Review

When all you have is a hammer …: RCTs and hegemony in science

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A B S T R A C T

People diagnosed with autism spectrum disorder (ASD) deserve the same respect as any other person and should be free to benefit from scientific research that can help them achieve skills which enable them to reach their full potential. Over the past 40 years Applied Behaviour Analysis (ABA) has utilised inductive, natural science methods to investigate techniques for the analysis and augmentation of socially significant behaviours. Unfortunately, many individuals with ASD in the UK cannot avail of these techniques because of an obdurate reliance on randomised controlled trials (RCTs) as the single most respectable measure of effectiveness of interventions. In this paper we focus on how the debate about RCTs is played out in the 'autism wars'.

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If you want to examine the effectiveness of a particular drug on a population, the randomised controlled trial (RCT) is a simple yet powerful research tool. As a basic paradigm for a nomothetic or group-based approach to science, its power lies in the selection tactic of randomly assigning individuals to either the experimental group (the group that receives the targeted drug/s) or the control group (the group that receives another drug, often a placebo). Random assignment ensures that conclusions about the effectiveness of the target treatment on a population are not compromised by unexpected variables associated with selection bias; 'blinding/double blinding' of treatment and/or assessment adds rigor to the procedure (Fig. 1).
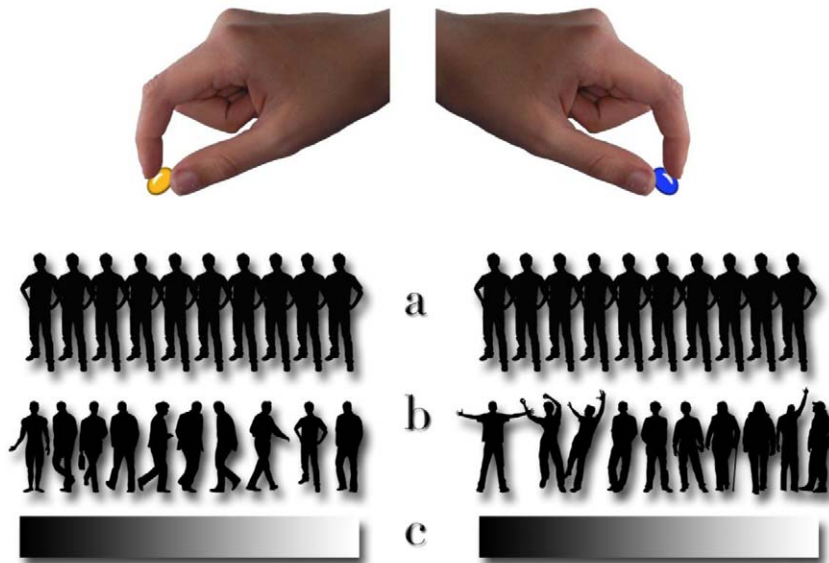
Fig. 1. (Panel a) In an idealised group design, a treatment drug (left-hand side) is given to a large number of participants in which variability between them is minimal. The control drug is given to a similar group of participants (right-hand side). (Panel b) Because an idealised group does not exist, participants for each group are randomly assigned to minimise the effects of extraneous variables that unexpectedly contribute to any differences between group results (RCT). (Panel c) Variability in individual responses that arise because of the effects of the drug, and/or variability in individual histories are represented by the spectrum.

Despite its simplicity, or perhaps because of it, the use of RCTs has stimulated much debate (Powers & Witmer, 1951; Smith & Pell, 2003). By-and-large, RCTs are held to provide the best clinical evidence available (NICE, 2009). The debate, however, hinges on the appropriateness of limiting research strategies to one experimental paradigm when assessing the efficacy/effectiveness[2] of different procedures in various settings (Edward, Carr, Granpesheh, & Grosman, 2009; Stephenson & Imrie, 1998). In this paper we outline this debate within the field of autism research. We focus on the behavioural treatment of autism and examine the ways in which a 'one model fits all mentality' of using RCTs to judge the appropriateness of an intervention has undermined the nature of scientific discourse which in turn has prevented many children diagnosed with an autism spectrum disorder (ASD) from receiving effective treatment.

It is not the aim of this paper to present a comprehensive discussion of the pros and cons of using Applied Behaviour Analysis (ABA). Rather, it is argued that much of the debate is mired in confusion whereby ABA is wrongly labelled as a specific form of autism treatment rather than being viewed correctly as an ideographic approach to science with its epistemology anchored in the natural science perspective of behaviour analysis (Chiesa, 1994; Hineline, 1990; Keenan, 1997; Keenan, Kerr, & Dillenburger, 2000; Keenan, Henderson, Kerr, & Dillenburger, 2005; Moore, 1985, 2008; Morris, 1985, 2009; PCDI, 2009; Schnaitter, 1987).

We begin with a brief description of ABA as it relates to the treatment of autism. Following this, we describe a populist view, i.e., that the jury is still out and that many empirical questions related to ABA are 'not yet scientifically settled' (Jordan, 2001, p. 421). This view is largely based in the argument that appropriate RCTs have not been conducted (BMJ, 2009; Ospina et al., 2008; Rogers & Vismara, 2008; Spreckley & Boyd, 2009) and that therefore ABA should not be wholeheartedly recommended as a basis for treatment and for governmental support (Maginnis, 2008; McConkey, Kelly, & Cassidy, 2007; Task Force Report, 2001; Task Group Report, 2002). Finally, we explain why exclusive reliance on inter-group designs, such as RCTs, is inappropriate for the design and evaluation of individualized treatment protocols.

1. Applied Behaviour Analysis (ABA)

The term Applied Behaviour Analysis was first defined by Baer, Wolf, and Risley (1968) and is understood as follows:

> Applied Behavior Analysis is the science in which tactics derived from the principles of behavior are applied systematically to improve socially significant behavior and experimentation is used to identify the variables responsible for behavior change. (Cooper, Heron, & Heward, 2007, p. 20)

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[2] 'Efficacy tends to differ from effectiveness because people who give informed consent to enter trials usually differ, in ways that affect outcome, from those who are eligible but decline or are not invited. Furthermore, taking part in research often involves procedures and commitments that are different from routine practice. In this sense, effectiveness cannot be judged from tightly controlled research, but without prior evidence of efficacy, it can be hard to attribute events in the real world to the effectiveness of an intervention.' (Stephenson and Imrie, 1998, p. 611).