# Using computers to teach people with intellectual disabilities to perform some of the tasks used within cognitive behavioural therapy: A randomised experiment

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A B S T R A C T

*Aims:* Training has been shown to improve the ability of people with intellectual disabilities (IDs) to perform some cognitive behavioural therapy (CBT) tasks. This study used a computerised training paradigm with the aim of improving the ability of people with IDs to: a) discriminate between behaviours, thoughts and feelings, and b) link situations, thoughts and feelings.
*Methods:* Fifty-five people with mild-to-moderate IDs were randomly assigned to a training or attention-control condition in a single-blind mixed experimental design. Computerised tasks assessed the participants' skills in: (a) discriminating between behaviours, thoughts and feelings (separately and pooled together), and (b) cognitive mediation by selecting appropriate emotions as consequences to given thoughts, and appropriate thoughts as mediators of given emotions.
*Results:* Training significantly improved ability to discriminate between behaviours, thoughts and feelings pooled together, compared to the attention-control condition, even when controlling for baseline scores and IQ. Large within-group improvements in the ability to identify behaviours and feelings were observed for the training condition, but not the attention-control group. There were no significant between-group differences in ability to identify thoughts, or on cognitive mediation skills.
*Conclusions:* A single session of computerised training can improve the ability of people with IDs to understand and practise CBT tasks relating to behaviours and feelings. There is potential for computerised training to be used as a "primer" for CBT with people with IDs to improve engagement and outcomes, but further development on a specific computerised cognitive mediation task is needed.

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## 1. Background

The last decade has seen an increase in research evaluating the efficacy of psychological therapies for people with intellectual disabilities (IDs), especially cognitive behavioural therapy (CBT) of anger regulation problems. Meanwhile, the proportion of case studies and single-armed trials has decreased, with more large-scale multi-site randomised controlled trials (RCTs) being completed (Brown, Duff, Karatzias, & Horsburgh, 2011; Vereenooghe & Langdon, 2013). This increase in the methodological quality of intervention studies enabled Vereenooghe and Langdon (2013) to complete a meta-analysis reporting moderate to large effect sizes for CBT of both anger regulation problems and depression.

The efficacy of psychological treatments is of particular importance given the high prevalence rates of mental health problems in this population. It is estimated that up to forty per cent of people with IDs suffer from mental health problems (Cooper, Smiley, Morrison, Williamson, & Allan, 2007), many of which may be associated with the higher occurrence of negative life events (Biswas & Furniss, 2009; Hulbert-Williams & Hastings, 2008). In spite of this, access to psychological therapies for people with IDs is still limited, in particular for young adults and people with mild to moderate IDs who often do not receive psychiatric assessments

(Bhaumik, Tyrer, McGrother, & Ganghadaran, 2008).

Various barriers, both before and during therapy, may contribute to the lack of adequate provision in psychological therapies. Initial problems may arise in the assessment phase when mental health problems are not recognised as distinct from the IDs (Reiss, Levitan, & Szyszko, 1982) or misdiagnosed as challenging behaviour (Azam, Sinai, & Hassiotis, 2009). For those who receive psychological therapy, being uninformed about the reason for their referral may negatively impact upon their motivation to engage in therapy; hence, affecting treatment outcomes (Willner, 2006). Likewise, difficulties in establishing a therapeutic alliance may lead to clients engaging in a dependency-inducing relationship rather than taking ownership of the therapeutic process (Brechin & Swain, 1988; Jahoda et al., 2009). Furthermore, the perceived level of cognitive functioning may pose an additional barrier when therapists are more likely to use the cognitive aspects of CBT with more abled clients only (Willner, 2006).

The assumption that cognitive and verbal skills affect the ability of people with IDs to engage in and benefit from psychological therapy has been investigated. Taylor, Lindsay, and Willner (2008) reviewed the evidence regarding the impact of full scale IQ and verbal IQ on therapy outcomes, reporting that while some studies reported better outcomes for clients with a higher verbal IQ (Rose, Loftus, Flint, & Carey, 2005; Willner, Jones, Tams, & Green, 2002), others reported greater improvements from pre-intervention to follow-up for clients with lower full scale IQ scores (Taylor, Novaco, Gillmer, Robertson, & Thorne, 2005). This discrepancy could be associated with mode of delivery, individual versus group-based treatments, and intensity or frequency of sessions (Taylor et al., 2008). Meta-analytic evidence supports the first assumption, with both Prout and Nowak-Drabik (2003) and later Vereenooghe and Langdon (2013) affirming greater therapy efficacy for individual rather than group therapy.

In addition to verbal ability, other skills may be desirable or required to participate in CBT successfully, some of which are likely to be related to general intellectual functioning. The Suitability of Short-term Cognitive Therapy (SSCT) scale identifies ten skills that would determine a person's suitability for therapy (Safran, Segal, Vallis, Shaw, & Samstag, 1993), including compatibility with the cognitive rationale and potential to form a therapeutic alliance. Our study targeted two of the four skills of the SSCT scale that are associated with capacity for participation in CBT and are predictive of therapy outcome for anxiety and depression: accessibility of automatic thoughts and awareness and differentiation of emotions (Renaud, Russell, & Myhr, 2014).

## 1.1. Suitability for CBT in terms of cognitive skills

Various cognitive, interpersonal and motivational factors have been identified that may affect therapy outcomes. The cognitive aspects, linked to the cognitive rationale of CBT, have been determined by the antecedent-belief-consequence model (ABC-model; Ellis, 1977) of rational-emotive therapy. The ABC-model explains behaviour and emotions as consequences, C, to how a situation or antecedent, A, has been interpreted or mediated by beliefs, B. Assessments derived from this model have focused on identifying various emotional states, linking situations to feelings (Antecedent and Consequence components), linking thoughts to feelings (Belief and Consequence components), differentiating between thoughts, feelings, and behaviours (Belief and Consequence components), and understanding of how thoughts mediate the relationship between situations and consequential emotions, a process known as cognitive mediation (Antecedent, Belief and Consequence components).

Identifying emotional states, particularly your own, is essential to engaging in meaningful discussions about the causes and consequences that led to them. Many researchers have focused on whether people with IDs are able to successfully identify emotional states. However, the evidence indicates that differentiation between various positive and negative emotional states, other than happy and sad, is sometimes problematic for people with IDs (Dagnan & Chadwick, 1997; Joyce, Globe, & Moody, 2006; McKenzie, Matheson, McKaskie, Hamilton, & Murray, 2001).

In addition, performance on emotion recognition assessments has been associated with the type of assessment and stimuli used (McKenzie, Matheson, McKaskie, Hamilton, & Murray, 2000; McKenzie et al., 2001). For example, labelling emotions appears more difficult than identifying a given emotion from multiple stimuli, in which accuracy rates can be increased by reducing the range of forced-choice stimuli from six to two. Emotion recognition ability is also higher for photographs with more contextual information than line drawings when there are a greater number of stimuli presented. The value of photographs over line drawings tends to reduce, however, when fewer stimuli are presented.

While identifying emotional states is important for psychological therapies, the ability to link situations, or antecedents, to feelings, or consequences is also important. Reed and Clements (1989) examined this ability with adolescents and young adults who have IDs, and approximately two thirds of their sample showed substantial levels of emotional awareness as determined by errorless performance in linking happy and sad faces to six different pictured scenarios, leading them to report that an age equivalent score of 4 years and 5 months on the British Picture Vocabulary Scale (Dunn, Dunn, Whetton, & Pintillie, 1982) was necessary to complete the task successfully.

Replications of this task led to similar findings with pass rates ranging from fifty to seventy-five per cent (Dagnan, Chadwick, & Proudlove, 2000; Joyce et al., 2006), indicating that most people with IDs can determine the appropriate emotional response in various situations provided they demonstrate substantial verbal comprehension skills.

Moreover, Dagnan and Chadwick (1997) assessed cognitive mediation skills by verbally describing brief scenarios and presenting facial expressions of consequential emotions. All participants generated at least one thought that would mediate the association between the presented situation and emotion, although the task was considered difficult by some.

In a subsequent study, the cognitive mediation assessment was subdivided in two tasks focusing on different aspects of cognitive mediation (Dagnan et al., 2000). The 'If A and B, choose C' task presented participants verbally with a scenario comprising an antecedent, A, and a belief, B, and prompted participants to identify whether they would feel happy or sad (emotional consequence, C). Likewise, for the 'If A and C, choose B' task, participants had to select an appropriate mediating belief, B, for scenarios comprised of an antecedent, A, and its positive or negative emotional consequence, C. Respectively, ten and twenty-five per cent of participants managed to pass each task, a grade awarded to scores of eight out of ten or higher, and no differences were found in level of difficulty between the two tasks.

The above findings were replicated by Joyce et al. (2006) and again by Oathamshaw and Haddock (2006) in people with IDs and psychosis. Most of the above studies reported a significant correlation between cognitive mediation ability and level of verbal comprehension, but it is important to bear in mind that participants with limited verbal skills were excluded from these studies. More recently, Vereenooghe, Reynolds, Gega, and Langdon (2015) did not employ exclusion criteria based on verbal skills, but reported substantially higher pass-rates on these tasks using an adapted and computerised version.