

The Role of Expression Card Media in Supporting Emotion Recognition in Late Adolescents with Intellectual Disabilities

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ABSTRACT

Emotion recognition is a fundamental component of socioemotional development, yet individuals with intellectual disabilities often face challenges in accurately identifying and interpreting emotional cues. The research aimed to determine whether structured visual tools, such as expression cards, could enhance these abilities in a measurable way. A quasi-experimental design with a single-group pretest-posttest approach was implemented. The participants consisted of 35 individuals aged between 16 and 21 years. Quantitative data were collected and analyzed using paired-sample t-tests and analysis of covariance (ANCOVA) to assess the impact of the intervention. The results indicated a statistically significant improvement in emotion recognition abilities following the intervention. Paired-sample t-test analysis showed a marked difference between pretest and posttest scores, while ANCOVA results confirmed the effectiveness of the intervention, with a considerable portion of posttest score variance explained by the model's covariates and independent variables. In conclusion, expression cards proved to be a valuable tool in enhancing emotion recognition among adolescents with intellectual disabilities. The effectiveness of the intervention, however, was influenced by individual baseline capabilities and the severity of disability. This study contributes to inclusive education practices by highlighting the potential of visual-based strategies to support affective development and promote socioemotional competencies in special education contexts.

Keywords: *Social Emotional Learning, Expression Card Media, Intellectual Disabilities*



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INTRODUCTION

Emotion recognition is a fundamental component of social-emotional learning (SEL), playing a crucial role in the development of interpersonal skills, self-awareness, and emotional self-regulation. For late adolescents with intellectual disabilities (IDs), recognizing and expressing emotions can be particularly challenging, often leading to difficulties in social interaction, limited peer relationships, and reduced overall quality of life. Previous studies have consistently shown that individuals with intellectual disabilities tend to perform more poorly in identifying facial

expressions of emotion compared to their peers without disabilities. These challenges are especially pronounced in the recognition of complex emotions such as fear and anger, which require higher-level cognitive processing and emotional sensitivity (Scotland et al., 2015).

Limitations in emotion recognition among individuals with intellectual disabilities (IDs) can negatively affect their social functioning, including their ability to build and maintain relationships, respond appropriately in social situations, and participate in inclusive environments. Garcia-Garcia et al. (2022) found that individuals with both intellectual disabilities and autism spectrum disorder experienced greater difficulties in recognizing emotions compared to individuals with intellectual disabilities alone. These deficits were significantly associated with lower levels of social functioning. Such findings underscore the need for targeted and accessible interventions aimed at enhancing emotion recognition skills in this population (Tamas et al., 2024). Several approaches have been proposed to support emotion recognition in individuals with intellectual disabilities, ranging from direct cognitive-behavioral training to the use of visual aids and multimedia. For instance, Jacob et al. (2022) demonstrated that training using emotional video clips can significantly improve the ability of individuals with intellectual disabilities to recognize facial expressions. However, while effective, this method often requires substantial technological resources, structured environments, and guided facilitation, which may not always be feasible in everyday educational settings (Rydin-Orwin et al., 1999).

Expressive arts-based media have emerged as a promising alternative to support emotional development in individuals with intellectual disabilities. Rezaei (2016) demonstrated that interventions grounded in expressive arts can significantly enhance emotional well-being and emotion regulation skills in adults with intellectual disabilities. Among various media, interactive visual tools such as expression cards have gained attention for their accessibility and potential to engage learners with cognitive challenges. Expression cards, which depict a range of facial expressions and emotional contexts, offer concrete visual scaffolding that can assist individuals in recognizing and labeling emotions more effectively (Ho et al., 2020).

Although there is emerging evidence that visual media can enhance emotion recognition, comprehensive studies focusing on the specific impact of expression cards, particularly in inclusive educational settings, remain limited. Addressing this gap, the present study aims to examine the effectiveness of expression cards in improving emotion recognition skills among late adolescents with intellectual disabilities. In addition to measuring intervention outcomes, the study also seeks to explore participants' perceptions regarding the use of expression cards as a learning tool. Insights gained from this research are expected to inform educational practices and support the design of contextually relevant, inclusive interventions that promote emotional and social development. Furthermore, the findings may contribute to the formulation of inclusive education policies that are more responsive to the emotional and developmental needs of students with disabilities.

In educational contexts, social-emotional learning (SEL) competencies are increasingly recognized as foundational to students' holistic development. According to the Collaborative for Academic, Social, and Emotional Learning (CASEL), there are five interrelated core SEL

competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Richerme, 2022). These competencies contribute not only to academic success but also to psychosocial well-being and meaningful participation in society.

Self-awareness involves the ability to recognize one's emotions, thoughts, and values and understand how they influence behavior. Self-management refers to the capacity to regulate these emotions and behaviors in different situations, including setting and working toward personal and collective goals. Social awareness encompasses the ability to empathize with others, including those from diverse cultural and social backgrounds. Relationship skills involve establishing and maintaining supportive, healthy relationships and navigating social interactions across contexts. Responsible decision-making is defined as the capacity to make constructive and ethical choices regarding personal and social behavior (Priatiningsih, 2024; Richerme, 2022).

Recent studies highlight the positive impacts of SEL on students' emotional well-being, behavioral adjustment, and academic achievement. For example, a school-based SEL program in South Australia demonstrated significant improvements in students' emotional regulation and their ability to manage challenges, which translated into better behavioral outcomes and academic performance (Naseem et al., 2024). Moreover, the development of SEL competencies outside the classroom through activities such as practicing empathy via media, time management, stress regulation, and reflective journaling has also been shown to enhance emotional resilience and life skills among children and adolescents (Drew et al., 2024).

To clarify the understanding of the five core SEL competencies, the CASEL Framework can be seen below which summarizes the definition and main components of each competency.

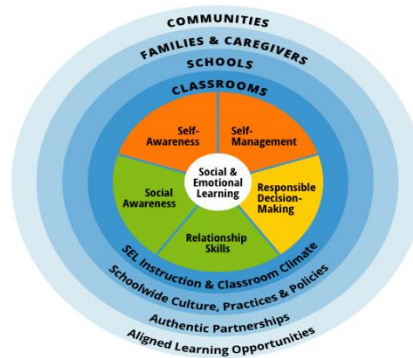


Figure 1 CASEL Framework

Through collaboration with researchers and educators, Ross and Tolan (2018) identified five core social-emotional learning (SEL) competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. At the heart of SEL implementation is the promotion of students' social and emotional development throughout the school day in collaboration with families and the wider community. By understanding and developing these five competencies, students are better equipped to face life's challenges, build healthy relationships, and make responsible decisions—factors that collectively support academic success and overall well-being.

Emotion recognition forms a foundational element of SEL, as it enables individuals to identify and manage their own emotions while also responding appropriately to the emotions of others. Research has consistently shown that children who possess strong emotion knowledge demonstrate greater social competence and achieve better academic outcomes. For instance, Agbaria (2020) found that preschool children's emotion knowledge is positively correlated with future academic achievement, primarily through indirect effects on self-regulation and social skills. Similarly, Denham et al. (2013) demonstrated that early emotion understanding significantly predicts both social and academic competence in later childhood.

Effective emotion recognition also enhances emotional intelligence and academic performance. SEL programs aimed at strengthening social-emotional competencies have been shown to improve students' emotional regulation and social behaviors. Qayyum et al. (2021) reported that SEL interventions led to notable improvements in students' social-emotional skills, dispositions, and behaviors, which subsequently supported emotional regulation and prosocial interactions. Likewise, Sania et al. (2025) found that students who participated in SEL-based programs exhibited higher levels of empathy, self-awareness, and emotional control, all of which contributed to better emotional and mental health.

Individuals with intellectual disabilities (ID) present unique social-emotional profiles, often characterized by challenges in recognizing and interpreting the emotional expressions of others. Tamas et al. (2024) found that individuals with ID especially those with comorbid autism spectrum conditions (ASC-ID) struggle to identify facial expressions of negative emotions such as anger and fear. These difficulties hinder effective social functioning, although emotion recognition alone explains only a small part of such variability. In another study, Masoomi et al. (2025) discovered that individuals with moderate ID exhibited lower physiological responses to emotional stimuli compared to a control group, suggesting altered emotional processing potentially linked to cognitive and neurological limitations (Martínez-González & Veas, 2021).

Limitations in facial expression processing among individuals with ID impact their ability to interact socially and develop socio-emotional competencies. Gaya-Morey et al. (2024) highlighted that emotion recognition models trained on neurotypical populations fail to accurately interpret the facial expressions of individuals with ID, indicating the need for tailored approaches. Consequently, interventions specifically designed to enhance emotion recognition and social functioning such as facial expression training and adaptive technologies—are essential (Gaya-Morey et al., 2024; Wijaya et al., 2024).

In inclusive education, multimodal learning and visual media have emerged as key tools in meeting the diverse needs of students with special needs, offering alternative perceptual pathways for accessing information. The strategic use of visual aids facilitates broader knowledge transmission, particularly for students with cognitive, linguistic, or sensory challenges, as visual inputs are often easier to process (Fernández-López & Perea, 2023). From the perspective of Vygotsky's Zone of Proximal Development (ZPD), visual scaffolding plays a critical role in guiding students from their current capabilities to more complex levels of understanding (Park, 2022). Numerous studies have confirmed that visual aids not only enhance information retention but also foster greater engagement and active participation in collaborative learning among students with special needs (Bafadal et al., 2024; Mitsea et al., 2020).

Expression cards, a specific form of visual aid, are theoretically grounded in Paivio's Dual Coding Theory, which posits that cognitive processing involves both verbal and non-verbal channels. The simultaneous activation of these channels strengthens encoding, storage, and retrieval of information (Oesch, 2024). For students with communication disabilities, expression

cards serve as a visual representation of abstract emotional concepts, offering a more accessible mode of communication (Singireddy et al., 2025). Empirical findings support the use of expression cards in enhancing emotional regulation and social communication, particularly among students with autism spectrum disorder (ASD), who showed notable improvements after targeted interventions (Restoy et al., 2024). Neurobiological evidence also supports these findings, with neuroimaging studies indicating heightened activation in brain regions related to emotion and empathy among special needs students regularly using visual communication systems (Luna-Jiménez et al., 2021).

The cognitive paradigm underpinning visual aids like expression cards provides a robust theoretical and empirical foundation for inclusive, student-centered education. The application of multimodal learning promotes a gradual shift from external assistance to learner autonomy, in accordance with the scaffolding and fading principles in instructional theory (Sharma & Giannakos, 2024). Research also demonstrates positive transfer effects from expression card-based interventions, where skills learned in structured environments generalize to real-world social contexts (Nurain et al., 2024). Advances in educational technology have further expanded the potential of expression cards, incorporating features such as augmented reality and interactive apps to enhance customization and accessibility (Barratt et al., 2024).

In conclusion, the synthesis of theoretical perspectives and empirical findings supports the use of expression cards within multimodal learning as a powerful pedagogical strategy. This approach not only fosters inclusivity and cognitive independence but also promotes the socio-emotional development of students with special needs. These findings have significant implications for the formulation of sustainable and equitable inclusive education policies and practices (Garcia-Garcia et al., 2022).

METHOD

This study employed a quasi-experimental one-group pretest–posttest design to examine the effectiveness of expression card media in improving emotion recognition among late adolescents with mild to moderate intellectual disabilities. A total of 35 participants aged 16 to 21 years were purposively selected from inclusive and special education institutions. Inclusion criteria included a clinical diagnosis of mild to moderate intellectual disability, basic verbal communication skills, and consistent school attendance. Individuals with comorbid severe behavioral disorders or sensory impairments that could hinder visual-based interventions were excluded. Ethical approval was obtained from the institutional review board, and informed consent was secured from participants and their legal guardians.

The intervention utilized specially developed expression cards depicting six basic emotions—happiness, sadness, anger, fear, surprise, and disgust—illustrated using culturally adapted facial expressions based on Ekman’s facial affect model. The intervention was implemented over a six-week period, with two 45-minute sessions conducted per week. During each session, participants engaged in structured activities involving the expression cards, including emotion identification, matching exercises, role-playing scenarios, and peer discussions, all facilitated by a trained special education teacher. The instructional strategy integrated direct teaching with socio-emotional scaffolding, adjusted to align with the participants’ cognitive and communicative profiles.

Data collection involved a picture-based emotion recognition assessment adapted from the Ekman 60 Faces Test, administered both before and after the intervention. In addition, structured classroom observations and in-depth interviews with teachers and caregivers were conducted to provide qualitative triangulation. Quantitative data were analyzed using paired-samples t-tests to

compare pretest and posttest scores, while ANCOVA was employed to control for potential covariates such as age, gender, and baseline cognitive functioning. Qualitative data were analyzed thematically to enrich and contextualize the quantitative results. All statistical analyses were performed using SPSS version 26, with significance set at $p < .05$.

RESULTS

Quantitative Findings

The following are tables of descriptive data and statistical analysis results that support the research.

Table 1. Participants' Emotion Recognition Scores (N = 35)

Variable	Minimum	Maximum	Mean (M)	Standard Deviation (SD)
Pretest Score	18	42	28.63	5.79
Posttest Score	30	54	41.51	6.24
Age (years)	16	21	18.4	1.7

Table 2. Participant Characteristics by Gender and Severity of Intellectual Disability

Characteristic	n	Percentage (%)
Gender		
Male	20	57.1
Female	15	42.9
Severity of Disability		
Mild	22	62.9
Moderate	13	37.1

Table 3. Paired Sample t-Test Results for Emotion Recognition Scores

Measurement	Mean (M)	SD	t	df	p-value	Cohen's d
Pretest	28.63	5.79				
Posttest	41.51	6.24	12.87	34	< .001	2.18

Table 4. ANCOVA Results: Posttest Scores Adjusted for Covariates

Source of Variation	F	df	p-value	Partial η^2
Pretest Score (covariate)	24.67	1, 31	< .001	.44
Gender	0.63	1, 31	.43	.02
Severity of Disability	5.12	1, 31	.03	.14
Model (overall)	18.24	3, 31	< .001	.55

Qualitative Findings

The qualitative data derived from structured classroom observations and in-depth interviews with participants, teachers, and facilitators provided rich contextual insights into the impact of the expression card media. Thematic analysis revealed two major themes: (1) participant engagement and emotional responsiveness, and (2) educator perceptions of instructional effectiveness.

Participant Responses to Expression Card Media

Participants showed a great deal of interest in and involvement with the expression card activities during each observation session.

Table 5. Frequency Distribution Table of Participant Responses (N = 35)

No.	Participant Response Indicators	f (Frekuensi)	Percentage (%)	Category
1	Focus and enthusiasm in tasks using visual media	30	85.7%	Very high
2	Able to express emotions independently in social interactions	27	77.1%	High
3	Giving positive comments about the media ("I like the happy face card")	24	68.6%	High
4	Using emotion words appropriately in social contexts (angry, scared, happy, etc.)	26	74.3%	High
5	Actively participate in role-playing activities using expression cards	25	71.4%	High
6	Relating emotional expressions to social situations in everyday life	22	62.9%	High enough
7	Demonstrates increased social reciprocity (noticing others' emotions and responding appropriately)	20	57.1%	High enough

The visual aspect of the media was well received by the majority of participants, who frequently demonstrated greater focus and zeal when completing tasks that required them to recognize or imitate emotional expressions. During peer interactions and class discussions, a number of participants especially those with mild intellectual disabilities started to more accurately label emotions on their own. "I like the happy face card," said one student. I can now tell when my friend is depressed. These answers show how the media's tangible and visual elements improved learners' emotional awareness and recognition in an approachable and pleasurable way.

Additionally, role-playing exercises using the expression cards enabled participants to practice perspective-taking and empathy in a structured and supportive setting. Several participants who initially struggled with expressing or identifying emotions gradually displayed greater social reciprocity, such as using emotion words ("angry," "scared") appropriately in context. Facilitators noted that many of the students began to associate emotional expressions with social cues in their daily routines, such as recognizing when a classmate needed help or expressing when they themselves felt frustrated or excited.

Teacher and Facilitator Perspectives on Effectiveness

Educators and facilitators consistently described the expression card media as a practical and effective tool for promoting socio-emotional learning among students with intellectual disabilities. Teachers reported that the cards provided a consistent visual reference point that helped bridge the abstract nature of emotional concepts with concrete examples. One teacher explained, "The cards helped students externalize their feelings. Before, they couldn't say 'I'm upset.' Now they can show and say it."

Besides, use of expression cards in structured activities i.e., group story, daily emotional self-reporting, and peer modeling was observed to reinforce classroom solidarity and emotional literacy. The facilitators also noted that the media were extremely compatible with differentiated instruction guidelines to allow them to adapt activities according to the level of cognition of each learner. While with some slight challenges, e.g., need for repetition and cued help with some

middle-level participants, all facilitators reported sustained usage of the media in inclusive and special education settings.

These qualitative insights reinforce the quantitative findings by highlighting the social validity and contextual relevance of expression card media. Together, they suggest that the intervention not only improved measurable emotional recognition skills but also enhanced participants' emotional expression and social interaction in naturalistic settings.

The following is a table of qualitative findings analysis based on two main focuses: participant responses to the media and teacher/facilitator views on the effectiveness of using expression cards.

Table 6. Thematic Analysis of Participant Responses to Expression Card Media

Theme	Sub-themes	Representative Quotes	Frequency (n = 35)
Increased emotional recognition	Ability to name and match facial expressions	"That's sad. I feel that too."	28 participants
Enhanced engagement	Active participation in card-based activities	"I like the angry face, I can act it."	30 participants
Improved peer interaction	Recognizing and responding to emotions in others	"He looks scared, I help him."	22 participants
Verbalization of emotions	Using emotional vocabulary spontaneously	"I'm happy today, like the card!"	25 participants

Table 7. Thematic Analysis of Teacher/ Facilitator Perspectives on Effectiveness

Theme	Sub-themes	Representative Quotes	Frequency (n = 5)
Practicality of the media	Easy integration into classroom routines	"They're simple but powerful for our students."	5 teachers
Support for emotional development	Helps students label and understand emotions	"They now say 'I'm upset,' not just act out."	5 teachers
Visual strength of media	Cards bridge abstract emotions with concrete visuals	"Students connect better with pictures than just words."	4 teachers
Applicability across abilities	Useful for both mild and moderate disabilities	"Even students who speak less respond to the pictures."	5 teachers
Need for guided facilitation	Repetition and scaffolding required for some	"Some students needed modeling before they could respond."	3 teachers

DISCUSSION

The findings of this study demonstrate that the use of expression card media significantly enhances emotion recognition in late adolescents with mild to moderate intellectual disabilities. The statistically significant increase in posttest scores compared to pretest results underscores the effectiveness of the intervention. This outcome aligns with Bandura's social learning theory, which emphasizes the role of observation, modeling, and imitation in the acquisition of social and emotional competencies. Expression cards, as a form of visual media, offer concrete and culturally relevant stimuli that support individuals with cognitive limitations in recognizing and expressing emotions. From the perspective of emotional development, the intervention facilitates key stages of affective growth by providing visual scaffolding that aids comprehension and communication of emotional states. This is particularly critical, as individuals with intellectual disabilities frequently experience challenges in understanding, expressing, and regulating their emotions.

The results of this study are consistent with prior research highlighting the efficacy of visual-based interventions in fostering social-emotional skills among individuals with intellectual disabilities. For instance, Gül (2016) found that combining video modeling with social stories effectively improved social skills in children with intellectual disabilities. Similarly, Adeniyi and Omigbodun (2016) reported that classroom-based interventions enhanced social competencies in Nigerian students with intellectual disabilities. More recent studies by Barman and Jena (2023) and Bati et al. (2018) further support the effectiveness of visual tools in improving emotional recognition and social interaction.

These findings carry important implications for special education practice. Integrating visual media such as expression cards into the special education curriculum can serve as a powerful tool to develop students' emotional literacy and social functioning. Moreover, equipping teachers and facilitators with training in the strategic use of such media can optimize educational outcomes. A curriculum that is attuned to the social-emotional needs of students with intellectual disabilities is essential to fostering their ability to engage in meaningful interpersonal interactions and participate more fully in inclusive societal contexts.

CONCLUSION

This study provides compelling empirical evidence for the effectiveness of expression card media in enhancing emotion recognition among late adolescents with mild to moderate intellectual disabilities. Quantitative analysis revealed significant improvements in participants' ability to identify and label basic emotions, while qualitative data reinforced these gains through observations of increased emotional verbalization, improved peer interaction, and greater engagement in socio-emotional learning (SEL) activities. These outcomes underscore the value of culturally adapted visual supports in addressing the cognitive and communicative barriers faced by individuals with developmental challenges. Both educators and participants reported positive experiences with the intervention, highlighting the practicality, accessibility, and relevance of expression cards as instructional tools in inclusive and special education contexts.

Grounded in social learning and emotional development theories, the findings reaffirm the importance of visual modeling and scaffolded interaction in building socio-emotional competencies. Furthermore, this study contributes to existing literature by emphasizing the embodied, context-sensitive nature of emotional learning facilitated by tangible media. Participants not only improved in recognizing emotions but also demonstrated an increased ability to associate emotional expressions with appropriate social cues an advancement particularly significant for learners with cognitive processing difficulties.

Despite these promising results, certain limitations warrant attention. The study was conducted in a controlled educational setting with trained facilitators, which may limit the generalizability of outcomes to under-resourced environments. Long-term retention of emotional vocabulary and empathy skills was not assessed, and cultural-linguistic nuances in emotional expression were not deeply explored.

Nevertheless, the findings have important implications for inclusive education practice. The integration of structured visual media, such as expression cards, into SEL curricula holds potential for enhancing emotional literacy and relational empathy among students with intellectual disabilities. To support scalability, future efforts should focus on educator training, resource

development, and culturally contextualized design of emotion recognition tools. Such efforts will help ensure that SEL interventions are not only effective but also sustainable and responsive to diverse educational and cultural settings.

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