IMPACT OF SIGHT LOSS ON THE SOCIAL-EMOTIONAL DEVELOPMENT OF CHILDREN AND ASSOCIATED INTERVENTIONS

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ABSTRACT

Sight loss, which includes a range of conditions from partial vision loss to complete blindness, can significantly impact a child's social-emotional development. Social-emotional development refers to a child's ability to understand and manage their feelings, which is essential for navigating social situations and forming healthy relationships. While much research has focused on the physical and cognitive aspects of sight loss, little has been written about its social-emotional effects, making it important to examine how sight loss affects this domain of development. This review explores the various impacts of sight loss on the social-emotional development of children, including its effect on attachment styles and the ability to socialize and form relationships. Interventions such as infant massage, International Classification of Functioning, Disability, and Health (ICF) Framework, and providing an individualized support system for children with sight loss attempt to address these issues. By reviewing these interventions, this paper seeks to identify effective strategies for mitigating the impact of sight loss on the social-emotional development of children and discusses the importance of their implementation. Through synthesizing current research, this paper aims to deepen understanding and inform strategies to promote positive social-emotional outcomes for children with sight loss.

POSITION STATEMENT

We acknowledge that our engagement with this research is shaped by our positionality. As sighted, able-bodied, undergraduate students from North America, our perspectives are influenced by our academic background, cultural context, and access to specific sources. While we strive for a comprehensive analysis, we recognize that our viewpoint is inherently shaped by these factors.

INTRODUCTION

A child's social-emotional development involves understanding, regulating, and expressing emotions, as well as recognizing and responding to the emotions of others. Sight loss can impact this development, making it more challenging to navigate social situations and form healthy relationships [1]. Social-emotional development fosters important life skills, such as effective communication, the ability to express empathy, and the capacity to self-regulate and practice self-care when needed [1]. Healthy social-emotional development allows children to form secure attachments to parents and build friendships with their peers. These interpersonal relationships provide a sense of safety, support, and belonging, all of which are foundational for overall well-being and mental health [2]. Vision, a key sensory modality, plays an integral role in social-emotional development by providing critical cues such as facial expressions and body language, which help facilitate social engagement and emotional understanding [3,4].

According to the World Health Organization's International Classification of Diseases 11 (ICD-11; VV10), visual impairment is defined as a presenting visual acuity (VA) in the better eye worse than 3/60, with blindness representing the most severe form of impairment. Functional low vision includes individuals with VA less than 6/18 up to light perception, alongside limitations in visual fields [4]. Notably, although visual impairment is a common term found in literature, according to the Canadian National Institute for the Blind

(CNIB) inclusive language guidelines, using terminology such us “impairment” or “deficit” focuses negatively on sight loss and is not preferred [5]. As such, for the purposes of this review, the terminology “sight loss” will be used hereon-out when discussing individuals with sight loss and/or blindness.

This paper explores the impact of sight loss on the social-emotional development of children, examining key developmental stages from before school-age to school-age and outlining interventions currently utilized by children with sight loss. For the purposes of this article, development was divided into two stages—“before school-age” (0-3 years) and “school-age” (4+ years)—to reflect the distinct differences in a child’s social environments and interactions. Here, “school” refers specifically to formal schooling in Ontario, which includes a free two-year kindergarten program for children aged 4 and 5 [6]. While attendance only becomes mandatory at age 6, age 4 is used here as a typical marker for the start of the “school-age” period. By synthesizing current research, this paper aims to deepen understanding and inform strategies to promote positive social-emotional outcomes for children with sight loss.

METHODS

Articles, either written or translated into English, were eligible for inclusion in this review. A preliminary literature review was conducted on Google Scholar as an introduction to the available literature. The databases PubMed, Ovid, SAGE Journals, and Web of Science were consulted to gather relevant information. Searches included terms related to sight loss, early childhood, infancy, adolescence, school-aged children, social-emotional development, and interventions. Primary studies and reviews were included in the research. Exclusion criteria consisted of studies involving blind children with additional disabilities to reduce confounding variables which could affect the interpretation of outcome specific to blindness. These excluded conditions including deaf-blindness, traumatic brain injury (TBI), acquired brain injury (ABI), and cerebral palsy.

IMPLICATIONS OF SIGHT LOSS: BEFORE SCHOOL-AGE CHILDREN

Sight loss in infant-toddlers profoundly impacts social-emotional development, as vision is a key modality for communication and interaction [3]. Without visual input, they face challenges in expressing emotions, engaging in social exchanges, and forming secure attachments, encouraging a deeper understanding of their unique needs [3,4]. One notable limitation of research is its predominant focus on the child’s interaction with the mother, often excluding mention of paternal interactions.

3.1 Emotional Expression and Recognition

Infants with sight loss display a limited repertoire of expressive behaviors compared to sighted infants. For instance, a study looking at the responses of blind infants to their mothers versus strangers found that blind infants’ social smiles, a critical marker of early emotional development, are less frequent and often elicited by auditory or tactile stimuli rather than visual cues [7]. This delay in expressive behaviors can hinder the reinforcement of caregiver interactions and may affect the reciprocal nature of emotional exchanges [7]. A study conducted in 2022 using a parental questionnaire to assess emotion regulation in children with sight loss found that blind children, aged 9-12 months old exhibit lower composite scores for emotion regulation compared to their sighted peers of the same age, emphasizing the developmental challenges posed by the lack of visual input [8]. Moreover, blind infants struggle with nuanced expressions of emotions such as fear or avoidance, which are often less discernible without visual cues. This limitation may reduce the frequency and immediacy of maternal responses, further compounding developmental delays [7].

3.2 Social Interaction

One of the significant challenges for blind infants is initiating and sustaining social interactions. Sighted infants often rely on visual cues to coordinate their behaviors with their social environment, enabling them to attract attention and engage in reciprocal interactions. Blind infants, however, face difficulties in recognizing when they have their caregiver’s attention, often resulting in fewer self-initiated interactions, which is a marker of motor difficulties [7]. This reduced initiative is compounded by their limited ability to observe and imitate facial expressions, a cornerstone of early communication and social bonding. The concept of dialogue, where infants learn that their actions elicit predictable responses from caregivers, is also delayed in blind infants. This delay stems from their restricted opportunities to experience consistent visual feedback, making it harder for them to develop intentionality and reciprocity in their interactions [7].

3.3 Maternal Role and Environmental Influence

The role of a caregiver is particularly pivotal for blind infants. Mothers of infants who are blind often face challenges in interpreting their child’s subtle behavioral cues and adapting their responses accordingly. This difficulty can result in either overprotective or inconsistent caregiving practices, which impacts the development of a secure attachment style [7]. Attachment refers to a specific aspect of the relationship between a child and their caregiver, aimed at ensuring the child's safety, security, and comfort. It involves the child using the caregiver as a secure base for exploration and as a haven for protection and emotional support

when needed [8]. Research emphasizes the importance of maternal sensitivity and the need for specialized interventions to support caregivers in fostering reciprocal interactions and promoting the infant's social-emotional growth [7,8].

3.4 Attachment and Seperation Anxiety

The development of attachment behaviors, such as separation anxiety, where an infant feels uneasy when away from their caregiver, is influenced by an infant's ability to perceive and conceptualize the presence of caregivers [9]. Blind infants show a delayed onset of separation anxiety which may be linked to their slower development of cognitive prerequisites, such as object permanence, or the ability to know an object exists even when not directly observed [10]. Unlike sighted infants, who visually track the departure and return of caregivers, blind infants rely on auditory and tactile cues, making it harder for them to conceptualize their caregiver's absence and develop separation anxiety [7].

INTERVENTIONS: BEFORE SCHOOL-AGE CHILDREN

While knowledge of interventions for early childhood social-emotional development, particularly in improving parental attachment and social skills in blind infants, remains limited, several approaches have shown promise.

4.1 Infant Massage

One such intervention is a therapeutic practice called infant massage, where parents and caregivers massage their baby's body to foster bonding and improve their infant's sense of comfort within the parent-child relationship [11]. A structured approach to the massage is provided by the International Association of Infant Massage (IAIM) protocol, which guides parents through gentle strokes and techniques tailored to the baby's developmental stage and needs [11]. For infants with sight loss, massage(s) can compensate for the absence of visual cues, such as eye contact, smiling and positive affect, and attunement, all of which are important for developing secure attachment. Attunement involves the caregiver's sensitive response to the infant's needs, allowing the infant's brain to receive the nurturing input necessary for healthy development [12]. By being attentive to the infant's cues and responding appropriately through massage, parents can demonstrate to their infant that their emotional needs will be met. This tactile communication shows the infant that their caregiver is present and responsive, reinforcing feelings of comfort and safety [13]. At an early stage, this practice supports the development of skills such as communication through verbal tone, touch, and empathy, which help validate the child's feelings and trust [13,14]. A longitudinal study examined the effects of infant massage on maternal confidence and responsiveness, using standardized scales such as the Parenting Stress Index and the Maternal Confidence Scale. The resultsshowed that regular infant massage significantly improved maternal confidence and responsiveness, enhancing the parent-infant relationship and promoting positive social-emotional development [14].

4.2 Parent-focused Programs

Another early intervention includes programs and resources designed specifically for parents to facilitate stronger bonds with their infants affected by sight loss. In 2003, the United Kingdom's central government launched the Early Support program to educate families of children with disabilities on the best practices to promote healthy development [15]. As part of the initiative, the Developmental Vision teams at Great Ormond Street Hospital (GOSH) created the Developmental Journal for Babies and Children with Visual Impairment [15], a guide tailored towards supporting parents and caregivers in navigating their child's developmental journey. The Developmental Journal includes a comprehensive list of expected developmental steps in children with sight loss who are up to 36 months old, providing families with a framework to track progress and adapt their parenting styles to the child's individual needs [15]. By offering structured guidance to help parents better understand their child's developmental progress and challenges, the journal strengthens the bond between caregiver and child [15]. Parents are encouraged to actively participate in their child's development through activities that promote effective communication, shared discovery, and joint attention. These include interactive games with sound-emitting, textured toys, as well as sensory exploration exercises that guide the child's hand to identify objects. Such activities are important for building trust, emotional security, and secure attachment [15].

IMPLICATIONS OF SIGHT LOSS: SCHOOL-AGED CHILDREN

A child's transition into formal schooling is a critical period for their cognitive and social-emotional development. During these years, children form meaningful relationships with peers, develop self-awareness, explore their identity, and refine their emotional regulation—all of which contribute to overall well-being and future success [16,17]. It has been found that children with sight loss may experience challenges related to social aspects of their school life, such as having limited involvement in school activities [18] and lacking positive social interactions with their sighted peers and teachers [19]. Undoubtedly, lacking exposure to various experiences that help children build their social-emotional competency puts children with sight loss at a disadvantage compared to their sighted peers.

Measuring social-emotional development in school-aged children often relies on measurements such as school belonging, self-esteem, and social relationships with

peers and teachers. These various indicators can be correlated to Bronfenbrenner's ecological model, which considers how various systems interact with the child's nature to influence their development [20]. As seen in Figure 1 [refer to appendix], the ecological model depicts how there are a multitude of forces that impact the child at different levels based on how the child interacts with them. The model conceptualizes human development by depicting how it can be influenced by a child's nested environmental systems [21]. As such, when considering the experiences of a school-aged child, it is critical to account for the various factors that directly and indirectly shape how they interact with their environment.

5.1 Microsystems & Mesosystem

A child's social-emotional development is influenced by their direct environments, or microsystems, including family, school, and peer relationships. In school aged children, peer relationships and feeling a sense of belonging at school are particularly important as they directly influence the self-esteem and academic inclusion of children [22]. Notably, it has been found that the severity and visibility of a child's visual disability can influence their self-esteem. For example, adolescents with severe sight loss often report a stronger sense of school belonging which is speculated to be because they have accepted their condition and are more willing to seek support [23]. In contrast, those with moderate impairments may try to hide their disability from their typically developing peers with the fear that their needs may not be understood, leading to social isolation and lower self-esteem [22,23]. In addition to these findings, the use of specialized equipment for sight loss has also been discussed as a factor impacting social inclusion for students due to internalized shame and feeling as if they stand out amongst their peers [24]. According to the Canadian National Standards for the Education of Children and Youth Who are Blind or Visually Impaired, developing skills with assistive technology and orientation and mobility is essential for the development of body and spatial awareness as well as directionality [25]. These skills are not only critical for a child's safety but can also increase the probability that the student will be actively involved in age-appropriate activities with their peers [25].

The next system that can influence social-emotional development in children is the mesosystem which are the interactions between the microsystems. Importantly, it has been suggested that social support from teachers, parents, and other care providers can act as protective factors against social emotional development challenges for children [26]. By supporting children to learn how to identify when peers are trying to initiate social engagement or facilitating lessons on how to understand nonverbal signals and social cues from others, children with sight loss can be better equipped to form relationships with others [26].

5.2 Exosystem

The exosystem indirectly influences a child's experiences, such as school policies, teacher training, or parental work environment. Notably, the Ontario Human Rights Commission has indicated that children in the province face a variety of barriers in education, including physical inaccessibility, a lack of individualization, and negative attitudes and stereotypes [27]. These barriers can act as significant hindrances to a child's social-emotional development as they can result in feelings of isolation and low self-esteem [23].

5.3 Macrosystem & Chronosystem

Societal and cultural norms within the macrosystem can influence children with sight loss, particularly as negative societal perceptions and cultural biases towards disability can lead to internalized stigma [27]. A lack of knowledge among educators, staff, and students can make it difficult for students with disabilities, potentially feeling ashamed, which could lead to social withdrawal, influencing social-emotional development. Over time, within the chronosystem, significant events may take place in society, which can change the trajectory of a child's social-emotional development, depending on its influence. For example, the current age of technology offers students with visual disabilities several resources that can help them with their academic learning, social relationships, and physical navigation within the world [28]. However, it also creates a space for online bullying and economic barriers due to the price of technology [29,30]. These various forces can influence a child's experiences within the world, ultimately indirectly also influencing their development.

INTERVENTION: SCHOOL-AGE CHILDREN

6.1 The Evolution of Disability Perspectives & ICF Framework

The understanding of disability, especially sight loss, has evolved over time [31]. Historically, rehabilitation followed the medical model, focusing on anatomical issues and isolated skills [27]. However, in the 1970s, the social model emerged, viewing disability as a result of societal barriers rather than individual limitations. In 2007, the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) unified both perspectives, emphasizing active participation in all aspects of life, including education, social interactions, and community activities [31]. This integrated approach forms the foundation for the development of interventions designed to address the social-emotional needs of school-aged children with vision loss, ensuring they are supported not only in their academic pursuits but also in their social inclusion and emotional well-being [31].

6.2 Social Awareness & Inclusion Strategies for Children with Vision Loss

Children with vision loss often face challenges in developing social awareness and skills due to their reduced access to non-verbal cues, such as facial expressions and body language. Embedding opportunities for social interaction within everyday classroom activities is emphasized as a means to provide children with vision loss meaningful experiences that foster self-awareness and peer engagement [31].

Strategically planning these environments allows for incidental learning and positive peer interactions, addressing the difficulties children with low vision face in learning through imitation [27]. Thoughtfully designed classroom layouts, such as those implemented at elementary schools in Northern Ontario and the Greater Toronto Area, prioritize clear, unobstructed pathways, consistent furniture placement, and accessible seating arrangements to help children confidently navigate and locate objects. For example, teachers ensured that students with sight loss were seated closer to the front of the classroom for better access to the whiteboard and instructional materials while avoiding isolation [32]. Additionally, seating students in pairs rather than groups facilitated social inclusion while accommodating their unique needs. Classroom adaptations such as taped-down wires, tactile markers, and Braille-labeled objects further enhance navigation and engagement, ensuring that specialized equipment and support staff facilitate rather than hinder peer interactions in an inclusive learning environment [32].

6.3 Tailored Educational Approaches & School Belonging

Educators emphasize that relying on a one-size-fits-all approach may not effectively support inclusion and well-being, particularly for students with unique challenges [32]. Instead, they advocate for adaptable strategies that accommodate diverse learning needs [32]. Educational systems should embrace diverse approaches that honor individuality and create meaningful engagement opportunities tailored to each child's unique strengths and needs. Fostering understanding among sighted peers is necessary, as it encourages positive social interactions and reduces barriers to inclusion [23]. In doing so, children with low vision are able to develop relationships and greater confidence in social settings. School belonging plays a pivotal role in shaping the self-esteem and emotional well-being of students with vision impairments. Students who feel valued and included are more likely to exhibit higher levels of self-confidence, resilience, and emotional stability [23]. Conversely, a lack of belonging can exacerbate feelings of isolation and hinder social-emotional development. Teacher and parental social support serve as protective factors against social-emotional challenges, such as isolation and difficulty developing social skills. Additionally, peer-focused interventions, such as collaborative activities between students with low vision and their sighted peers, have been shown to improve social behaviours and foster stronger connections within the classroom [23].

6.4 Structured Activities for Skill Development & Individualized Support System

Structured activities offer children with low vision opportunities to develop specific social-emotional and social skills in a supportive environment. Small group sessions involving storytelling, games, and discussions are effective in helping children practice skills such as expressing emotions, resolving conflicts, and initiating conversations [23,31]. These activities create positive interactions among sighted peers, promoting understanding and collaboration while simultaneously enhancing the development of critical social competencies and creating a more inclusive classroom atmosphere [23,31]. Additionally, individualized support, such as one-on-one mentoring and counseling, is crucial in addressing specific social-emotional needs that group settings may not effectively manage. These sessions can focus on building self-esteem, coping with feelings of isolation, or developing tailored social skills [33]. Furthermore, programs such as buddy systems and "circle of friends" utilize peer networks to provide natural support and promote inclusion. These strategies leverage the strength of peer relationships to help children feel more connected and supported in their social environments [33].

DISCUSSION

The findings in this review highlight various discrepancies in social-emotional development across developmental stages for children with sight loss. From infancy through school age, children with visual loss face unique challenges in emotional expression, social interaction, attachment, and impulse control, all of which contribute to developmental disparities when compared to their sighted peers. The existing literature offers limited insight into the social-emotional disparities between sighted children and those with low vision. As such, further research is needed to understand how these differences impact long-term developmental outcomes.

Despite the interventions identified, without clear implementation strategies, the gaps in developmental trajectories will persist. Future research should focus on developing comprehensive, evidence-based programs that integrate social-emotional learning with assistive technology and inclusive education practices. By addressing the unique barriers children with sight loss face and implementing targeted interventions, educators, caregivers, and policymakers can work collaboratively to close the developmental gap between children with sight loss and their sighted peers. This would not only foster emotional well-being and social competence but also pave the way for greater inclusion and long-term success for children with sight loss.

LIMITATIONS

Several limitations must be considered. This review is limited to published studies in North America and the United Kingdom, meaning its findings apply to the Canadian context, and relevant unpublished data may have been overlooked. Variability in sample sizes, methodologies, and outcome measures across studies contributes to significant heterogeneity, restricting the generalizability of the findings. It is also important to acknowledge that these interventions are not accessible to all children, particularly those in low-resource settings where specialized services and support may be limited. Addressing these limitations through further research will help ensure that interventions are both effective and widely applicable.

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APPENDIX

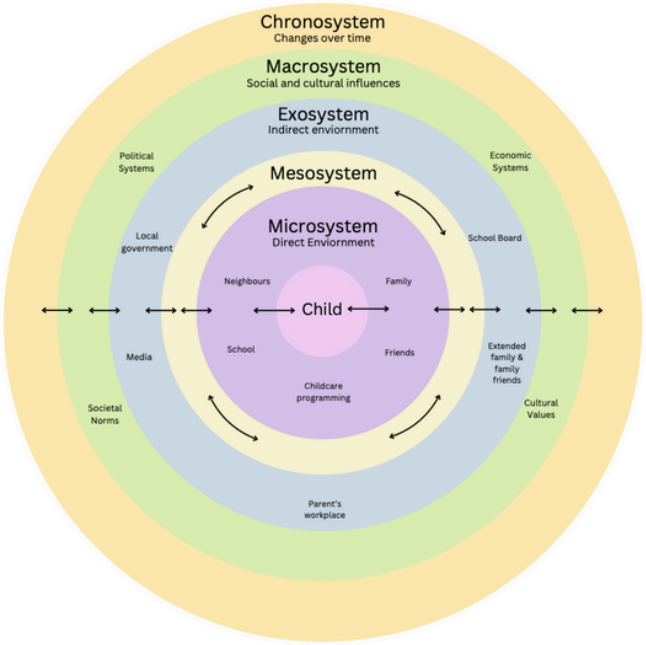

Figure 1: Bronfenbrenner's Ecological Systems Model

Photo description: There are five circles, each representing a different system as outlined by Bronfenbrenner. The circles are in ascending order, each getting slightly bigger than the one before. In the center there is a pink circle, of which is the smallest, that has the text 'child'. Moving outwards there is a slightly larger purple circle titled 'microsystem'. Within this circle there are several terms that depict a child's direct environment including 'Neighbours', 'family', 'school', 'friends', and 'childcare programming'. The next circle is yellow and is slightly larger than before. Within the picture there are four arrows that follow the shape of the circle.