"Inside the mirror"
A pilot study on the effects of dance movement intervention on interpersonal non-verbal attunement in adolescents with autism spectrum disorders.

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Ethical review	Approved WMO
Status	Will not start
Health condition type	Developmental disorders NEC
Study type	Interventional

Summary

ID

NL-OMON36439

Source
ToetsingOnline

Brief title
Inside the mirror

Condition

- Developmental disorders NEC

Synonym
autism, autism spectrum disorders

Research involving
Human

Sponsors and support

Primary sponsor: Orbis Medisch Centrum
Source(s) of monetary or material Support: an application for funding has been made at a local reseach fund

Intervention

Keyword: autism, dance movement psychotherapy, mirror neurons, non-verbal attunement

Outcome measures

Primary outcome

We expect that the movement observations will show increasing signals of inter-personal engagement in participants, an increase in the overt nonverbal interaction behavior and that neuronal regulation improves. As a consequence the child*s capacities to maintain contact/relationship through intentionally attuning to another person*s movement are increased, consolidated for use over their lifetime.

The main study parameters are the changes that occur between the measurements before start of the intervention (baseline) and after the intervention ended (endpoint) in the differences in:

a) number of social-orienting movements of the participant (e.g. eye-contact)

b) social behaviour profile drawn from parental questionnaires

c) neuronal activation profile drawn from fMRI scan.

d) brain anatomy drawn from the anatomical MRI scan and, indirectly, from the resting state data.

Secondary outcome

Throughout intervention, data from movement patterns showing engagement (e.g.

eye contact) will be collected via videotapes of sessions

Secondary parameters are:

a) the difference in neuronal activation profile between patients and controls

at endpoint

b) the change in number of events of social orienting movements within subjects

throughout repeated measurements during sessions 1, 6, 12, 18, 24.

Study description

Background summary

Autism is described as a developmental disorder with a cluster of markers in i) diminished ability to communicate, ii) reduced social functioning, and iii) preference for stereotype routines (WHO, 1992; APA, 2000). A broad variety of appearances is known to fit into these cores markers.
Causes of ASD are multilayered (Rogers, 2006; v.d. Gaag, 2001) and still not clearly identified in their interplay. It is generally assumed that the interaction of hereditary, neurobiological and developmental characteristics and structures causes the atypical development of social engagement, empathy and formation of theory of mind (Bennetto & Rogers, 2001; Aitken, 2008).
In ASD, due to atypical patterns in relationships with others, the (early) nonverbal attunement between child and caregiver may not only be disturbed, but there may, as a consequence, be retardation in the development of intersubjectivity. Coming from an impaired nonverbal attunement in the child-parent dyad and triad a lack of experience in perceptive and proprioceptive movement traces will grow, which may lead to a lack of experiential traces in neurological connectivity. Thus a limited plasticity in brain-structures will determine perceptual sensitivity according to the earlier experiences. Recent theories emphasize the involvement of shared neural circuits in the impairment of social-emotional functioning (Keysers & Gazzola, 2006).
Research in dyadic interactions in children with ASD has shown that the interaction partner adjusts to the pathological interaction behavior with reduced frequency of intentional addressing towards the child nonverbally (Wimpory, Hobson &Nash, 2007; Garcia-Peréz, Lee & Hobson, 2007). This may lead to further abatement of the child/carer interactions.
Studies found in the literature have investigated the possibilities of the child with Autistic Spectrum Disorder (ASD) to attune to a partner during social interaction. They give attention to the role of imitation (e.g. Hobson

and Hobson, 2008) and deficient mirror neuron activity (e.g. Dapretto, Davies, Pfeifer, Scott, Sigman, Bookheimer et al., 2006). However, the underlying kinetic structures during non-verbal attunement have hardly been taken into account. Furthermore, a strong accent has been given to the child*s capacity to imitate. Only a few (behavioural) studies focus on the effects of the child being imitated by the other. Some studies (e.g. Calvo-Merino, Grèzes, Passingham & Haggard, 2006) suggest that the mirror neuron activation (MNS) is modulated through sensory motor experiences that combine perception and proprioception during dyadic movement experience. In brain imaging research with fMRI, participants with ASD have shown reduced or atypical activation in mirror neuron circuits during action observation and imitation (Dapretto et.al., 2006). Recent theories broaden this perspective and emphasize the involvement of shared neural circuits (for action and action observation) in the impairment of social-emotional functioning (Keysers & Gazzola, 2006).
This pilot study will test a non-verbal intervention to find out its effectiveness in increasing inter-personal attunement for adolescents with a diagnosis in the autistic spectrum (ASD). Dance movement therapy/DMT has been offered to children, adolescents and adults in multidisciplinary outpatient therapy settings for many years, producing much anecdotal evidence from therapists and caregivers. However, it has not yet been studied systematically. From thorough analysis of video-taped clinical material and literature research the current set up for a research study has been derived.
The aim of the intervention is to bring about relational movement experiences in patients who do not have a clear sense of self and whose self perception is not anchored in embodied experiences (Erfer, 1995, Loman 1995) through experiences of shared movement activity.
The DMT intervention addresses the mutual engagement at a level from which the child is capable to engage . This orientation to resources is facilitated through the therapist*s sensitivity to, and knowledge of, movement analysis. The child*s assessed movement profile outlines the movement capacities and strengths and helps to identify the gaps in the movement repertoire. Moreover this analysis provides the potential possibilities for the interaction partner/therapist to join the kinetic patterns of the patient. The therapist shapes the specified movement intervention with this information in mind and also uses it to guide the parent-carer on how to attune to their child nonverbally. The therapist arranges the situation for the participants to be invited into movement activity. S/he offers sufficient containment for the participant to bear the nonverbal contact and organizes the situation in a way that stimulates the child*s intrinsic developmental impulse. The spontaneous movement reaction of the child to the situation offers the potential to reconnect with an autonomous developmental process (Samaritter, 1990).
In dance movement therapy (DMT) attuned movement intervention is used to develop embodied interpersonal engagement in children with autism. Participating in the mutual kinetic experience is a sensory, kinaesthetic activity in non-conceptual shared (movement) space, time and weight. In view of their function the MNS and social neuronal circuits are most likely to to be

modulated during this process.

Study objective

The project aims at contributing some empirical evidence of treatment effects of DMT with ASD. We expect i) to replicate similar results in a series of individual treatment processes and ii) to find contrasting results in a series of individual cases that follow *treatment as usual* (which might be psycho-education, parental counseling).
Aims:
1) To show the effects of DMT on nonverbal interpersonal engagement in adolescents with ASD
2) To evaluate if any increase in nonverbal interpersonal engagement can be related to an increase of activity in mirror neurons
3) To assess whether an increase in nonverbal interpersonal engagement can be recognized by caregivers/key workers in their systematic reports on the child*s overt nonverbal interpersonal engagement behavior.

Study design

As this is the first phase of study in this area and there are no validated instruments for measuring non-verbal interpersonal engagement in this population we will have to define our focus to in-depth single case studies. To strengthen the results we will apply a triangulatory, convergent measurement set-up: Outcomes from movement pattern analysis of nonverbal communicative behaviour and a standardized questionnaire on social behavior will be related to the analysis of data obtained by fMRI scans of the areas involved with mirror neuron activity during action-observation. The analysis of this data will be contrasted to analysis of data collected throughout the intervention, using a reversal design in which blocks of attuned movement will be alternated by non-specific movement interventions.
In quasi experimental design the results of pre/post intervention data analysis of the intervention group (N7) will be compared to the results of a control group (N7) of adolescents who did not follow the intervention.
Testing will take place as follows: Pre and post intervention on neuronal regulation will be gathered through fMRI scans. Dr. C. Keysers, head of the research group social neuroscience at the Dutch institute for neuroscience Amsterdam (NL) will supervise data collection/task design and the related data analysis.
Data from movement patterns showing engagement (e.g. eye contact) will be collected via videotapes of sessions. Based on Laban Movement Analysis observation tools three independent qualified raters will blindly assess event-related movement patterns from a) videotaped movement observation sessions pre/post intervention b) video samples of sessions at the end of each intervention block 1, 6, 12, 18, 24 (Cruz & Koch, 2004).
At pre and post intervention carer-parents will complete the VISK (CSBQ), a

Dutch standardized social behavior questionnaire for children with ASD to define the child*s nonverbal engagement profile.
The pilot will be undertaken to test the overall design, procedures for collecting data using fMRI/videotape/movement observation and questionnaire. If positive outcomes are demonstrated following the pilot a main study with more participants and follow up is envisaged.

MEASUREMENT INSTRUMENTS:
- standardized questionnaires on the social behaviour (CBCL & VISK) of children completed by caregiver
- movement pattern data-analysis of non-verbal communicative behaviour as observed from video-vignettes by independent movement observers trained as raters in Laban based Movement Analysis (LMA)
- functional brain-imaging scans (fMRI).

Intervention

The intervention will consist of 24 DMP sessions, conducted in a reversal design in which blocks of attuned movement will be alternated by non-specific movement intervention

Study burden and risks

The study is not expected to have any intrusive aspects for the participating adolescents.
The frequency of two weekly sessions during twelve weeks is considered to provide regularity without burdening participants more than usual treatment programmes. Outcome on usefulness of the proposed intervention would benefit more in general the treatment planning of the ASD population in outpatient settings. The study is expected to contribute to embodied neuronal structures and therefore considered to modify the developmental impact of the condition.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adolescents (12-15 years)
Adolescents (16-17 years)

Inclusion criteria

adolescents age 12-16, diagnosed with Autism spectrum disorder/ASD according to DSM IV-TR, IQ (WISC) > 75

Exclusion criteria

co-morbidity other psychopathology, e.g. ADHD; IQ (WISC) < 75

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)

Primary purpose: Treatment

Recruitment

NL

Recruitment status:	Will not start
Start date (anticipated):	01-04-2011
Enrollment:	14
Type:	Anticipated

Ethics review

Approved WMO

Date:	28-03-2011
Application type:	First submission
Review commission:	METC Z: Zuyderland-Zuyd (Heerlen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL35169.096.11