The Session Structure and Treatment Phases in Cognitive Behavioral Therapy (CBT) for Autism Spectrum Disorder (ASD)

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Abstract:

Autism spectrum disorder (ASD) is a neurodevelopmental disorder which impairs social functioning, executive functions (EF), perception/sensory and repetitive thinking patterns/behavior. Individuals with ASD often suffer from comorbid psychiatric disorders such as anxiety and depression. Findings suggest that patients with ASD might benefit from cognitive-behavioral therapy (CBT). However, research also highlight that adaptations in CBT are needed in order for more efficient treatment of ASD. This theoretical paper is based on research and clinical experience. The aim is to present issues within ASD that may interfere with CBT, proposing using the session structure and treatment phases as a way to compensate for these difficulties.
Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that has been added to the most recent edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V). In the preceding edition, DMS-IV-TR, patients could be diagnosed with four separate disorders, i.e., Asperger’s syndrome, autism, childhood disintegrative disorder and pervasive developmental disorder not otherwise specified (Black and Grant, 2014). The criteria for diagnosis include deficits in social communication and interaction, restrictive and repetitive patterns of behaviors, interests or activities. Symptoms should be present in early childhood and decrease functionality in social, occupational or other domains. Nevertheless the impairments may be detected later in a person’s life when social/communicational and daily demands are heightened (Friedman, Politte, Nowinski and McDougle, 2015).

Adults with ASD suffer more from psychiatric disorders in comparison to general developing population. The most common comorbid psychiatric disorders in ASD are mood and anxiety disorders (Lever and Geurts, 2016). Typical problems in ASD include emotion regulation (Mazefsky et al., 2013), social skills deficits (White, 2011), executive functioning (Brahmman et al. 2016, Wallace et al 2016), sleep disturbances (Richdale, 1999), and sensory processing abnormalities (Wigham 2015).

Although studies on the effectiveness (Weston, Hodgekins and Langdon, 2016) and recommended adjustment (Kerns, Roux, Connel and Shattuck, 2016) regarding CBT in ASD patients exist, there is still a lack of a comprehensive CBT treatment manual for ASD. This paper focuses on ASD without intellectual disability and typical difficulties that might interfere with individual CBT treatment. This theoretical article is based on research and clinical experience. The aim of this paper is to propose treatment phases and how to use the session structure to compensate for typical executive function (EF) deficits. The suggested phases presented in this paper are for instance initial phase (focusing mainly on “activating”
the patient in session and problem-solving around CBT homework) and additional skill building (representing skill building interventions that might be used before, currently with or after individual CBT).

*Meta-analysis of CBT in ASD*

CBT focuses on explaining the relation between thoughts, behavior and emotions. By skill-building the patient increases his/her awareness regarding these relations. Furthermore, patients learn to challenge dysfunctional beliefs and underlying behaviors which is essential in reducing symptoms and treating a problem. Treatment is carried out by introducing the CBT approach (e.g. structure), diagnosis (e.g. interview and measure), conceptualization (e.g. presenting hypotheses regarding problems), treatment plan (e.g. behavioral goals), psychoeducation (e.g. bibliotherapy), implementing cognitive and behavioral strategies (e.g. cognitive restructuring and behavioral activation), homework (e.g. caring out behavioral experiments) and relapse preventing (at the end of therapy). (Calkins, Park, Wilhelm and Sprich, 2016)

A systematic review and meta-analysis was made by Weston, Hodgekins and Langdon (2016) when analyzing studies involving children, youths and adults with ASD. 48 studies where chosen after the exclusion process involving 2099 participants. Findings showed a variety of effect sizes dependent on the type of report/measure used. Regarding ASD and CBT treatments of mood disorder, results based on self-report showed a small to medium non-significant effect size, while both informant-report and clinical-report data showed a significant medium effect size. With regards to CBT studies designed to treat ASD symptoms (mainly focusing on strengthening social skills, but also theory of mind, affectionate communication and facial emotions) treatment was associated with small to medium non-significant effect sizes for self-report measures, a significant small to medium
effect size for informant-report measures, a significant medium effect size for clinical-report measures and a significant small to medium effect size for task-based measures. Altogether, these results indicate that CBT might be beneficial for patients with ASD, however is should be noted that most of the studies were carried out on children and adolescents.

Executive skills deficits in ASD

Bramham et al. (2009) found that adults with ASD had impairment in initiation, planning and strategy formation. Furthermore ASD patients were slower to execute a given plan in comparison to an ADHD group and neurotypical controls. Wallace et al. (2016) made a study measuring executive functioning in adults with ASD and examining correlations with adaptive functioning and anxiety and depression. Findings suggest that adults with ASD have impairment in flexibility and planning/organization functioning. Problems regarding flexibility were associated to anxiety symptoms while problems regarding planning/organization were associated to depressive symptoms. Furthermore, executive function impairments were associated with adaptive functions difficulties. Researchers suggest that executive functions problems should be addressed during treatment of this group. They also stress that it is crucial for patient with ASD that have executive function difficulties to get support during early adulthood when external support (school and parental support) diminish and the patients might feel overwhelmed to deal with adult environment without proper compensatory strategies and tools. This notion seems to be consistent with findings where young adults with ASD had more psychiatric symptoms than elderly ASD patients (Lever and Guerts, 2016).
Emotion regulation in ASD patients

Mazefsky et al. (2013) describe a proposed model for emotion dysregulation in ASD. The authors elaborate that contributing factors in emotion dysregulation are executive functioning deficits (e.g. poor problem solving), function of emotion (e.g. less organized and goal-directed emotion), affect (greater or more negative affect/irritability), altered physiological affect (possibility of hyperarousal), neural circuitry (abnormal amygdala/prefrontal cortex function and connectivity), comorbid psychiatric disorders (such as anxiety and depression), and information processing and perception (such as atypical triggers, difficulty processing social and emotional cues).

Suggested phases in CBT treatment of ASD patients

Small to medium non-significant effect size in self-reports of ASD patients (Weston, Hodgekins and Langdon, 2016) and complex problems in both executive functioning (Bramham et al, 2009; Wallace et al, 2016), emotional regulation (Mazefsky et al., 2013), social skills (White, 2011) with comorbid conditions (Lever and Geurts, 2016) suggest that the patients might need adaptations in treatment and custom-made treatment phases. Specific treatment phases have been adjusted for particular disorders and circumstances. For instance, in cognitive behavioral integrated treatment (C-BIT) of substance abuse a total of four treatment phases with additional skill-building emphasis (in every phase) are used. 1) Engagement and building motivation to change, 2) negotiating some behavior change, 3) early relapse prevention and 4) relapse management (Graham, 2003). Furthermore, in an inpatient dialectical behavior therapy (DBT) program three phases are described with the following main goals for each phase 1) getting in – (goal: develop an get commitment to inpatient treatment plan), 2) getting in control – (goal: reduce behavioral dyscontrol requiring hospital care) and 3) getting out – (goal: develop and successfully execute discharge plan).
As described, CBT involves a set of skills that patients learn in treatment. The first ASD challenge for the therapy might be to cope with executive function difficulties that may interfere with treatment and acquiring these skills. Specialists have already proposed emphasis on executive functions support for this patient group (Kerns et al., 2016). In elderly patients with general anxiety disorder (GAD), addressing both CBT and executive function training was found to be more effective than CBT alone (Mohlman, 2008).

Below, treatment phases (table 1) are presented as a proposed adjustment to ASD patients.

**Table 1. Phases for CBT treatment among ASD patients**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Goal</th>
<th>Target behaviors</th>
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</table>
| Phase 1     | Compensating for EF interfering factors in CBT structure, homework and engagement. | 1. Increasing in-session responsibility and activity: monitoring, prioritizing, time-management and coping (illustration 1) within session structure.  
2. Problem solving and time-planning around home-work. |
| Phase 2     | Psychoeducation, increasing commitment and adjusting treatment tools. | 1. Use CBT proposed adaptations in materials and resources.  
2. Identify network as collaborators. |
| Phase 3     | Target dysfunctional beliefs (including rigid thinking) and behaviors. | 1. Let patient choose among coping strategies and behaviors.  
2. Create functional alternatives to rigid rules, thinking and behavior.  
3. Plan behavioral experiments and CBT skill training.  
4. Activate network to help with dealing with dysfunctional beliefs and behaviors (e.g. behavior activation plan). |
| Phase 4     | Terminating individual therapy. Plan for attaining support group and skill training. | 1. Give appropriate materials to support network.  
2. Plan for other support and skill training group or activities if needed. |
Additional Skill building group/support groups might be beneficial at any stage to individual therapy or pre/post.

- Social skills (Koegel, Ashbaugh, Koegel, Detar, & Regester, 2013; Laugeson and Park, 2014; White et al. 2011)
- Assertiveness skills
- Time management
- Problem solving (Bonete, Dolores Calero and Fernández-Parra, 2015)
- Relaxation skills
- Mindfulness (Kiep, Spek and Hoeben, 2015)

Phase 1 Compensating for EF interfering factors

*Increasing in-session responsibility and activity.* Within EF, ASD patients have difficulty with initiating a task, are slower in executing a plan (Bramham et al., 2009), have problems in organizing/planning (Wallace et al., 2016) and difficulty in episodic memory which can influence learning (Massand and Bowler, 2015). On the other hand, patients favor similarity and routine (Eisenberg, Wallace, Kenworthy, Gotts and Martin, 2015). In CBT every session has a general structure that the clinicians adhere to (Calkins, Park, Wilhelm and Sprich, 2016). One suggestion to help patients with EF deficits is to have them fill out “The patients structure of session form” (figure 1) for every session. This might help patients to engage and be more active within the CBT structure. The EF involved in filling in such a form is initiation of activity (filling in the form from beginning of session), self-monitoring (symptoms check), time-management, decision making and prioritizing (deciding on how to distribute time on agenda topics and keeping time with e.g. phone notification) problem-solving and use of strategy plan (around next homework).

Furthermore, using coping (writing useful strategies to each agenda topic) and episodic memory enhancement (write feedback and have a session summary within the form, which help with the learning process). The therapist role would be to support patient to fill out the
“structure of session form”.

<table>
<thead>
<tr>
<th>Structure of session form</th>
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<tbody>
<tr>
<td><strong>1. Self-monitoring</strong></td>
</tr>
<tr>
<td>Scale</td>
</tr>
<tr>
<td><strong>2. Homework review</strong></td>
</tr>
<tr>
<td>Conclusions</td>
</tr>
<tr>
<td><strong>3. Agenda</strong></td>
</tr>
<tr>
<td>Topic</td>
</tr>
<tr>
<td>Priority</td>
</tr>
<tr>
<td>Time</td>
</tr>
<tr>
<td>Cognitive and behavioral strategies</td>
</tr>
<tr>
<td><strong>4. New homework</strong></td>
</tr>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Obstacle/Solution</td>
</tr>
<tr>
<td>Time and place of homework</td>
</tr>
<tr>
<td>Reminders and support</td>
</tr>
<tr>
<td><strong>5. Feedback</strong></td>
</tr>
</tbody>
</table>

Figure 1. The patients structure of session form.

**Problem solving and time-planning with regards to home-work.** One core feature of CBT is homework assignments which seems to be a difficulty in ASD students. Endedijk, Denessen and Hendriks (2010) made a study on students with ASD. They found that executive function impairment had an impact on homework difficulties. Mainly interfering planning skills (e.g. disorganization of materials) and organization difficulties (e.g. prioritizing of activities) seemed to interfere with the homework. Furthermore, parent-reports showed higher difficulties in comparison to the ASD students self-reports. These findings are congruent with clinical experience where patients often exhibit difficulties in carrying out homework assignments during treatment. A meta-analysis on homework engagement in CBT patients showed that homework compliance was associated with improved treatment outcome.
(Mausbach, Moore, Roesch, Cardenas and Patterson, 2010). This implies that focusing on compensating for home-work difficulties at an early stage of therapy for ASD patients might be an essential component for treatment outcome. In a workbook by Wells, Lochman and Lenhart (2008) a chapter is devoted to supporting children with homework assignments, other literature also give some hint on what to focus on (Calkins, Park, Wilhelm and Sprich, 2016; Dawson and Guare, 2016; Kazantis, Deane, Ronan and L’Abate, 2005; Scarpa, Williams and Atwood, 2013). With some adjustments to adult ASD patients these are proposed helpful steps 1) set expectations in treatment contact (describing homework as an important part of the treatment and get patients’ commitment) and psychoeducation about benefits and finding internal motivation, 2) clarity and rationale for assignment and take attention span and EF in consideration (start off with small assignments), 3) give patient necessary materials (decide where patients will put these), 4) identify the place and exact time for making the homework, 5) set up external help (reminders on phone, note in calendar/weekly schedule, visual cue, network to support, therapist send sms by using a sms delay application, put a deadline), 6) ask about possible obstacles (which includes negative automatic thoughts) and strategies to deal with them (e.g. send completed home-work to therapist on deadline), 7) have a chart for home-work assignments to check off, 8) select a reward after completing the assignment or a couple of assignments in a row and 9) write down encouraging statements.

*Identify network as collaborators.* To identify a network as possible collaborators for the next phases of treatment might be beneficial at an early point. Establishing contact and activating the network might require some time. Discussing about the next phases and persons that might support goal attainment and target behavior might be a good focus in this phase.
Adaptations in materials have been described for ASD adults in mood and anxiety disorders in a thorough review by Kerns et al. (2016). The authors have created an extensive adaptations in CBT for ASD patients based on four categories: 1) *general* (e.g. creating reminders, routines and checklists), 2) *psychoeducation* (e.g. regarding both ASD and psychiatric disorders), 3) *cognitive restructuring* (e.g. let the patient choose amongst samples of coping thoughts to battle cognitive distortions, rather than generating them himself/herself) and 4) *behavioral activation* (e.g. use patients network as support to develop an attainable activity plan). These kinds of adaptations are suitable for phase two to four.

**Working with cognitive rigidity.** Flexibility or “set shifting” is defined as “…the ability to update or shift the cognitive strategies we’re employing to perform tasks in response to changes in the environment.” (Dawson and Guare, 2016, p. 210). Research by Greenaway and Howlin (2010) shows that in comparison to typically developing group, boys with ASD had more dysfunctional beliefs, experienced high standards from others and showed more socially prescribed perfectionistic beliefs. The authors suggest that cognitive inflexibility might explain the higher level of dysfunctional and perfectionistic attitude. Scarpa White and Attwood (2013) suggested that one typical trait of rigidity is associated with fear of making mistakes. This is congruent with one explanation of perfectionism used by Antony & Swinson (2009) which include having unachievable standards or standards that are very difficult to accomplish, being overly concerned with making mistakes, doubting that one has done the right choice which results in lowered performance. Moreover, Dawson and Guare (2016) write that in addition to rigidity, emotional regulation (people tend to be inflexible when having unpleasant emotional reactions) and metacognition (to not see other alternatives) are overlapping skills to flexibility that might need some intervention in treatment. Greenaway and Howlin (2010) explain that rigidity might stem from the pragmatic language deficits in
ASD which results in registering expectations in an over-literal way which might result in an overgeneralized use of a phrase such as "I want you to give 110%". Gaus (2007) described how rigid rules develop in childhood interaction with parents or other caregivers. A functional rule e.g. “don’t lose your money” might help a child to value money and prevent him/her from losing it. However this might develop to a dysfunctional rule in adulthood where e.g. patients suffer from intense anxiety when spending money on unplanned activities. Then creating a more functional rule might be needed.

Dawson and Guare (2016) describe some strategies to deal with rigidity such as creating visual reminders (e.g. with a note “It’s good to try new but small things”), randomly choosing activity (rolling a dice where numbers match different activities), do an exposure exercise (send an email with deliberate errors if he/she is over-concerned with perfectly written text), go along with the rigidity taking into consideration emotional distress (e.g. go to social gatherings that include concrete activities e.g. bowling then unstructured ones), give time and use self-talk for down-regulating when rigidity sets in (“I feel the inflexibility. It’s ok for me to be upset. I need some time to process this“) and make replacement or small change in behavior (e.g. add a small portion of side dish to your meal). Antony & Swinson (2009) described CBT methods to treat perfectionism which ASD patients also might find useful.

**Additional skill training**

In clinical group setting it might be beneficial to create a balance between skill attainment and acceptance of deficits (Hesselmark, Plenty and Berjerot, 2013). In one ASD study patients reported that being in a group setting, gives hope for change and is an opportunity to spend time with other persons with similar difficulties (Weiss and Lunsky, 2010). To normalize difficulties and give hope are viewed as important elements within ASD treatment (Kerns et al., 2016).
Although there are some skill training groups for ASD there is still a lack of a comprehensive manual and workbook addressing multiple skills and deficits for adults with ASD in clinical settings. In comparison, Safren, Sprich, Perlman and Otto (2011) client-handbook of CBT for patients with ADHD describe how to acquire skills and deal with different diagnose specific issues by also teaching patients CBT. They have modules dealing with difficulties in concentration (e.g. putting color dots on objects that distracts as a reminder of getting back on task), planning and organizing (giving a step-by-step advice on how to organize documents at home) and problem-solving (such as problem formulation, generating solutions, pros, cons and evaluation of solutions, and executing a plan). There is a need to develop similar workbooks and therapist manuals in ASD group.

Social skills. The Program for Education and Enrichment of Relational Skills (PEERS_) uses CBT based methods to improve social functioning in children and youths with ASD (Laugeson and Park, 2014). The Multimodal Anxiety and Social Intervention (MASSI) is a treatment program based on CBT principles targeting social anxiety and social deficits typical for teenagers with ASD (White et al. 2010).

For young adults with ASD structured social planning, including feedback from social activities, organizational skills (e.g. using a planner and choosing amongst activities) and basic social skills (e.g. topics to talk about in the social activities) seems to be an effective treatment option. In a study by Koegel et al. (2013) this intervention resulted in an increase in social activity per week, quality of life, satisfaction with college experience and peer interactions, increase in other social interactions, college study results and employment possibilities.

Problem solving skills. Bonete, Dolores Calero and Fernández-Parra (2015) did a study with developing an Interpersonal Problem-Solving Skills for Workplace Adaptation (SCI-Labour)
program in adults ASD. The program focused on abilities such as interpersonal conflict resolution, communicational and problem solving. Results showed that participants had higher problem-solving skills in task and better socialization skills at post treatment.

*Mindfulness based stress reduction for ASD.* Kiep, Spek and Hoeben (2015) looked at effects on mindfulness-based therapy for autism spectrum (MBT-AS). Adaptations on the mindfulness based stress reduction (MBSR) program made for the autism-spectrum group involved features such as reducing ambiguous sentences, cutting out examination of own thoughts, extension of the program with one week and changing length of breathing exercise to five minutes (instead of three). Results indicate that symptoms of depression, anxiety, somatization, agoraphobia, inadequacy in thinking and acting, sleeping disturbance, distrust and interpersonal sensitivity and rumination were lowered. Positive affect, general physical and psychological wellbeing was heightened. The effects were still present at a nine-weeks follow-up.

*CBT or recreational group.* Hesselmark, Plenty and Bejerot (2013) made a study of cognitive behavioral therapy in adults with ASD without intellectual disability with a recreational activity group as a control group. In both groups quality of life reports was increased, however in the CBT group participants rated themselves as more generally improved and moreover helped patients to express needs and understand difficulties. Other group treatments that patient might benefit from are for instance relaxation training, time planning and assertiveness training (Gaus 2011).
Discussion

This paper has addressed ways to compensate for typical difficulties in EF within adult ASD in CBT treatment. A structure of session form to be filled out by patients and treatment phases as a way to overcome these interfering difficulties and train EF has been described. Although this is a recommendation of how to cope with difficulties and engage in EF training within CBT structure, additional research needs to test this idea of treatment phases and increase of activity within individual session for ASD patients.

The weakness of this paper is that it’s unclear how patients will respond to the proposed interventions and if they work well in treatment. Moreover some of the skill-building groups described have not been developed for adults with ASD. In contrast, the strength of this paper is that it pushes forward an idea of how to adjust CBT treatment within ASD and focus on practical implementations from a holistic view.
References:


