

R&D item

## 2. Visualizing the Effects of Art Intervention

### Progress until FY2023

#### 1. Outline of the project

The aim of this study is to establish objective endocrine and psychophysiological indicators that capture the improvement in mental well-being and social curiosity resulting from artistic activities, with the goal of providing art activities that allow children and adolescents with challenges in social skills and characteristics associated with Autism Spectrum Disorder (ASD) to enhance their sociability while feeling at ease.

#### Exploration of art activities that lead to peace of mind and vitality

People with developmental disabilities, such as autism spectrum disorder, at higher risk of school refusal and withdrawal by the difficulties they face

Artistic and creative activities foster resilience as a protective factor and prevent school refusal

Social competence immaturity  
Communication difficulties  
Failure to build relationships  
Sense of inadequacy  
Low self-esteem

#### Social Prescription

No medicines

Visualising the effects of art workshops through physiological, behavioural and psychological indicators.

• Empathy between people with similar characteristics (Kameda, 2014)  
• Improved social skills through peer activities (Nitto, 2018)  
• Art therapy may contribute to flexible and relaxed attitudes, better self-image, and improved communication and learning skills in children with autism (Schweizer, 2014).

- Prepare the field for conducting face-to-face/remote Art Workshop Sessions (AWS) targeting children and begin collecting data on hormonal fluctuations in saliva.
- Develop a wearable small-scale electrocardiogram measurement system.
- Develop a face-to-face detection app and a motion visualization system.
- Initiate heart rate measurement in face-to-face AWS sessions targeting adults and accelerometer measurement using the face-to-face app, and evaluate the implementation protocol.

- Conduct a questionnaire survey on art activities and enhance the content.

#### 2. Outcome so far

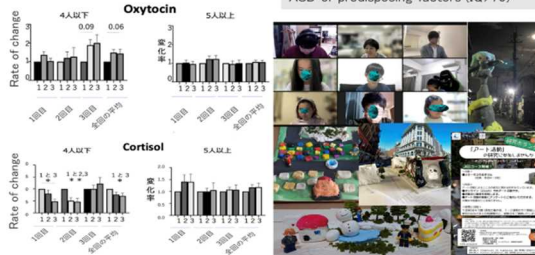
##### <Art Workshop>

Compared to typically developing children of the same age, children with ASD (Autism Spectrum Disorder) have shown larger changes in salivary oxytocin and cortisol concentrations when participating in face-to-face or remote AWS (Art Workshop Support) sessions up to the fiscal year 2022. Based on this, in the fiscal year 2023, we continued collecting data on changes in salivary oxytocin and cortisol concentrations during AWS sessions for children with ASD. As a result, it was suggested that for children with ASD, conducting remote AWS sessions with four or fewer participants can reduce stress and provide a higher sense of satisfaction. This indicates that creating an environment conducive to interaction in small groups can enhance the secretion of endogenous oxytocin

#### Changes in salivary oxytocin and cortisol concentrations during remote AWS (comparison by number of participants in each group)

Group size of 4 or less may be best

Participants: 19 adolescent children with ASD or predisposing factors (IQ>70)

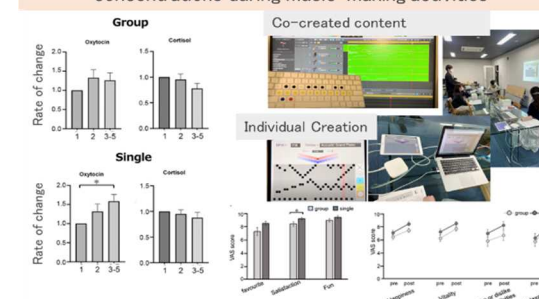


during art-making activities.

Additionally, we conducted two types of face-to-face AWS sessions using music content (Desktop Music): individual and collaborative creation. In both individual and collaborative creation sessions, participants reported increased happiness and

relaxation on the Visual-Analog Scale administered before and after the activities. There was also an observed increase in salivary oxytocin concentrations and a decrease in cortisol concentrations. Notably, in individual creation activities, where participants

#### Rate of change in salivary oxytocin and cortisol concentrations during music-making activities



engaged deeply and interacted more with the facilitator, there was a significant increase in salivary oxytocin concentrations. These results have been compiled and submitted as a paper.

#### 3. Future plans

The results so far suggest that fluctuations in salivary hormones may reflect interactions and bonds among participants during AWS (Autism Work Support). While continuing to develop AWS to be more suitable for children with ASD, we will also investigate whether the addition of content such as music appreciation can capture the stress-relieving effects, satisfaction, and sense of accomplishment from artistic activities. By doing so, we will continue to evaluate the usefulness of these indicators in demonstrating the effects of artistic activities. In addition, we will strengthen collaboration with community halls and other venues to promote the implementation of these activities in schools and society.