

# How it Works

Brain in Hand has been designed to improve outcomes and save money. Since its launch, we have engaged with researchers, commissioners, end users, and the academic community to understand the impact it makes and its acceptability to users.

Research on digital support systems in the area of autism and mental health is nascent. The evidence base is growing, but there is much that is not known and, in many regards, traditional research methods are not suitable.

Mindful of these challenges, there are three principles that inform research and development at Brain in Hand:

- (1) Make the most of existing published research to inform product development
- (2) Be nimble: make the most of every opportunity to gather data and get insight on how Brain in Hand is working
- (3) Be open to collaboration with partner organisations and academic institutions.

Our research programme is informed by the NICE Evidence standard framework for digital health. We have strong evidence for Tier 2 of the standard and are working towards Tier 3a.

We have documented our thinking about the mechanisms behind Brain in Hand in this white paper 'How Brain in Hand Works'. Our understanding of how Brain in Hand works is constantly evolving, so we want and expect this document to change in light of new insights and feedback from end users, funders, and researchers.

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All three authors work for Brain in Hand - Dr Louise Morpeth is CEO, Serin Hartopp is Product Owner, and Michelle Martin is a Senior Programme Manger

# How Brain in Hand Works

## BiH Explained

Brain in Hand is a goal-oriented, user-led approach. It combines the benefits of technology and the potential of people's support networks to help them develop and deploy strategies to tackle everyday tasks and challenges. Designed for young people and adults with impairments to executive function - such as difficulties with planning, problem solving and initiating tasks - it helps them establish routines, deal with unexpected events, and manage the stress and anxiety that can arise when things go off track.

BiH starts with the user, leveraging their motivation to build self-efficacy and become more independent. A step-by-step process of personal planning helps them to identify goals, pinpoint problems, and develop solutions. These are translated into strategies, broken down into manageable steps, alongside routines for daily tasks, organising and planning.

*Goals typically relate to one or more of the following areas:*

**Emotions and feelings:** managing anxiety; coping with change

**Travel:** using public transport

**Communication:** being able to communicate needs  
Social: talking to new people in new situations

**Study or work skills:** breaking down and planning assignments or work tasks

**Organisation:** knowing where to be and when; remembering what is needed for the day

**Independent living:** managing housework or bills; spending time at home alone

**Relationships:** how to best respond to what friends or family might say or do

Brain in Hand is a goal-oriented, user-led approach

Stored online and easily accessible via mobile software, the user's strategies can be drawn on as and when they need them to help navigate their day. This includes ways of coping with unexpected events, like the bus not arriving or lectures being cancelled. They can make notes in the moment about the things that have and haven't worked well for them, and why.

A mood monitor in the form of green, amber, and red traffic lights promotes self-monitoring and self-regulation by encouraging the user to pause briefly and reflect on how they are feeling throughout the day. A record of their traffic light presses is stored on a timeline which they and their supporters can access.

## Strategies to help users navigate their day are easily accessible via mobile software

Using the traffic lights and strategies on the user's phone, and aided by their supporters, BiH enables self-management. It helps users to reflect on their successes and struggles, identify triggers for anxiety, and expand and refine their repertoire of strategies.

Brain in Hand harnesses people's networks to access 24/7 support. It gives the user the confidence to use their strategies and solutions, safe in the knowledge that a safety net will catch them if a little extra help is needed to get the day back on track.

Brain is Hand is a personalised system with the flexibility to be tailored to users' specific requirements, which vary depending on their goals and their support network. For example, a student learning skills to live independently might focus more on planning, reminders, and prompts, and be helped by a parent or university mentor. A young person wanting to manage the anxiety of using public transport might focus more on mood monitoring and strategies for dealing with unplanned situations. They might have the support of a care worker, relative, or mental health practitioner.

A personalised digital system with flexibility

# Influences on Brain in Hand

As Brain in Hand has evolved, it has been influenced by three approaches known to be effective for helping people with executive function impairment and anxiety: cognitive behavioural therapy, solution-focused brief therapy, and coaching.

The Brain in Hand approach has much in common with cognitive behavioural therapy (CBT). It involves mutually agreed goal-setting with a focus on current problems. It aims to understand the user's perspective to help them discover alternative solutions to existing problems. It aims to equip people to adopt new behavioural patterns and is concerned with activity scheduling - for example, planning for situations in advance - and dividing tasks that will provoke anxiety into manageable steps.

## Cognitive behavioural therapy, solutions focused brief therapy and coaching

Brain in Hand differs from CBT in that it is not a therapy. BiH is pragmatic and assumes that behaviours can be modified by focusing on skill development.

BiH can, however, be used to record strategies from therapy sessions and may be used as an augmentation to clinical practice when appropriate. In these circumstances, BiH can support techniques such as positive self-talk (for example, a reminder that the user has successfully caught the bus alone before) and re-framing (for example, adopting a strategy for dealing with difficult social interactions to a new, specific interaction).

Brain in Hand draws on elements of Solution-Focused Brief Therapy (SFBT) to support users to identify their own solutions and strategies to overcome challenges. Users identify a goal or change to achieve with a focus on their own preferred future. They are helped to recognise the progress they have already made and ways they have coped with challenges in the past to inform solutions for overcoming these and similar difficulties in the future.

Solution-focused questions are employed to get the user started with BiH. They are encouraged to generalise strategies and reflect on the positives of situations instead of being problem-focused.

Brain in Hand also has much in common with coaching: a collaborative, client-centred, client-driven approach to making sustainable change focused on goal attainment. BIH allows members of the support network, such as a parent or mentor, to offer unobtrusive support and guidance from a distance (through the website) much like a coach, all the while empowering the user to make progress towards their goals with the highest possible degree of self-sufficiency and independence.

## Development of life skills or participation in education, work, or social & home life

As a personalised system, the outcomes for each user depend on the things that are important to them and the goals they select. A good outcome is movement towards or achievement of a goal. For the majority of users, goals concern with aspects of living more independently: for example, the development of life skills or participation in education, work, or their social or home life.

Brain in Hand can be used as a standalone support system or as an adjunct to other forms of support such as occupational therapy, psychological therapy, and social care.

Brain in Hand focuses on skill development

# Who is Brain in Hand for?

Brain in Hand is recommended for young people and adults who experience anxiety, difficulty managing their behaviour, or remembering things. Each of these difficulties may arise from a range of clinical conditions. One of the key features of support for people with anxiety is helping them identify the early signs of an anxious episode so that they can implement strategies to manage the anxiety before it becomes overwhelming. It is also well documented that anxiety conditions are associated with difficulties with some aspects of executive functioning: skills such as planning, problem-solving, and initiation of actions.

## Anxiety, difficulty with appropriate behaviour, or difficulty remembering things

People likely to benefit from Brain in Hand include those with the following conditions (due to the primary feature of anxiety): autistic spectrum conditions, generalised anxiety disorder, obsessive compulsive disorder, panic disorder, and anxiety associated with chronic medical conditions.

There are also a number of health conditions that result in executive functioning difficulties where individuals may find it difficult to stay on track or to recall, initiate, or complete tasks. It is in these circumstances that Brain in Hand is recommended as an aid, primarily to help manage difficulties in executive functioning and impulsivity by increasing daily awareness of the need to implement pre-planned responses to complex or unexpected situations.

People likely to benefit from Brain in Hand include those with the following conditions (due to the primary feature of executive function difficulties): acquired brain injury, ADD /ADHD, ASD, specific learning difficulties such as dyslexia, dyspraxia and dyscalculia, and language delays resulting from hearing loss.

Experience of implementing BiH in multiple settings has highlighted three other characteristics that contribute to increased user benefits. First, users need to have some motivation to make a change in their life, in order to consider a goal that they want to work towards. Second, as a text-based system, users need basic literacy. The system supports the use of emojis, which many users with low literacy levels have found beneficial. Third, users need to have a smartphone and be comfortable using it.

Please visit [www.braininhand.co.uk](http://www.braininhand.co.uk) for more information.

## Users develop awareness of difficulties and implement pre-planned responses

**STUDIES:** When Brain in Hand was in the pilot stage, two invaluable studies were conducted to understand if a digital support system would be acceptable to autistic people and the impact it could have. The first study of autistic adults<sup>1</sup> was undertaken by Devon Partnership Trust in 2013. It reported that over three quarters (77%) of users felt the system had a very positive impact on their lives: for example, by reducing anxiety and improving the ability to self-manage. BiH was partly attributed with enabling a transition from residential to independent living, and with a reduction in the number of weekly contacts that a user had with clinical support; this was early evidence that Brain in Hand could represent cashable savings to services. This was followed by a study of autistic students<sup>2</sup> by the National Autistic Society in 2015, which found that half of users reported being better able to implement strategies for coping with difficulties; a similar proportion reported increased confidence.

As a result of interest in Brain in Hand's suitability for people with an Acquired Brain Injury (ABI), we supported a study led by Professor das Nair at Nottingham University<sup>3</sup>. The study, showed that BiH has potential to ease the burden of care on carers and to reduce the number of hours of care provided, as well as to help users make progress towards their goals and increase their levels of participation (for example, in social activities, work, or education). The research was conducted by Dr Jade Kettlewell for her PhD, and included a fascinating systematic review of the evidence of smart technologies to improve outcomes in adults with ABI.

For these study papers email us at:  
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<sup>1</sup>Devon Partnership NHS Trust & Brain in Hand (2013) An assessment of quality of life and economic benefit, unpublished report.

<sup>2</sup>National Autistic Society (2015) HelpTech for students with autism: autism innovation fund project final report Jan-July 2015

<sup>3</sup>Kettlewell J., Phillips, J., Radford, K. & das Nair, R (2018) Informing evaluation of a smartphone application for people with acquired brain injury: a stakeholder engagement study. BMC Medical Informatics and Decision Making (2018) 18:33 <https://doi.org/10.1186/s12911-018-0611-0>