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Tim Luckett, Anita Bundy and Jacqueline Roberts

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What is This?
Do behavioural approaches teach children with autism to play or are they pretending?

TIM LUCKETT The University of Sydney, Australia
ANITA BUNDY The University of Sydney, Australia
JACQUELINE ROBERTS The University of Sydney, Australia

ABSTRACT Play is, by definition, internally motivated, flexible, spontaneous and voluntary. Yet some researchers claim to have taught children with autism to play using behavioural interventions that are heavily structured, repetitive and make use of external reinforcements. In the current systematic review, we examine the extent to which these claims are supported by the evidence presented by the researchers themselves. We conclude that the most effective behavioural interventions have been those which have built on children’s existing abilities or have relied on the motivating nature of activities themselves rather than on external rewards. We discuss the problems inherent in distinguishing between behavioural and cognitive change in children’s play and highlight generalization as a poorly understood but focal process. Finally, we discuss the value of teaching children with autism play behaviours when these are not characterized by the defining qualities of play as a disposition.

ADDRESS Correspondence should be addressed to: DR TIM LUCKETT, Discipline of Occupation & Leisure Sciences, Faculty of Health Sciences, The University of Sydney, PO Box 170, Lidcombe, NSW 1825, Australia. e-mail: t.luckett@usyd.edu.au

Introduction

Autism is characterized by a lack of spontaneous and varied play of all kinds (Boucher and Wolfberg, 2003). Large amounts of money are spent annually on interventions aimed at teaching children with autism to play, much of which is used to fund techniques that can be described collectively as behavioural approaches.

There is now a considerable research literature aimed at evaluating the use of behavioural approaches for promoting play in children with autism (see Stahmer et al., 2003, for a review). Reported results are frequently
impressive, and claims have even been made that children with autism have been taught to play at levels similar to language-matched peers (e.g. Stahmer, 1995).

However, concern is widespread among educators and clinicians that children taught through behavioural techniques do not learn to play in a ‘genuine’ sense. There is a perception, instead, that behavioural programmes train children to ‘go through the motions’ of playing, with the result that the essence of true play is conspicuous by its absence. Indeed, so prevalent is concern that behavioural approaches result in rote, ‘robot-like’ behaviours that websites marketing behavioural programmes routinely seek to allay this concern at the risk of raising its profile still further (e.g. ABA Resources for Recovery from Autism/PDD/Hyperlexia, 2006; First Years Intervention, 2006; The Creative Learning Centers, 2005). Given this concern, is there a danger that some practitioners and researchers have lost sight of what play really is, why children engage in it, and the reasons we might want to teach children with autism to play in the first place?

This article examines the extent to which claims made by researchers for teaching children with autism to play using behavioural approaches are supported by the results reported by the researchers themselves. In particular, we will be interested to consider whether the measures used in evaluative studies conform to and adequately address a standard definition of play, and whether the changes measured are likely to make a real difference to the children undergoing treatment.

Defining play is dependent on the theoretical perspective one chooses, whether this be anthropological, historical, or concerned with the psychology of the individual player (Sutton-Smith, 1997). We are interested here in evaluating the changes made through treatment to the play of individual children. Definitions that are amenable to this purpose have in common the need to distinguish between play and non-play in terms of the experience, motivations, or other cognitions of players versus non-players or observers. In no case does a contemporary definition of play rely entirely on its behavioural features.

In order to circumnavigate problems encountered in providing a brief but all-encompassing definition of play, theorists have agreed on a list of attributes that denote an attitude or disposition toward play (e.g. Garvey, 1991; Rubin et al., 1983; Sayeed and Guerin, 2000; Wolfberg, 2003). A critical feature of play in this sense is that it is not dependent on the materials, activities or contexts involved; rather, the status of any activity as play is dependent on the attitude taken by the player him/herself. Perhaps the property most unanimously attributed to play in this sense is that it should be internally motivated rather than motivated by the promise of external reward. Related features include the necessity that true play is
voluntary, that there is attention to the process itself rather than to the end product of activity, and, as such, that play is flexible and spontaneous (i.e. it is largely dependent on the player’s immediate whim). Play also is generally agreed to involve at least some freedom from the constraints of reality, a feature most obviously made manifest through pretence. Other features of play include its pleasurable and safe qualities, its capacity to actively engage the player, and a tendency for the locus of control to lie within the player rather than external to him or her. For all its complexity, however, it is important to note that at least some aspects of a playful attitude are immediately communicable even among animals (Sutton-Smith, 1997).

Intuitively at least, these characteristics of play would not seem readily compatible with teaching techniques that rely on high levels of imposed structure, repetition and a rewards system (Boutot et al., 2005; Wolfberg, 1999) – all of which are defining features of behavioural approaches.

Much research has focused on establishing the developmental order and correlates of the emergence of different kinds of play (see Rubin et al., 1983, for a review of the earlier literature). In the case of autism, a distinction between ‘functional’ and 'symbolic' play capacities has received special attention. Functional play has been defined as ‘using an object as its function denotes’ (Libby et al., 1998, p. 487), including the use of miniature items (for example, a toy brush). Symbolic play, which emerges later in typical development, involves the player treating an object as if it were something else. Sigman and Ungerer (1984) and Leslie (1987) established the following three kinds of symbolic act as definitional features of symbolic play: referring to an object as if it were something else (e.g. watching a cardboard box as if it were a TV); attributing properties to objects that they do not possess (e.g. giving a doll a bottle as if she could feed herself); and referring to an object that is not really there (e.g. moving one’s hands as if one was holding a car steering wheel). While functional play does not develop normally in autism (Jarrold et al., 1993; Trillingsgaard et al., 2005; Williams et al., 2001), it seems relatively preserved when compared with the marked impairment in spontaneous symbolic play (Baron-Cohen, 1987; Bernabei et al., 1998; Jarrold, 2003; Libby et al., 1998). The significance of the symbolic play impairment in autism remains controversial but has been taken by some authors as evidence of an underlying deficit in the capacity to represent mental states (e.g. Leslie, 1987), a deficit that might also underlie impairments in social understanding and at least some characteristic problems with language (Baron-Cohen et al., 1994).

It is important to note that, in dispositional terms, functional play in the narrow sense described by Libby et al. (1998) is not play at all. If a child is using a toy brush to brush the floor without sufficient flexibility, spontaneity and freedom from the constraints of reality to be approaching
its use in some slightly more unorthodox way, then he is not playing – he is brushing. Of course, as we have seen, if the child uses the toy as if it were something else, then he is not only playing but engaged in symbolic play. But there is also another option: the child may be using the toy brush neither with strict adherence to the way its function denotes nor in any of the three ways that denote symbolic play. Instead, he may flick water with the bristles of the brush, roll the brush downstairs to listen to the clatter, or set challenges for himself by seeing how quickly or slowly he can brush the floor. In these cases, freedom from the constraints of reality is manifest not in pretence but in the child’s disregard for practical and/or social conventions. Provided the child’s approach to such activities fits with all the other features of play as a disposition, then that child is engaged in play.

A second focus in the autism literature has been on difficulties with social play. After reflecting on the literature in this area, Jordan (2003) concluded that social and affective impairments in autism may combine with cognitive deficits underlying poor development of play to form a cycle in which children do not gain the social, emotional and cultural experiences necessary for them to develop typically. In particular, the notable difficulties that children with autism display in variability, flexibility and spontaneity in all activities, including play, seem likely consequences of a lack of early social play experience (Wolfberg, 1999, cited in Jordan, 2003).

When we set out to teach children with autism to play, it is worth establishing why we want to achieve this and whether our methods will be likely to fulfil our intended purpose. At least two reasons for teaching children with autism to play emerge from the literature. First and most important among these in the general literature is the developmental potential that play has both in and of its own right and as a medium for development of other skills, most notably those relating to social interaction and communication (Brown and Murray, 2001; Fein, 1981; Jordan, 2003). The developmental potential of play is not typically emphasized in the behavioural literature, though it is referred to in the rationale for some studies (e.g. Baker, 2000; Thorp et al., 1995). Second, and of more prominence in the behavioural literature, is what we might term the diversionary potential that play has for replacing other activities that may be perceived as harmful, undesirable, or purposeless (e.g. Eason et al., 1982; Santarcangelo et al., 1987). We return to consider this second potential in our general discussion.

Behavioural approaches to teaching children with autism to play have been much expanded over the past four decades from the original discrete trial training model. They now include a range of techniques that make use of stereotyped behaviour, differential reinforcement of behaviour, reciprocal imitation, pivotal response training, self-management training, in vivo and video modelling, and play scripts (Stahmer et al., 2003). All of these

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approaches have in common that they are grounded in behavioural psychology, in particular, applied behaviour analysis (ABA).

Claims made in support of behavioural approaches for teaching children with autism to play can be divided into two camps: ‘soft’ claims that argue for increasing behaviours that resemble, at least superficially, the play of typically developing children, or for increases in skills thought to contribute to play in typical development; and ‘hard’ claims which suggest that children with autism have been taught to play in a dispositional sense, even in ways directly comparable to children without autism. As can be inferred from our earlier definition of play, this distinction goes beyond one of simple semantics; rather, it relates to the difference between arguing for a change in observable behaviours and proposing that children’s motivations and approach towards activities have been altered in specific ways.

In the current study, we are primarily concerned with evaluating the hard claims. We do this by examining the degree to which the measures that yielded the results these claims are based on relate to the accepted criteria for play described above. We leave discussion of the softer claims to a consideration of the potential purposes that teaching children with autism to play in this weaker sense might serve.

Of course, the problem inherent in both making and evaluating claims for dispositional change is one that is common across psychology and relates to the fact that data are invariably behavioural, at best verbal, and so can be used only to make inferences about changes in underlying mental states rather than as direct evidence. This gives rise to confusion over what should rightly be taken as sufficient evidence of change in disposition toward play. At the same time, analysis of such points of tension may serve to elucidate focal processes involved in dispositional change. We turn our attention to this issue in our discussion.

The categories of functional, symbolic and social play referred to earlier in this article provide a useful framework via which to situate behavioural studies within the context of the broader psychological literature. It should again be emphasized, however, that, for a child to be described as playing, the dispositional features of play should apply regardless of the type of activity he or she is engaged in. The primary question we are concerned with, then, is not whether the activities of children with autism who have taken part in behavioural therapy studies were functional, symbolic or social, but rather, whether the children were approaching these activities in a way that merited the description ‘play’.
Method

Procedure
We undertook a systematic review of research relating to behavioural approaches to promoting play in children with autism. To ensure that the review included a cross-section of techniques, we conducted database searches based on categories described in the recent review of the literature presented by Stahmer et al. (2003). These authors do not present an exhaustive list of behavioural approaches but rather provide ‘a sampling of often used, research-based techniques’ (2003, p. 401). Using the Stahmer et al. review as a guide, we searched the database PsychInfo with the terms: Autism AND play AND applied behaviour$^1$ analysis; Autism AND play AND discrete trial$^1$; Autism AND play AND pivotal response training; Autism AND play AND reciprocal imitation; Autism AND play AND differential reinforcement; Autism AND play AND self management; Autism AND play AND in vivo model$^1$; Autism AND play AND script$^1$; Autism AND play AND video model$^1$.

The abstracts of returned results were scanned for reference to studies that evaluated the effectiveness of behavioural approaches in promoting play in children with autism. Where abstracts did not provide enough information to make a decision regarding inclusion or exclusion of a given article, the full text article was obtained and scanned for details of the intervention used. Interventions were considered to meet criteria if they:

1. were based on one of the approaches listed in our search terms, and
2. made reference to increasing play behaviours in children with autism, or to developing other skills (e.g., communication) of children with autism within the context of play. While not of interest in themselves, articles referring to the development of other skills required reviewing in case there were claims for reciprocal benefits to play.

We supplemented our review of articles returned by the database search with a review of studies, subject to the same criteria, that were referenced in the article by Stahmer et al. (2003). The Stahmer et al. article appeared in a special issue of Autism (volume 7, issue 4) that focused on play. Authors of articles in the special issue were encouraged by the editors to ‘provide plenty of references, so that interested readers can go on to explore any particular topic in greater depth’ (Boucher and Wolfberg, 2003, p. 339). Stahmer et al.’s stated purpose was to ‘introduce a set of efficacious methods’ (2003, p. 401); as experts in and advocates of behavioural approaches to promoting play, these authors were well qualified to highlight the most persuasive evidence to date of their publication.

Articles were independently assessed by the current article’s first two authors and allocated to either ‘hard’ or ‘soft’ claim categories. Articles were
identified as making hard claims if they made reference to teaching children with autism to play:

1. without any sort of qualification regarding the precise behaviours or skills taught (i.e. it was stated, simply, that children had been taught to play);
2. in a way comparable to children without autism; or
3. in a way that implied developments in children’s approach to activity as internally motivated, voluntary, flexible, enjoyable, or spontaneous; or in children’s paying attention to the process of activity rather than to its end product; or in children’s control over their activities, active engagement, or freedom from the constraints of reality.

Articles making claims that met any of these three criteria were reviewed for the evidence on which the claims were made. Research measures were considered to be the primary source of evidence but justifications based on theory were also taken into account where these occurred. In particular, where participants spontaneously generalized the behaviours they were taught to other contexts, materials and people, this was taken as evidence that children’s approach to activities was to some extent internally motivated, voluntary and flexible. We were also especially interested in measures aimed at capturing the quality of children’s play and how this might compare to the play of children without autism.

Results and discussion

Altogether, 62 references were returned by searches of the PsychInfo database. Of these, 47 articles fitted our criteria. One of these was written in Japanese and 12 were PhD theses which were unavailable for review. The remaining 34 articles were reviewed along with additional articles from the 25 that met criteria and were referenced by Stahmer et al. (2003), giving a total of 41 articles. All of the articles reported at least some change as a result of intervention. Inter-rater agreement regarding hard versus soft claim categorization of articles was 89 percent. Where there was disagreement, brief discussion between the raters enabled articles to be allocated with agreement to one category or the other.

Two studies reported improvements in skills that were taught in a play context but did not include claims for contributing to children’s play per se (Buggey et al., 1999; Charlop and Walsh, 1986). A further four studies taught siblings, parents, or non-autistic children to be better playmates to children with autism and included only secondary or no measures relating to the play of participants with autism themselves (Celiberti and Harris, 1993; Moran and Whitman, 1991; Reamer et al., 1998; Shafer et al., 1984). Of the remaining 35 articles, 13 met our criteria for hard claims. Summaries
of these articles, our assessment of the claims made by their authors, and a discussion of issues arising are presented under functional, symbolic and social play categories below.

**Functional play**
Four studies – by Nietupski et al. (1986), Nuzzolo-Gomez et al. (2002), Santarcangelo et al. (1987) and Stahmer and Schreibman (1992) – reported interventions that were claimed to have increased ‘appropriate play’ or ‘toy play’ in children, adolescents or young adults with autism in a way that met one or more of our three criteria for hard claims. Definitions of play measures used in these studies closely approximated to definitions for functional play found in the broader literature, though the term ‘functional play’ was not used. Play measures were respectively defined as ‘actions with play materials considered typical for those materials’ (Nietupski et al., 1986, p. 262), ‘exhibiting behaviours such as touching the toy or using it in the manner for which it was designed with no other end than the manipulation of the toy itself’ (Nuzzolo-Gomez et al., 2002, p. 83), ‘playing with a toy in the manner with which it was meant’ (Santarcangelo et al., 1987, p. 40), and ‘the use of objects in the manner for which they were intended, where one response leads to or proceeds from another in the accomplishment of some project’ (Stahmer and Schreibman, 1992, p. 449).

The interventions reported in these articles used a range of behavioural approaches including differential reinforcement (Nietupski et al., 1986), discrete trial training (Nuzzolo-Gomez et al., 2002; Santarcangelo et al., 1987), and self-management training (Stahmer and Schreibman, 1992).

Two of the four articles provided evidence for developments in at least some of the features of play as a disposition. Of the two, Stahmer and Schreibman’s (1992) article provided the most substantial evidence in that it reported an intervention that used a stage approach to encouraging children to self-monitor their activities and so, arguably, to internalize motivation. Both Stahmer and Schreibman and Santarcangelo et al. (1987) reported generalization of the behaviours taught to toys and/or a setting other than those featured in training. Generalization of behaviours would seem to imply at least some degree of internal motivation, voluntariness and flexibility in the children’s approach to activities. Moreover, anecdotal reports from parents in both studies suggested that play had increased more generally at home. It is a shame that these reports were referred to only briefly in the discussion sections of both articles and were not reported in more detail. Given that playfulness is often immediately recognizable to an observer, parents’ intuitions regarding changes in their children’s approaches to activities might have been the most valuable measure in determining whether disposition toward play had been impacted by the interventions.
Further, it would have been interesting to learn whether children were using toys in a way that suggested they were free from at least some constraints of reality rather than simply responding to the objects’ immediate functional properties.

**Appropriate play**

‘Appropriate play’ is a term that is used quite commonly in the behavioural literature, although its definition varies between authors. While none of the definitions we reviewed made reference to disposition towards play, they differed in the extent to which they went beyond observable behaviours to make reference to children’s intentional states. The articles categorized by us as making hard claims were representative of those reviewed in that most definitions included reference to the use of a toy in a way that was ‘typical’ or ‘meant’ or ‘intended’ by someone other than the children themselves. As in the case of Libby et al.’s (1998) definition of functional play, definitions of this sort seemed actively to preclude the spontaneity, flexibility and freedom from constraints of reality that characterize play, especially when acceptable object use was further constrained by reference to a list of behaviours deemed appropriate for each toy (Eason et al., 1982) or to imitation of ‘correct play’ modelled by a peer (Tryon and Keane, 1986, p. 547). Notable exceptions included studies by Schreibman and colleagues in which measures made indirect reference to children’s intentionality in using toys. As we have seen, Stahmer and Schreibman (1992) required children to use toys in a sequence of actions that suggested some ultimate purpose; Schreibman et al. set criteria that a child must ‘use toys appropriately or “creatively” or participate in games’ (1981, p. 613), although the authors gave no further information about how creativity should be judged. Measures of this kind exemplify the problem, introduced towards the end of our introduction, in distinguishing between behaviour and the underlying mental states or attitudes that drive these. This problem is further exemplified by the measures used by Nuzzolo-Gomez et al. who required children to use toys ‘with no other end than the manipulation of the toy itself’ (2002, p. 83). The word ‘end’ in this context implies reference to children’s intentions and could even be interpreted in a dispositional sense to refer to children’s preoccupation with the process of playing. However, given that the authors were concerned with contrasting use of toys with ‘stereotyped’ behaviours, it seems likely that they were aiming instead to distinguish between two categories of behaviour. Even more confusingly, the same authors used terms such as ‘prefer’ and ‘choice’ in ways that seemed to severely limit the role of intentional states, e.g. ‘children would be taught under pairing conditions until the toys or books control choice in free time’ (2002, p. 85). If, as these authors suggested, children’s preferences
resulted from the ‘reinforcement’ offered by the toys, to what extent could their choices be said to be voluntary rather than conditioned responses? Debate around ‘free will’ and the proper explanation of behaviour has a long history, including a sometime rebuttal by behaviourists of the need for appeal to psychological phenomena of any kind (Skinner, 1953). We can only conclude that the articles by contemporary behaviourists reviewed in the current study referred to intentional states inconsistently and somewhat ambiguously.

Play and stereotyped behaviours in children with autism

Nuzzolo-Gomez et al.’s (2002) study also provides an example of a play intervention that was undertaken with the aim of decreasing ‘stereotyped’ behaviours. The inverse relationship between ‘appropriate play’ and stereotyped or ‘inappropriate’ behaviours was frequently reported in the articles we reviewed (e.g. Eason et al., 1982; Greer et al., 1985; Santarcangelo et al., 1987). In explaining this phenomenon, Nuzzolo-Gomez et al. offered that ‘stereotypical behaviours have a play function and can be replaced with play behaviour’ (2002, p. 85). Indeed, at least some behaviours seen in children with autism and commonly labelled as stereotyped seem likely to fulfil several of our criteria for play in that they appear to be spontaneous, to be internally motivated and to involve attention to process rather than to any end product, and are evidently enjoyable and highly engaging. Ironically, however, these features were generally less characteristic of the play behaviours that were taught to replace stereotyped behaviours in the studies we reviewed. The question arises, then, as to why the authors of these studies should have chosen to undertake such replacements.

A review of researchers’ rationales suggests that their motivation may have been at least partly the cosmetic potential that taught play behaviours have for being more socially acceptable than the behaviours they replace. This motivation is evidenced by value judgements of stereotyped or ‘inappropriate’ behaviour, e.g. ‘aimlessly flipping through magazines’ (Nietupski et al., 1986, p. 260); reference to social norms in the definition of such behaviour, e.g. ‘dissimilar in rate or topography to that of culturally accepted patterns’ (Greer et al., 1985, p. 270); and social validation of changes that include items such as ‘To what extent does the child appear to be abnormal?’ (Schreibman et al., 1981, p. 617).

We do not deny that, in some cases, replacement of socially ‘inappropriate’ with ‘appropriate’ behaviours may be a legitimate goal in itself, given that children whose behaviour does not conform to social norms are less likely to benefit from the opportunities bestowed by integration, and that social isolation and perceived rejection are a source of stress to parents of children with developmental disabilities (McCubbin et al., 1982). It also
is evident that, when children engage in self-stimulatory behaviours to the exclusion of other activities, learning is likely to suffer (Stahmer and Schreibman, 1992). However, care is needed to ensure that replacement of behaviours deemed inappropriate does not occur at the expense of activity that forms part of a wider repertoire and that – while atypical in its expression – represents genuinely playful engagement on the part of the child. There seems little doubt that people with autism often differ from the mainstream with regard to the activities that they find engaging, motivating, and enjoyable; their preferences demand consideration and respect (e.g. Donnelly and Bovee, 2003).

**Symbolic play**

Six studies – by Ingersoll and Schreibman (2002), Stahmer et al. (1994), Lifter et al. (1993), Newman et al. (2000), Stahmer (1995) and Thorp et al. (1995) – reported interventions that were claimed to have increased symbolic, ‘pretend’ or ‘make-believe’ play in children with autism in a way that met one or more of our criteria for hard claims. The articles by Ingersoll and Schreibman and Stahmer et al. (1994) were unpublished presentations, the results of which were referred to by Stahmer et al. (2003).

Stahmer et al. claimed that:

Ingersoll and Schreibman (2002) found that very young children with autism learned imitative pretend play with an adult using this procedure and this play generalized to novel settings, therapists and materials. Several of the children also increased their spontaneous use of pretend play. In addition, the children exhibited increases in social behaviours such as coordinated joint attention after reciprocal imitation training, suggesting that both the imitative and the spontaneous play had taken on a social quality. (2003, p. 405)

Stahmer et al. claimed that in the study by Stahmer et al. (1994), ‘when rated by naïve observers for creativity, spontaneity, and “typical” play, children with autism improved significantly after pivotal response training play training’ (2003, p. 404). Unfortunately, the unpublished nature of these studies meant that we were unable to review the evidence in support of claims made on behalf of Ingersoll and Schreibman (2002) and Stahmer et al. (1994). However, it is important to note that Stahmer et al. qualified their report of Stahmer et al.’s (1994) results by saying that ‘play remained qualitatively distinguishable from the play of typical children’ (2003, p. 404).

Of the remaining four articles, each reported results that seemed consistent with developments in some of the criteria for play as a disposition. The intervention reported by Lifter et al. (1993) took a developmental approach to discrete trial training of three boys with pervasive developmental disorder and/or autistic behaviours. Based on the Developmental Play Assessment...
(Lifter et al., 1988), the intervention targeted ‘developmentally appropriate’ activities in which children behaved as agents in a pretend scenario with dolls (e.g. putting a cup to the doll’s mouth for her to drink) and more advanced ‘age appropriate’ activities in which children pretended that dolls themselves were agents (e.g. putting a cup in the doll’s hand for her to drink). Measures focused on spontaneous occurrences of the target activities and generalized responses that included items or pretend actions not featured in training. The increase in generalized responses for developmentally appropriate activities suggested that the children’s activities showed evidence of voluntariness, flexibility, spontaneity and freedom from the constraints of reality.

The programme of intervention reported by Newman et al. (2000) was particularly interesting in that it constituted a novel attempt to use a behavioural approach to target variability in play. The results from this study were especially difficult to interpret in terms of dispositional change. Through a self-management technique, two children in Newman et al.’s study increased their generation of varied responses in play (defined as responses that ‘had not been emitted previously during the session by either student or experimenter’: 2000, p. 147), one with a toy robot and another in her drawing. However, these children’s continued self-prompting suggests that their responses did not become spontaneous: for example, when unable to think of a varied response, one of the participants simply said ‘a new one’. At the same time, however, the finding that children did not always self-administer rewards suggests that they may have become internally motivated in their approach to generating the responses; in other words, they may have become playful in the way they met the requirements given to them by the experimenters rather than in the behaviours identified for intervention. Newman et al.’s findings highlight how difficult it is to make a judgement regarding the quality of change in disposition towards play without the benefit of subjective ratings from observers who can be called on to make judgements as to whether children are playing.

Some of the hardest claims by our assessment appeared in the article by Stahmer (1995). Stahmer reported that the children with autism in her study:

learned to be creative and spontaneous in their play. They developed new play themes not suggested by the experimenter, and could engage in complex symbolic play with novel toys. Overall, the children were quite flexible in their play, and did not appear to mind variation or interruption in their play themes. They made as many unique play actions as did the typical controls. (1995, p. 130)
Stahmer did not admit to any qualitative difference between the play of her participants with autism and typically developing children. Indeed, she claimed that the children with autism ‘learned to perform complex and creative symbolic play actions at levels similar to that of language matched controls’ (1995, p. 123). However, Stahmer’s reference to the objectivity of her measures and recommendation for inclusion of ‘social validation’ in future studies suggests that she may have been stopping short of claiming that the children in her study learned to play in a way that was indistinguishable from controls.

Stahmer (1995) reported results from a pivotal response training programme that she gathered across an impressive array of measures. Stahmer’s definition of ‘symbolic play’ closely resembled the criteria set by Sigman and Ungerer (1984) and Leslie (1987): ‘(a) using one object as if it were another object, and/or (b) attributing properties to an object which it did not have, and/or (c) referring to absent objects as if they were present’ (1995, p. 128). Other measures included percentage of intervals containing ‘complex play’, defined as activity including ‘a sequence of at least three actions related to the same pretend theme’ (1995, p. 128); percentage of intervals containing ‘creative/unique play’, defined as performance of ‘symbolic play themes not learned during training’ (1995, p. 128); and ‘interaction during play’, including type of response (positive, negative or neutral) and number of initiations. Finally, Stahmer measured generalization of symbolic play to other toys and playmates.

To a greater or lesser extent, all seven children with autism in the study responded to play training with developments in the complexity and creativity of their symbolic play, although advances decreased somewhat at 3 month follow-up in three of the children. They also engaged in more positive interactions, though initiations remained generally low. Taken together, these findings suggest evidence of freedom from the constraints of reality, spontaneity, voluntariness, orientation to process and internal motivation. The finding that play was generalized to new toys and playmates in six out of seven of the children suggests that play also became more flexible in nearly all cases, the exception being a child who tended to perform the same action sequences repeatedly.

One important caveat to the success of Stahmer’s results concerns the finding that children performed best with the therapist and training toys, and generalized least to play with peers. Play sessions with parents and therapists consisted of 7 minutes of the child playing alone followed by 7 minutes of interactive play. Results were presented only for whole sessions so that the levels of play when alone are not known, other than it being stated in the article’s discussion that children ‘spontaneously produced complex symbolic play actions while playing alone’ (1995, p. 138). Given
that play varied as a function of playmate, that therapists (whom the children played best with) were likely the most skilled and motivated of the playmates, and that the number of child-initiated interactions remained low, it seems that support from playmates was an important factor in the advances seen in these children’s play.

The study reported by Thorp et al. (1995) was similar to those of Lifter et al. (1993) and Stahmer (1995) in that the intervention and measures it used were informed by the general as well as behavioural literatures. These authors targeted sociodramatic play skills in three boys with autism using a pivotal response training approach. The Play History Interview (Rogers et al., 1986) with parents and teachers was adapted to assess children’s sociodramatic play behaviour and included items relating to the manner in which children played with toys – ‘the extent to which the child engages in pretend play’ (Thorp et al., 1995, p. 269). Another measure concerned the percentage of intervals that children engaged in each of the five basic elements of sociodramatic play described by Smilansky (1968): role playing, persistence, make-believe transformations, social behaviour, and verbal communication. In this context, ‘make-believe transformations’ seemed to include activities described under the first and third criteria offered by Sigman and Ungerer (1984) and Leslie (1987) and were defined as ‘substitution of ambiguous or nonexistent items for real objects’ (Thorp et al., 1995, p. 270). Additionally, ‘role playing’ seemed to overlap with the first and second criteria and included verbalizations that suggested a child had taken on the role of a real or fictitious character. ‘Persistence’ approximated more closely to Stahmer’s criterion for ‘complex play’, requiring children to link together a minimum of four consecutive actions that combined to carry a play theme from beginning to end.

Following training, positive increases were found in Thorp et al.’s (1995) study across all the measures for all three children. Performance generalized to new toys and settings and, to a lesser extent, to new playmates. Furthermore, changes were maintained above baseline at follow-up 3 months later. A significant strength of the study lay in the fact that the Play History Interview gathered parents’ perspectives on children’s play and enabled them to formally report spontaneous increases in imaginative play at home. Further, qualitative observation of children’s play reported in the discussion indicated ‘a great deal of variety and creativity’ (1995, p. 279) in the children’s play. These results suggest that children did indeed display a degree of freedom from the constraints of reality, voluntariness, orientation to process, internal motivation, flexibility and spontaneity, especially since children spontaneously varied the plot of their favourite play themes. However, poorer performance when playing with parents and a continued preference on the part of two children for parallel play suggests that children’s engagement...
was at least partly reliant on elicitation. Moreover, Thorp et al. qualified their claims by conceding that the play of their participants, and especially of their third child who continued to present with stereotyped and minimally interactive behaviours, remained qualitatively different from the play of non-autistic children. Interestingly, in explaining their positive results, Thorp et al. referred to the ‘reinforcing nature of play’ (1995, p. 279), a feature that the more general play literature might alternatively term ‘play’s intrinsically motivating quality’.

**Social play**

Three articles – by Perry et al. (1995), Baker (2000) and Jahr et al. (2000) – reported interventions that were claimed to have taught social play to children with autism in a way that was consistent with one or more of our criteria for hard claims. Of the three sets of authors, Perry et al. made the strongest claims in that they reported that two siblings they treated using the Lovas technique of ABA ‘recovered’ to the extent that they ‘no longer meet the criteria for any pervasive developmental disorder, nor have any eccentricities of behaviour or language that clearly separate them from their peers’ (1995, p. 235). These claims were primarily substantiated by results from the Vineland Adaptive Behaviour Scales (Sparrow et al., 1984); results from additional measures, such as school and parental reports and professional observations from a video of the children engaged in free play, were referred to briefly, often only in the discussion section of the article, and were impressionistic at best. Following this article’s publication in the Journal of the American Academy of Child and Adolescent Psychiatry, Shapiro and Hertzig (1995) wrote a letter to the editor casting doubt on Perry et al.’s initial diagnoses of autism and suggesting that the strength of their claims was disproportionate to the evidence the authors provided. From the perspective of the current analysis, insufficient detail was given regarding measures to ascertain whether a dispositional change in play had occurred.

Baker (2000) reported an intervention that incorporated the thematic ritualistic activities of children into board games with the aim of increasing the sibling social play of three children with autism. Unlike the authors of other interventions reviewed in the current article, Baker emphasized the voluntary nature of participation in her intervention: no extrinsic reinforcers were used to encourage children to play. ‘Social play’ was contrasted with ‘nonsocial play behaviours’ and was defined by Baker as ‘actively participating in the activity with the child’s sibling; using the play materials as designed for play; attending to the game; playing with the sibling and not just with the materials; exhibiting reciprocal turn-taking as per the rules of the game; remaining oriented toward the activity (or remaining in the position to play and ready to participate in the activity); and/or
engaging in positive social communication, engaging in interactive pretend play with the sibling and not ritualistically engaging in perseverative behaviours’ (2000, p. 71). In addition, Baker included measures of children’s attention behaviours (negative non-engagement versus positive joint attention), child affect, and prevalence of thematic ritualistic activities (both observed in sessions and rated at home by parents). Finally, and for our purposes most importantly, Baker also included measures of play with siblings at home as rated by parents and by the siblings themselves. Following the intervention, Baker found an increase in children’s social play, positive affect and engagement, and a decrease in ritualistic behaviours. Effects generalized to home and were maintained at 3 month follow-up. There were also positive changes in parental ratings and sibling perceptions of both the prevalence and the quality of participants’ play with their siblings, in particular ‘siblings’ perceptions of the target child’s ability to play, willingness to play, and interest in play’ (2000, p. 72). Taken together, these findings suggest that, following intervention, participants did indeed demonstrate degrees of voluntariness, internal motivation and enjoyment in their approach to playing with their siblings. Most impressively, all three participants were observed to cheat at board games (i.e. break the rules when their sibling was not attending), suggesting advanced levels of flexibility and control, as well as complex social understanding.

Finally, Jahr et al. (2000) reported an intervention that used in vivo modelling, verbal description and imitation to teach cooperative play to six children with autism. ‘Cooperative play’ was measured in terms of the number of ‘play responses’ children contributed to a turn-taking ‘play episode’ with a peer partner. Interestingly, play responses were defined in functional terms, as ‘a discrete manipulation of toys in a conventional manner’ (2000, p. 156); however, the ‘conventional manner’ attributed to toys in play episodes scripted by the authors could equally have been described as symbolic play (e.g. A feeds a doll, B gives it a bath, A dries the doll, B puts on a diaper). In fact, the activities described seemed largely to involve substitution of a life-like toy for a real object (e.g. a toy train for train), a form of play that Libby et al. (1998) have identified as developing earlier and being of less difficulty for children with autism than the other forms of symbolic play listed by Leslie (1987). A secondary measure used in Jahr et al.’s study related to the ‘variability’ of play responses both within and across play episodes. Within-episode variability concerned children’s ability to produce a response that differed from those contributed by the child himself or a partner within that particular episode; across-episode variability required children to play with a toy they had never been observed to play with previously or with a familiar toy in a new way. In order to reach ‘mastery of cooperative play’, children were required to contribute
two play responses to a four-response play episode (see doll play example above), and for at least 50 percent of these contributions (i.e. at least one response) to show within-episode variability (e.g. A builds a train track, B puts on a train, A drives the train, B drives the train). Importantly, Jahr et al. also included a social validity measure which consisted of Likert-type scale ratings by 10 special education teachers from 1 to 7 for ‘improvement following training’, ‘playing within the same topic’, ‘no prompt or artificial reinforcers’ and ‘importance of new skills’ (2000, p. 159). All six participants gained mastery of cooperative play following training and generalized skills to new settings and partners. Further, cooperative play was maintained at follow-up an average of 10 months later. Variability of play responses also increased dramatically both within and across play episodes. Finally, social validity ratings following training averaged 6.2 out of the maximum 7.

Impressive as children’s progress was on the measures used, we were hesitant in recognizing the results of Jahr et al.’s study as indicative of play in the dispositional sense. ‘Cooperative play’ was used by the authors to describe a rigid turn-taking sequence which seemed to preclude spontaneity and flexibility in contributions from the children. While the children evidently gained from the structured approach the intervention offered, an assessment of disposition to play would have required the inclusion of further informal play sessions where children were given freedom to spontaneously break the turn-taking sequence. While, at first glance, progress on Jahr et al.’s variability measures seems to indicate that children’s play became more flexible and spontaneous in its content, the authors do not say whether children’s responses were genuinely novel or simply repeated responses modelled to them in training that they had not reproduced previously. Finally, the social validation ratings were carried out by experts in disabilities who were not blind to the children’s diagnoses, the purpose of study, or the pre versus post status of the sessions they observed. Ratings, though generally high, ranged widely, especially for ‘no prompt or artificial reinforcers’ (range 2 to 7), and none of the ratings related to the characteristics of play in the dispositional sense. Perhaps the most important results from our perspective were the average ratings of 6.6 (range 5–7) for ‘importance of new skills’, the finding that children generalized skills to new settings and play partners, and the maintenance of skills at 10 months following intervention. These findings suggest that children’s activities with partners may have developed a degree of flexibility and voluntariness, and may indicate an impression on the part of the teachers that children’s approach to activities had changed in important ways.
General discussion

The current critical review evaluated claims made for behavioural approaches regarding the promotion of play in children with autism against results presented by the researchers themselves and within the context of a generally accepted definition of play. We identified 13 articles as making ‘hard’ claims for promoting play in children with autism. Of these, studies by Baker (2000), Jahr et al. (2000), Lifter et al. (1993), Newman et al. (2000), Santarcangelo et al. (1987), Stahmer (1995), Stahmer and Schreibman (1992) and Thorp et al. (1995) each reported results that seemed consistent with developments in some of our criteria for play. Collectively, these studies reported changes that, to some extent at least, could be related to most of our criteria, suggesting that behavioural approaches may sometimes be effective in changing children’s disposition toward play.

Interestingly, while the successful interventions above took a behavioural approach in that they were heavily structured and emphasized the role of reinforcement in shaping behaviours, the teaching procedures they employed included features not generally part of the behavioural canon. These features may have been significant factors in enabling dispositional change. For example, Lifter et al. (1993) took a developmental approach to building on children’s existing skills; Jahr et al. (2000) provided children with peer support aimed at developing their ideas in a turn-taking sequence of play. Both of these techniques might be described as ‘scaffolding’ (Wood et al., 1976) and may have offered artificial but effective means of focusing activity at the edge of children’s capabilities where children are typically most motivated to play (Csikszentimihayli, 1975). Of the remaining studies, interventions carried out by Baker (2000), Stahmer (1995) and Thorp et al. (1995) relied on reinforcement from the activity or materials themselves rather than on any extrinsic reinforcement right from the beginning; participation in Baker’s intervention was voluntary and relied on the rules of the games (and children’s capacity to shape the rules to suit themselves) rather than on rules imposed by the therapist. Stahmer and Schreibman (1992) and Newman et al. (2000) both used approaches that encouraged children to self-monitor their behaviours and so may have enabled them to build internal motivation.

Generalization as a focal phenomenon

Almost all of the studies we reviewed aimed to teach skills that went beyond simple reproduction of behaviours as taught to generalize to other materials, playmates or settings (e.g. Baker, 2000; Celiberti and Harris, 1993; Stahmer, 1995). The extent to which generalization is assumed to demonstrate that there has been cognitive change probably differs between contemporary
behaviourists and was rarely discussed in the articles we reviewed. Where the factors involved in facilitating generalization were discussed, they tended to include reference to the need for children to be trained with a large number of examples (e.g. D’Ateno et al., 2003; Stahmer, 1995; Tryon and Keane, 1986), an idea originally put forward by Stokes and Baer (1977). It seems evident from our review that the processes underlying generalization in children with autism are not well understood but that they are, nonetheless, instrumental in marking a transition between changes in play behaviours and play in the dispositional sense. The confusion that surrounds behavioural versus dispositional interpretations of generalization is exemplified by the conclusions drawn by Baker (2000), who accounted for the long-term maintenance and generalization of social behaviours in her study by suggesting that children’s ritualistic behaviour was replaced as a reinforcer by the intrinsically motivating, spontaneous and self-generated advantages of the interactive play itself.

Rationales for interventions targeting behavioural change

Not all of the articles we assessed as making soft claims made reference to replacement of stereotypical or inappropriate behaviours in their rationales. Neither were the play behaviours they targeted restricted to functional play. Often, the rationale was limited to identification of a particular deficit in autism and the authors’ intent to ameliorate this, with no reference to anticipated developmental impact outside the targeted behaviour (e.g. Nikopoulous and Keenan, 2004; Taylor et al., 1999). D’Ateno et al., for example, identified symbolic play as a deficit in autism and then claimed to have taught play skills which they described as ‘scripted verbal responses and modeled motor responses’ (2003, p. 10). Although these authors measured novel verbal and motor responses which might have provided evidence of a dispositional change in play, in neither case did these significantly increase following treatment. Nonetheless, D’Ateno et al. concluded from their results that ‘video modeling can be an effective and efficient teaching medium’ (2003, p. 10) without explaining how teaching these behaviours would be likely to benefit the children who took part.

Companies marketing behavioural treatments sometimes defend against concerns that behavioural approaches result in rote behaviours by arguing that skills undergo a transition from early unnaturalness and rigidity to later fluency and spontaneity (e.g. ABA Resources for Recovery from Autism/PDD/Hyperlexia, 2006). However, if this phenomenon occurs and/or is used by some researchers as a rationale for teaching play behaviours, this was not evidenced in any of the articles we reviewed. Notably, no account of this transition was given in the one article we reviewed that claimed to have achieved ‘recovery’ of children with autism undergoing behavioural
intervention (Perry et al., 1995). Yet, if children in Perry et al.’s study really did recover, then, presumably, something like this transition must have taken place.

Perry et al.’s (1995) article was among others that reported what seemed to us to be the most important findings in an incidental way in their discussion sections (e.g. Santarcangelo et al., 1987; Stahmer, 1995; Stahmer and Schreibman, 1992; Thorp et al., 1995). These findings tended to relate to parents’ reports or informal observations that offered insight into the quality of children’s activities. The fact that such findings were reported at all suggests that qualitative as well as quantitative change in children’s behaviour formed part of the rationale for at least some of the interventions we reviewed. It may be partly a difficulty with more solidly capturing these changes that prevented them from taking higher precedence, but, equally, it may be that quality of play is not featured as a primary measure because it is not normally expected to improve. Thorp et al. (1995) expressed a belief, perhaps shared by many researchers, that the play of children with ‘severe’ autism will remain qualitatively different from that of other children regardless of increases in play behaviours brought about through intervention. This difference in the quality of play is certainly a persistent characteristic of autism and one that is highly resistant to intervention whatever the approach used.

At the same time, of course, it is possible that dispositional change did occur in some of the studies reviewed but, because it was not the focus of measurement, it could not be reported. Moreover, children with autism are often idiosyncratic in the way they express themselves: It seems plausible that children in this group might approach activities with a playful disposition but do so in a manner not readily interpretable by the observer. The aim of the current review was to assess the evidence for claims that suggested developments in children’s disposition to play. As such, we cannot conclude that dispositional change did not occur in any of the studies we reviewed; we can conclude only that some authors did not provide substantive evidence for the claims they were making regarding developments in play.

Future research

Future behavioural research looking at play in children with autism would do well to include measures of the quality of play when assessing the progress made by children following intervention. The definitional features of play – the fact that it is internally motivated, voluntary, spontaneous and flexible, involves attention to the process of playing rather than to any end product, actively engages and is controlled by the player, involves at least some freedom from the constraints of reality, and is safe and enjoyable – should not be overshadowed by the established imperative to measure
increases in behaviours such as conventional use of toys. More research is also needed to examine the processes involved in generalization of skills to new toys, settings and especially playmates. These processes, and the best ways to facilitate them through intervention, are of critical interest when promoting play in children with autism.

The majority of studies we reviewed made use of single case designs. The undertaking of randomized controlled trials should therefore be a priority in this field. Ideally, trials would take the form of longitudinal studies with the potential to assess the developmental impacts of behavioural interventions over a number of years.

Finally, research comparing performance on the same measures by children taking part in behavioural programmes and other play interventions would be especially welcome – an endeavour that, to our knowledge, has been attempted only once (Bernard-Opitz et al., 2004). Currently, the behavioural and cognitive play literatures remain largely distinct and poorly integrated: The Autism special issue’s review of the literature on pretend play (Jarrold, 2003) omitted behavioural studies altogether, and most authors of the behavioural articles reviewed in the current article – with the notable exception of Stahmer and colleagues – made scant reference to the cognitive literature. This division in the research literature is out of step with current clinical and educational practices where ‘mix and match’ approaches to working with children with autism are common.

Note
1 $ is used to conduct truncated searches on PsychInfo. A search for 'behaviour$', for example, will return results that include ‘behavioural’ and ‘behaviours’.

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