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The Role of Visual Communication in Supporting Choice-Making Among Individuals with Developmental Disabilities

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Abstract

Individuals with developmental disabilities frequently experience significant communication barriers that limit their capacity to express preferences, make meaningful choices, and exercise autonomy in daily life. Visual communication systems, including picture-based augmentative and alternative communication (AAC) tools, have emerged as critical supports for enabling choice-making and promoting self-determination. This comprehensive review synthesizes empirical evidence on the effectiveness of visual communication strategies in supporting choice-making among individuals with developmental disabilities. The analysis examines multiple visual communication modalities, including the Picture Exchange Communication System (PECS), speech-generating devices (SGDs), tangible symbols, and communication boards, and their impact on autonomy, preference expression, and person-centered support. Findings indicate that visual communication systems facilitate functional communication, enhance choice-making opportunities, and support self-determination across diverse populations and settings. However, implementation challenges, individual variability in preference and learning, and the need for systematic training and support remain important considerations. This paper provides practical recommendations for developmental service workers (DSWs), educators, and support professionals to implement evidence-based visual communication strategies that honor individual preferences and promote meaningful inclusion.

Keywords: Disability, choice-making, speech, symbols, PECS, SGDs

1. Introduction

Communication represents a fundamental human right and an essential component of autonomy, self-determination, and social participation. For individuals with developmental disabilities, communication barriers pose significant challenges to expressing preferences, making choices, and exercising control over daily activities and life decisions (Snell et al., 2010). Approximately 25% of children diagnosed with autism spectrum disorder (ASD) fail to develop sufficient speech to meet everyday communication needs, while individuals with profound intellectual and multiple disabilities often experience severe limitations in expressive communication (Achmadi, 2015; Bondy et al., 1994). These communication deficits can result in reduced opportunities for choice-making, diminished autonomy, and increased dependence on caregivers and support staff. Visual communication systems have emerged as critical tools for addressing communication barriers and supporting choice-making among individuals with developmental disabilities. Augmentative and alternative communication (AAC) approaches, including picture-based systems, tangible symbols, communication boards, and speech-generating devices, provide alternative modalities for expressing needs, preferences, and choices (van der Meer et al., 2011). These visual supports enable individuals who have limited or no functional speech to participate more fully in decision-making processes, exercise self-determination, and engage meaningfully in person-centered planning.

The importance of supported choice-making extends beyond functional communication to encompass broader principles of human rights, dignity, and inclusion. Self-determination theory emphasizes the critical role of autonomy, competence, and relatedness in promoting psychological well-being and quality of life (Wehmeyer et al., 2020). For individuals with developmental disabilities, access to effective communication supports directly influences their capacity to exercise self-determination, participate in community life, and achieve meaningful outcomes aligned with personal values and preferences. Person-centered support approaches recognize that individuals with disabilities are experts in their own lives and should be empowered to make choices about services, supports, and daily activities (Houseworth et al., 2023). Despite growing recognition of the importance of visual communication supports for choice-making, significant gaps remain in understanding how to effectively implement these tools across diverse populations, settings, and contexts. Questions persist regarding which visual communication modalities are

most effective for specific individuals, how to assess and honor individual preferences for communication systems, and what implementation strategies best support sustained use and meaningful outcomes (van der Meer et al., 2011). Additionally, ethical considerations related to informed consent, assent, and supported decision-making require careful attention when working with individuals who have complex communication needs (Tullis et al., 2025).

This comprehensive review examines the role of visual communication in supporting choice-making among individuals with developmental disabilities. The analysis synthesizes empirical evidence on picture communication systems, assistive communication technologies, and accessibility considerations; explores theoretical and practical dimensions of choice-making, autonomy, and self-determination; examines preference assessment methods and individualized communication supports; and provides practical guidance for implementation in developmental service settings. The review aims to inform evidence-based practice among developmental service workers, educators, therapists, and other professionals supporting individuals with developmental disabilities.

2. Visual Communication in Developmental Services

2.1 Picture Communication Systems

Picture-based communication systems represent one of the most widely researched and implemented forms of visual communication support for individuals with developmental disabilities. The Picture Exchange Communication System (PECS), developed by Bondy and Frost in 1994, exemplifies a structured approach to teaching functional communication through picture exchange (Bondy et al., 1994). PECS was designed to address shortcomings in previous communication training strategies by emphasizing spontaneous, functional communication initiated by the individual rather than prompted by others. The system progresses through six phases, beginning with simple picture exchange for desired items and advancing to more complex sentence construction and responsive communication. Empirical evidence supports the effectiveness of PECS in promoting functional communication and choice-making among children with autism and other developmental disabilities. Schwartz et al. (1998) documented communicative outcomes for young children with disabilities using PECS, demonstrating measurable gains in communication skills and potentially providing a bridge to speech acquisition. The structured nature of PECS, combined with its emphasis on functional communication in

natural contexts, makes it particularly well-suited for supporting choice-making activities. When individuals learn to exchange pictures to request preferred items or activities, they simultaneously develop skills in expressing preferences and making choices. Recent innovations have extended picture communication approaches to address diverse needs and contexts. Parker (2009) explored an adapted form of PECS for young children with visual impairments and developmental disabilities, demonstrating that modifications to accommodate sensory differences can maintain the functional benefits of picture-based communication while ensuring accessibility. Baez et al. (2025) examined organizational strategies for PECS implementation in classroom settings, providing insights into how environmental structure, material organization, and staff collaboration influence successful adoption and sustained use of picture communication systems. The effectiveness of picture communication systems extends beyond initial skill acquisition to include long-term maintenance and generalization. Studies comparing PECS with other AAC modalities have found comparable acquisition rates across different visual communication options, suggesting that picture-based systems represent a viable and effective approach for many individuals with developmental disabilities (Roche et al., 2013). However, individual variability in learning patterns, preferences, and communication needs underscores the importance of personalized assessment and selection of communication modalities.

2.2 Assistive Communication Technologies

Technological advances have expanded the range of assistive communication options available to individuals with developmental disabilities, with speech-generating devices (SGDs) and tablet-based applications emerging as increasingly popular alternatives to traditional picture exchange systems. SGDs provide synthesized or digitized speech output when users select symbols, pictures, or text, offering the potential for more naturalistic communication and greater social acceptance compared to manual picture exchange (Sigafoos et al., 2009). The proliferation of mobile technologies, particularly iPads and other tablets, has made high-tech AAC options more accessible and affordable for families and service providers. Comparative research examining acquisition, preference, and maintenance of different AAC modalities provides important insights into the relative advantages and limitations of high-tech versus low-tech visual communication options. Achmadi (2015) conducted comprehensive comparisons of manual sign, picture exchange, and speech-generating devices as AAC options for children with developmental disabilities, assessing not only acquisition and maintenance but also user preference and social

validity. Findings indicated that while children learned to use all three modalities at comparable rates, individual preferences varied, with some children showing clear preferences for SGDs while others preferred picture exchange or manual signs. Van der Meer et al. (2012) compared three augmentative and alternative communication modes for children with developmental disabilities, examining both effectiveness and user preference. Results demonstrated that children could successfully learn multiple AAC modalities, but individual differences in preference and performance highlighted the importance of offering choices among communication options rather than prescribing a single approach. Couper et al. (2014) extended this line of research by comparing acquisition of and preference for manual signs, picture exchange, and speech-generating devices in nine children with autism spectrum disorder, finding that most participants demonstrated preferences for SGDs when given opportunities to choose among modalities.

Tablet-based AAC applications have generated particular interest due to their portability, versatility, and social acceptability. Nepo et al. (2017) investigated the use of iPod Touch devices to increase functional communication of adults with autism spectrum disorder and significant intellectual disability, demonstrating that mobile technology could effectively support communication and choice-making in community settings. Agius et al. (2016) compared PECS and iPad-based communication for teaching requesting to preschoolers with autistic spectrum disorders, finding that both approaches were effective but that the iPad offered advantages in terms of portability and potential for expanded vocabulary. Despite the promise of high-tech AAC options, implementation challenges remain. Stephenson (2016) examined the use of the Choiceboard Creator app on an iPad to teach choice-making to a student with severe disabilities, noting that while the technology was effective, careful attention to training, support, and individualization was necessary for successful outcomes. The rapid pace of technological change also presents challenges, as devices and applications may become obsolete or unsupported, requiring ongoing adaptation and investment.

2.3 Accessibility Considerations

Ensuring accessibility of visual communication systems for individuals with diverse sensory, motor, and cognitive abilities represents a critical consideration in developmental services. Traditional picture-based systems may not be accessible to individuals with visual impairments, while touch-screen devices may pose challenges for individuals with motor impairments. Adaptations and modifications to standard AAC approaches can enhance accessibility and ensure

that visual communication supports are truly inclusive. Parker (2009) demonstrated the feasibility of adapting PECS for young children with visual impairments and developmental disabilities, using tactile symbols and other modifications to accommodate sensory differences. This work highlights the importance of considering individual sensory profiles when selecting and implementing visual communication systems. Similarly, research on tangible symbols, three-dimensional objects that represent concepts or items, has shown that these concrete representations may be more accessible and meaningful for some individuals with developmental disabilities, particularly those with visual impairments or profound intellectual disabilities (Roche et al., 2013). Motor accessibility represents another important consideration, particularly for individuals with physical disabilities or motor planning difficulties. Direct selection responses, in which individuals point to or touch symbols directly, may be more accessible than picture exchange for some individuals, while others may benefit from scanning systems or switch access. Roche et al. (2013) compared tangible symbols, picture exchange, and direct selection responses for enabling two boys with developmental disabilities to access preferred stimuli, finding that both participants learned all three options at comparable rates but showed a clear preference for tangible symbols. This research underscores the importance of assessing individual motor abilities and preferences when selecting communication modalities.

Cognitive accessibility involves ensuring that visual communication systems match individuals' cognitive and linguistic abilities. For individuals with profound intellectual disabilities, simple, concrete representations may be most effective, while individuals with higher cognitive abilities may benefit from more abstract symbols and expanded vocabulary (Steagall et al., 2025). The organization and presentation of visual communication materials also influence accessibility, with research suggesting that systematic organization, consistent placement, and clear visual contrast enhance usability (Baez et al., 2025). The broader discourse on inclusive support for learners with diverse cognitive profiles reinforces the importance of accessibility in communication design. Ehigie (2025) examined the role of artificial intelligence in supporting dyslexic learners, arguing that stigma-reduction and the adoption of adaptive, learner-centered tools are essential preconditions for meaningful participation and inclusion. Although that analysis focuses on dyslexia within educational contexts, its central argument , that individualized, accessible supports must replace one-size-fits-all approaches , applies directly to the design and implementation of visual communication systems for individuals with developmental disabilities. The principle that

support tools must be tailored to the learner's cognitive profile, rather than imposed uniformly, is foundational to both inclusive education and developmental disability services.

3. Choice-Making and Autonomy

3.1 Self-Determination Theory and Practice

Self-determination theory provides a foundational framework for understanding the importance of choice-making and autonomy in promoting well-being and quality of life for individuals with developmental disabilities. Self-determination encompasses the attitudes, abilities, and perceptions that enable individuals to act as primary causal agents in their lives, making choices and decisions free from undue external influence (Wehmeyer et al., 2020). For individuals with developmental disabilities, opportunities to exercise self-determination are often limited by communication barriers, restrictive environments, and low expectations from caregivers and service providers. Visual communication systems play a critical role in enabling self-determination by providing individuals with the means to express preferences, make choices, and participate in decision-making processes. Kim et al. (2025) examined strategies for supporting self-determination for students with complex support needs using augmentative and alternative communication, identifying four key approaches: interpreting ways students communicate, modeling words to express preferences and choices, introducing ranking scales for weighing preferences, and facilitating meaningful choice-making. These strategies recognize that self-determination is not simply an individual characteristic but rather emerges through interactions between individuals and their environments, with communication supports serving as essential mediators. The relationship between choice-making opportunities and self-determination has been documented across multiple studies. Pilesjö's research on the organization of choice-making activities for children with profound intellectual and multiple disabilities demonstrated that structured choice-making opportunities, supported by visual AAC methods, can invite self-determination even among individuals with the most significant disabilities. This work challenges assumptions that self-determination is only relevant for individuals with mild or moderate disabilities, instead demonstrating that all individuals can benefit from opportunities to express preferences and make choices when provided with appropriate supports.

Wehmeyer et al. (2020) provided a comprehensive analysis of the development of choice-making and implications for promoting choice and autonomy for children and youth with intellectual and

developmental disabilities. Their work emphasizes that choice-making skills develop over time through repeated opportunities to make choices, experience consequences, and refine preferences. Visual communication supports facilitate this developmental process by making choice options concrete and accessible, enabling individuals to engage in choice-making activities that might otherwise be inaccessible due to communication barriers.

3.2 Person-Centered Support Approaches

Person-centered support represents a philosophical and practical approach to developmental services that places individuals with disabilities at the center of planning, decision-making, and service delivery. This approach recognizes that individuals with disabilities are experts in their own lives and should be empowered to direct their supports and services according to personal values, preferences, and goals (Houseworth et al., 2023). Visual communication systems are essential tools for implementing person-centered support, as they enable individuals to participate meaningfully in planning processes and express preferences about daily activities, living arrangements, employment, and relationships. The implementation of person-centered support requires systematic attention to communication accessibility. Tullis et al. (2025) developed an assent framework for people with intellectual and developmental disabilities and complex communication needs, addressing the ethical imperative to obtain meaningful consent and assent from individuals who use AAC. This framework emphasizes the importance of providing information in accessible formats, allowing adequate time for processing and decision-making, and honoring all forms of communication, including nonverbal expressions of preference or refusal.

Person-centered planning processes, such as Personal Futures Planning and Essential Lifestyle Planning, rely heavily on understanding individual preferences, interests, and priorities. Visual communication supports facilitate these processes by enabling individuals to express preferences about important life domains, including where to live, with whom to spend time, how to spend leisure time, and what types of work or activities to pursue (Cobigo et al., 2010). Choice-making in vocational activities planning, for example, benefits significantly from visual supports that make job options, work environments, and employment conditions concrete and understandable. Dowling et al. (2019) examined managing relational autonomy in interactions with people with intellectual disabilities, highlighting the complex interplay between individual autonomy and relational interdependence. Their work suggests that autonomy is not simply about making

independent choices but rather involves navigating relationships and social contexts in ways that honor individual preferences while recognizing the reality of interdependence. Visual communication supports facilitate this relational autonomy by enabling individuals to express preferences and negotiate choices within relationships with family members, support staff, and peers.

3.3 Independence and Quality of Life

The relationship between choice-making, independence, and quality of life represents a central concern in developmental disability services. While independence is often conceptualized narrowly as the ability to perform tasks without assistance, a broader understanding recognizes that independence involves having control over one's life, making meaningful choices, and directing one's supports and services (Houseworth et al., 2023). Visual communication systems contribute to independence by enabling individuals to express needs, preferences, and choices without relying on others to interpret or anticipate their desires. Research on the impact of visual communication supports on independence has documented positive outcomes across multiple domains. Moore et al. examined increasing independence with PECS for an adult with developmental and intellectual disabilities, demonstrating that picture-based communication enabled greater autonomy in daily activities and reduced dependence on caregiver prompting and assistance. Similarly, Stephenson (2016) found that teaching choice-making using visual supports on an iPad increased independent decision-making and reduced reliance on staff direction. Quality of life for individuals with developmental disabilities is multidimensional, encompassing physical well-being, material well-being, emotional well-being, personal development, self-determination, interpersonal relationships, social inclusion, and rights (Houseworth et al., 2023). Visual communication supports influence multiple quality of life domains, most directly affecting self-determination and interpersonal relationships. When individuals can express preferences and make choices, they experience greater control over their lives, enhanced dignity, and improved emotional well-being. Additionally, effective communication supports facilitate social interactions and relationship development, as individuals can more readily engage in reciprocal communication with family members, peers, and community members.

Longitudinal research examining choice and control for people with intellectual and developmental disabilities over time has documented persistent disparities in opportunities for

choice-making and self-determination (Houseworth et al., 2023). Despite policy initiatives and philosophical commitments to person-centered support, many individuals with developmental disabilities continue to experience limited opportunities to make meaningful choices about important life decisions. Visual communication supports represent one strategy for addressing these disparities, but their effectiveness depends on systemic commitment to honoring individual preferences and creating environments that support choice-making.

4. Preference Inventories and Communication Supports

4.1 Identifying Individual Preferences

Systematic assessment of individual preferences represents a foundational step in implementing person-centered supports and facilitating meaningful choice-making. Preference assessment methods range from informal observations of approach and avoidance behaviors to structured assessments that systematically present options and measure responses (Cannella et al., 2005). For individuals with developmental disabilities who have limited communication abilities, visual supports play a critical role in making preference assessment accessible and valid.

Cannella et al. (2005) conducted a comprehensive review of choice and preference assessment research with people with severe to profound developmental disabilities, identifying multiple assessment approaches and highlighting methodological considerations. Their review emphasized that preference assessment is not a one-time activity but rather an ongoing process, as preferences may change over time and vary across contexts. Visual communication supports facilitate ongoing preference assessment by providing consistent, accessible methods for individuals to express likes and dislikes. Yu et al. (2003) examined whether tangibles, pictures, or verbal descriptions should be used in choice presentations, comparing the effectiveness of different stimulus modalities for supporting choice-making. Findings suggested that more concrete representations (tangibles and pictures) were generally more effective than verbal descriptions alone for individuals with significant cognitive and communication impairments. This research underscores the importance of matching the concreteness of choice presentations to individual cognitive and communication abilities. Preference assessment methods must account for individual differences in sensory abilities, motor skills, and communication modalities. For individuals who use AAC, preference assessments should incorporate the individual's communication system, allowing them to express preferences using familiar symbols, pictures, or devices (van der Meer et al., 2011). Additionally,

preference assessments should occur in natural contexts whenever possible, as preferences expressed in clinical or contrived settings may not accurately reflect preferences in everyday environments.

4.2 Individualized Communication Tools

The principle of individualization is central to effective AAC implementation and choice-making support. While standardized communication systems like PECS provide structured frameworks, successful implementation requires adaptation to individual needs, preferences, abilities, and contexts (Baez et al., 2025). Individualized communication tools reflect personal interests, relevant vocabulary, and preferred modalities, enhancing motivation and functional utility. Research comparing different AAC modalities has consistently demonstrated individual variability in learning, preference, and performance, underscoring the importance of personalized assessment and selection (Achmadi, 2015; van der Meer et al., 2012). Some individuals demonstrate clear preferences for high-tech SGDs, while others prefer low-tech picture exchange or tangible symbols. These preferences may reflect factors such as motor abilities, sensory preferences, social considerations, and prior experience with different communication modalities. Individualization extends beyond selecting a communication modality to encompass vocabulary selection, symbol representation, and organizational structure. Steagall et al. (2025) described designing a pictogram-based visual language tool for self-determination, emphasizing the importance of including vocabulary relevant to expressing preferences, making choices, and participating in decision-making. Vocabulary should reflect individual interests, daily activities, and important life domains, enabling individuals to communicate about topics that matter to them.

The process of developing individualized communication tools should involve collaboration among individuals with disabilities, family members, support staff, and communication specialists. Torres et al. (2021) demonstrated the value of teaching job decision-making to college students with intellectual and developmental disabilities using individualized visual supports that reflected relevant employment considerations. This collaborative approach ensures that communication tools are functional, meaningful, and aligned with individual goals and priorities.

4.3 Visual Supports for Preference Expression

Visual supports for preference expression encompass a range of tools and strategies designed to make abstract concepts concrete and facilitate communication about likes, dislikes, and priorities. These supports include preference boards, choice menus, visual schedules with embedded choice

points, and ranking scales that enable individuals to indicate relative preferences among options (Kim et al., 2025). Preference boards typically display multiple options using pictures, symbols, or objects, allowing individuals to indicate preferences by pointing, touching, or exchanging symbols. These tools are particularly useful for supporting choice-making in daily routines, such as selecting meals, activities, or clothing. The effectiveness of preference boards depends on several factors, including the number of options presented, the visual clarity of symbols, and the individual's familiarity with the representation system. Kim et al. (2025) introduced ranking scales as a strategy for supporting self-determination among students with complex support needs who use AAC. Ranking scales enable individuals to express not only whether they like or dislike something but also the intensity of their preferences. For example, a visual scale might include options ranging from "really don't like" to "really like," allowing for more nuanced preference expression. This approach recognizes that preferences exist on a continuum rather than as simple binary choices. Visual schedules with embedded choice points represent another strategy for integrating preference expression into daily routines. Rather than presenting all activities as predetermined, visual schedules can include designated choice points where individuals select among options for specific activities or sequences. This approach balances the need for structure and predictability with opportunities for autonomy and self-determination.

The effectiveness of visual supports for preference expression depends on systematic instruction and ongoing support. Individuals must learn to understand the meaning of visual symbols, associate symbols with referents, and use symbols to communicate preferences. Stephenson et al. (1995) demonstrated that choice-making contexts provide natural opportunities for teaching communication board use, as the functional consequences of communication (accessing preferred items or activities) provide inherent motivation and reinforcement.

Table 1: Comparison of Visual Communication Systems for Choice-Making Support

Communication System	Key Features	Advantages	Limitations	Best Suited For
Picture Exchange Communication System (PECS)	Structured six-phase protocol; physical picture exchange; low-tech	Low cost; portable; concrete; well-researched evidence base	Requires motor skills for exchange; limited vocabulary without expansion; may be stigmatizing	Individuals learning functional communication; those who benefit from concrete, structured

				approaches
Speech-Generating Devices (SGDs)	Electronic devices with synthesized speech output; expandable vocabulary	Natural speech output; socially acceptable; large vocabulary potential	Higher cost; requires charging/maintenance; may be complex to program	Individuals with motor skills for device access; those who benefit from speech output
Tangible Symbols	Three-dimensional objects representing concepts	Highly concrete; accessible for visual impairments; tactile feedback	Limited portability; vocabulary constraints; storage challenges	Individuals with visual impairments; those with profound intellectual disabilities; early communicators
Communication Boards	Static displays of pictures/symbols; direct selection	Simple; low cost; customizable; no technology required	Limited vocabulary on single board; requires motor skills for pointing	Individuals with reliable pointing; those needing simple, accessible options
Tablet-Based AAC Apps	iPad/tablet applications with customizable interfaces	Portable; socially acceptable; multimedia capabilities; expandable	Requires device; potential for distraction; technology learning curve	Tech-comfortable individuals; those benefiting from multimedia supports; community settings

5. Practical Applications in Developmental Services

5.1 Implementation Strategies

Successful implementation of visual communication supports for choice-making requires systematic planning, training, and ongoing support. Implementation strategies must address multiple levels, including individual skill development, environmental modifications, staff training, and organizational culture change (Baez et al., 2025). Evidence-based implementation frameworks emphasize the importance of assessing readiness, selecting appropriate interventions, providing training and coaching, monitoring fidelity and outcomes, and making data-based

adjustments. Baez et al. (2025) examined organizational strategies for PECS implementation in classroom settings, identifying critical factors that influence successful adoption and sustained use. Key implementation strategies included establishing clear organizational systems for storing and accessing communication materials, creating consistent routines that incorporate communication opportunities, training all staff members in implementation procedures, and monitoring student progress systematically. These organizational factors proved as important as individual student characteristics in determining implementation success. Environmental modifications represent an important implementation strategy for supporting visual communication and choice-making. Environments should be structured to provide multiple opportunities for choice-making throughout daily routines, with visual supports readily accessible at relevant times and locations (Stafford, 2005). For example, choice boards might be placed in dining areas to support meal selection, in activity areas to support leisure choices, and in personal care areas to support choices about clothing or grooming preferences.

Systematic instruction in using visual communication systems is essential for skill development and generalization. Stephenson et al. (1995) demonstrated that choice-making contexts provide natural opportunities for teaching communication skills, as the functional consequences of communication provide inherent motivation. Instructional strategies should emphasize naturalistic teaching approaches, embedding communication instruction within meaningful activities and routines rather than relying solely on isolated skill training. Littrell (2013) examined using simultaneous prompting with an iPad to teach choice-making to adolescents with disabilities, demonstrating the effectiveness of systematic prompting procedures for teaching technology-based communication skills. Simultaneous prompting involves presenting the target stimulus and controlling prompt simultaneously, then fading the prompt over time. This approach can be effective for teaching individuals to use visual communication systems while minimizing errors and frustration.

5.2 Staff Collaboration and Training

Staff collaboration and training represent critical components of successful visual communication implementation. All staff members who interact with individuals using AAC must understand the communication system, recognize communication attempts, honor expressed preferences, and provide appropriate support and encouragement (Biggs et al., 2018). Inconsistent implementation across staff members can undermine communication development and limit opportunities for

meaningful choice-making. Comprehensive staff training should address multiple competency areas, including understanding the rationale for visual communication supports, implementing specific communication systems, recognizing and responding to communication attempts, creating communication opportunities, and troubleshooting implementation challenges (Baez et al., 2025). Training formats may include didactic instruction, video modeling, hands-on practice, and ongoing coaching and feedback. Cobigo et al. (2010) examined choice-making in vocational activities planning from the perspective of job coaches, identifying recommendations for supporting choice-making in employment contexts. Job coaches emphasized the importance of understanding individual communication styles, providing adequate time for decision-making, presenting information in accessible formats, and honoring expressed preferences even when they differed from staff recommendations. These insights highlight the importance of staff attitudes and practices in facilitating meaningful choice-making.

Collaboration among team members, including individuals with disabilities, family members, direct support staff, supervisors, and specialists, is essential for developing and implementing effective visual communication supports. Interdisciplinary collaboration ensures that communication systems are functional across settings, consistent with individual preferences and abilities, and aligned with person-centered goals (Hong et al., 2016). Regular team meetings provide opportunities to review progress, address challenges, and make adjustments to communication supports and implementation strategies.

5.3 Ethical Considerations

Ethical considerations in implementing visual communication supports for choice-making encompass issues of autonomy, dignity, informed consent, and the right to refuse. Tullis et al. (2025) developed an assent framework for people with intellectual and developmental disabilities and complex communication needs, addressing the ethical imperative to obtain meaningful consent and assent from individuals who use AAC. This framework emphasizes several key principles: providing information in accessible formats, allowing adequate time for processing and decision-making, honoring all forms of communication including nonverbal expressions, and recognizing the right to refuse or change one's mind. The principle of supported decision-making recognizes that individuals with disabilities have the right to make decisions about their lives with appropriate supports, rather than having decisions made for them through substitute decision-making (Dowling et al., 2019). Visual communication supports are essential tools for

implementing supported decision-making, as they enable individuals to access information, express preferences, and participate in decision-making processes. However, implementation must be guided by respect for individual autonomy and recognition that communication supports should enhance rather than constrain choice-making.

Ethical tensions may arise when individuals express preferences that conflict with staff recommendations or safety concerns. Rajaraman et al. (2023) provided a practitioner's guide to emphasizing choice-making opportunities in behavioral services, addressing how to balance respect for individual preferences with legitimate safety and health concerns. Their guidance emphasizes the importance of distinguishing between preferences that pose genuine risks and those that simply differ from staff preferences or convenience, advocating for maximizing choice-making opportunities while implementing appropriate safeguards for genuine safety concerns.

The right to refuse represents an important but sometimes overlooked aspect of choice-making. Chen (2019) examined communication interventions on conditional requesting or rejecting skills for individuals with moderate to severe developmental disabilities, highlighting the importance of teaching individuals not only to request preferred items but also to reject or refuse non-preferred options. Visual communication systems should include symbols or methods for expressing refusal, and staff must honor these communications even when they create inconvenience or require additional problem-solving.

Table 2: Steps in Systematic Preference Identification and Support

Step	Activities	Visual Communication Strategies	Key Considerations
1. Initial Assessment	Observe approach/avoidance behaviors; interview family and staff; review records	Use pictures/objects to present options during observation; document responses	Consider sensory, motor, and cognitive abilities; assess across multiple contexts and times
2. Systematic Preference Assessment	Present paired choices; offer multiple options; measure selection patterns	Use individual's communication system (pictures, symbols, SGD); ensure accessibility	Present sufficient trials; vary presentation order; assess consistency over time
3. Preference Validation	Confirm preferences in natural contexts;	Embed choices in daily routines using visual supports; monitor	Recognize that preferences may change; reassess periodically

	assess stability over time	engagement and satisfaction	
4. Communication Tool Development	Create individualized choice boards, menus, or device vocabulary	Include preferred items/activities; use clear, meaningful symbols; organize logically	Collaborate with individual and team; ensure portability and accessibility
5. Instruction and Support	Teach communication system use; create choice opportunities; provide prompting and reinforcement	Use naturalistic teaching in functional contexts; fade prompts systematically	Ensure all staff implement consistently; monitor progress and adjust as needed
6. Ongoing Monitoring	Track choice-making frequency; assess satisfaction and outcomes; identify barriers	Use data collection systems; solicit feedback through visual supports	Make data-based decisions; celebrate successes; address challenges proactively

6. Discussion

6.1 Benefits of Visual Communication Supports

The synthesis of empirical evidence demonstrates substantial benefits of visual communication supports for facilitating choice-making and promoting autonomy among individuals with developmental disabilities. Visual communication systems provide concrete, accessible methods for expressing preferences and making choices, enabling individuals who have limited or no functional speech to participate more fully in decision-making processes (Bondy et al., 1994; Schwartz et al., 1998). These benefits extend across multiple domains, including functional communication, self-determination, social participation, and quality of life.

One of the primary benefits of visual communication supports is their capacity to make abstract concepts concrete and accessible. For individuals with cognitive and communication impairments, verbal information may be difficult to process and retain, while visual representations provide enduring, concrete referents that can be revisited and reviewed (Yu et al., 2003). This concreteness is particularly valuable in choice-making contexts, where individuals must understand available options, consider alternatives, and express preferences. Visual communication supports also facilitate independence by enabling individuals to initiate communication and express needs without relying on others to anticipate or interpret their desires (Moore et al., 2009). This capacity

for self-initiated communication represents a fundamental shift from dependence to autonomy, as individuals gain control over their environment and experiences. Research has documented that individuals who use visual communication systems demonstrate increased independence in daily activities, reduced reliance on caregiver prompting, and enhanced self-determination (Stephenson, 2016). The social benefits of visual communication supports are also significant. Effective communication is foundational to relationship development and social participation, and visual communication systems enable individuals to engage in reciprocal communication with family members, peers, and community members (Nepo et al., 2017). Speech-generating devices, in particular, may enhance social acceptance and facilitate community inclusion by providing speech output that is more readily understood by unfamiliar communication partners (Couper et al., 2014). This emphasis on reducing stigma and promoting social belonging through accessible tools resonates with Ehigie's (2025) broader argument that inclusive technologies must be reimagined not merely as functional aids but as instruments of dignity and social equity, a perspective that carries direct implications for how visual communication supports are framed and implemented in developmental services.

6.2 Limitations and Challenges

Despite the substantial benefits of visual communication supports, important limitations and challenges must be acknowledged. Individual variability in learning, preference, and performance means that no single communication system is optimal for all individuals (van der Meer et al., 2011). Some individuals demonstrate rapid acquisition of visual communication skills, while others require extended instruction and support. Similarly, preferences for specific communication modalities vary widely, with some individuals preferring high-tech SGDs, others preferring low-tech picture exchange, and still others preferring tangible symbols or manual signs (Achmadi, 2015; Roche et al., 2013). Implementation challenges represent another significant limitation. Successful implementation of visual communication supports requires systematic planning, comprehensive staff training, organizational support, and ongoing monitoring and adjustment (Baez et al., 2025). In practice, these implementation requirements are not always met, resulting in inconsistent use, limited communication opportunities, and suboptimal outcomes. Staff turnover, competing demands, and limited resources can undermine implementation efforts, particularly in settings that lack strong organizational commitment to communication accessibility. The evidence base for visual communication supports, while substantial, has important limitations.

Much of the research relies on single-subject designs with small samples, limiting generalizability (Achmadi, 2015). Additionally, most studies focus on short-term outcomes, with limited evidence regarding long-term maintenance and generalization of communication skills. Research on social validity, the extent to which interventions are acceptable and valued by individuals, families, and communities, remains limited, though emerging evidence suggests generally positive perceptions (van der Meer et al., 2011).

Technological challenges pose particular concerns for high-tech AAC options. Devices may malfunction, require charging, or become obsolete, creating barriers to consistent communication access (Stephenson, 2016). The rapid pace of technological change means that devices and applications may be discontinued or unsupported, requiring ongoing investment and adaptation. Additionally, the complexity of some high-tech systems may create barriers for staff implementation and family use.

Ethical challenges related to autonomy, consent, and supported decision-making require ongoing attention. While visual communication supports are intended to enhance autonomy, implementation practices may inadvertently constrain choice-making if staff limit available options, fail to honor expressed preferences, or use communication systems primarily for staff convenience rather than individual empowerment (Tullis et al., 2025). Ensuring that visual communication supports genuinely enhance rather than constrain autonomy requires vigilant attention to implementation practices and organizational culture.

6.3 Implications for DSW Practice

The evidence reviewed in this paper has important implications for developmental service workers (DSWs) and other professionals supporting individuals with developmental disabilities. First, DSWs must recognize communication accessibility as a fundamental right and a prerequisite for meaningful choice-making and self-determination. All individuals, regardless of disability severity, have the right to effective communication supports that enable them to express preferences, make choices, and participate in decisions about their lives (Snell et al., 2010). Second, DSWs should adopt a person-centered approach to selecting and implementing visual communication supports, recognizing that individual preferences, abilities, and contexts must guide decision-making (Kim et al., 2025). Rather than prescribing a single communication system for all individuals, DSWs should conduct comprehensive assessments of individual needs and preferences, offer opportunities to experience different communication modalities, and honor

expressed preferences even when they differ from staff recommendations. Third, DSWs must commit to creating multiple opportunities for choice-making throughout daily routines and activities. Choice-making should not be limited to special occasions or formal planning meetings but rather should be embedded in everyday experiences, from selecting meals and activities to choosing clothing and social companions (Stafford, 2005). Visual communication supports should be readily accessible at relevant times and locations, enabling individuals to make choices spontaneously rather than only when prompted by staff. Fourth, DSWs should engage in ongoing professional development to enhance competencies in implementing visual communication supports. This includes learning about different AAC systems and approaches, developing skills in recognizing and responding to communication attempts, and understanding how to create communication-rich environments (Biggs et al., 2018). Collaboration with speech-language pathologists and other specialists can enhance DSW knowledge and skills while ensuring coordinated, consistent implementation. Fifth, DSWs must attend to ethical considerations in implementing visual communication supports, ensuring that practices genuinely enhance autonomy and respect individual dignity. This includes providing information in accessible formats, allowing adequate time for decision-making, honoring all forms of communication including nonverbal expressions, and recognizing the right to refuse or change one's mind (Tullis et al., 2025). When conflicts arise between individual preferences and safety concerns, DSWs should engage in supported decision-making processes that maximize autonomy while addressing legitimate risks.

Finally, DSWs should advocate for organizational policies and practices that support communication accessibility and choice-making. This includes advocating for adequate resources for AAC systems and training, promoting organizational cultures that value individual autonomy and self-determination, and working to eliminate barriers to communication access and choice-making (Houseworth et al., 2023). Systemic change is necessary to ensure that all individuals with developmental disabilities have access to effective visual communication supports and meaningful opportunities for choice-making.

Table 3: Benefits and Limitations of Visual Communication Supports for Choice-Making

Domain	Benefits	Limitations	Mitigation Strategies
Communication	Provides concrete,	Individual variability	Conduct comprehensive

Effectiveness	accessible methods for expressing preferences; enables self-initiated communication; supports functional communication in natural contexts	in learning and performance; may require extended instruction; limited vocabulary without expansion	individual assessment; provide systematic instruction; expand vocabulary based on individual needs and interests
Autonomy and Self-Determination	Enhances capacity to make choices and direct supports; reduces dependence on caregiver interpretation; supports participation in person-centered planning	Effectiveness depends on staff honoring expressed preferences; may be constrained by limited options or staff control	Create multiple choice opportunities; train staff in person-centered practices; monitor and address barriers to autonomy
Social Participation	Facilitates reciprocal communication with others; may enhance social acceptance (especially SGDs); enables community participation	Some systems may be stigmatizing; communication partners may not understand or respond appropriately	Provide communication partner training; select socially acceptable systems when possible; advocate for inclusive attitudes
Implementation	Well-researched evidence base; multiple system options available; can be implemented across settings	Requires systematic planning, training, and support; staff turnover and competing demands may undermine consistency; resource constraints	Develop comprehensive implementation plans; provide ongoing training and coaching; secure organizational commitment and resources
Technology	High-tech options offer expanded capabilities, portability, and social acceptability	Devices may malfunction or become obsolete; requires charging and maintenance; may be complex to program	Provide technical support; develop backup systems; balance high-tech and low-tech options; ensure device reliability
Cost	Low-tech options (PECS, communication boards) are inexpensive and accessible	High-tech options (SGDs, tablets) may be costly; ongoing costs for maintenance and updates	Explore funding sources; consider cost-effectiveness; use low-tech options when appropriate; advocate for insurance coverage

7. Conclusion

Visual communication systems play a critical role in supporting choice-making and promoting autonomy among individuals with developmental disabilities. The evidence synthesized in this review demonstrates that picture-based communication systems, speech-generating devices, tangible symbols, and other visual supports enable individuals who have limited or no functional speech to express preferences, make meaningful choices, and participate in decision-making processes. These communication supports are not merely technical tools but rather fundamental enablers of human rights, dignity, and self-determination. The effectiveness of visual communication supports depends on multiple factors, including individual characteristics, system features, implementation quality, and organizational context. No single communication system is optimal for all individuals; rather, person-centered assessment and selection processes are essential for identifying communication modalities that match individual preferences, abilities, and contexts. Research comparing different AAC options has consistently demonstrated individual variability in learning, preference, and performance, underscoring the importance of offering choices among communication modalities and honoring individual preferences.

Successful implementation of visual communication supports requires systematic attention to multiple levels, including individual skill development, environmental modifications, staff training and collaboration, and organizational culture change. Evidence-based implementation strategies emphasize the importance of creating communication-rich environments with multiple opportunities for choice-making, providing comprehensive staff training and ongoing coaching, monitoring implementation fidelity and outcomes, and making data-based adjustments. Organizational commitment to communication accessibility and person-centered support is essential for sustained implementation and meaningful outcomes.

Ethical considerations must guide all aspects of visual communication implementation, ensuring that practices genuinely enhance autonomy and respect individual dignity. The principles of supported decision-making, informed consent and assent, and the right to refuse provide important frameworks for ethical practice. Visual communication supports should be implemented in ways that maximize individual control and choice-making while addressing legitimate safety and health concerns through collaborative problem-solving rather than unilateral staff decision-making. For developmental service workers and other professionals supporting individuals with developmental disabilities, the evidence reviewed in this paper provides clear guidance for practice.

Communication accessibility must be recognized as a fundamental right and a prerequisite for meaningful choice-making and self-determination. Person-centered approaches to selecting and implementing visual communication supports, embedded choice-making opportunities throughout daily routines, ongoing professional development in AAC implementation, attention to ethical considerations, and advocacy for organizational policies that support communication accessibility represent essential components of evidence-based practice.

Looking forward, continued research is needed to address gaps in the evidence base, including long-term outcomes of visual communication interventions, effectiveness across diverse populations and settings, implementation strategies that support sustained use, and social validity from the perspectives of individuals who use AAC. Additionally, research examining the intersection of visual communication supports with other important outcomes, including employment, community participation, relationship development, and health and safety, would provide valuable insights for practice and policy. The fundamental message of this review is clear: communication accessibility is essential for autonomy, dignity, and inclusion. Visual communication systems provide powerful tools for enabling individuals with developmental disabilities to express preferences, make choices, and direct their lives. However, the availability of these tools is not sufficient; systematic implementation, staff competence, organizational commitment, and ethical practice are all necessary to ensure that visual communication supports fulfill their promise of enhancing self-determination and promoting meaningful inclusion for all individuals with developmental disabilities.

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