NEUROACT

Stress Management for Flexibility & Health

Professional Training Online

29th to 30th of August, 2024

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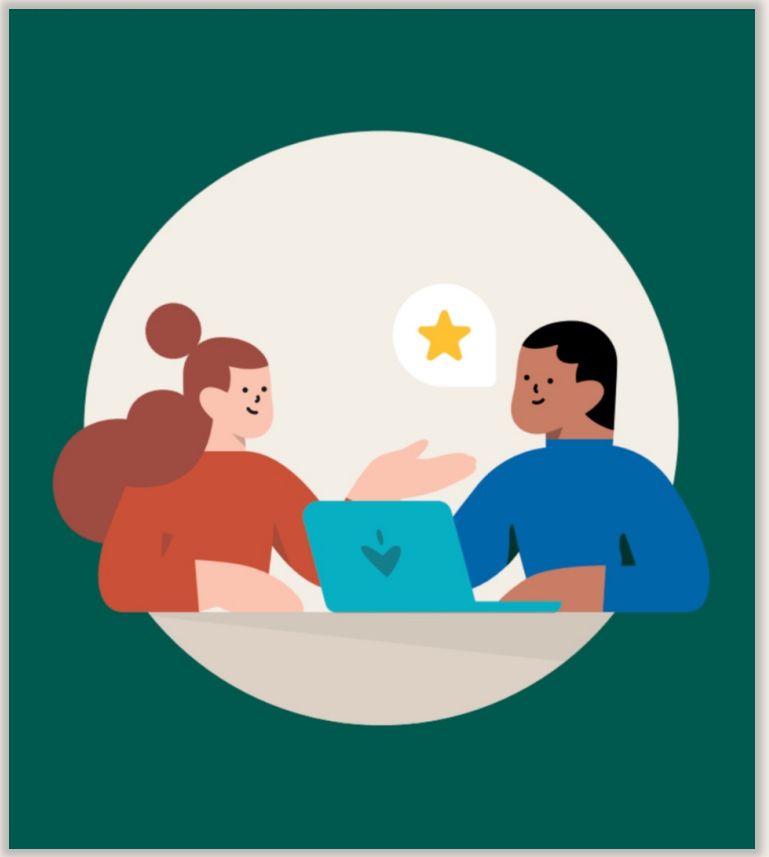
Brainproof Innovation & Education



Course objectives and contents

- To teach NEUROACT in a **clear and concise** manner
- Mixing **theory** with **experience-based** sessions
- Presentation of **selected sessions** and NEUROACT **materials**
- **Modeling** and role play
- **Discussion** in whole group setting

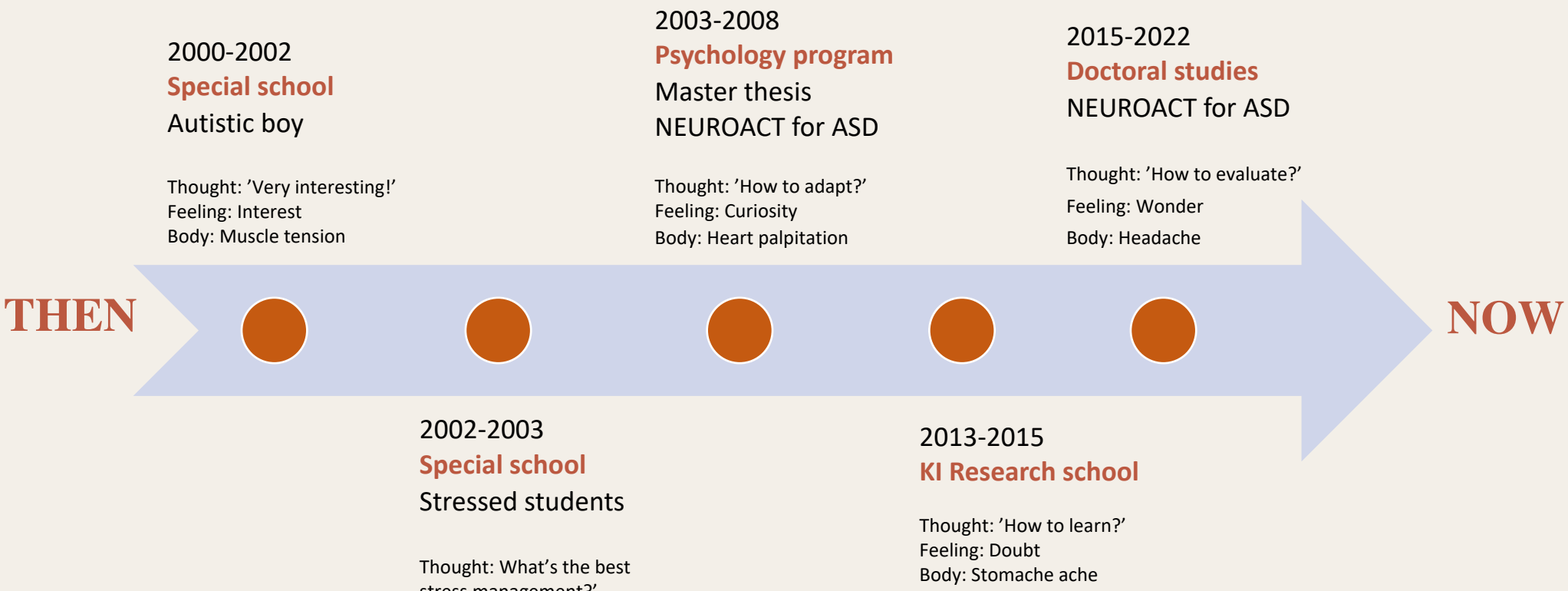
Course schedule

NEUROACT® International Course Schedule

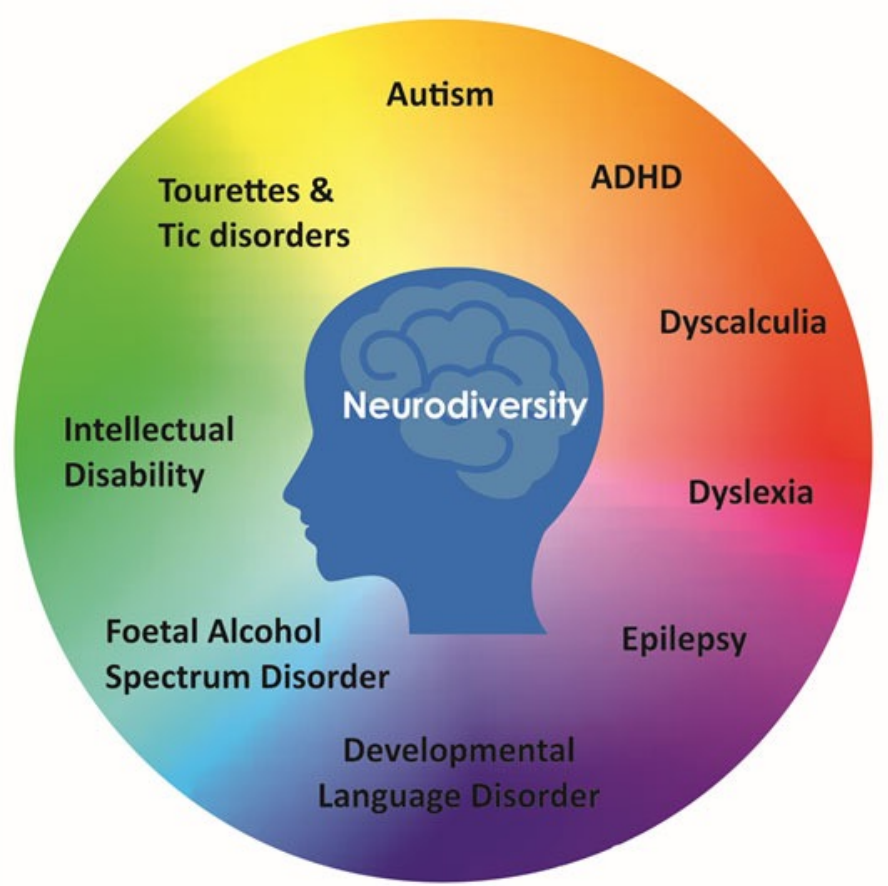
2024-08-29 (Day 1)	
09.00-09.20 am (UTC+2)	Introduction and presentation of the lecturer and participants
09.20-10.15 am (UTC+2)	Stressors in autistic individuals Executive function challenges as a perpetuation of stress and mental distress Previous research and treatment recommendations
10.15-10.30 am (UTC+2)	*Break*
	Rational for acceptance and commitment therapy (ACT) and contextual neuroscience as stress management for autistic individuals
10.30 am-12.00 am (UTC+2)	Conceptualizing of the NEUROACT® model. Motivation, Acceptance, and Perspective as an alternative to Perseveration, Avoidance, and Mindlessness.
	Introduction to the NEUROACT® – stress management for flexibility & health program manual and work material
12.00 am-13.00 pm (UTC+2)	*Break*
13.00-14.20 pm (UTC+2)	**MODULE 1. STRESS & AVOIDANCE** Stressors and avoidance behaviors Experience-based exercises from the NEUROACT® work-material
14.30-14.45 pm (UTC+2)	*Break*
14.45-16.30 pm (UTC+2)	**MODULE 2. PERSPECTIVE** Focus training and perspective taking on thoughts Experience-based exercises from the NEUROACT® work-material

2024-08-30 (Day 2)	
09.00 am-10.15 pm (UTC+2)	**MODULE 3. WHAT IS IMPORTANT** Life values and goal behaviors Experience-based exercises from the NEUROACT® work-material Expert modeling of techniques and approaches
10.15-10.30 pm (UTC+2)	*Break*
10.30-12.00 pm (UTC+2)	**MODULE 4. ACCEPTANCE & COMPASSION** Regulation of emotions, sensory input, and body signals Experience-based exercises from the NEUROACT® work-material Expert modeling of techniques and approaches
12.00-13.00 pm (UTC+2)	*Break*
13.00-14.15 am (UTC+2)	**MODULE 5. SOCIALIZE & SELF-CARE** NEUROACT® skills in social situations and restoration from stress Experience-based exercises from the NEUROACT® work-material
14.15-14.30 am (UTC+2)	*Break*
14.30-16.00 am (UTC+2)	**MODULE 6. THE LIFE MAP** The Life Map – a practical tool to help yourself after the training Experience-based exercises from the NEUROACT® work-material Summary evaluation and reflection on the training

Life line


2000-2002
Special school
Autistic boy
Thought: 'Very interesting!'
Feeling: Interest
Body: Muscle tension
2002-2003
Special school
Stressed students
Thought: What's the best stress management?'
Feeling: Uncertainty
Body: Nervous
2003-2008
Psychology program
Master thesis
NEUROACT for ASD
Thought: 'How to adapt?'
Feeling: Curiosity
Body: Heart palpitation
2013-2015
KI Research school
Thought: 'How to learn?'
Feeling: Doubt
Body: Stomache ache
2015-2022
Doctoral studies
NEUROACT for ASD
Thought: 'How to evaluate?'
Feeling: Wonder
Body: Headache
THEN
NOW

Neurodiversity



Autism according to DSM-5

- **A-criteria:** Deficits in social reciprocity, communication, and understadning relationships (3/3)
- **B-criteria:** Stereotyped behavior, cognitive inflexibility, limited interests, hyper- or hyposensitivity (2/4)
- Debut in **early childhood** (may be masked by strategies)
- At least **two settings** and independent sources of information
- Serious **functional impairment** and/or **personal suffering**
- Is **not better explained** by other conditions

Complexity

- **Core challenges:** Social interaction, flexibility, sensory over- or under sensitivity
- **Co-occurrence:** Depression and anxiety in 50-70%
- **Other neurodivergence:** ADHD (40-50%), Tourette's syndrom, dyslexia, dyskalcylia, epilepsia, alexithymia (50%)
- **Other challenges:** Personality conditions, Schizophrenia, Emotional Instability, executive dysfunction
- **Complexity** of individual characteristics and co-occurring conditions

Clinical guidelines

- **Adjustments and support (NICE guidelines*)**
  - (1) Concrete and structured (2) Components for behavioural change (3) Written and visual information (4) Psychoeducation (5) Group format

- **No pharmacological treatment for core challenges**
  - Reduced effects or higher tolerance in cooccurring conditions (e.g., depression, anxiety)

- **Evidence based interventions**
  - Social Skills Management Training (KONTAKT), CBT for different co-occurring conditions, psychoeducation (Prisma, SCOPE), mindfulness-based programs (MBSR), tailored ACT (NEUROACT)

* NICE. (2012, 14 of June, 2021). Autism spectrum disorder in adults: Diagnosis and management. Clinical guideline (CG 142). Retrieved from Retreived October 2021 from: https://www.nice.org.uk/Guidance/CG142

Psychological treatments for autism

- **(1) Maximise potential**
  - Choose the appropriate intervention based on age, developmental level, treatment targets, etc.
  - E.g., **(1)** Early Intensive Behavioral intervention (EIBI) for small children; **(2)** social skills training when there are large difficulties with social interaction; **(3)** psychoeducation about autismas a first-line intervention in a stepped care process.
- **(2) Minimise obstacles**
  - Lokalise and prevent obstacles to one's own development.
  - E.g., **(1)** Enhance communication skills using the Picture Exchange Communication System (PECS); **(2)** targeted programs for hyper-sensitivity or repetitive behaviours.
- **(3) Increase person-environment fit**
  - Influence socio-ecological factors that facilitate resilience
  - E.g., create autism friendly environments in schools, workplaces and public spaces.

Psychological treatment in autism

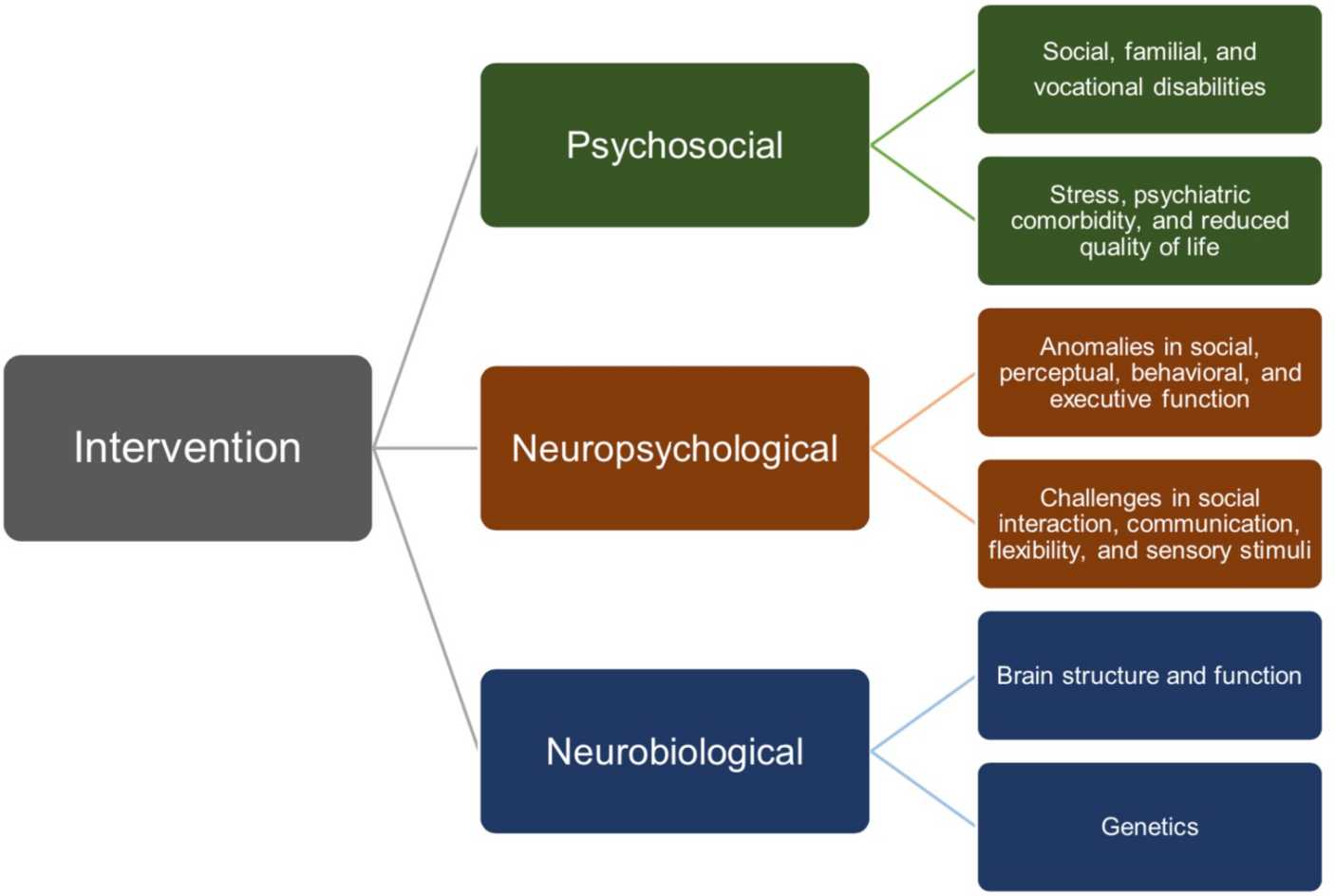


Figure 1. Levels of analysis in autism.

General conceptualisation

- Psychological treatment for autism include **2 aspects:**

(1) An understanding of the neuropsychological prerequisites and executive deficits. An understanding of neurological processes and what **cannot be changed**. An understanding of what needs to be supported to aid executive dysfunction.

(2) An understanding of what **one is able to change**, neurological plasiticity, brain training, teach skills to effect behaviour change.

Adaptation of treatment in autism

- **(1) Addition to standard execution**
  - E.g. no need for eye-contact or can fidget with hands whilst in conversation.
- **(2) Exclusion of procedures and techniques**
  - E.g. no work with basic assumptions or metaphores.
- **(3) Modification of treatment contents or procedure**
  - E.g. using visual aids, clearer instruction or shorter exercises.

Executive function in autism

- Dysregulation in the **exteroceptive system** (sensory cortex, PFC)
- **Hypersensivity to sensory stimuli** (sound, light, smell, taste, touch)
- Regulatory deficits in the **interoceptive system** (insula)
- **Hyposensivity to interoceptive stimuli** (hunger, thirst, cold, pain)
- **Different HPA-system** (cortisol, CAR)

Executive function in autism

- **Self-perception, autobiographical memories and imagination** (posterior cingulate, PCC)
- **Mentalisation, perspective-taking, intuitive perception of emotion, cognitive flexibility, intentionality** (temporoparietal junction, TPJ)
- **Social cognition** and information processing of social stimuli (mPFC)
- **Emotion regulation and goal attainment** (ACC, PFC, amygdala)
- **Working memory** and learning (hippocampus)

What does research suggest?

CBT for autistic adolecents

- Depression/anxiety (Anderson & Morris, 2006)

CBT for autistic adults

- Individually and group (Gaus, 2011; Weiss and Lunsky, 2010; Hesselmark, Plenty, & Bejerot, 2014)

Social skills training

- Virually and group (Nuernberger et al., 2013; Kandalaft et al., 2013)

Psychoeducation

- Group and internet, SCOPE (Gordon et al, 2015; Backman et al, 2018)

MBSR for autistic adults

- Group (Spek et al, 2013)

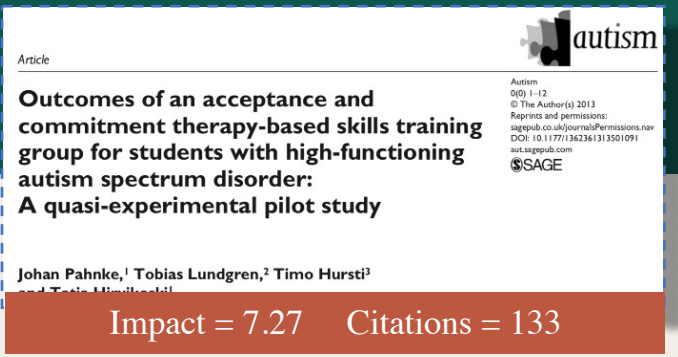
Cognitive defusion

- Skill that can be trained (Maisel et al, 2019)

NEUROACT for autistic adolescents/adults

- Group (Pahnke et al, 2014; Pahnke et al, 2019, Pahnke et al, 2022)

Study 1. NEUROACT for autistic adolescents and young adults in school



Background: Autistic adolescents have high degree of stress och mental health problems.

Participants: 28 adolescents and young adults with DSM-5 ASD (15 NeuroACT/13 wait-list), 13-21 years (M=16.5, SD=2.0).

Study design: Quasi-experimental design in school environment. 3 classes had 12 group sessions NeuroACT and 3 classes has teachin as usual. 1 Groupleader.

Evaluation: Self- and teacher rated stress (SSS), self rated psychological distress (BYI, SDQ), hyperactivity, and prosocial behavior (SDQ) before, after, and after 2 months.

Statistical analyses: Two group mixed-design repeated measures analysis of variance (rmANOVA). Effect size with EtaSquared.

Study 1. Results

+ Self – and teacher rated stress, anger, hyperactivity/
inattention, prosocial behavior, depression (trend) (average to large ES)

- Anxiety, emotional symptoms, behavioral problems, peer problems

Feasibility

+ All completed intervention
+ 93 % = > 6 sessions
+ 53 % trained = > 3 days/week
+ 93 % satisfied or very satisfied
+ 64 % experienced mindfulness as easy or very easy

Table 2. Means and standard deviations (*SDs*) as well as statistics from the repeated measures ANOVAs on self-ratings of the SDQ.

		Pre-skills training	Post-skills training	2- month follow-up	Effect of time	Between-group effect	Group-by-time interaction effect	Correlation with teacher-rating at baseline
The SDQ total score	ACT	14.00 (5.75)	13.20 (6.46)	11.13 (4.97)	$F_{(2, 52)} = 1.39$; $p = .258$; $\eta_p^2 = .05$	NS	$F_{(2, 52)} = 1.95$; $p = .152$; $\eta_p^2 = .07$	$r = .23$
	C	11.92 (5.98)	10.92 (5.17)	11.92 (6.78)				$p = .248$
The SDQ subscales								
Emotional symptoms	ACT	3.87 (2.97)	3.27 (3.31)	2.93 (2.60)	$F_{(2, 52)} = .27$; $p = .768$; $\eta_p^2 = .01$	NS	$F_{(2, 52)} = 2.13$; $p = .13$; $\eta_p^2 = .08$	$r = .42$
	C	2.38 (2.50)	2.62 (1.85)	2.85 (2.51)				**$p = .027$**
Hyperactivity/inattention	ACT	4.07 (2.05)	4.73 (2.19)	3.20 (1.61)	$F_{(2, 52)} = 2.54$; $p = .089$; $\eta_p^2 = .09$	NS	$F_{(2, 52)} = 3.90$; **$p = .026$**; $\eta_p^2 = .13$	$r = .18$
	C	4.54 (2.57)	3.23 (2.68)	3.62 (2.63)				$p = .366$
Conduct problems	ACT	2.33 (1.80)	2.07 (1.79)	2.07 (2.12)	$F_{(2, 52)} = .51$; $p = .951$; $\eta_p^2 = .00$	NS	$F_{(2, 52)} = .91$; $p = .410$; $\eta_p^2 = .03$	$r = .54$
	C	1.85 (1.35)	2.08 (1.89)	2.23 (1.83)				**$p = .003$**
Peer relation problems	ACT	3.73 (1.91)	3.13 (1.41)	2.93 (1.67)	$F_{(2, 52)} = .93$; $p = .402$; $\eta_p^2 = .03$	NS	$F_{(2, 52)} = 1.27$; $p = .289$; $\eta_p^2 = .05$	$r = .50$
	C	3.15 (1.99)	3.00 (1.35)	3.31 (2.21)				**$p = .007$**
Prosocial behaviour[a]	ACT	7.27 (1.91)	7.33 (2.02)	7.53 (1.77)	$F_{(2, 52)} = 1.54$; $p = .224$; $\eta_p^2 = .06$	NS	$F_{(2, 52)} = 3.61$; **$p = .034$**; $\eta_p^2 = .12$	$r = .362$
	C	7.38 (1.39)	6.69 (2.18)	6.15 (2.30)				$p = .058$

ANOVA: analysis of variance; ACT = acceptance and commitment therapy-based skills training group; C = control group; SDQ: Strengths and Difficulties Questionnaire.
[a]The SDQ subscale prosocial behaviour is not included in the SDQ total score. In contrast to other SDQ subscales, higher scores in the SDQ prosocial behaviour indicate better adjustment.
Bold values = statistically significant *p*-values.

Study 2. NEUROACT for autistic adults in outpatient psychiatry care - pilot

Background: Autistic adults have high degree of stress and psychological distress, and low quality of life.

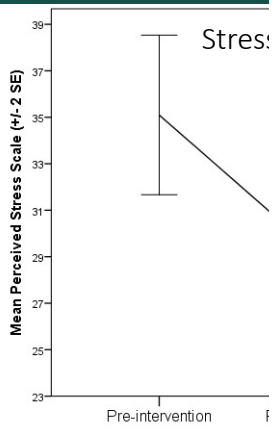
Participants: 10 adults (25-65 years; 5 men/5 women), HIQ 106 (SD=16.1) with DSM-5 ASD with or without ADHD. Exclusion: Psychosis, addiction, ID (HIQ>70).

Study design: Open trial pilot, 12 group sessions (2,5 h+ 30') in outpatient psychiatry, 2 groupleaders.

Evaluation: Self-rated stress (PSS), quality of life (SWLS), psychological distress (BDI, BAI), level of funtion (SDS), psychological inflexibility (AAQ), cognitive fusion (CFQ), before, after, and after 3 months.

Statistical analyses: Paired samples t-test. Effect size with Cohen's *d*.

Study



Stress

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Measure	Pre-follow-up
PSS	0.51
SWLS	0.77
BDI-II	0.55
BAI	0.42
SDS (work)	0.19
SDS (social)	0.27
SDS (family)	0.15
AAQ-7	0.56
CFQ-7	0.54

Note. PSS = Perceive
Disability Scale; AAQ
*$p < .05$.
**$p < .01$.

y; SDS = Sheehan

Figure 12. Participants' comments after NeuroACT.

Study 3. NEUROACT for autistic adults in outpatient psychiatry care - RCT

Original Article

autism

Acceptance and commitment therapy for autistic adults: A randomized controlled pilot study in a psychiatric outpatient setting

Johan Pahnke[1], Markus Jansson-Fröjmark[1], Gerhard Andersson[1,2], Johan Bjureberg[1,3], Jussi Jokinen[4], Benjamin Bohman[1] and Tobias Lundgren[1]

Autism
1–16

DOI: 10.1177/13623613221140749
journals.sagepub.com/home/aut
SAGE

Background: Autistic adults have high degree of stress and psychological distress, and low quality of life.

Participants*:* 39 adults (21-72 years), HIQ 108.5 (SD=13.5) DSM-5 ASD with or without ADHD. Inclusion: High stress and low quality of life. Exclusion: Psychosis, addiction, ID (HIQ > 70).

Study design: Block-wize individual randomization (20/19), 14 group sessions (2,5 h+ 30') in outpatient psychiatry or TAU, 2 groupleaders. TAU-group had NeuroACT after one year. Power calculation (SWLS, ES: 0.77) = 56; (PSS, ES: 0.92) = 40

Evaluation: Self-rated stress (PSS), quality of life (SWLS), psychological distress (BDI, BAI, KSQ), level of funtion (SDS), psychological inflexibility (AAQ), cognitive fusion (CFQ), avoidance behaviors (CBAS), and autistic core difficulties (SRS), before, after, and after 6 months (both groups).

Statistical analyses: Two-group mixed design repeated measures analysis of variance (rmANOVA). Effect size with Cohen's *d*.

Study 1. Results

Table 13. Means, standard deviations, statistical significance, and effect sizes between groups for autistic core challenges and executive difficulties at pre, post, and 6-month follow-up.

Clinical significance and reliable change for stress and quality of life (primary)

+ Double the many (50 %) in NEUROACT recovered from stress and 3 x more (38 %) showed clinical significant improvement compared to TAU

+ 3 x more (38 %) in NEUROACT recovered regarding quality of life and 25 % compared to 0 % showed clinical significant improvement compared to TAU

Feasibility

+ 85 % completed intervention

+Self-rated feasibility 7.3/10 (SD = 2.5)

...ex (RCI)

...e SWLS (primary outcomes)

			...T (*n* = 16)	TAU (*n* = 18)
				n (%)
				2 (11 %)
			...)	0 (0 %)
Improved	6 (38 %)	2 (11 %)	4 (25 %)	0 (0 %)
RCI	6 (38 %)	2 (11 %)	4 (25 %)	0 (0 %)
Unimproved	2 (13 %)	7 (39 %)	7 (44 %)	13 (72 %)
RCI	2 (13 %)	1 (6 %)	0 (0 %)	0 (0 %)

Note. Recovered = Clinically significant change - below or above cut-off score; Improved = Clinically significant change - 2 standard deviations below or above the group mean; Unimproved = Failed to change 2 standard deviations from group mean.

Note. SRS = Social Responsiveness Scale – total score; SRS-AM = Social Responsiveness Scale – Autistic mannerism; SRS-M = Social Responsiveness Scale – Motivation; SRS-A = Social responsiveness Scale – Social Awareness; SRS-SC = Social Responsiveness Scale – Social Cognition; SRS-C = Social Responsiveness Scale – Communication; DEX = Dysexecutive Questionnaire - Self report. Effect size measured by Cohen's *d* (0.2 = small; 0.5 = moderate; 0.8 = large).

* $p < .05$. ** $p < .01$. † non-significant trend

Group discussion

- **Personal experiences** of stress in autistic or other neurodivergent individuals?

What is ACT?

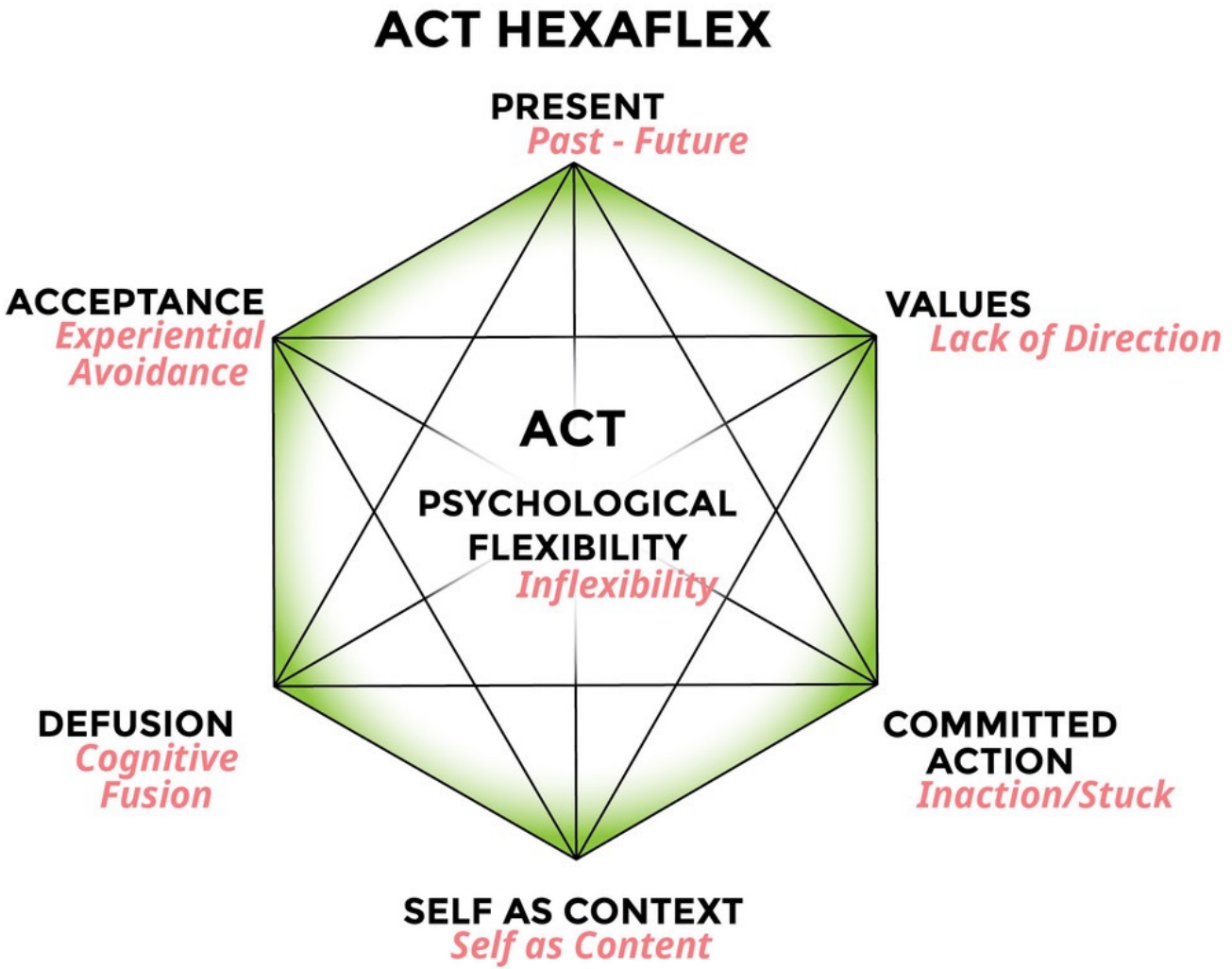
- **Video**

ACT

Acceptance and Commitment Therapy

- **Pragmatic** and **value-based**
- **Psychological flexibility** (instead of symptom reduction)
- **Six core processes** (Life Values, Goal-behaviors, Bein present, Acceptance, Defusion, and Self as context)
- Relationship to **private experiences** (thougths, emotions, and body reactions/signals)

ACT model



Why ACT for autism?

- Develop **skills** to cope with **stressful situations**
- Reduce **avoidance behaviors** and increase **psychological flexibility**
- Increase **level of function** and **quality of life**
- Reduce **stress** and **mental distress**
- **Same three core skills** in different situations (facilitates generalization)

Psychological flexibility in autism

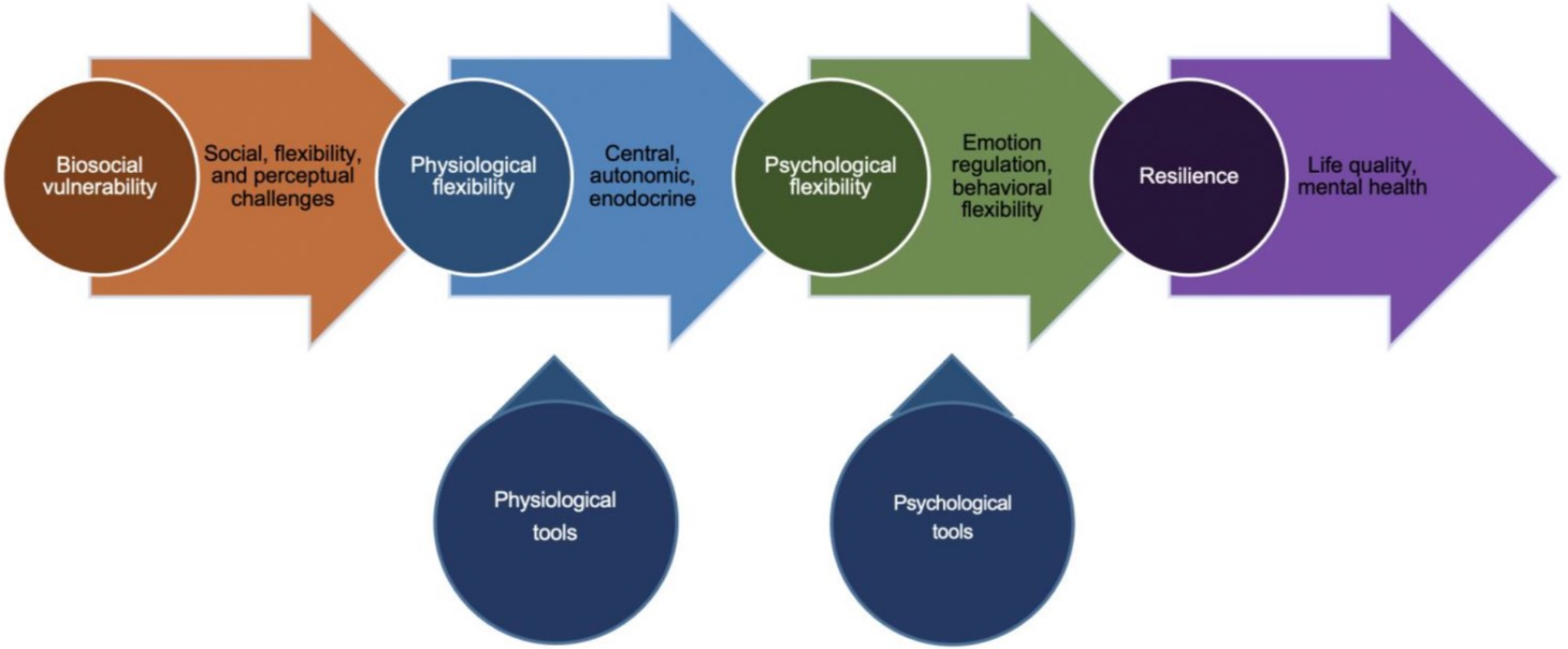
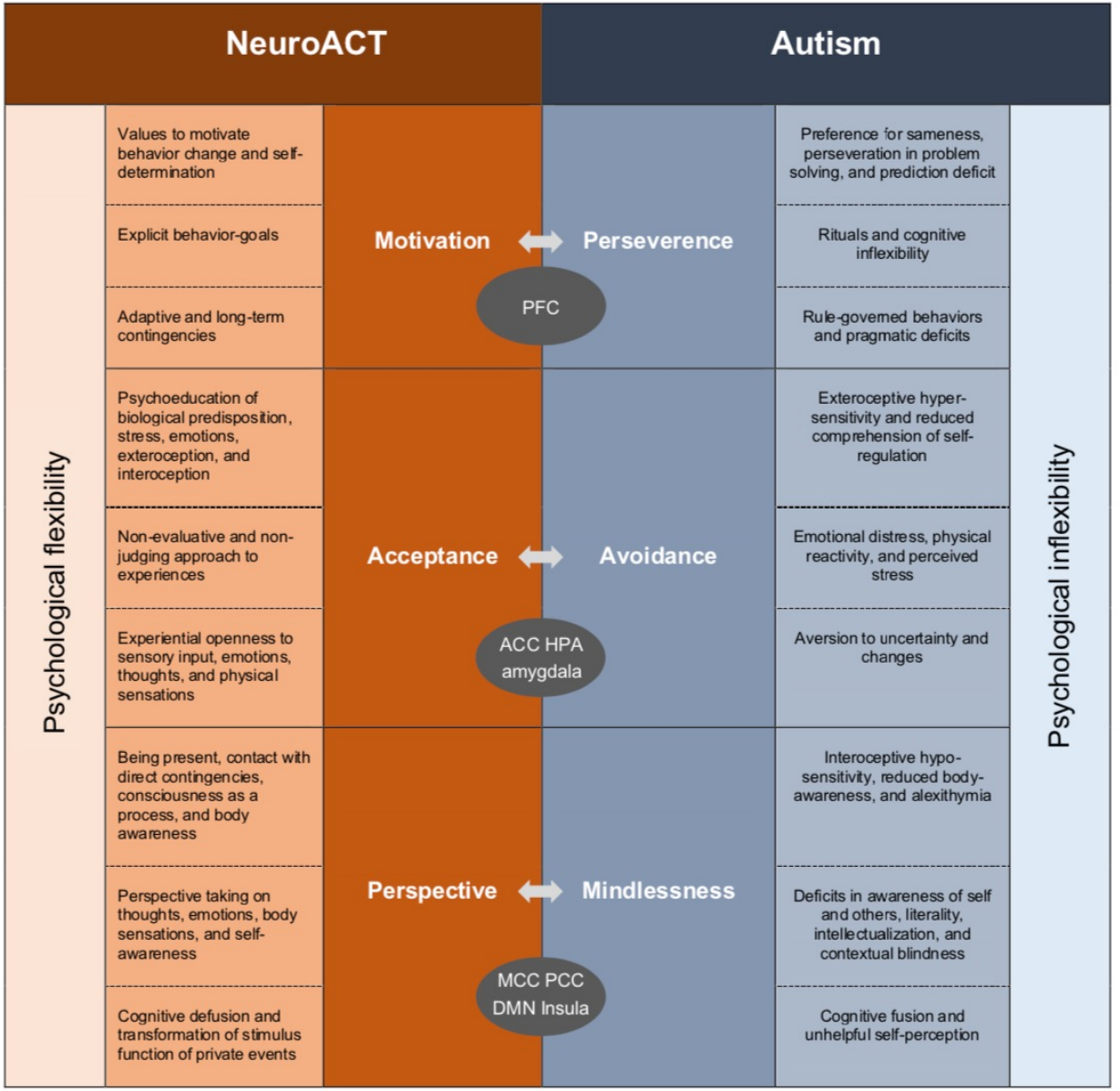


Figure. The biosocial model for resilience to adversity in ASD (Scarpa et al., 2021).

Conceptualization



* Pahnke (2022). NeuroACT conceptualization of autistic challenges (Doctoral thesis)

A pragmatic perspective on autism

Treatment approach	Truth criterion	Identity	Treatment objective	Treatment focus
Non-functional contextual	**Norm-based** (e.g., social skills training)	**Identity as a clinical feature** (e.g., diagnosis)	**Symptom reduction** (e.g., depression; anxiety)	**Direct** (e.g., training working memory)
Functional contextual	**Pragmatic** (e.g., personal value-based behavior goals)	**Identity as an event** (e.g., defuse from an unhelpful perception of self)	**Disrupt functional relation between symptoms and mind** (e.g., acceptance of anxiety)	**Indirect** (e.g., contextual skills training; managing thoughts, emotions, and body sensations)

* Pahnke (2022). Theoretical aspects of intervention, comparing a contextual behavioral and a non-contextual behavioral perspective (Doctoral thesis).

Man on the bus

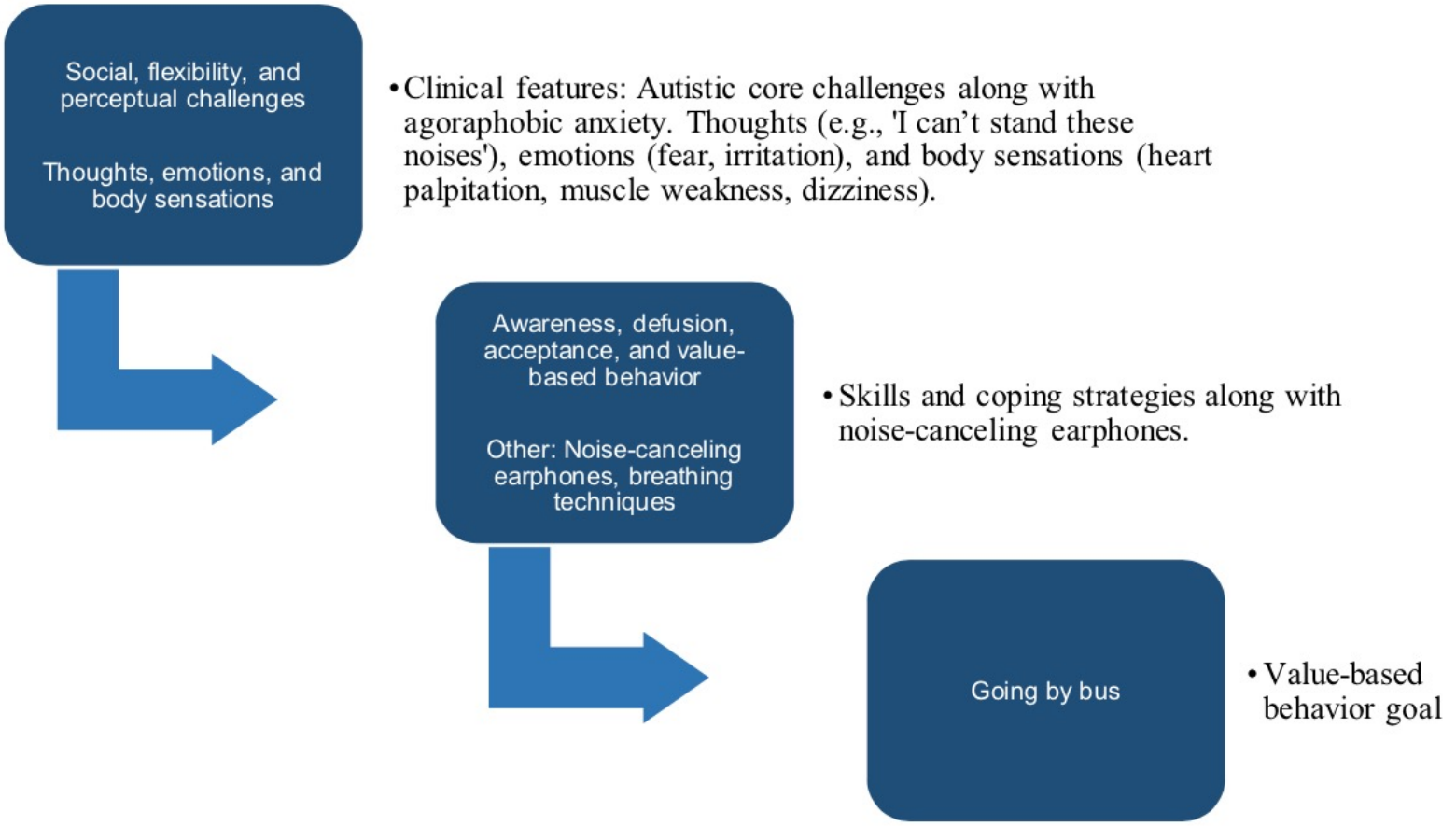


Figure 6. Case study (Man on the bus).

NEUROACT – aims and content

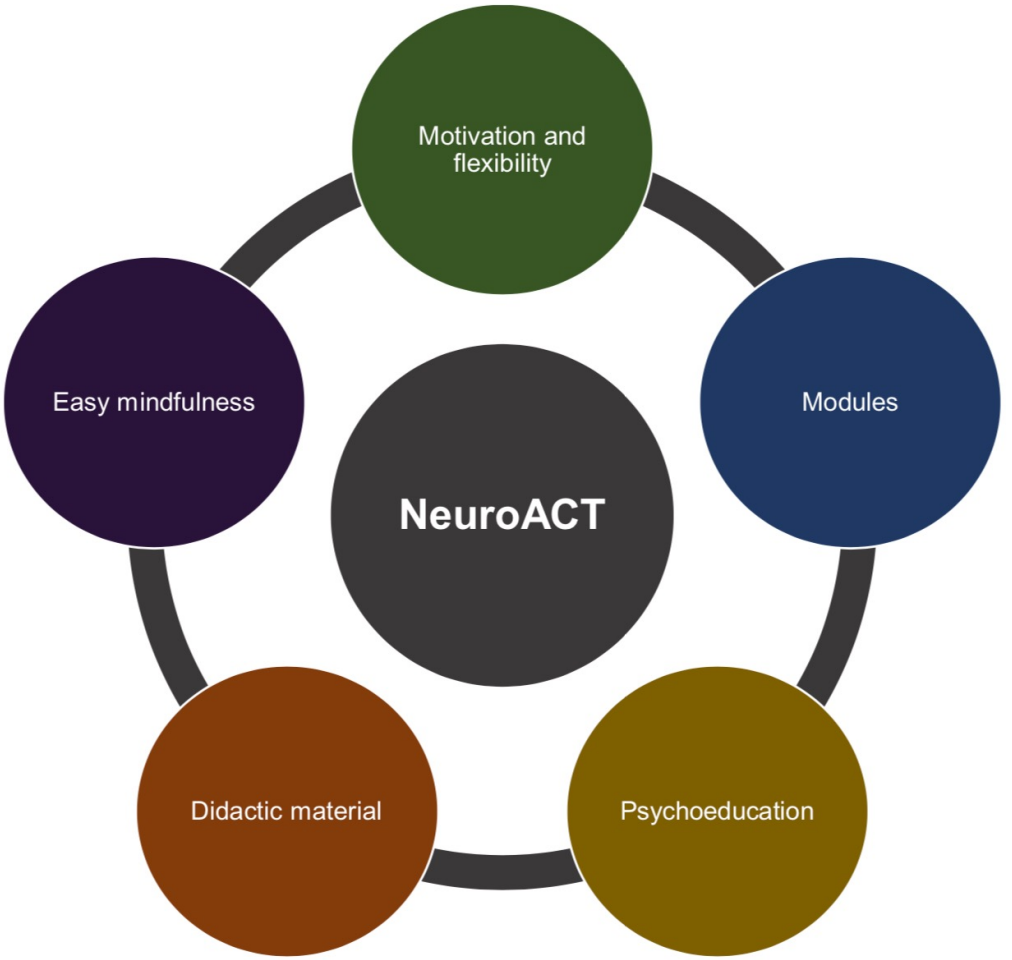


Figure 9. NeuroACT program overview.

NEUROACT

Skills training for individuals with ASD	ACT + knowledge about autism and executive function
6 modules (12 sessions) 2.5 h/session (+ ind time 30'), 2 groupleaders	Presentation, info sheets, work sheets, home assignments, week cards
Short and easy mindfulness and acceptance exercises	Psychoeducation (emotions, stress, sensory input, body signals)
Digital platform (brainproof.se)	Scientifically evaluated program

Session structure

1. Mindfulness or acceptance exercise (from session 3)
2. Review homework
3. New session topic
4. Exercises and practical work
5. New homework

Adjustments

NEUROACT	AUTISM
Structured and didactic material	Executive difficulties
Balance between predictability and flexibility	Adapt to challanges *and* train skills
More focus on explaining – it should be comprehensible	Context blindness
Easy and short mindfulness and acceptance exercises - rational prior to each exercise	Working memory, predictability, context blindness, communication
Autism relevant themes (stressful situations, avoidance, sensory, body perception, emotions, stress, recovery, social situations)	Autism relevant challenges
Different levels to meet autism level 1, 2, and 3 (still developing)	Autism 1, 2, and 3 – different needs

Work material

Worksheet 1

My stressful situations

Below are situations that can be perceived as stressful. Circle the ones that *you* experience as stressful.

- Making mistakes
- That everything is not perfect
- Not knowing what to do
- Not being allowed to finnish what I'm doing
- To meet new people
- To lose
- To be among many people
- Someone tells me that I *have* to do something
- To speak in a group with people
- To receive criticism
- To wait for something
- To ask for help
- To have critical thoughts about myself
- To have my things in disorder
- Disturbing sounds or lights
- People talking
- How certain things smell
- To have something change that I am not prepared for

Other:.....

NEURO ACT

Infosheet 7

Emotion school

What are emotions and why do we have emotions?

Emotions are natural reactions in the body that affect how we think and what we do. Emotions help us become motivated to do something. For example, approaching something (interest) or defend ourselves from danger (anger). We experience some emotions as pleasant, other as unpleasant or neutral. Each emotion motivates us in its unique way (why we have the emotion).

Below you can read about our most common emotions.

	Emotion	Why we have the emotion
Pleasant	Interest Excitement Attraction	Get a pleasant feeling Seek information
	Joy Satisfaction Pleasure	Increase wellbeing Relax
Neutral	Astonishment Surprise Wonder	Try something new
Unpleasant	Fear Terror Anxiety	Seek protection Handle dangers
	Grief Sadness Dispair	Reflect Handle loss
	Anger Rage Irritation	Defend oneself Remove obstacles
	Shame Humiliation Embarassment	Follow rules
	Disguste Distaste Aversion	Protect oneself from ingesting something dangerous

NEURO ACT

Homework 1

My stressful situations

Write down two situations that you can experience as stressful.

Situation 1

Situation 2

NEURO ACT

Weekly card 1

To do

1. Write down 2 situations that you can experience as stressful.
2. Check the Yes-box when you've completed the homework.
3. Write a comment on how it was to do the homework. For example, if it was easy, difficult, or how long time it took.

Completed homework?

Yes No

Comments

NEURO ACT

Worksheet 4

My thoughts

Below, you wright down the thoughts that you have for 3 minutes.

NEURO ACT

Material

- **Concrete** (difficult overview much information)
- **Not much text** (communicative difficulties)
- **Images** (stronger visually than auditory)
- **Memory support** (difficulties with working memory)
- **Work sheets with examples** (reduced central coherence, imagination)

Material

- **Explanatory info sheets** (emotions, sensory input, body awareness)
- **Rational prior to audio exercises** (intentionality, central coherence, motivation)
- **Color coded** (working memory, systematization, context blindness)
- **Autistic validation**: Learn by Spektra

Modules and sessions

MODULES	SESSIONS
STRESS & AVOIDANCE	**1. My stressful situations**
	2. Avoidance trap
PERSPECTIVE	**3. Focus training**
	4. Take perspective
WHAT'S IMPORTANT	**5. What's important to me**
	6. Do what's important
ACCEPTANCE	**7. Handle emotions**
	8. Handle the body
SOCIALIZE & SELF-CARE	**9. Socialize with others**
	10. My self-care
THE LIFE MAP	**11. Life Map**
	12. Look forward

MODULE 1: STRESS & AVOIDANCE

Session 1: My stressful situations

Aims of the session

- Teach participants about **stress** and pay attention to their **own stressful situations**.
- Communicate that what makes us stressed is how we **relate** to our thoughts, feelings and body sensations. Not the thoughts, feelings and body sensations themselves.
- When the brain perceives a situation as a **'threat' or 'problem'**, a stress response is initiated via the HPA system.
- The brain is **plastic.** It is possible to train the ability to handle stressful situations and to act in a long-term and sustainable way.

MODULE 1: STRESS & AVOIDANCE

Session 2: Avoidance trap

Aims of the session

- Teach participants about the **avoidance trap**, which means that behaviors that reduce discomfort and stress in the short term rarely work in the long term.
- Make the participants aware of their **own avoidances** that are not effective.
- Communicate that there are **long-term strategies** for managing stress and discomfort and that it is something we will practice in NEUROACT.

MODULE 2: PERSPECTIVE

Session 3: Focus training

Aims of the session

- Teach participants about **Focus training** (mindfulness) as a way to notice things that happen, both within oneself and outside.

- Make the participants **aware** of their focus is, while also bringing attention to their thoughts, emotions, and body sensations.

Perspective

NEUROACT	AUTISM
Improve perspective-taking on the body and emotions.	Interoceptive hyposensivity (e.g., body signals, thirst, hunger, temperature). Alexithymia.
Improve perspective-taking on thoughts. Thoughts as a *process* (*not* focusing on the content).	Difficulties with awareness of oneself and others minds. Intellectualizing. Creates rumination and worries.
Improve perspective-taking on thoughts. Not being automatically controlled by thoughts (defusion). See the function/intention behind thoughts, instead of literal interpretation.	Literal interpretation of words and context blindness. Difficulties with seeing the intention and function behind thoughts. Makes thoughts more convincing.
Improve perspective-taking on thoughts about oneself (self as context).	Entangled in: - right/wrong', 'good/bad (evaluing) - I am better/worse (comparative) - I can't see people because I am autistic (rule-governed)

MODULE 2: PERSPECTIVE

Session 4: Take perspective

Aims of the session

- Teach participants to **take perspective on their thoughts** (cognitive defusion), as a way of not letting letting their thoughts steer away from what is important to each of them.

- Make the participants **aware of their thoughts** and how they affect their emotions, how the body reacts, and their behaviors.

MODULE 3: WHAT IS IMPORTANT

Session 5: What's important to me

Aims of the session

- Teach the participants about **life values** to clarify **what is important** to each of themselves.

- Make the participants aware the extent to which they do things in line with what is important to them in four life areas: **Work/day care/other**, **Health**, **Relationship**, and **Leisure** (for adolescents: **School work**, **Feel good**, **Peers/family**, and **Leisure**).

- Help the participants **formulate their own life values** within the four areas of life.

Life values and goals

NEUROACT	AUTISM
Improve motivation	Reduced motivation (except special interests)
Value-based behaviors	Short-term avoidance and rule-governed behaviors
Training in goal-formulation	Difficulties formulating own goals
Improve predictability and long-term behaviors	Prediction deficit

MODULE 3: WHAT IS IMPORTANT

Session 6: Doing what's important

Aims of the session

- Teach participants about **goal behaviors** and what they can do in line with their life values.

- Help the participants formulate their **own goal behaviors** within the four life areas.

MODULE 4: ACCEPTANCE

Session 7: Handle emotions

Aims of the session

- Teach participants **about emotions** and how to **handle** emotions.

- That participants understand that there are different basic emotions with a **specific function** and that every emotion is needed.

- That the participants practice on **using Focus training and acceptance** to handle emotions.

Acceptance

NEUROACT	AUTISM
Psychoeducation to improve awareness Experiential openness to sensory input	Exteroceptive oversensitivity
Non-evaluative approaches to experiences	Highly exposed to stressors
Experiential openness to thoughts, emotions, and body sensations	Emotional and social avoidance

MODULE 4: ACCEPTANCE

Session 8: Handle the body

Aims of the session

- Teach participants about **sensory input** (exteroception) **body awareness** (interoception), and how to **manage sensory input and body signals**.

- That the participants are aware of there are sensory inputs **giving rise to stressful thoughts, emotions, and body sensations**.

- That the participants are aware of that there are **body signals hard to recognize**.

- That the participants use **Focus training** and **acceptance** to handle sensory input and body signals, including the thoughts, emotions, and body sensations linked to them.

MODULE 5: SOCIALIZE & SELF-CARE

Session 9: Socialize with others

Aims of the session

- That participants use their **NEUROACT skills** in **social situations**.

- That the participants further practice to handle stressful thoughts, emotions, and body sensations in line with what is important to them within the **life area Relationship**.

MODULE 5: SOCIALIZE & SELF-CARE

Session 10: My self-care

Aims of the session

- Making the participants aware of **effective self-caring activities** that can be used to prevent stress and facilitate self care.
- That the partipants use their **NEUROACT skills** within the **life area Leisure**.
- That the participants use their **NEUROACT skills to facilitate self-care.**

MODULE 6: THE LIFE MAP

Session 11: The Life Map

Aims of the session

- That the particiants use their **NEUROACT skills** within **all the four life areas**.

- That the participants **handle stressful thoughts, emotions, and body sensations**, with the purpose of **overcoming obstacles when engaging in value-based goal-behaviors**.

- That the participants **learn to use the Life Map**, which is a structured template to continue using NEUROACT skills after completing the program.

MODULE 6: THE LIFE MAP

Session 12: Look forward

Aims of the session

- That the participants **summarize their experiences of the NEUROACT program**, what they have learned, and how they want to continue using their NEUROACT skills on their own.

- That the participants **summarize their work based on the Life Map**, and **clarify their life values and goal-behaviors for the future**.

Adjustments

- There is **no evidence** for the use of programmes or protocols that are not adapted
- Need to consider **core difficulties** and **executive challenges**
- At risk for feeling **un-validated in NT-groups**, **camouflaging** common
- **(1)** An understaning of **how ACT meets autistic challenges**
- **(2)** Concrete **adjustments of program** (bed-side manner) and **materials**

Attitude and approach

- **Little talk** (reduced working memory, process speed, and communication)
- **Straight forward communication** (don’t wind in)
- **Give answer options and explain** (difficult with open questions, (context blindness)
- **Give time to respond** (process speed)
- **Prepare** (give material in advance, tell about the expectations, structure, and content)

Attitude and approach

- **Explain experiential exercises** (purpose and contents)
- **Model and give concrete examples** (e.g., ’I have the emotion curiousness right now’ or ’this morning I had a thought…’)
- **Use the patients own vernacular and metaphores** (use simple and common terms, show pictures of metaphores)
- **Avoid arguments and discussions** (especially when rationalizing and detail orientedness)
- **Mirror the function of a behavior** (e.g., ’I notice that you have a lot of thoughts and that it makes you upset)’

Attitude and approach

- Mirror **perspective-taking** (e.g., the patient says: ’that’s the way it is… it is unfair’ with ’right now, you have the thought ’it is unfair’
- Establish **ground rules** (e.g., need to interrupt if a patient is talking too much)
- Remind patients of the **purpose** with what is happening in the treatment (lacking contextualisation, intentionality in actions/thoughts)
- Remind patients that exercises and treatment goals can feel and seem **confusing**
- **Use confusion (**and other emotions) that arise as training ACT-skills (meta-training)

To think about and validate

- Emotions and sensory impressions can become **intense** (emotions dysregulation, exteroceptive dysreglation)
- Cannot perceive **thoughts** (lack of meta-cognition, perspective taking)
- Difficulty perceiving the **body** (lack of self-awareness)
- Materials and instructions can be interpreted as **illogical** (cognitive inflexibility)
- Difficulties understanding **instructions** (working memory deficits, communication)

To think about and validate

- Does not want to **share** in the group setting (deficits in social reciprocity, communication, high sense of integrity)
- Unrealistic **goals** (central coherence deficit, imagination, self-perception)
- Unusual **life values** (unique preferences and interpretations of the outside world)
- **Di**fferent ways of **expression** (communication)
- Difficulty **moving forward** (cognitive inflexibility, overload, stress)

MANUAL AND MATERIALS

- The manual and work material can be accessed at Brainproof.se.

Thank you!

Contact

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