

The Homunculi: a flexible CBT approach to social and emotional wellbeing in children and adolescents on the autism spectrum

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Editorial comment

It is well established that children and adults with autism are at much higher risk of developing social and emotional difficulties and mental health disorders than the general population. Parents and carers and professionals are therefore keen to find interventions which might prevent or reduce these problems. In this paper, the authors describe the Homunculi approach to enhancing the individual's thinking and responses to everyday situations which often lead to stress and anxiety. The great strengths of the approach are that it is evidenced based and can be carried out without expensive and intensive training. The strategies draw on ideas already available to teaching staff and can be used by parents and carers too. Evaluation data are presented which demonstrate the value of this intervention to children on the autism spectrum and the authors suggest many other children with different social and emotional needs could benefit too.

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Introduction

The central tenet of cognitive behaviour therapy (CBT) is that 'people are disturbed not by things but by the views which they take of them' (Epictetus, 135AD, translated Higginson, 1865). Its rationale is that feelings and behaviour are largely determined by the thought processes by which individuals structure their world (Beck, 1963). It recognises that people with psychological problems, including depression, anxiety, anger, difficulties with social interaction and maladaptive behaviour patterns in general, frequently show 'distorted cognitions'. The aim of CBT is to help the individual to be able to assess the evidence in a realistic way, to become aware of negative and distorted patterns of thinking and to replace them with ways of viewing situations which are more positive and adaptive. This has clear relevance for young people on the autism spectrum in particular, whose thinking is already marked by inflexible, concrete and stereotyped views. Their

thought patterns are often very similar to the very rigid views frequently found among people who have issues such as depression or anxiety, for whom CBT can offer a means of developing new and more positive perspectives.

For the general population, CBT has a very strong evidence base. It is recommended in the treatment of many childhood problems and is a first choice of treatment for children with depression (National Institute for Health and Clinical Excellence, 2005). Its application to those on the autism spectrum has developed only in recent years, but it is increasingly being shown to be as effective for this group as for the general population. The use of CBT for children and young people on the spectrum is particularly appropriate because of the high level of co-existing conditions in autism (Ming et al, 2008). Since CBT already has a well-established evidence base

for dealing with anxiety, depression, obsessive compulsive disorder, anger, vulnerability to bullying and other issues, it is highly suited to dealing with such issues within autism. Studies over the last few years with children and young people on the spectrum have shown good results in areas such as reducing anxiety (Chalfant, Rapee and Carroll, 2007; Reaven et al, 2009; Sofronoff, Attwood and Hinton, 2005; Wood et al, 2009), dealing with anger management (Sofronoff et al, 2007) and promoting daily living skills and independence (Drahota et al, 2011).

Development of the Homunculi approach

The Homunculi approach (Greig and MacKay, 2013) has been developed over a ten-year period to address the social, emotional and behavioural issues experienced by children and adolescents on the autism spectrum using the principles of cognitive behaviour therapy. While it is CBT that provides the principal foundation of practice underlying the approach, the Homunculi is also informed by other areas of evidence-based practice, in particular, metacognition. Metacognition is concerned with people's knowledge and regulation of their own cognitive processes while thinking (Moore, 1982). It was first defined by Flavell (1976) as follows:

'Metacognition refers to one's knowledge concerning one's own cognitive processes and products or anything related to them.' (p 232)

Evidence for its importance has accumulated over many years and metacognitive strategies are used very widely to support areas such as learning and problem solving (Vrugt and Oort, 2008; Whitebread, 1999). These strategies such as self-questioning ('How have I solved this problem before?') and self-evaluation ('How well did I tackle this problem?') provide an established way to support children and young people in reflecting on their own thinking as a means of understanding and modifying their feelings and behaviour.

In addition to these major fields of evidence-based practice, the Homunculi approach incorporates many other ideas that are well established as making a valuable contribution in the autism field. These include features shared in common with social stories and cartoon strips (Gray, 1994a, 1994b; Gray and White, 2003), with Petersen's

(1995) impulse control model and with CBT-specific behavioural tools (Attwood, 2003).

Range of applications

The Homunculi was initially devised with a focus on individual work with young adolescents with Asperger syndrome or high functioning autism. Over the years it has been developed to allow it to be used flexibly across a wide age range from about seven years into the teenage years. While continuing to offer an individual programme it has also proved adaptable to group work. Current research is assessing how its principles can be applied within schools at class and year-group levels for building resilience in ways designed to help both those on the spectrum and the general population.

An important principle of the approach is that it is designed for use by anyone. The benefits offered by CBT for those on the autism spectrum have raised challenges regarding provision of resources. Formal CBT as a therapy for mental health problems is provided by a limited number of highly specialised professionals, such as psychologists or accredited CBT therapists, and most of these do not have autism-specific expertise. The Homunculi translates CBT practice into strategies that can be universally applied, and it is therefore a resource for those regularly working with young people on the spectrum, such as learning support teachers, classroom assistants, care workers and parents, in addition to psychologists and therapists.

The need for the Homunculi approach

The development of the Homunculi approach in Scottish schools and other settings is central to the aims of the Scottish Strategy for Autism and the needs it identified. It recommended:

'... that agencies and services develop a menu of interventions including advice, therapeutic interventions and counselling for children, young people and adults with an ASD, that are appropriate and flexible to individual need.' (Scottish Government, p 14)

Areas identified for intervention included:

'... improving communication, learning to be more flexible in accepting change ... and anger and/or anxiety management.' (p 28)

The need to develop the Homunculi approach arose from two factors: first, the widespread prevalence of mental health problems among young people on the autism spectrum, together with a wider range of social, emotional and behavioural issues; second, the lack of flexible resources which are based on sound psychological theory, which young people find exciting and enjoyable and which have an evidence base for their effectiveness.

Regarding mental health problems and wider issues, the extensive occurrence of these among young people in the general population has been well documented (Green et al, 2005). It is also well established that these problems are very much higher in the autism population. For example, Simonoff et al (2008) reported an overall anxiety disorder diagnosis rate of almost 42 per cent. The higher functioning populations present even higher risk in this regard, and it has been estimated that up to 65 per cent of adolescents with Asperger syndrome have clinically significant levels of anxiety, depression or anger (Gillot, Furniss and Walter, 2001; Green et al, 2000; Hare, 1997). Green et al (2005) found that mental health issues for children on the autism spectrum were reported by 89 per cent of parents, with almost all of these having gone on to seek help from professional agencies. The same large-scale survey noted that 25 per cent of parents reported issues of self-harming compared with two per cent for the general population.

Regarding the lack of appropriate, flexible resources for children and adolescents on the autism spectrum, many widely available resources are not supported by a sound theoretical and evidence base. Our understanding of the autism spectrum has historically been informed by four main strands of theory, each of which continues to play its part in helping to explain the thinking, feelings and behaviour of individuals on the spectrum. The first three of these are cognitive theories – theory of mind (Baron-Cohen, 1995), central coherence (Frith, 1989) and executive function (Ozonoff, Pennington and Rogers, 1991). All of these

seek to explain how the thinking processes of individuals with autism are different from the general population. The fourth, affective theory (Hobson, 1993), is based on the idea that underlying the difficulties faced by those with autism is a fundamental impairment in the realm of feeling, or emotion. The Homunculi is designed to address the specific difficulties for the individual associated with each of these four theories.

It addresses theory of mind difficulties by allowing young people to stand back from their own thinking and find new perspectives that take account of the thinking and behaviour of other people. It addresses weak central coherence by building a reflective capacity to aid in grasping meaning, to build up the 'big picture' of how thinking, feeling and behaviour are linked and to generalise lessons learned into wider settings. It addresses executive function problems by building structures for planning actions to achieve goals and by providing strategies to inhibit impulsive responses and regulate emotions. Finally, it addresses weaknesses in affective function by helping young people to learn manually the things about emotion that come intuitively to those with typical development, so that they can build an understanding of appropriate responses to their own feelings and those of others.

A further gap in resources arises from the fact that the standard CBT protocol as designed for the general population must be modified so that it is applicable for use within the autism spectrum. From the start, the development of the Homunculi has incorporated the key modifications to CBT approaches which are now recommended in the NICE Guideline on ASD (National Institute for Health and Clinical Excellence, 2012). Only the adult guideline covers intervention issues, since the current guideline on children focuses on assessment and diagnosis, but the CBT modifications are even more necessary for children and young people. They include the need for: a more concrete and structured approach, with a greater use of visual information, which may include worksheets, thought bubbles, images and 'tool boxes'; making rules explicit and explaining their context; involving a family member, carer or professional as co-therapist to improve the generalisation of skills; and maintaining the person's attention by incorporating their special interests into therapy, if possible. These are precisely the types of

adaptation of CBT on which the Homunculi approach is based, and they are designed to increase its appeal and effectiveness for working with children and young people on the spectrum.

Description of the Homunculi approach

'Homunculi' in Latin means 'little people'. In practical terms, the fold-out picture of a head provided with the pack depicts a drawing of the inside of a skull, the home of the Homunculi, that can flexibly contain, for example, an eye department, sleeping department, eating department or conference room. Children create their own characters and departments on the basis of problems they wish to solve. Each character is given a name and a job description or script of what that character can do.

In the first case study, five main characters were created by the young person to deal with moods, sleep problems, friendships, communication and motor tics (Moody, Couch Potato, Gaffa, Chatterbox and Twitch, respectively). In terms of the job description or script, for instance, Moody helped him to stop shouting or being aggressive, to stop going into a bad mood and to stop hurting inside. Couch Potato helped him to get to sleep at night. Gaffa looked after facial expressions and also helped him to know when he should pause and let others speak. Chatterbox helped him to 'know when to stop talking, take turns, be interesting and interested'. The job of Twitch was to stop nervous twitches and jumpyiness.

Special tools were allocated to each character: for example, Gaffa had a friendship repair tool kit. In addition, a Head Homunculus is in charge, whose job is to be always on patrol, to notice when problems arise by monitoring a 'thoughts and feelings screen' inside the Skull and responding to an early warning system of flashing traffic lights: 'red = stop; amber = think; green = do'. He also has a 'Good Rule Book' that contains advice about problems written in the form of personal scripts (eg, how to get a good night's sleep).

Therapeutic sessions involve working through a specific problem visually, using relevant characters and an array of tools, located in the Skull 'tool room'. Characters and tools are therefore detachable and can be moved to enact the problem story line visually. The child or therapist records the evolving story on a proforma. This provides a record of the session and can be used by the child later to create, for example, a cartoon strip as homework.

The Homunculi approach also incorporates the concept of role play as a central feature. The use of role play and drama can make a significant contribution to addressing the triad of impairments in the autism spectrum (Sherratt and Peter, 2002). Social interaction and understanding are promoted through 'make believe' roles which help young people to reflect on the behaviour and thinking of themselves and others. Language and communication skills are fostered by having a range of contexts in which to practise communication skills, to learn to understand non-literal language such as metaphor and sarcasm and to learn the importance of non-verbal communication such as facial expressions. Restricted and inflexible thought patterns are approached by the ways in which role play and drama have creativity and imagination at their core. Therefore, while the extent to which dramatic activities are incorporated or otherwise is fully adaptable to the personality of the young person and the support worker, the underlying concepts relating to role play make an important contribution.

Evaluation of effectiveness

The first research study for the Homunculi approach was a carefully conducted case study of a boy with Asperger syndrome who had just turned 13 years when the programme started (Greig and MacKay, 2005). Presenting problems at school as reported by teachers included poor attention, concentration and organisation, inappropriate verbal and non-verbal communication and disruptive and attention-seeking behaviour. Other concerns as reported by his mother related to the impact of changes of routine, sleeping and eating patterns, moods, tics, self-esteem and relationships. His difficulties were measured in three areas: levels of anxiety, depression, anger and stress using the Trauma Symptom Checklist for Children (Briere, 1996), social skills and competence assessments by pupil and parent (Spence, 1995) and observational school data

in the form of teacher round-robin reports and assessments. At pre-test, these assessments produced clinically significant scores for anxiety, depression, anger and stress. Social competence difficulties were comparable to or worse than the scores obtained by a comparison group of young people with Asperger syndrome on the same tests (MacKay, Knott and Dunlop, 2007). After ten weeks using the Homunculi approach highly significant changes were reported. Scores on anxiety, depression and stress all fell below clinical thresholds, social competence scores rose significantly and comments from teachers were transformed. In addition he developed the skills to establish a group of friends.

This case study was followed by group work with a sample of six teenage boys with Asperger syndrome. Highly significant reductions in scores for anxiety, depression, anger and stress were recorded. In addition, evaluation from the whole group was video recorded. The following were sample answers to the question:

*'Is there anything you think would make
The Homunculi better?'*

'I think I'm going to pass on that one.'

'No. I think it's a brilliant project as it is.'

*'I'm going to have to agree. I don't see any way the
Homunculi project could be made better.'*

When asked about changes in their view of Asperger syndrome, answers included:

*'Through the Homunculi I've learned that Asperger
syndrome is not so much a disability. I don't find
Aspie to be a bad character.'*

*'From this whole project I've realised that Asperger
syndrome can be beneficial.'*

A wider research study had a sample of over 30 young people aged 8–18 years (MacKay and Greig, 2008). This was with a mixed group in terms of their special needs, with about half of the sample on the autism spectrum and the rest with a wide range of other difficulties. Specific issues raised by the young people as target areas to be addressed included exam stress, friendship problems, fighting and bullying, low self-esteem, swimming pool phobia, social confidence, inappropriate social behaviour, coping with change, anxiety and depression. Self-ratings on these target areas showed significant improvement, and again their scores on anxiety, depression, anger and stress fell considerably, reaching levels which compared favourably with general population norms.

In addition to its use with individuals and small groups on the spectrum, the Homunculi approach has been adapted for wider use in building resilience and enhancing mental health. Following encouraging results for the experimental class in a pilot study with all children in their final year in two primary schools (age 11 years), data are now being analysed from an ongoing study of a whole year group in two Scottish secondary schools (age 12–13 years). The target group are pupils with emotional vulnerabilities and other special needs, and they include those who are on the autism spectrum. Preliminary results show significant increases for the experimental group who had the intervention over the control group who did not on standard measures of self-efficacy – the belief in their ability to succeed.

In addition, a series of social scenarios was designed that specifically aimed to elicit the participants' actual thoughts in certain social situations. These included four situations that young people typically find difficult or stressful: being alone or abandoned by friends; not being allowed out with a new friend because of homework or study needs; peer pressure and falling out with a best friend because of a rumour. The pupils rated themselves on a scale of 1–3 in terms of their perceived ability to cope with these situations (1 = not coping, 2 = coping half the time, 3 = mostly coping). Then they wrote down a description of what they could do to manage the situation. These written responses were evaluated and coded for 'reflective capacity'.

Examples of levels of reflective capacity are as follows:

- No/little reflective capacity: 'Don't know,' 'nothing.'
- Some reflective capacity: 'Say no and tell, 'just walk away.'
- Sufficient reflective capacity: 'Do the study and negotiate with parents, 'say you tried it before and did not like it.'
- A lot of reflective capacity: 'I hardly fall out with friends, but there is always somebody else to talk to anyway, so go for a walk about,' 'go to the room and do the work, plan to go to the movie another night and say sorry to the friend.'

Transcripts of the pupil's responses were coded according to these criteria by two independent researchers in order to establish inter-rater reliabilities. Preliminary analysis of these qualitative data indicates that the experimental group who used the Homunculi approach demonstrated greater reflective capacity, more positive strategies and fewer negative strategies than the control group who did not receive the intervention.

Concluding comments

The Homunculi approach offers an autism-specific CBT resource for children and adolescents on the autism spectrum. While its key features have been drawn from the experience of psychologists working with young people on the autism spectrum in their clinical and educational practice, its underlying features have been comprehensively founded on autism theory and evidence-based interventions, with a view to addressing the full triad of autism features, with a particular focus on addressing mental health issues and fostering social and emotional wellbeing. It is flexible in that it can be used by anyone working with young people on the autism spectrum, it can be used in individual or group settings and it can be adapted to suit the specific needs and interests of the young person.

Quantitative and qualitative findings to date have shown encouraging results regarding its effectiveness in supporting children and adolescents with autism. It has also shown good results with young people who have emotional and behavioural problems similar to those experienced by children with autism, and preliminary findings point to its potential in building resilience and fostering mental health at a whole class and year group level. This may provide pointers to more inclusive approaches to supporting young people in general. Instead of situations where those with autism are often subject to interventions designed for the general population but with no autism-specific focus, it may be that well-designed interventions for those on the autism spectrum prove also to be beneficial for young people in general, thus allowing for a more inclusive approach.

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