

Impact of Digital Emotion- Regulation Applications on Reducing Anxiety in Individuals with ASD: A Scoping Review

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Spring 2026

Background

- According to the U.S. Centers for Disease Control and Prevention, about 17% of children ages 3-17 in the U.S. were diagnosed with a developmental disability, which includes ASD (2025)
- 42% of individuals with ASD have a comorbid anxiety disorder diagnosis (Lecavalier et al., 2019)
- Only 43% of mental health treatment facilities reported that they provided mental health services to individuals with ASD (Cantor et al., 2020)

Research Question

- What is the impact of digital emotion-regulation applications on reducing anxiety in children with autism?

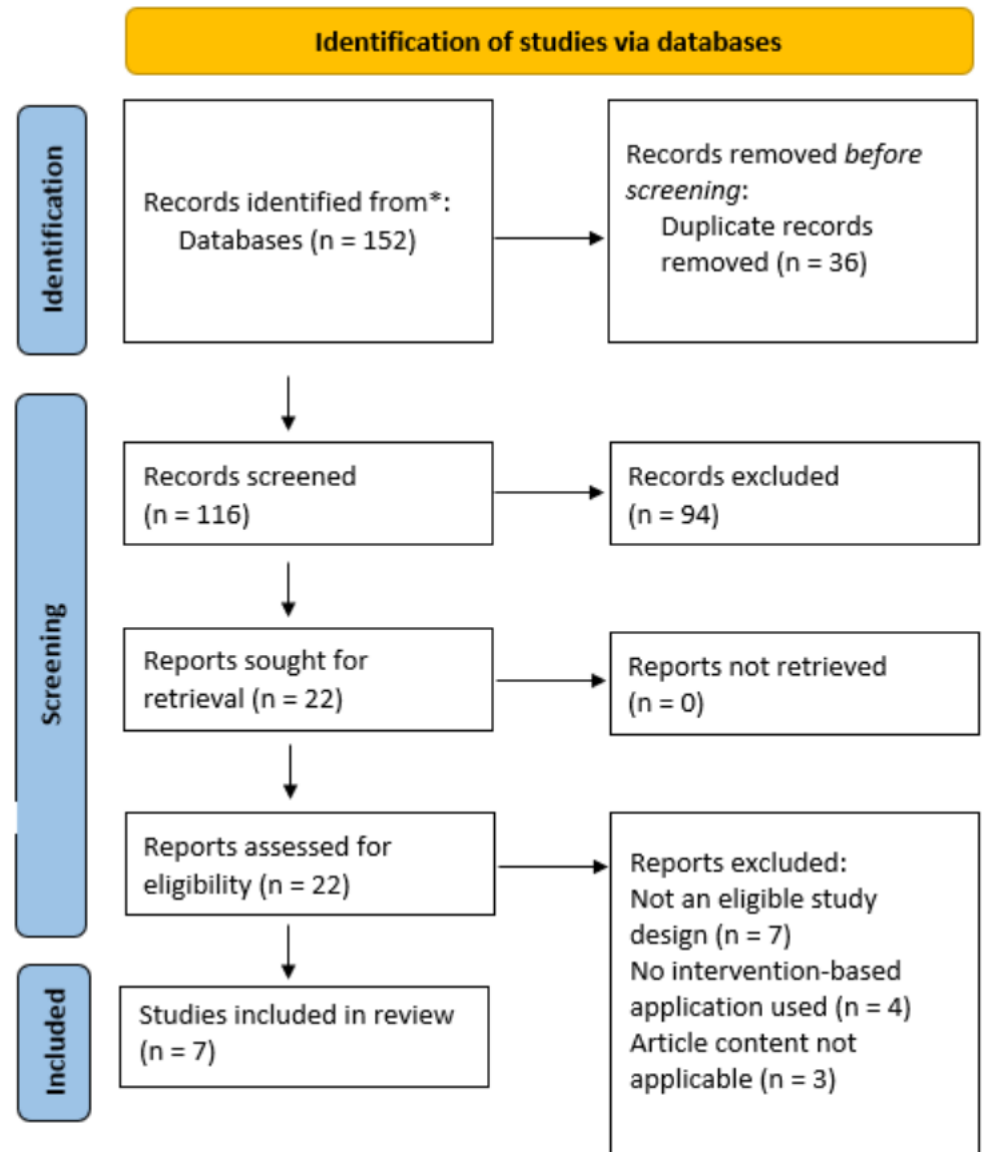
Methodology

- Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018)
- Screening
- Collaborated with UConn librarian to create literature search
 - PubMed, ERIC, PsycINFO, Embase, and IEEE Xplore
- Inclusion and exclusion criteria

Selection Criteria

- Peer reviewed and original data
- Intervention must be delivered through digital application
- Include participants with a diagnosis of Autism Spectrum Disorder
- Participants must be children, adolescents, or young adults aged 0 to 22

Screening Process (PRISMA- Scr)



Results

Study	Intervention	Target Focus	Key Findings on Anxiety
Oakley et al., 2025	App-based CBT intervention	Cognitive restructuring, coping skills for anxiety	Significant reduction in anxiety
Yang et al., 2023	App-based CBT intervention	Cognitive restructuring, coping skills for anxiety	Significant reduction in anxiety
Matthews et al., 2025	Mindfulness-based application	Emotional awareness, regulation for anxiety	Significant reduction in anxiety
Hillier et al., 2015	Music-based app (SoundScape)	Music activities for stress and anxiety reduction	Significant reduction in anxiety
Hare et al., 2015	Real-time stress management via PDA	Real-time stress management (relaxation, deep breathing)	Significant reduction in anxiety
Voss et al., 2019	Wearable-assisted platform (Superpower Glass)	Facial expression tracking and emotional cueing	No significant reduction in anxiety
Yoo et al., 2019	Gamified therapeutic app	Social skill practice, reducing social anxiety	No significant reduction in anxiety

Discussion

- Interventions demonstrated varying levels of effectiveness in reducing anxiety
- App-based CBT and mindfulness applications showed most promising results in reducing anxiety
- Female adolescents demonstrating more significant reductions in anxiety when using mindfulness-based applications (Matthews et al., 2025)

Future Directions

- Continue research on whether the use of a phone is shown to increase or decrease anxiety, even with the emotion-regulation application
- Increase and diversify sample sizes
- Larger sample size of applications to research if these tools are effective in reducing anxiety

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