Institution: University of Southampton

Unit of Assessment: 04 Psychology, Psychiatry and Neuroscience

Title of case study: 04-02 New Forest, New Approaches: Providing the Evidence Base for Advances in the Psychological Treatment of Attention-Deficit/Hyperactivity Disorder

1. Summary of the impact

A research programme of randomised controlled trials undertaken at the University of Southampton demonstrating the efficacy of the New Forest Parenting Programme (NFPP) played a crucial role in: (i) influencing the developers of clinical guidelines to recommend parent training in general as a core part of the treatment of Attention-Deficit/Hyperactivity Disorder (ADHD) and (ii) establishing the NFPP, in particular, as a widely employed evidence-based treatment for ADHD, a condition estimated to affect up to 400,000 children in the UK alone. As a direct result of the trials, the programme, a novel therapeutic intervention that teaches parents of preschool children with ADHD how to modify their children's behaviour and improve their self-regulation, has been included in the National Institute for Health and Clinical Excellence (NICE) and other clinical guidelines and recommended internationally as an effective alternative to medication, which often brings only short-term benefits and is associated with a range of potentially debilitating side-effects.

2. Underpinning research

The importance of treating ADHD: ADHD is estimated to affect around 3% to 5% of children globally. The most frequently used treatment for ADHD is medication, which targets the cognitive centres of the brain with a stimulant. Although this is effective at controlling symptoms in the short term, medication has limited lasting benefits and commonly (for 30% to 40% of children) leads to side-effects such as loss of sleep, restricted growth and loss of appetite. Parents and clinicians are often resistant to using stimulants to treat young children with ADHD.

Background to the NFPP: Initially developed in the clinical setting in 1994, and revised and remodelled a number of times over the following 20 years on the basis of clinical experience and research findings, the NFPP is a novel non-pharmacological intervention for preschool children with ADHD. It comprises an eight-to-12-week home-based individualised programme specifically designed to teach parents of preschool ADHD children how to modify their children's inattentive, impulsive and challenging behaviour and to improve their self–regulation through a series of easy-to-implement parenting techniques, including the use of clear and short messages, eye contact and an authoritative tone to improve communication. Parent led games to increase self-regulation through parent-child interactions are a core part of the programme. The NFPP is based on a combination of clinical insight and theoretical models developed by Dr Margaret Thompson, Reader in Child Psychiatry, Edmund Sonuga-Barke, Professor in Psychology, and Cathy Laver-Bradbury, Consultant Nurse ADHD, at the Institute for Disorders of Impulse and Attention (IDIA) at the University of Southampton's School of Psychology.

The efficacy of ADHD – from evidence to impact: This ICS relates to the programme of research evaluating the NFPP carried out at the University of Southampton involving a series of coordinated high quality randomised controlled trials (RCT). The first RCT published in 2001 compared NFPP to both an active control arm involving general non-specific support for parents and a no treatment control (Sonuga-Barke et al., 2001). A wide range of child and parent mental health outcomes were studied. Outcomes were measured both immediately after intervention and at 3 months follow up. This trial demonstrated that the NFPP can reduce levels of ADHD and related problems to a statistically and clinically significant degree. Some 53% of children who participated in the first trial showed clinically significant improvements. These results challenged the view that psychological treatments for ADHD are only adjunctive, treating general behaviour problems rather than targeting the core ADHD features of inattention, impulsivity and hyperactivity. Promisingly, the effects on ADHD persisted for three months after treatment. In a recent, already influential meta-analysis published in the *American Journal of Psychiatry* (Sonuga-Barke et al., 2013) the NFPP was shown to have the highest efficacy of all behavioural treatments for ADHD in terms of core symptom reduction. Two other RCTs have been published (Sonuga-Barke et al., 2004; Thompson et al., 2009). The first in 2004 was

an effectiveness trial which examined whether the NFPP could be delivered in everyday practice. The results highlighted the importance of selecting appropriately experienced and skilled therapists to deliver the programme. The second, published in 2009, was an evaluation of the most recent version of the NFPP which included an increased element of self-regulation training and gave strikingly positive results.

This programme of RCTs has had impact on the treatment of preschool children with ADHD in the UK and around the world because it has ***provided high quality evidence for the efficacy of this treatment which has been instrumental in changing clinical guidelines (e.g. NICE***) to highlight the value of parent training in general for the treatment of ADHD (leading to a change in guidance) and more specifically has ***encouraged clinicians to implement the NFPP as their package of choice***. This has led to the widespread cross-national implementation of the NFPP as an evidence-based non-pharmacological treatment for ADHD.

As well as supporting the NFPP as an evidence-based treatment, findings from these trials have informed the further improvement of the intervention over the years. The NFPP has also been revised to reflect findings from wider neuro-scientific research conducted in the Developmental Brain-Behaviour Laboratory led by Professor Sonuga-Barke. This has led to the NFPP seeking to improve children's cognitive abilities in core areas of ADHD deficits, such as delay aversion and working memory impairments, through the use of structured tasks. Sonuga-Barke & Thompson have also been involved in large-scale trials of the revised NFPP in the UK, the US and Europe.

3. References to the research

3.1 Sonuga-Barke EJS, Daley D, Thompson M et al. (2001). Parent-based therapies for preschool attention deficit/hyperactivity disorder: a randomised, controlled trial with a community sample. Journal of the American Academy of Child & Adolescent Psychiatry, 40, 402-408. (271 citations in Google Scholar).

3.2 Sonuga-Barke EJS, Daley D, Thompson M (2002). Does Maternal AD/HD reduce the effectiveness of parent training for pre-school children's AD/HD? Journal of the American Academy of Child & Adolescent Psychiatry, 41, 696-702. (143 citations in Google Scholar).

3.3 Sonuga-Barke EJS, Thompson M, Daley D, Laver- Bradbury C (2004). Parent Training for Attention Deficit/Hyperactivity Disorder: Is it as effective when delivered as routine rather than as specialist care? British Journal of Clinical Psychology, 43, 449-457. (40 citations in Google Scholar).

3.4 Thompson et al. (2009). A small-scale randomised controlled trial of the revised New Forest Programme for Preschoolers with Attention Deficit Hyperactivity Disorder. European Child & Adolescent Psychiatry, 18, 605-616. (28 citations in Google Scholar).

3.5 Sonuga-Barke E, Brandeis D, Cortese S, Daley D, Ferrin M, Holtmann M, Stevenson J, Danckaerts M, van der Oord S, Döpfner M, Dittmann R, Simonoff E, Zuddas A, Banaschewski T, Buitelaar J, Coghill D, Hollis C, Konofal E, Lecendreux M, Wong I, and Sergeant J (2013). Non-pharmacological interventions for Attention-Deficit/Hyperactivity Disorder: Systematic review and meta-analyses of randomised controlled trials of dietary and psychological treatments. American Journal of Psychiatry, 170, 275-289. (20 citations in Google Scholar). *The recent meta-analysis highlighting the NFPP as the most effective parenting package available for ADHD.*

3.6 Sonuga-Barke, EJS, Koerting, J, Smith, E, McCann, DC, Thompson, M (2011).Early detection and intervention for attention-deficit/hyperactivity disorder. Expert Review of Neurotherapeutics, 11, 557-563. (12 citations in Google Scholar). *A paper describing the development of the NFPP.*

Grants supporting the research

1) Initial efficacy RCT grant: 1994-97 - An evaluation of a cognitive-behavioural intervention with pre-school children referred with hyperactivity (Sonuga-Barke & Thompson) NHS R&D - £104k.

2) Effectiveness grant: 1997-99 and 2001-02 - The evaluation of programme for the parents of hyperactive pre-school children. (Sonuga-Barke, Thompson & Daley). Mental Health Foundation.

£85k.

3) Trial of revised NFPP: 2005-07 - A parent training package for the treatment of pre-school ADHD. (Sonuga-Barke & Thompson). HOPE. £100k. Key output: Thompson MJJ, Laver-Bradbury C, Ayres M, Le Poidevin E, Mead S, Dodds C, Psychogiou L, Bitsakou P, Daley D, Weeks A, Miller Brotman L, Abikoff H, Thompson P, Sonuga-Barke EJS (2009).

On-going large scale international evaluations

1) 2007-11 - Home based parent training for preschool ADHD (Abikoff, Sonuga-Barke et al). NIMH - $2,042,289 (the analysis is still being undertaken beyond 2011 but there is no cost extension);
2) 2010-14 - The development of an integrated early detection and intervention model for Attention Deficit Hyperactive Disorder (PEDIA). (Sonuga-Barke, Thompson et al., RP-PG-0108-10061); NIHR - £2,029,787;
3) 2012-16 - D'SNAPP trial in Denmark (TrygFonden (10 million Danish Kroner).

4. Details of the impact

By providing some of the highest quality and strongest evidence for the efficacy for any psycho-social intervention, the programme of clinical trials into the efficacy of the NFPP conducted at Southampton, has (i) made a major contribution to ***fundamentally changing guideline recommendations in relation to ADHD clinical practice*** by demonstrating the value of non-pharmacological interventions, and (ii) ***led many practitioners more specifically to use the NFPP to improve the lives of ADHD children*** and their families. The development of the NFPP was a breakthrough in ADHD treatments transforming the ability of parents in the UK and overseas to manage and modify the behaviour, and improve the underlying self-regulation of children with ADHD, an illness that affects one in 20 five-to-15-year-olds – or around 400,000 children in the UK. Participation in the NFPP enables a decrease in core ADHD features without the use of medication and its unwanted side-effects. Reducing children's levels of inattention, impulsivity and hyperactivity has benefits for their educational attainment and social adjustment and for their psychological development more generally. In addition to the direct advantages for children with ADHD, reducing their disruptive behaviour also benefits their families, teachers and associates. More specifically, evidence from the first RCT suggests the NFPP can improve mothers' mental health.

First, the programme has informed clinical guidelines for practitioners treating children with ADHD, as well as leading to its widespread use in the UK and abroad, directly benefiting children living with ADHD and their families, increasing parental understanding of the disorder and strengthening parent-child relationships. Although emphasis has been placed on the treatment of children with early-onset ADHD, the NFPP is being used clinically up to the age of 12 and parents can apply the principles of the programme in caring for their children through their teenage years. The 2001 NFPP trial was identified in the National Institute for Health and Clinical Excellence's (NICE) 2008 guidance on ADHD – guideline CG072 – as one of the few methodologically sophisticated trials of parent training in the literature **[5.1]**. This contributed towards NICE's subsequent recommendation that parent training be made available as a frontline treatment for ADHD **[5.1]**. Professor Tim Kendall, chair of the ADHD guidelines committee has written ***"Sonuga-Barke and colleagues' work was instrumental in leading to the NICE guideline recommendations that the parents of all children with ADHD, and those pre-school with these behaviours, should have access to parent training/education programmes. Combined with similar guidance for the provision of parent training for the parents of children with conduct disorders, Sonuga-Barke' s work has also lead to a major national implementation programme in which the number of such parent training programmes has increased very substantially across England and Wales"*** **[5.8]**.

Following on from this, the NFPP was validated by the National Academy for Parenting Practitioners, making it one of 10 Academy programmes registered as an evidence-based treatment **[5.2; 5.3]**. The NFPP forms the basis of an ADHD training website sponsored by the Welsh Assembly that provides online training and support for general practitioners, GPs with special interests, community paediatricians and Child and Adolescent Mental Health Services staff **[5.4; see also 5.5]**. The NFPP

was highly rated by the UK Department of Education **[5.6]**. The NFPP trials were also cited in the 2011 American Academy of Paediatrics' revised guidelines for the treatment of ADHD, extending the programme's reach to the United States **[5.7]**.

The NFPP is now widely used across the UK and increasingly in Europe and the US. ***2,500 parents have purchased a NFPP self-help manual published less than 2 years ago*** (Laver-Bradbury et al., 2010). Thompson and Laver-Bradbury have coordinated a training programme in the UK, Europe and the US. This has resulted in ***over 250 clinicians being trained to use the techniques over the last 3 years alone*** with courses run in Southampton, Portsmouth, London, North Wales, Sheffield, Leicester, Bromley, Dundee, and Guernsey. These meetings have been attended by practitioners from many parts of the UK and Denmark, USA, Japan, Italy, Spain. Workshops have taken place at international meetings in Turkey and Spain attended by staff from all over Europe and South America. Based on the notion that each of these clinicians used NFPP with 10 ADHD patients a year, ***we estimate that at least 7,500 patients and their families have benefitted from this work***.

The perceived importance of the NFPP by public bodies is further demonstrated by the funding of major trials by overseas governments. For instance, a multi-centre NIHR trial in the UK is evaluating the efficacy of a version of the NFPP adapted for treatment resistant families (i.e., PEDIA), while a trial in New York funded by the National Institute of Mental Health (NIMH) at a cost of $2.3m, has compared the revised NFPP to a generic intervention for conduct problems. The results of this trial will be published in 2014. There is also a national study on-going in Denmark with firm plans for studies in Japan, Hong Kong, Sweden and Brazil. Discussions are currently underway regarding major initiatives in Spain, Japan, Brazil, Hong Kong and the Middle East.

5. Sources to corroborate the impact

The following links corroborate the impact of the NFPP on national and international health policy and practice.

5.1 NICE: http://www.nice.org.uk/CG072

5.2 National Academy of Parenting Practitioners (NAPP): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/183457/DFE-RR186.pdf

5.3 Health Innovations Alliance: http://www.healthinnovationsalliance.org.uk/index.php/showcase/34-new-forest

5.4 Welsh Assembly: http://www.adhdtraining.co.uk/nonpharma.php

5.5 Evidence Based Nursing: http://ebn.bmj.com/content/4/4/109.full

5.6 UK Department of Education: http://education.gov.uk/commissioning-toolkit/Programme/Detail/41

5.7 American Academy of Pediatrics: http://pediatrics.aappublications.org/content/128/5/1007.full.pdf+html

5.8 Personal communication from: Chair of the ADHD guidelines committee, Director National Collaborating Centre for Mental Health (NCCMH), website http://www.nccmh.org.uk/