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Summary of Cosmo Research Article

Research Article: Kosyvaki, L, & Curran, S (2018). The role of technology-mediated music-making in enhancing engagement and social communication in children with autism and intellectual disabilities. *Journal of Intellectual Disabilities*.

Full journal article here: <http://journals.sagepub.com/doi/pdf/10.1177/1744629518772648>

How music and technology can increase engagement and social communication in Special Educational Settings

A new research article published in the *Journal of Intellectual Disabilities* explores the impact of an intervention combining music and technology on children with a dual diagnosis of autism and intellectual disability (ID), and reports positive outcomes, especially regarding social communication, behavioural regulation and joint attention. Although there has been much academic research conducted on the benefits of music for children with autism, this is the first study to explore the impact of a technology-mediated music-making intervention on the engagement levels and social communication skills of children with autism and ID at school. At a time when both Music and Educational Technology are being heralded as cornerstones of a successful Special Education School experience, it's exciting to see how they can be combined to support development and enjoyment for children with autism.

The Study

The study was conducted in a primary school in the UK, with a group of children aged 5-7, all with autism and ID, and all of whom were working at around level 3-4 on the UK's National Curriculum P-Scales. The study was conducted by researchers from the University of Birmingham, in collaboration with teaching staff from the school. The technology used was **Cosmo**, last year's BETT Award winner for Best Special Educational Needs Innovation. **Cosmo** was chosen on the basis that it combines music and technology and can be used in simple and accessible ways. Additionally, the system does not require any verbal instructions, which could be a barrier for young children with autism and ID.

The Technology

Cosmo consists of a set of six multi-sensory switches which provide auditory (i.e. sounds and music) and visual cues (i.e. multi-coloured lights). The switches connect wirelessly to the Cosmo app, which contains a multitude of activities that focus on a variety of social, academic, cognitive, and motor skills. For the purposes of this study, certain activities were chosen because of their focus on engagement and social communication. These activities were: Improvisation, Turn Taking, Exploration, Orchestration, and Follow the Light. While engaging with the Cosmo activities the researchers drew on principles from the following interventions:

- Intensive Interaction (Nind and Hewett, 2001)
- Musical Interaction (Methley and Wimpory, 2010) and
- Responsive Imitation Training (RIT) (Ingersoll, 2010).

The researchers were observant, 'tuned in' and responsive while allowing pauses, but they also often modelled actions with the Cosmo units.

The Results

The children participated in **two sessions with Cosmo each week over a period of 5 weeks**, and data was collected in the form of video recordings of every session, as well as weekly group interviews with staff. Although some of the children were already noted as having an affinity for music and / or technology, results based on the video data showed that there was a clear increase in both engagement and social communication during the Cosmo sessions. The group interviews with teaching staff also yielded positive results regarding increased engagement, especially in the areas of awareness, anticipation, curiosity and initiation. Staff members mentioned that the multi-sensory features of the Cosmo units could compensate for children for whom music was not a great motivator. For example, Andy's* Teaching Aide said that '[he] doesn't really like music but anything flashy attracts his eye' referring to the lights of the switches.

The importance of customisation was also a theme that came up during the study. As Cosmo is a versatile system, personal music preferences could be considered in order to motivate certain children. For example, Rehan* was only interested in engagement with the activity when Bhangra music was playing and the sound was loud. As any music can be uploaded to the Cosmo app, personalising the activities was a simple process.

It's also worth noting that analysis of the video data and group interviews showed that while the children were engaged with the Cosmo activities, they all displayed more social communication acts than existing literature suggests when children of similar characteristics are in a naturalistic environment. The active involvement of school staff in the process of development of the intervention was another positive element of this study, reflecting the importance of a bottom-up approach that includes input from staff of all levels.

Next Steps

The researchers from the University of Birmingham are now looking to expand their study on how music technology can support the communication skills of students with autism and intellectual disabilities. The creators of Cosmo are dedicated to continuing the development of their system through further involvement in evidence-based research and are currently working alongside some of the best Special Educational Needs schools in the UK.

***All children's names are pseudonyms**

For further information on the research, you can contact Dr Kossyvaki at:
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References

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Methley A and Wimpory D (2010) Music Interaction Therapy for Children with Autism [DVD]. Bangor: Bangor University.

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