility concerns. Finally, we summarize the strategies caregivers use to teach individuals with I/DD about safety precautions when using consumer products in the home. Brief table summaries of physical and cognitive challenges follow their associated sections.

## II. Physical Challenges

Some individuals with I/DD encounter physical challenges, often related to low muscle tone, spinal cord malformations, and/or stature. Individuals with I/DD who participated in the research, specifically individuals with CP and DS, often encountered product-related risks due to challenges with balance, mobility, and dexterity. Although research participants sometimes struggled with additional physical challenges related to spoken communication and accessibility, the following section focuses primarily on the safety risks individuals with I/DD may experience related to balance, mobility, and dexterity. Challenges related to communication and accessibility are discussed later in this report. Table 3 provides a summary of products that pose risks due to physical challenges, as well as products that mitigate risks.

### A. Balance

Reduced balance puts individuals with I/DD at higher risk for slipping and falling. To mitigate balance-related challenges frequently present in the bathroom, kitchen, and on stairs, many caregivers introduce structural adaptations to rooms and incorporate products that assist in maintaining balance. For example, one caregiver noted that they remodeled their bathroom to include low-slip tiles within the shower and on the bathroom floor to minimize slip hazards. Other caregivers purchased rubber or silicone mats to place at the bottom of showers to improve grip. Rolling bathroom chairs assisted with using the toilet and the shower and helped stabilize the individual with I/DD while in the bathroom (Image 1). When asked to design an ideal bathroom for an individual with I/DD, caregivers suggested modifications such as walk-in showers, showers with sliding doors, and safety railings for balance support.

Caregivers indicated that they implement similar strategies in their kitchens and dining rooms to help individuals with I/DD while eating or playing. For example, young individuals with I/DD often use high chairs with foot support and chest safety belts that allow for greater stability to sit and eat (Image 2). However, a few caregivers expressed concern over the availability of adequate, age-appropriate, and affordable products to

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*“She really prefers me to be in [the bath] there to help her get in and out... We put a little step stool there, but it almost makes it too high. So, some sort of grippers on the side of the bathtub so she feels a little more stable, getting in and out would be really helpful... but just something that makes her feel a little more comfortable because she's not super stable.”* —Caregiver, DS

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**IMAGE 1. SUPPORTIVE BATHROOM CHAIR**

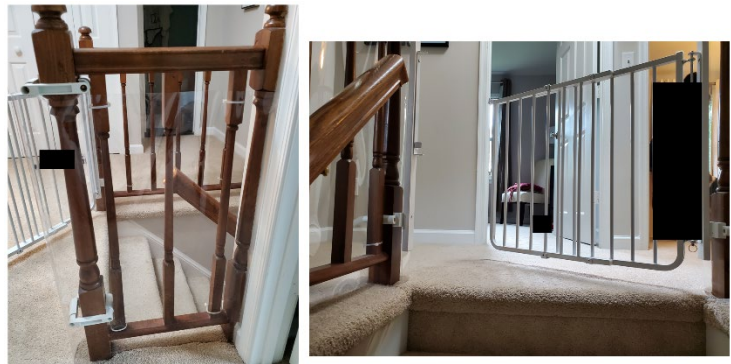


support an individual with I/DD. One caregiver noted that they had to surround their high chair with multiple items to ensure that the child could not tip the high chair over while using it. Other caregivers shared how challenges with balance may affect interactions with small, sharp objects, like eating utensils. One caregiver replaced metal straws with a silicone alternative in case the individual with I/DD fell while drinking.



**IMAGE 2. HIGH CHAIR WITH FOOT SUPPORT AND SAFETY BELT**

Many individuals with I/DD require additional support to safely climb stairs, such as additional railings on both sides of the stairs or physical assistance from a caregiver (Image 3). Some may be more prone to balance-related hazards due to associated depth perception challenges. In several ethnographies, uneven or narrow stairs further exacerbated balance challenges. Notably, caregivers of younger children with I/DD expressed greater concerns related to slipping and falling. Several caregivers added railings to beds or cribs to avoid potential slipping or falling hazards. Similarly, caregivers frequently placed plastic stair covers and safety gates at the top and bottom of stairways to limit access, but some caregivers were concerned that this was a temporary solution, as individuals with I/DD can learn to open the gates as they age.



**IMAGE 3. PLASTIC STAIR COVER AND SAFETY GATE**

Additionally, some caregivers explained that they anchored larger and heavier furniture (e.g., dressers, bookshelves) to walls to prevent them from tipping over if the individual with I/DD grasped them for stability (Image 4). However, a few caregivers noted some difficulties with anchoring furniture; for example, a few indicated that they were hesitant to anchor furniture because they were renting their home and did not want to damage walls, a few said that the crown molding on their floors and ceilings prevented them from anchoring because the furniture would not lay flush against the wall, and a few indicated that they believed their furniture was

too heavy to move. Some caregivers shared the adaptations they used to help them anchor furniture, including nailing wooden boards to the wall to anchor the furniture and choosing not to have large furniture in bedrooms.

Because limited balance can impact independence with certain tasks, several caregivers said that they purchased products with enhanced features to support the individual with I/DD. For example, one caregiver purchased a specialty lightweight bicycle for the individual with I/DD to minimize the impact of a bicycle's weight and risk of falling on the individual with I/DD. Another caregiver's family members created a wooden chair and desk that could help support and stabilize the individual with I/DD while they played. The family members built onto the chair and desk as the individual with I/DD grew.



**IMAGE 4. DRESSER ANCHORED TO THE WALL**

## ***B. Mobility and Dexterity***

In addition to challenges related to balance, individuals with I/DD also experience a variety of mobility- and dexterity-related challenges, which are often attributed to spinal cord malformations or low muscle tone. For some, particularly individuals with CP, this requires the use of medical devices, such as wheelchairs and walkers, to assist with mobility. A few participants in caregiver focus groups discussed challenges with larger medical devices in the home; some discussed making custom modifications to their home (e.g., ramps, walk-in bathtubs, garage door openers) and others shared that their home is not fully accessible (e.g., too-narrow doorways and hallways). One ethnography participant with CP described their decision to remove any carpeting in the house to allow for easier navigation for their wheelchair.

Dexterity- and mobility-related challenges and product needs are based on the capabilities of the individual with I/DD, but some products can improve independent usability. As many individuals with I/DD experience several medical comorbidities, medication regimens were a crucial part of most daily routines. Several individuals with I/DD and their caregivers expressed a preference for “day-of-the-week” pill boxes with push buttons that allowed the individual with dexterity challenges to access their medicine more easily (Image 5). Similarly, many individuals with



**IMAGE 5. DAYS-OF-THE-WEEK PILL BOX**

I/DD preferred to use electric toothbrushes because they required less manipulation than their manual alternatives.

Due to the smaller frame of some individuals with I/DD, grip strength, the feasibility of holding products, and the ability to reach products are key dexterity considerations. Caregivers often sought out products with handles or appropriate surface areas to reduce risks of injury. These include cups with handles on both sides, spill-proof containers, larger markers for writing rather than thinner pencils, and modified serving utensils. A few caregiver participants in the DS focus groups discussed using smaller food and drink containers that are easier to grip and manage for individuals with smaller statures. Although these items are easier to grasp, caregivers expressed concerns that these products are intended for children and are harder to use as the individual with I/DD gets older, due to concerns over bullying in school environments or lack of dignity. Some products were purchased based on their durability and safety against the risk of dropping on the floor, such as plastic drinking cups instead of glass. To combat balance- and dexterity-related challenges, several caregivers moved frequently used products such as kitchenware and toys from higher cabinets to drawers closer to the floor so the individual with I/DD could access everyday items easier (Image 6). This change also reduced the risk of the individual with I/DD reaching and falling or dropping items.

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*“One other issue we’ve had is with large cartons and jugs and things that are hard to get their smaller hands around. So, we decant a lot of things into smaller pitchers or smaller things for her.”*

—Caregiver, DS

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**IMAGE 6. LOW CABINET DRAWERS**

Participants shared similar modifications they made to their home to reduce the risk of injury due to issues with dexterity. For example, a few caregivers noted that they prefer to have pocket or sliding doors, whereas others prefer doors with larger levers or handles rather than knobs, which may be harder to grip and turn. A few noted that these doorknob modifications were important considerations, particularly when planning for emergency circumstances; individuals with I/DD may become trapped in a room that they cannot easily escape because they cannot easily turn a doorknob.

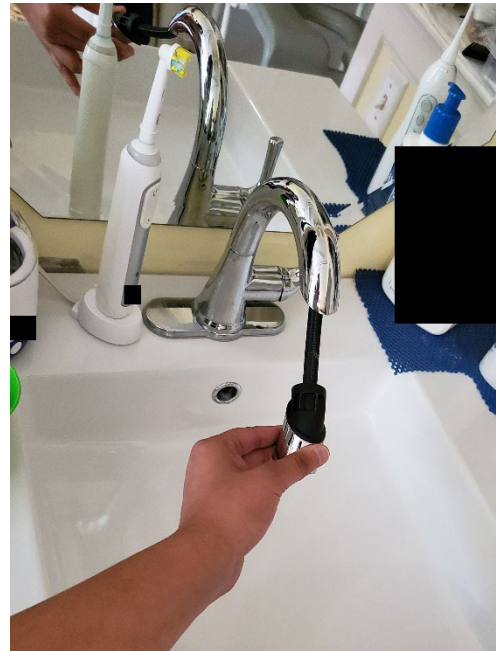
As fine motor skills may be limited, individuals with I/DD can experience challenges with dressing and clothing products. For shoes, many individuals with I/DD prefer hook-and-loop or slip-on shoes compared to those with shoelaces, as it may be difficult to tie laces. This can also reduce the incidence of falling due to the balance challenges noted earlier if shoelaces became untied. Similar challenges exist with other types of clothing items, particularly in fastening mechanisms. Some caregivers explained that they often choose clothing items that are easy to pull on rather than clothing with fasteners such as clasps, zippers, and buttons. These types of clothing replacements can allow for greater autonomy in daily tasks for individuals with dexterity challenges.

### *Burning, cutting, and abrasions*

Parts of the kitchen remain inaccessible to many individuals with I/DD due to dexterity and mobility challenges. For example, some individuals with I/DD have physical limitations such as shorter limbs and stature that can introduce increased burn risk when they need to reach across hot surfaces. Several ethnography participants with physical disabilities also reported having difficulty reaching the microwave or opening the oven; these challenges could lead to spilling hot substances on themselves or burning their arms or hands while trying to reach inside.

Caregivers reported particular concern about gas stoves and fires. For example, individuals with I/DD can encounter additional burn risks when stovetops require reaching over burners to turn on the heat. Some focus group participants reported that they ensured that the individual with I/DD used silicone bumpers and silicone oven mitts to protect against burn risk. Additionally, to manage their risk of burns from hot water, one ethnography participant explained how they used faucet extension tubes to provide more control when using the sink or shower (Image 7).

Challenges with dexterity can also increase the risk of cutting and abrasions for individuals with I/DD when using razors, knives, and other sharp products. A few focus group participants described using nylon knives and plastic utensils instead of sharp knives (Image 16). Others described keeping knives and other sharp utensils out of reach or only allowing use under supervision.



**IMAGE 7. FAUCET EXTENDER TUBE**

## *Choking and Swallowing*

Some individuals with I/DD, especially those who are young or who have smaller frames, experience an increased risk of choking while eating and drinking. Caregivers from ethnographies who provided support to younger individuals with I/DD shared several purchased products that addressed this risk, including feeding spoons that permitted less food per bite, straws with smaller openings, automatic stopping mechanisms limiting the speed of liquid intake (Image 8), and airway clearance devices in case of a choking incident (Image 9). Other caregivers preferred to replace metal or plastic straws and mouthpieces with silicone versions to minimize the dangers of chewing and swallowing plastic pieces or falling with a metal straw in the mouth.

Caregivers of individuals with comorbidities such as respiratory challenges, thyroid conditions, or epilepsy sometimes incorporated additional medical equipment and medications into the individual with I/DD's routine. In the focus groups, several caregivers of individuals with CP described requiring a feeding tube and associated equipment to provide nutrition (often instead of eating solid foods). Some described related concerns about choking or aspirating and how they adapted products or environments to minimize choking hazards in these circumstances. For example, one caregiver used a shelf near the bed to hold the continuous positive airway pressure (CPAP) machine and a pacifier clip to secure the airway pipe to the individual with I/DD's clothing to prevent wire twisting and potential suffocation at night (Image 10). For younger children, caregivers often remove additional products from the bed to minimize potential choking hazards during sleep. Another caregiver in a focus group discussed using a suction device for teeth brushing and cleaning.



**IMAGE 8. CUP WITH STRAW TO LIMIT LIQUID INTAKE**



**IMAGE 9. AIRWAY CLEARANCE DEVICE**



**IMAGE 10. CPAP MACHINE AND PACIFIER CLIP**

**TABLE 3. SUMMARY OF PRODUCTS RELATED TO PHYSICAL CHALLENGES**

PHYSICAL CHALLENGES	
<b>Balance</b>	
<i>Risks: falling, tripping, slipping, cutting</i>	
Products that pose a risk	Products that mitigate difficulties/harm
<ul style="list-style-type: none"> <li>▪ Bathtubs</li> <li>▪ Showers</li> <li>▪ Chairs</li> <li>▪ Rugs</li> <li>▪ Carpets</li> <li>▪ Wood floors</li> <li>▪ Stairs</li> <li>▪ Furniture</li> <li>▪ Home environment</li> <li>▪ Stools</li> <li>▪ Dishware</li> <li>▪ Drinking/eating utensils</li> </ul>	<ul style="list-style-type: none"> <li>▪ Rubber or silicone bathmats and mats</li> <li>▪ Bath seats</li> <li>▪ Shower/bath chairs</li> <li>▪ Ledges</li> <li>▪ Stools</li> <li>▪ Anti-slip products</li> <li>▪ Rug adhesives</li> <li>▪ Rug grips or pads</li> <li>▪ Sticky rugs</li> <li>▪ Safety gates</li> <li>▪ Rubber corner protectors</li> <li>▪ Lightweight bicycle to help with balance</li> <li>▪ Metal straws with a silicone insert</li> <li>▪ Plastic dishware resistant to breakage</li> </ul>
<b>Mobility and Dexterity</b>	
<i>Risks: cuts, abrasions, burns, scalds</i>	
<i>Difficulties: eating and drinking, writing, brushing teeth, getting dressed, opening containers, bathing and personal hygiene, cooking</i>	
Products that pose a risk or challenge	Products that mitigate difficulties/harm
<ul style="list-style-type: none"> <li>▪ Dishware</li> <li>▪ Eating utensils</li> <li>▪ Writing utensils</li> <li>▪ Stools</li> <li>▪ Medicine</li> <li>▪ Doors</li> <li>▪ Cords</li> <li>▪ Toothbrushes</li> <li>▪ Clothing</li> <li>▪ Shoes</li> <li>▪ Knives</li> <li>▪ Razors</li> <li>▪ Liquid bath/showering products</li> <li>▪ Faucets</li> <li>▪ Microwaves</li> <li>▪ Stovetops</li> <li>▪ Gas stoves</li> <li>▪ Ovens</li> </ul>	<ul style="list-style-type: none"> <li>▪ Cups with handles on both sides/cups with texture and large handles for easy gripping</li> <li>▪ Spill-proof containers</li> <li>▪ Easy-to-grip serving utensils</li> <li>▪ Larger/wider markers for writing</li> <li>▪ Plastic dishware resistant to breakage</li> <li>▪ See-through push-tab pill box</li> <li>▪ Curved pillows</li> <li>▪ Wheelchairs/wheelchair lifts</li> <li>▪ Walkers</li> <li>▪ Electric toothbrushes</li> <li>▪ Zippers on clothes</li> <li>▪ Clothing without fasteners</li> <li>▪ Hook and loop fastener shoes</li> <li>▪ Slip-on shoes</li> <li>▪ Elastic waistbands</li> <li>▪ Nylon-serrated knives</li> <li>▪ Knife covers</li> <li>▪ Dulled single-blade razors</li> <li>▪ Electric shavers</li> <li>▪ Soap dispenser (pump)</li> <li>▪ Silicone bumpers or oven mitts</li> </ul>

## III. Cognitive Challenges

Many individuals with I/DD experience challenges because of limited cognitive abilities. This can lead to challenges with higher-order processing, such as abstract concepts, reasoning and differentiation, and forgetfulness. Notably, cognitive challenges were more common in individuals with DS and ASD within the ethnography and focus group sample population. There were some cognitive processing challenges seen in individuals with CP who were younger, possibly due to other comorbid conditions. Table 4 provides a brief summary of products that pose risks due to cognitive challenges, as well as products that mitigate risks.

### ***A. Reasoning and Risk Assessment***

Reasoning and differentiation are challenging for many high-need individuals with I/DD—specifically, lacking awareness or understanding of hazards from various products. For example, some ethnography participants with I/DD struggled with deciding whether it was time to replace or replenish food items. Caregivers in ethnographies and focus groups shared that the individual with I/DD for whom they provided care also encountered challenges understanding whether items were safe to consume or dangerous (e.g., cleaning chemicals). Similarly, a lack of awareness or understanding of dangers related to sharp items, hot surfaces, and other potentially hazardous products (e.g., electric cords, outlets, cleaning products) contributes to increased risk. Intersections of these cognitive limitations and factors such as age, physical limitations, and comorbidities may exacerbate risks from products (e.g., choking, burning, cutting and abrasions).

#### *Burning*

Burn risks often exist for high-need individuals with I/DD of all ages because it may be difficult to recognize potential burn hazards. Several caregivers noted that an individual with I/DD may lack the cognition to recognize a hot surface and react quickly enough to minimize burning. Caregiver ethnography participants often described the kitchen as a location with accessibility challenges and additional safety concerns. Some caregivers expressed concern about increased burn risks as the individual with cognitive challenges aged and attempted more tasks independently. Several caregivers noted the importance of knob covers for the stove to prevent individuals with I/DD from accidentally turning on the stove, particularly when unsupervised. However, as shown in Image 11, one ethnography caregiver participant noted that the knob locks they had purchased were easy for the individual with I/DD to pull off and exposed not only a sharp screw but allowed the individual to

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*“She loves to help cook sometimes, or she likes smelling the food while I’m cooking it, but she gets very, very close to it, and doesn’t necessarily realize things are hot... So, a lot of the stuff in the kitchen is definitely a little more scary, just because she doesn’t always remember that they’re dangerous.” —Caregiver, ASD*

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turn on the burners. A few focus group participants shared that they had to completely remove the knobs from a gas stove as a safety precaution. Some caregivers limited use of heating appliances such as electric kettles and microwaves in the kitchen due to burn concerns.



**IMAGE 11. STOVE RAG AND KNOB COVER**

Caregivers said that they often provide verbal instructions for using kitchen appliances and modeled how to use them. For example, several individuals with I/DD shared that they knew to always use a specific button on their microwave to heat up food because that is what they were told to do. Another caregiver circled settings on kitchen appliances to indicate to the individual with I/DD where to set knobs during use. One ethnography caregiver purchased a specialized toaster oven that, when opened, automatically lifted and extended its rack to allow users to place and retrieve food outside of the hot inner surface (Image 12). Similarly, individuals with I/DD preferred to use appliances that had a see-through component (e.g., glass door) so that they could see when something had finished cooking rather than having to set a timer. Of note, some focus group participants reported that individuals with I/DD could successfully prepare their own food and use kitchen appliances with no safety concerns (e.g., toaster oven, stove top, air fryer). As discussed, cognitive capabilities vary among individuals with I/DD, and therefore, associated risks must be evaluated at the individual level.



**IMAGE 12. TOASTER OVEN WITH EXTENDING RACK**

Another challenge persisting across high-need individuals with I/DD includes differentiation of temperature (e.g., understanding that hot water can scald). To support the individual with I/DD, one caregiver described that they remodeled their

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*"I'll give her a bath, and she knows how to work the bath water...and she doesn't know how hot or cold it's getting. And so I'm having to constantly be like, 'Hey, don't touch the water,' or, 'Hey, it's going to be hot,' or something, even when she's washing her hands, just the concern of her hitting the hot water instead of the cool water because she doesn't know."*

—Caregiver, DS

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bathroom to move the temperature controls further away from the flow of water. This move decreased the risk of burn or slipping hazards as a reaction to hot water. Similarly, an ethnography caregiver modified their shower from two levers controlling temperature to a singular lever to mitigate the individual with I/DD having difficulty remembering which lever controlled the hot water. One focus group participant discussed setting a safe temperature limit for water with what they described as an “anti-scalding device.”

Concerns over burning extend to electrical outlets and vents. Some caregivers, particularly those with young children, purchased covers to minimize access (Image 13). Some covers slid across the outlet or rested on top as a removable cover. Caregivers also indicated that they minimize the number of products that are plugged into wall outlets around their home to reduce the risks of electrical shock and burning, and they limit unsupervised access to kitchen appliances such as ovens.



**IMAGE 13. ELECTRIC OUTLET COVERS**

### *Cutting and abrasions*

High-need individuals with I/DD may have challenges understanding the appropriate use of sharp products (e.g., knives, scissors, razors), which can increase their risk of injury. Although several individuals with I/DD in the ethnographies explained how teachers and parents taught them how to use knives and razors, some individuals with I/DD required supervision from their caregivers when using these items or chose not to use them at all. Several ethnography and focus group caregivers emphasized the importance of monitoring the possession and use of sharp items. Therefore, several caregivers reported removing, hiding, or restricting access to sharp objects so that individuals with I/DD would not use them unsupervised. Some caregivers routinized safety actions when using sharp objects (e.g., having the individual with I/DD consistently unplug their electric razor and return it to a set location).



**IMAGE 14. NYLON SERRATED KNIVES**

To encourage more autonomy while mitigating safety concerns, some caregivers said that they purchased modified versions of typically sharp products (e.g., nylon serrated blade with a blunt

tip) to avoid gash or puncture injuries (Image 14). Similarly, although some caregivers choose to help the individual with I/DD with tasks that involve sharp objects, like shaving, other caregivers purchased dulled single blade razors for shaving legs and underarms or electric shavers for shaving the face and neck because the individual with I/DD could use it themselves. One caregiver described the helpfulness of an electric shaver with a single setting because it was easy and safe to use.

### *Chemical products*

Several caregiver focus group participants discussed concerns related to liquid chemical products, such as household cleaners, personal care products, and beauty products. Safety concerns focused on individuals with I/DD mixing potentially dangerous chemicals together (e.g., nail polish remover, bleach, oven cleaner) or consuming them (e.g., laundry detergent). To address safety concerns, caregivers typically hid or locked the products away (e.g., toilet and cabinet locks), replaced them with a less dangerous alternative (e.g., baking soda and vinegar instead of bleach-based products), or removed them from the household completely. Caregivers also discussed individuals with I/DD playing with the chemicals and making a mess (e.g., paint) or overpouring amounts of bathing products (e.g., shampoo, soap). Several participants discussed using pumps in bottles, which helps control the amount of liquid dispensed and makes the products more user-friendly.

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*“...when my son was younger, he used to put everything in his mouth. One time he drank laundry detergent... And he would put everything in his mouth, so I had to be really, really careful and watch him all the time... Not so much now because he's broken that habit...but when he was young, we never kept anything around that could be considered a choking hazard or something like that liquid that's potentially poisonous that he would have access to.”* —Caregiver, DS

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## ***B. Abstract Concepts: Time, Object***

### ***Permanence, and Awareness***

Understanding abstract concepts remains a challenge for high-need individuals with I/DD and can lead to risks associated with object permanence, timing, and spatial awareness. Caregivers typically developed adaptations to support the individual with I/DD, including using external timers and alarms with sounds to alert them. Products with simplified features (e.g., specific buttons or singular push buttons for functions), were often easier to use. For example, caregivers often indicated that because individuals with I/DD could

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*“They have [smart watches] or [smartphones] along with their [tablets], which I think is every child's, especially with Down syndrome, favorite thing. But I think also being able to set timers independently, they can do that. And I've had a lot of success with a lot of them using [voice assistant] to set timers to go to the next class or to go get their lunch out of the fridge.”* —Caregiver, DS

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easily use smartphones or smart devices, technology was often incorporated into their routine for using appliances or home features (e.g., shower).

Similarly, caregivers emphasized the importance of introducing step-by-step routines or visual cues to teach individuals with I/DD to use devices and appliances with standardized buttons or input specific times and settings on appliances like microwaves or toaster ovens. For example, by introducing and maintaining step-by-step routines, individuals with I/DD could often independently use appliances (e.g., laundry). Multiple individuals with I/DD also used voice-to-text or interactive voice assistive technology to accomplish some tasks requiring time management or object awareness (e.g., set timers, reminders).

However, caregivers also noted that forgetfulness and issues with object permanence were prominent safety concerns. In the kitchen setting, caregivers said they were often concerned that individuals with I/DD may forget that the stove or oven was hot when in use. Due to these concerns, caregivers often encouraged the individual with I/DD to refrain from using certain appliances without supervision.

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*“Abstract thinking is difficult...The whole concept of, 'Don't touch the oven, it will burn you,' without actually going through that process is harder. Because if you've never been burned by an oven or burned by a stove, then you may not understand what burning is.” —Caregiver, DS*

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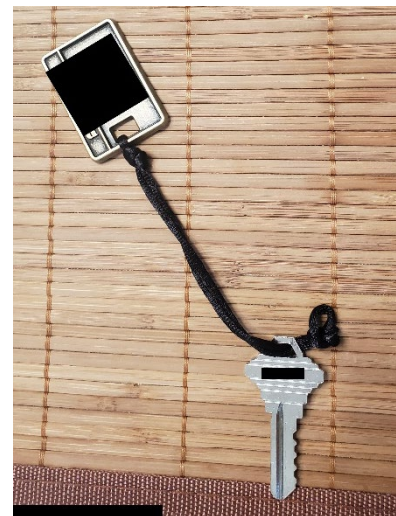
Caregivers noted that they often provided supervision or assistance to individuals with I/DD, specifically for activities requiring abstract thinking or multiple steps. For example, although caregivers often retrieved and allocated medications, many older individuals with I/DD used daily pill boxes to administer medicine with minimal supervision. To support this task independently, older individuals with I/DD indicated they preferred see-through medicine boxes to visually recognize the medications and those with push tabs for ease of use. As a mitigating strategy, some ethnography caregivers also incorporated additional reminders in visible locations, including to-do lists, bulletin boards, and physical calendars to encourage awareness of and preparation for regular activities and tasks.

Participants also shared adaptations to important items that helped keep individuals with I/DD prepared for daily activities. As described, caregivers often routinized daily tasks to support independence and help the individual



**IMAGE 16. DRESSER DRAWERS WITH LABELS**

with I/DD remember each step. Some caregivers noted that clearly marking instructions on products or incorporating images or videos as visual cues helped individuals with I/DD overcome some abstract concept barriers. For example, one individual with I/DD drew pictures of objects and clothing to designate which items belonged in each drawer (Image 16). Some caregivers noted that they developed “go bags” for specific rooms or activities so that the individual with I/DD could be fully prepared with the appropriate tools for the required tasks. For example, some go bags were packed with an extra set of clothes in case the individual with I/DD got wet or needed to change while being out of the home (e.g., rainy day, incontinence control). Another adaptation example to assist with daily activities was that a caregiver added a heavier keychain to the individual with I/DD’s house key because they would often forget their key (Image 15). In this case, the heavier keychain was more obvious to the individual with I/DD because they could feel the weight of the object, which increased their awareness of its presence.



**IMAGE 15. WEIGHTED KEYCHAIN**

### ***C. Sensory Fixations and Avoidances***

Some individuals with I/DD have difficulty processing sensory information. As a result, some individuals engage in repetitive motor movements or fixed routines or rituals to seek out or avoid certain sensory inputs. These behaviors may increase the risk for injury and intense distress due to fixations on particular sensory experiences or hypo-reactivity to stimuli in their environment. Therefore, some caregivers indicated that they implement strategies to distance the individual

with I/DD from dangerous activities related to sensory fixations (e.g., banging a head against a washing machine). Some specific strategies discussed among caregivers included limiting access to triggering products, introducing engagement with similar but safer sensory experiences, or incorporating the use of “fidget” toys. Products like weighted blankets and compression tools were also useful for helping with anxiety and sensory needs.

Some caregivers in focus groups discussed the importance of maintaining rituals, sensory fixation, or avoidant behaviors to reduce potentially intense or harmful emotional distress. To help mitigate these scenarios, caregivers use repetition and visual cues (e.g., images of distressing or new environments, videos of individuals with the same I/DD interacting with the environment) to explain and model safe strategies. Additionally, some caregivers noted that they introduce products (e.g., headphones) to minimize some of the more extreme sensations.

Many focus group participants discussed the positive and negative attributes of fixations on electronic devices, such as phones, tablets, televisions, and gaming systems. For example, some individuals with I/DD said that they found comfort and were entertained by devices, whereas other individuals with I/DD could become overstimulated, could ignore other things in the environment, and could lose track of time. Some caregivers addressed these issues by monitoring and limiting screen time. Additionally, a few caregivers discussed using a screen filter to address concerns about blue light from electronic screens.

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*“I also worry...with technology in a different aspect. His dad brought him his [video gaming system]. They sell all the features for kids with disabilities, special needs. And so I worry about him really getting hooked on that and really getting consumed with that in his time.”*

—Caregiver, CP

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Several focus group participants discussed providing care for individuals who have oral fixations and the related safety concerns with these fixations. A few caregivers expressed that they were concerned about the individual with I/DD putting various objects into their mouths (e.g., chalk) or chewing on electronic cords. To address this need for oral stimulation, caregivers purchased items including lollipops, teethers, and silicone chew necklaces.

Additionally, several caregivers in focus groups discussed the safety concerns that arise if individuals with I/DD have fixations related to products that vibrate (e.g., electronic toothbrushes). Notably, some individuals with I/DD enjoy the vibration sensations, whereas others are bothered by them. Like vibration sensations, some focus group participants also discussed sensory sensitivities to things like clothing tags or specific textures or fabrics. For individuals with I/DD who could not tolerate these sensations, caregivers said that they removed tags, purchased tag-less clothing, or had the individual with I/DD test the items to ensure they were comfortable before purchasing.

## D. Eloping

A noted safety risk for some high-need individuals with I/DD, particularly those with DS and ASD, was wandering or eloping. Some caregivers noted that elopement may occur for a variety of reasons (e.g., the environment is distressing or boring). Elopement is a serious safety concern for many caregivers, as the individual with I/DD may leave the home without the caregiver’s awareness and encounter environmental dangers. For example, cognitive challenges may lead to the individual with I/DD not being able to safely return home.

Some products were used to either limit the possibility for elopement or alert the caregiver of the individual with I/DD’s attempt. Products to limit elopement included overhead door locks that were out of reach of the individual with I/DD and locks on windows and screens. Products to alert the caregiver to potential elopement included door alarms that produce sounds or send notifications when the door is opened and camera monitors in areas that individuals with I/DD frequent (Image 17).

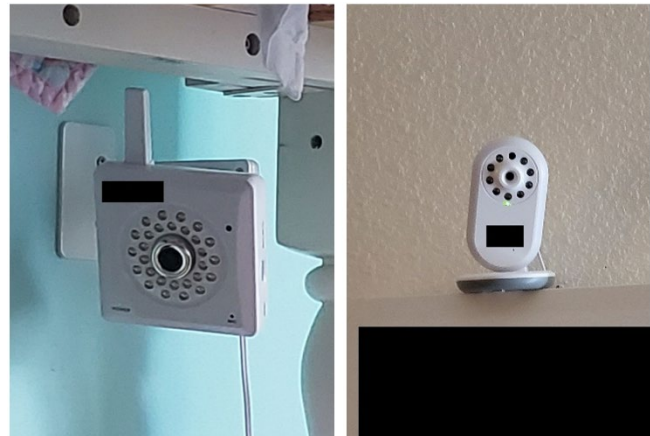


IMAGE 17. CAMERA MONITORS

Additionally, caregivers in focus groups discussed the relative pros and cons of using locks to prevent individuals with I/DD from eloping versus potential safety hazards (e.g., being able to escape in an emergency).

However, although alarms and monitors may alert caregivers to eloping, few product adaptations are currently available to help someone who has eloped. Smart and wearable technology could potentially help, such as location-enabled electronic trackers. Some focus group participants also discussed dressing individuals who tend to elope in neon-colored clothing so that they would be easier to see and find in public spaces and teaching them strategies like taking and sending a photo of their location.

TABLE 4. SUMMARY OF PRODUCTS RELATED TO COGNITIVE CHALLENGES

COGNITIVE CHALLENGES	
<b>Reasoning and Risk Assessment</b>	
<i>Risks: burning, cutting, mixing chemicals, using products inappropriately, fire hazards, or eloping.</i>	
<i>Difficulties: cognitive difficulties in regard to differentiating temperature, product usability, proper use of products, and lack of awareness of environmental risks.</i>	
<b>Products that pose a risk or challenge</b>	<b>Products that mitigate difficulties/harm</b>

<ul style="list-style-type: none"> <li>▪ Water faucets (hot water)</li> <li>▪ Household chemicals/cleaning products</li> <li>▪ Knives</li> <li>▪ Razors</li> <li>▪ Gas stove</li> <li>▪ Toaster oven</li> <li>▪ Microwave</li> <li>▪ Electric kettle</li> <li>▪ Outlets</li> <li>▪ Electrical products</li> <li>▪ Technology devices</li> </ul>	<ul style="list-style-type: none"> <li>▪ Faucet with maximum temperature setting (anti-scalding)</li> <li>▪ Magnetic locks</li> <li>▪ Elastic cords</li> <li>▪ Serrated nylon knives</li> <li>▪ Knife covers</li> <li>▪ Dulled single-blade razors</li> <li>▪ Electric shavers</li> <li>▪ Stove knob covers</li> <li>▪ Toaster oven spring-out tray</li> <li>▪ Silicone oven mitts and guards</li> <li>▪ Outlet covers</li> <li>▪ Monitoring applications for electronics</li> </ul>
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**Abstract Concepts: Time, Object Permanence, and Awareness**

*Risks: burning or fire hazards*

*Difficulties: lack of awareness of safety precautions, lack of understanding of time, and forgetfulness*

Products that pose a risk or challenge	Products that mitigate difficulties/harm
<ul style="list-style-type: none"> <li>▪ Oven</li> <li>▪ Stove</li> <li>▪ Microwave</li> <li>▪ Medicine (remembering to take medications)</li> <li>▪ Drawers</li> <li>▪ Keys</li> </ul>	<ul style="list-style-type: none"> <li>▪ Physical timers/timer phone applications</li> <li>▪ Bulletin boards</li> <li>▪ Physical calendars</li> <li>▪ Voice-to-text or interactive voice assistive technology</li> <li>▪ Heavy key chains</li> </ul>

**Sensory Fixation and Avoidances**

*Risks: choking, cutting, overstimulation, anxiety, meltdowns, and public exposure.*

Products that pose a risk or challenge	Products that mitigate difficulties/harm
<ul style="list-style-type: none"> <li>▪ Cables/cords</li> <li>▪ Knives</li> <li>▪ Scissors</li> <li>▪ Clothing and other fabrics</li> <li>▪ Weighted blankets</li> <li>▪ Electric or manual toothbrushes</li> <li>▪ Small toys/magnets</li> <li>▪ Electronic devices</li> <li>▪ Clothing tags</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fabric cord covers (hook-and-loop or fabric-covered elastic)</li> <li>▪ Chewing products (e.g., lollipops)</li> <li>▪ Fidget toys (e.g., teether or necklace)</li> <li>▪ Headphones</li> <li>▪ Sensory fidget toys</li> <li>▪ Elasticated cord (e.g., over closet doorknob)</li> <li>▪ Backpacks prepared with extra clothing</li> <li>▪ Electric or manual toothbrush</li> <li>▪ Weighted blankets</li> </ul>

**Eloping**

*Risks: getting lost, jumping out of windows, drowning in a pond/pool.*

*Difficulties: Lack of cognition to recognize potential danger by eloping.*

Products that pose a risk or challenge	Products that mitigate difficulties/harm

<ul style="list-style-type: none"> <li>▪ Windows</li> <li>▪ Doors</li> <li>▪ Pools</li> </ul>	<ul style="list-style-type: none"> <li>▪ Camera monitors</li> <li>▪ Door locks</li> <li>▪ Alarm systems</li> <li>▪ Tracking devices (e.g., small trackers that can attach to a shoe or fit in a backpack)</li> <li>▪ Phone tracking applications</li> <li>▪ Cribs</li> <li>▪ Safety gates</li> <li>▪ ID bracelet</li> <li>▪ Neon-colored clothing</li> </ul>
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## IV. Accessibility and Environments Outside of the Home

Individuals with I/DD encounter an array of accessibility-related challenges and other risks that often occur outside of their tailored home environment. Such environments include means of transportation (e.g., cars, airplanes), public spaces, and other people’s homes.

### A. Physical Accessibility

Physical accessibility challenges were more frequently discussed by focus group participants that care for individuals with CP who need a wheelchair or similar assistive product for mobility. Specific issues included lack of ramps, outdoor terrains that are difficult to travel on with wheels (e.g., playgrounds with mulch), restrooms and elevators that are too small, and limited seating for wheelchairs and handicapped parking spots. As noted by one ethnography participant with CP, some medical personnel are not well versed in how to manage assistive technology, like wheelchairs, which often poses additional safety risks. For example, if a medical professional incorrectly operates an electric lift, the person with I/DD may consequently fall, causing injury.

To address accessibility concerns, focus group participants said that they research the accessibility of various locations and try to plan for these needs before going. Some participants discussed using portable wagons or adaptive strollers that can accommodate diaper changes, carry equipment, and navigate some spaces more easily than wheelchairs. One participant purchased a multipurpose bath seat for water activities that allows her son to sit independently with trunk support. This commercial product is designed for children with additional needs.

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*“...hers is one of the adaptive strollers...it is still so big and bulky and huge that it can’t even fit into her doctor’s office or even at the children’s hospital. So we use our [wagon]... pretty much everywhere. And that’s where we have to change her.”*

—Caregiver, CP

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Unfortunately, many individuals with I/DD and caregivers discussed not being able to go to certain places or take part in activities due to various physical obstacles. Appropriate accessibility equipment such as shower chairs, ceiling lifts, and accessibility vans are often costly or difficult to find. Further, some products that are reliable in the house cannot be used in



external environments such as hotels, public bathrooms, and medical facilities, necessitating the additional purchase of travel products such as portable changing tables.

## ***B. Access to Safety Products and Adaptations***

Several ethnography participants explained dexterity-related safety concerns and adaptations they have made to their cars. For example, to address dexterity challenges related to buckling a seatbelt, one caregiver from the ethnographies purchased a product that stabilized the buckle, allowing the individual with I/DD to buckle or unbuckle themselves more easily (Image 18).

To prepare for potential accidents within a car, another ethnography participant explained that he prepared a seatbelt cutter in case of an accident. However, they noted that when their wheelchair was tied down in the car, he could not independently escape, so he and his caregiver added emergency call buttons within the vehicle. Additional purchases for seatbelt connectors, ramps, and shoulder harnesses for the car helped mitigate some safety concerns. However, both the individual with I/DD and their caregiver noted concerns about the integrity of the vehicle and the longevity of related equipment, such as airbags and seatbelts.

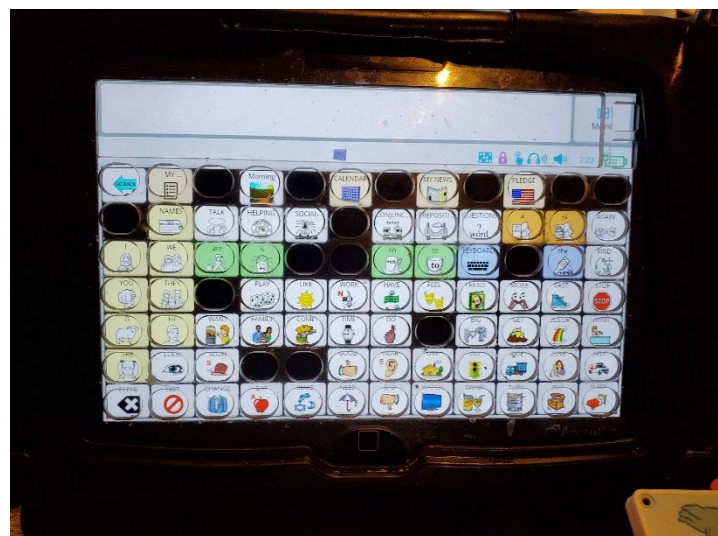


**IMAGE 18. SEATBELT BUCKLE STABILIZER**

Other environmental challenges that participants discussed were related to not having easy access to the safety measures they have at home. For example, some caregivers noted that when staying in new places, they monitor water temperature closely, use furniture to block doors, monitor and assist individuals with I/DD when they go up and down stairs, and pack travel bags with specialized eating utensils.

Caregivers also discussed the need to provide information to individuals (e.g., hotels, friends, family) before going to a new location to take important precautions such as moving large or heavy objects out of reach.

Individuals with I/DD also encounter accessibility challenges when products they rely on are no longer sold, often



**IMAGE 19. COMMUNICATION ASSISTANCE APPLICATION ON TABLET**

following the release of newer versions. For example, one caregiver in the ethnographies explained that the shower chair that best fits the individual with CP for whom they provide care was discontinued and they struggled to find the same model online.

Several individuals with I/DD noted that recent technology can help mitigate some of the most persistent accessibility challenges. In some instances, individuals with I/DD who are nonverbal or who encounter challenges related to verbal communication benefit from using assistive communication technology. For example, one ethnography participant used a tablet communication device programmed to include specific words attached to images on the screen (Image 19). For other individuals with I/DD, voice-to-text programming helps with dexterity challenges like writing or typing.

Additional automatic tools that participants found useful and provided independence included automated vacuums and robotic lawn mowers, which assisted with maintenance tasks that require strength, balance, and dexterity, and delivery service applications for shopping and eating, which removed the requirement to call or go to another location. Further, these products minimized the need to outsource everyday responsibilities to caregivers or pay for additional help.

### ***C. Online Environments***

As mentioned, use of electronic devices provides benefits to individuals with I/DD, but they also come with some safety concerns. For example, caregivers were concerned about individuals with I/DD watching inappropriate content (e.g., adult language and humor), communicating with strangers, and watching content creators who promote dangerous behaviors. Many discussed using parental controls, filters, and content restrictions to mitigate these concerns, although some found that these measures were limited. Other strategies included monitoring device use and teaching individuals with I/DD about taking caution when interacting with people online.

## **V. Purchasing Decisions**

Conversations with caregivers in focus groups and discussions with ethnography participants indicated that caregivers tend to be the primary decision-makers for items purchased both in and out of the home. This finding was expected for this research effort because of the focus on high-need individuals with I/DD. When choosing products, caregivers often focus on the quality of the product for the individual with I/DD, including ease of use, safety considerations, and cost. Ease of use is often dictated by a caregiver's awareness of the individual with I/DD's capabilities. These can include grip strength, balance, dexterity, cognitive limitations, and behaviors. Additionally, caregivers consider product needs and uses based on the individual with I/DD's

complete health history, including comorbidities and health care professionals' recommendations.

Product selections were also often based on the individual with I/DD's feelings of comfort, preferences, and entertainment. These could include technology, books, streaming services, clothing, food, and kitchen appliances. Although safety considerations were a major factor in purchasing decisions, many caregivers indicated that they perceived some products to be safe if the individual with I/DD was being monitored while using them. Of note, participants who are caregivers of young children with I/DD emphasized that they prioritized safety when choosing products. Although not explicitly discussed, while caregivers of adults with I/DD may not say that they keep safety at "top of mind" when considering a purchase of a product, they may be more accustomed to what is and is not safe, meaning the purchasing decision is more automatic and passive than it is for caregivers who are newly interacting with products.

Nearly all caregivers noted that cost and product availability severely impact purchasing decisions and abilities. Several noted that products designed for individuals with I/DD can often be costly when available. However, renters and homeowners in focus groups and ethnographies shared different considerations for purchases depending on cost and longevity of use within a given environment. For example, one caregiver from the ethnographies noted that they were unable to anchor their television to the wall and expressed apprehension about the cost of screwing gates into the wall without losing their rental security deposit. The caregiver explained they would likely anchor items for increased safety as their child grows and becomes stronger.

A noted concern that caregivers shared was that as individuals with I/DD age, the availability and age-appropriateness of products diminish. For example, several caregivers noted that they initially purchased products when the individuals with I/DD were young (e.g., high chairs, cups, eating utensils), but now the products are either too small or look childish. Therefore, caregivers indicated that retaining the dignity and independence of the individual with I/DD is a key consideration for selecting products as the individual with I/DD ages.

An additional consideration caregivers noted is the durability of the product. Some caregivers purchased additional products to protect medical equipment, such as CPAP machines, due to the individual with I/DD being unable to properly care for the equipment. Several caregivers noted that because many of the products best suited for the individual with I/DD are primarily developed for younger children, concerns arise in the durability of the product and weight limit as an individual ages. In some



**IMAGE 20. TOILET LOCK**

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cases, products like toilet locks were easily removed by older individuals with I/DD, and dresser locks had worn out due to extended use (Image 20).

The extent to which the individual with I/DD participated in product purchases differed on a case-by-case basis. In some instances, the individual with I/DD contributed to purchasing decisions, primarily in aesthetic choices rather than requesting products themselves. A few caregivers noted that individuals may develop product “wish lists” on online shopping sites. In other instances, the individual with I/DD actively participated in the purchasing process; some focus group caregivers indicated that the individual with I/DD goes to the store (e.g., grocery, clothing) with them to purchase different items. This active participation allows for the individual with I/DD to be involved with purchasing decisions.

## VI. Safety Strategies

### *A. Safety and Behavioral Communication*

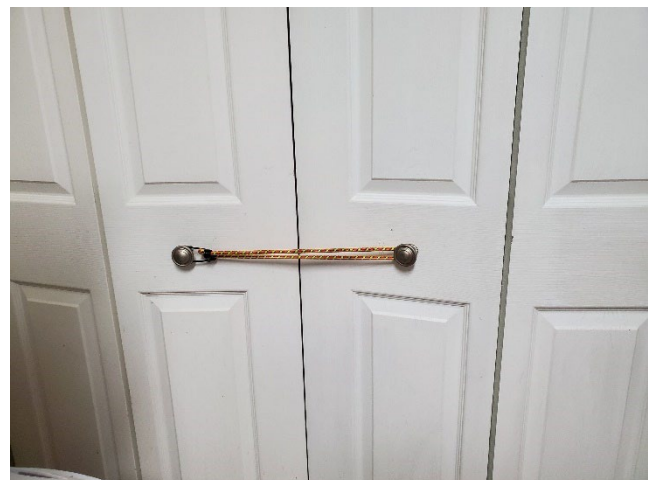
Caregivers discussed various methods and strategies to communicate safety risks. The most common ones were modeling, repetition, and practice. Modeling included providing lessons by demonstrating how to use a product or complete a specific task, and then providing accompanying instructions, typically verbally. Role playing for different scenarios (e.g., getting out of the house in case of a fire) was also a noted instructional tactic. Caregivers provided a wide range of tasks and activities that had been taught to individuals with I/DD through modeling (e.g., how to cook certain food, use different parts of the bathroom). Repetition was also a key component for reminding individuals with I/DD about these behaviors and maintaining precaution. Caregivers also discussed using audio and visual aids to support these lessons, such as how-to videos on YouTube and posting step-by-step instructions with pictures, symbols, or written directions (e.g., on a PDF or PowerPoint presentation).

Some caregivers indicated that they wanted additional resources for products, like simple instructions and visuals that were age-appropriate for adult individuals with I/DD (i.e., not too cartoonish or childish). For example, caregivers said they would appreciate QR codes that link to pictures, videos, and step-by-step instructions for using various products and scenarios (e.g., how to use a kitchen appliance, reminders for using the shower). The QR codes could be developed by the manufacturer or be made by caregivers to personalize for the individual with I/DD. The QR code would be particularly useful, given that many individuals with I/DD are comfortable with using electronic technology. One focus group participant discussed how particularly beneficial it would be to have a video featuring someone with ASD to share their personal experiences with navigating different scenarios (e.g., going to the doctor, going to the bathroom).

## ***B. Preventive Measures***

Caregivers discussed many various preventive measures taken to address general risks and safety issues for high-need individuals with I/DD. The most common tactic described was to put potentially dangerous products “out of sight, out of mind,” removing them from view. The “out of sight, out of mind” strategy consisted of hiding the specific product that presented a risk for the individual with I/DD (e.g., hiding sharp objects, chemical products, and makeup behind cabinets). In other cases, caregivers placed the product in a strategic location where the individual was unable to reach it (e.g., placing a product on high shelves, using locks to avoid access/reach, storage boxes). High-need individuals with I/DD may be unlikely to notice or use items that are hidden behind opaque cabinet doors, out of reach in higher locations, or physically blocked by obstacles.

Many caregivers described that they use safety locks, magnetic locks, or elastic cords (e.g., elasticated cords) to lock cabinets, dressers, and cabinet doors to prevent individuals with I/DD from encountering potentially dangerous products (Image 21). Notably, some of these features are not intended for extended use, and caregivers expressed concerns over the durability of the product. Similarly, caregivers explained that these types of safety guards—those intended for children—may not be as effective as the individual with I/DD grows older and gains the strength to open these locks.



**IMAGE 21. ELASTIC CORD TO LOCK CLOSET**

As a last resort, the removal of the product was necessary; this meant taking the product out of the home to avoid unsafe situations (e.g., removing cleaning supplies with harsh chemical components and replacing them with natural non-toxic cleaning supplies). In other instances, if the product still was needed or desired to be kept at home, the strategy of monitoring the individual while they used the product was crucial for their safety (e.g., caregiver monitoring the individual with I/DD while they cooked on the stove).

Other preventive measures discussed by caregivers were related to addressing potentially hazardous behaviors by the individual with I/DD (e.g., meltdowns, performing specific tasks when needed). The most common strategies employed were routinization and avoidance. Caregivers said that maintaining a routine helps individuals with I/DD stay calm and helps them focus on what is happening or what needs to be done. Routines included consistent repetition and

schedules, which provided a defined structure. Caregivers opted to use avoidance as a strategy when considering high-need individuals with I/DD’s preferences. Due to overstimulation (e.g., noises, smells, colors) and accessibility issues described previously, caregivers often opted to avoid going out (e.g., restaurants, the mall, parks) to avoid meltdowns or strenuous situations (e.g., the caregiver having to carry/lift the individual with I/DD or needing equipment to mobilize them).

## VII. Communication and Information Sources

Caregivers discussed the different communication channels they used to receive information related to reducing risk and improving safety for individuals with I/DD. The most common and trusted sources mentioned were other parents and caregivers of individuals with I/DD and general social media. Caregivers almost unanimously said that parents were the main source of information they used to learn about different products and strategies to implement. Caregivers also noted that they trusted other parents because they had personal lived experience and knowledge, providing reliable and helpful information. Social media was also seen as a great source of information, specifically special-needs or affinity groups on Facebook or different Instagram/YouTube accounts. These channels provided caregivers access to relevant and I/DD community-endorsed information about different products and brands (e.g., costs, usability, benefits, considerations, recommendations), and service providers with I/DD community experience (e.g., hair salons, dentists, pediatricians).

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*“I weigh heavily with the other parents. So, if I know that another parent has had really big problems with this one specific product, I’m not going to be running to go get it. I’m going to be a lot more cautious. I’m going to read a lot more about it. Even if it was referred to by a doctor, if I found out that an entire group of moms who, in a community, were saying how horrible the thing is, I’m going to be a lot more cautious to put my time and money into [it].”*

—Caregiver, ASD

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Other sources of information that caregivers used included support groups (e.g., local groups, peer groups), research institutions, publications (e.g., published articles, books, SPARK for Autism, Vanderbilt University; *ADDitude Magazine*; Boys Town Press), and medical professionals (e.g., doctor recommendations, therapists, durable medical equipment [DME] providers). Professional caregivers mentioned work-related resources (e.g., specific websites, certification programs).

## Limitations and Considerations for Future Research

There are notable limitations to this qualitative research study that are important to keep in mind, particularly related to how generalizable the results are to the broader intellectual and

developmental disability (I/DD) community. First, this effort used qualitative methods and included a relatively small sample size. Therefore, although the data collected provided context for general perspectives and insight into individuals' experiences, the findings should not be considered generalizable to the whole I/DD community. Second, there were planned and specific constraints to recruitment, including the intended focus on individuals with one of three I/DD diagnoses—autism spectrum disorder (ASD), Down syndrome (DS), and cerebral palsy (CP)—and on those who are considered “high need” due to the level of care they require. The larger I/DD community includes a wider variety of diagnoses and medical issues (e.g., fetal alcohol syndrome, spina bifida, brain injury, various genetic disorders), which can also include comorbidities that can make the interpretation of findings even more complex and nuanced. Also, many individuals with I/DD do not require a high level of care and can assess the safety of consumer products themselves. Even with these constraints, the research team identified a diverse range of individual abilities, needs, and considerations that affect individuals' and caregivers' interactions with consumer products.

Another limitation was that all in-person ethnographies occurred within the Washington, DC, Maryland, Virginia (DMV) geographic area, and participants with I/DD were primarily White with female caregivers. However, the online focus groups included a more racially diverse participant pool who resided across the United States. Caregiver participants were predominantly women, although this disparity does mirror how caregiving responsibilities are disproportionately executed by women rather than men.

Of note, most ethnography participants had moderate to high household incomes. This is an important limitation when interpreting the described household products purchased to mitigate or reduce safety risks. Many consumer products were described as specialized or custom, which often implies that the product or their application to the home was expensive. Most individuals with I/DD may not be able to afford or adapt the specified products.

Given these considerations, quantitative generalizations to the broader I/DD community, such as how prevalent a particular issue is with a product category, are not possible.

When considering future research with members of the I/DD community, it is important to prioritize input directly from the individual with I/DD. The individual with I/DD's lived experience will provide deeper insight into the needs and challenges they experience and will also ensure that any recommendations are directly influenced by their perspectives. With this context, caregivers should be considered a support rather than a main participant. Therefore, it is important to design study protocols and materials in line with these priorities. For example, ensure that the recruitment and consent materials are in plain language (i.e., at a 5th-grade or below reading level to maximize comprehension), that all questions are communicated in a

variety of ways (e.g., written, verbal), and that larger incentives or honorariums are provided to the individual with I/DD rather than their caregiver.

## Conclusions

Although there are challenges that many individuals with intellectual and developmental disabilities (I/DD) have in common—physical challenges and cognitive challenges—each person has their own unique abilities and needs, which impact how independently and safely they can interact with consumer products. Many common household products can be hazardous or can injure individuals with I/DD, and therefore, it is important that those with purchasing power consider these potential risks. Some risks are more unique to high-need individuals with I/DD, such as issues with balance and aspiration. Other risks and challenges are hazards that occur for youth and aging populations (e.g., products that require fine motor skills and dexterity, comprehension of dangers associated with chemical products and kitchen appliances).

Within the home, kitchens and bathrooms generally have the most consumer products that potentially pose safety risks for individuals with I/DD. For example, sharp implements and gas- or electricity-powered cooking appliances pose dangers in the kitchen, whereas in the bathroom, there are risks of slipping or falling while bathing. Bedrooms and bathrooms tended to have the most potential for adapting products to meet individuals' needs and preferences to improve accessibility (e.g., walk-in tub, bed railing).

Various products are helpful to either reduce specific risks or address challenges that individuals with I/DD face. Product locks, door locks, and safety gates limit access to potentially dangerous situations. Safer versions of utensils, such as plastic cups and nylon knives, are good alternatives for breakable glass and sharp metal knives. Technology may be applied to support individuals with I/DD in many ways; for example, assistive technology like voice assistants can set timers and reminders, and tablets have communication assistance apps for those with verbal impairments. Of note, many safety-centered products are designed for young children. There is a need for consumer products that are safe, durable, and age-appropriate for adolescents and adults with additional considerations for independence and maintaining dignity.

Outside of the home, there are numerous challenges that individuals with I/DD and their caregivers face, particularly when it comes to accessibility. Many public spaces are not easily navigable by wheelchairs or other devices that assist with mobility.

Caregivers use numerous preventive strategies with high-need individuals with I/DD to reduce their risks of injury due to consumer products. Tactics employed include frequent safety and behavior instruction through repetition and modeling, monitoring and supervising the use of products, and moving products out of sight and out of reach of the individual with I/DD.



The Consumer Product Safety Commission (CPSC) has an opportunity to create educational materials to support individuals with I/DD and their caregivers that emphasize considering safety when purchasing a consumer product. Further, CPSC can continue to work closely with product manufacturers to ensure that the safety and instruction information they include with their products is appropriate and helpful to a diverse audience with various needs and challenges. One area to explore would be the inclusion of QR codes on products to easily access instructional illustrations and videos.

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## Appendix A: Ethnography and Focus Groups Participant Demographics

ETHNOGRAPHY DEMOGRAPHIC CATEGORY	COUNT ( <i>n</i> = 9)
<b>I/DD Type</b>	
Cerebral Palsy	2
Autism Spectrum Disorder	3
Down Syndrome	4
<b>Caregiver's Relationship to the Individual with I/DD</b>	
Parent	6
Legal Guardian	2
Other: Direct Support Professional	1
<b>Gender</b>	
Female	4
Male	5
<b>Race/Ethnicity</b>	
White (non-Hispanic)	7
Black or African American (non-Hispanic)	1
Asian American (non-Hispanic)	1
<b>Age</b>	
12–72 months	2
6–9 years old	2
18 years and older	5
<b>Geographic Area Type</b>	
Urban	1
Suburban	8
<b>Household Income of Caregivers</b>	
\$50,000–\$99,999	3
\$140,000 or more	4
Prefer Not to Say	2
<i>Note: Caregivers were parents (<i>n</i> = 6), legal guardians (<i>n</i> = 2) and a direct support professional (<i>n</i> = 1)</i>	

CAREGIVER FOCUS GROUP DEMOGRAPHIC CATEGORY	COUNT (n = 46)
<b>Condition of Individual with I/DD Receiving Care</b>	
Cerebral Palsy	13
Autism Spectrum Disorder	16
Down Syndrome	17
<b>Caregiver's Relationship to the Individual with I/DD</b>	
Parent	38
Teacher	1
Legal Guardian	2
Residential Facility Worker	3
Aunt or Uncle	1
Other	1
<b>Gender</b>	
Female	40
Male	6
<b>Race</b>	
White	33
American Indian or Alaska Native	2
Asian American	7
Black or African American	2
Other	2
<b>Ethnicity</b>	
Hispanic	5
<b>Age</b>	
18–30 years	4
31–45 years	22
46–60 years	17
60+ Years	3
<b>Geographic Area Type</b>	
Urban	13
Suburban	28
Rural	5
<b>Household Income</b>	
Below \$30,000	8
\$30,000–\$49,999	8
\$50,000–\$99,999	16
\$100,000–\$139,999	7
\$140,000 or more	7
<b>Highest Level of Education Completed</b>	
High school graduate	3
Some college	12
2-year college or technical training	8
Bachelor's degree	15
Master's or other advanced degree	8