

Original citation:

Vereenooghe, Leen and Langdon, Peter E.. (2013) Psychological therapies for people with intellectual disabilities : a systematic review and meta-analysis. Research in Developmental Disabilities, 34 (11). pp. 4085-4102.

Permanent WRAP url:

<http://wrap.warwick.ac.uk/73722>

Copyright and reuse:

The Warwick Research Archive Portal (WRAP) makes this work by researchers of the University of Warwick available open access under the following conditions. Copyright © and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable the material made available in WRAP has been checked for eligibility before being made available.

Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge. Provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

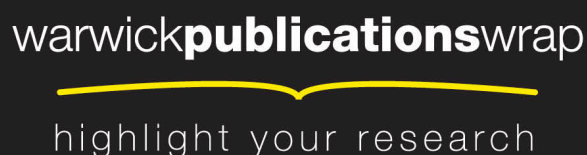
Publisher's statement:

© 2013, Elsevier. Licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International <http://creativecommons.org/licenses/by-nc-nd/4.0/>

A note on versions:

The version presented here may differ from the published version or, version of record, if you wish to cite this item you are advised to consult the publisher's version. Please see the 'permanent WRAP url' above for details on accessing the published version and note that access may require a subscription.

For more information, please contact the WRAP Team at: publications@warwick.ac.uk



<http://wrap.warwick.ac.uk>

Psychological therapies for people with intellectual disabilities:
A systematic review and meta-analysis

Leen Vereenooghe
University of East Anglia

Peter E Langdon
University of East Anglia and
Hertfordshire Partnership University NHS Foundation Trust - Norfolk

Author Note

Leen Vereenooghe, Department of Psychological Sciences, Norwich Medical School, University of East Anglia, UK; Peter E. Langdon, Department of Psychological Sciences, Norwich Medical School, University of East Anglia, UK and Broadland Clinic, Hertfordshire Partnership University NHS Foundation Trust - Norfolk, UK

Peter E Langdon is funded by a National Institute for Health Research Postdoctoral Fellowship

This article presents independent research funded by the National Institute for Health Research (NIHR). The views expressed are those of the author(s) and not necessarily those of the National Health Service, the National Institute for Health Research or the Department of Health.

Correspondence concerning this article should be addressed to Dr Peter E Langdon, Department of Psychological Sciences, Norwich Medical School, University of East Anglia, Norwich Research Park, Norwich, NR4 7TJ, United Kingdom. Email: P.Langdon@uea.ac.uk

Abstract

BACKGROUND: The aim of this study was to evaluate the efficacy of psychological therapies for people with intellectual disabilities (IDs) through a systematic review and meta-analysis of the current literature. **METHOD:** A comprehensive literature search identified 143 intervention studies. Twenty-two trials were eligible for review, and 14 of these were subsequently included in the meta-analysis. **RESULTS:** Many studies did not include adequate information about their participants, especially the nature of their IDs; information about masked assessment, and therapy fidelity was also lacking. The meta-analysis yielded an overall moderate between-group effect size, $g = .682$, while group-based interventions had a moderate but smaller treatment effect than individual-based interventions. Cognitive-behaviour therapy (CBT) was efficacious for both anger and depression, while interventions aimed at improving interpersonal functioning were not effectual. When CBT was excluded, there was insufficient evidence regarding the efficacy of other psychological therapies, or psychological therapies intended to treat mental health problems in children and young people with IDs. **CONCLUSIONS:** Adults with IDs and concurrent mental health problems appear to benefit from psychological therapies. However, clinical trials need to make use of improved reporting standards and larger samples.

KEYWORDS intellectual disability, systematic review, meta-analysis, psychological therapy, cognitive behavioural therapy, learning disabilities, neurodevelopmental disorders

Psychological therapies for people with an intellectual disabilities: A systematic review and meta-analysis

Disadvantageous life events and genetic vulnerability are believed to increase the risk of mental health problems amongst people with intellectual disabilities (IDs; Clarke, 2003; Emerson & Hatton, 2007; Hulbert-Williams & Hastings, 2008). The prevalence of psychiatric disorders amongst this population is difficult to determine because epidemiological studies have made use of different diagnostic criteria and assessment methods, but are also based on different subpopulations. As a consequence, prevalence estimates range between 10 to 39 percent (Borthwick-Duffy, 1994; Deb, Thomas, & Bright, 2001; Emerson & Hatton, 2007).

Available mental health treatment for people with IDs generally constitutes pharmacological and behavioural approaches, with a recent trend to provide more psychotherapeutic interventions. However, the increasing demand for psychotherapy for people with IDs has been met with both practical and theoretical concerns. These include the perceived lack of appropriate training amongst mental health practitioners (Royal College of Psychiatrists, 2004) and perceived “therapeutic disdain” towards this population (Bender, 1993). Theoretical concerns regarding whether people with IDs actually suffer from mental illnesses, as well as assumptions that IDs is associated with cognitive problems that prevent engagement in therapy, further constrain the provision of psychotherapy to this population (Adams & Boyd, 2010; Butz, Bowling, & Bliss, 2000).

The assumption that cognitive problems render therapy as ineffective with this population has been successfully challenged, and there has been an increase in therapy research with people who have IDs. There is a case study literature demonstrating that psychotherapy for various types of psychopathology including mood disorders (Fernandez, Tom, Stadler, Cain, & Knudsen, 2005), anxiety disorders (Arntzen & Almas, 1997; Chiodo &

Maddux, 1985; Hurley, 2004), symptoms of obsessive-compulsive disorder (Klein-Tasman & Albano, 2007), post-traumatic stress disorder (PTSD; Fernando & Medlicott, 2009; Lemmon & Mizes, 2002; Mevissen, Lievegoed, & de Jongh, 2011; Stenfert-Kroese & Thomas, 2006), psychosis (Barrowcliff, 2008; Haddock, Lobban, Hatton, & Carson, 2004), and anorexia nervosa (Cottrell & Crisp, 1984) may be effective. There is also emerging evidence from single group pre- and post-intervention design as well as controlled clinical trials.

However, considering the literature within this area, there are issues associated with the methodological quality of studies; many studies have a small number of participants and lack comparison groups or randomised allocation (Bhaumik, Gangadharan, Hiremath, & Russell, 2011). Sampling bias is likely due to recruitment through gatekeepers, such as family members, carers, service providers or disability groups. Some gatekeepers may actively try to prevent people with IDs from taking part in research, in an attempt to “protect” them, because of unfounded fears and concerns that researchers may not be acting in the best interests of people with IDs. Therefore, recruitment strategies such as these may not adequately capture those not receiving formal services or people without supportive gatekeepers (Becker, Roberts, Morrison, & Silver, 2004).

Furthermore, the capacity of people with IDs to give or withhold informed consent is highly relevant within clinical trials. Arscott, Dagnan, and Stenfert-Kroese (1998, 1999) assessed the ability of participants to consent to different treatment options. Their findings indicated that participants had a sufficient understanding of treatment procedures, but found it more difficult to consider the potential risks and benefits of treatment. Similar difficulties were reported regarding the right to withdraw from a study and the understanding of randomisation. The appropriateness of the inclusion of a treatment-as-usual (TAU) control group for people who seek help for mental health needs has also been questioned (Oliver et al., 2002).

The scarcity of controlled outcome studies within this area can partially be explained by a combination of recruitment strategies, concerns about treatment effectiveness, and ethical concerns regarding consent and randomisation. However, considering the marked prevalence of psychiatric disorders amongst people with IDs, there is a clear need for further clinical trials within this area. Others have attempted to undertake both narrative and meta-analytic reviews in order to examine the effectiveness of psychological therapy with people who have IDs who have mental health problems, including forensic mental health problems. For example, in a survey of reviews, Gustafsson et al. (2009) identified fifty-five reviews of therapy for people with IDs and concurrent mental health problems, and the evaluation of theoretical aspects of psychological therapy provision was sparse. Primary research was considered to lag behind due to the lack of randomised control trials (RCTs); however, it could be argued that evidence from non-RCTs should not be disregarded due to the ethical challenges associated with undertaking psychological research within this area.

Several other reviews have been undertaken in this area. First, Prout and Nowak-Drabik (2003) conducted a comprehensive literature review identifying ninety-two intervention studies of which thirty-five comprised a control group. Half of these controlled trials were published dissertations. Nevertheless, the diversity in psychotherapeutic techniques, and approaches under review, which included accounts of relaxation and social skills training, led to the conclusion that there was a moderate treatment effect. Also, approximately one third of the included studies omitted details regarding the underlying psychotherapeutic theory.

Second, evidence for the treatment of post-traumatic stress disorder (PTSD) in people with IDs was evaluated by Mevissen and De Jongh (2010). They found prevalence rates of PTSD difficult to estimate due to the absence of valid and reliable diagnostic measures, and a symptomatology differing from that in the general population. Only case studies reporting on

the successful treatment of PTSD could be identified and it was concluded that currently no empirically validated treatment is available.

Third, and turning to forensic mental health problems, there have been several attempts to review interventions for people with IDs who have forensic mental health problems, such as criminal offending or more broadly, anger problems. For example, a systematic review by Ashman and Duggan (2002) aimed to evaluate the efficacy of interventions for sex offenders with IDs but failed to identify published randomised controlled trials. An update of their Cochrane review in 2008 still yielded no results.

Behavioural and cognitive-behavioural interventions to reduce aggressive behaviours were evaluated by Hassiotis and Hall (2008) and found to have some temporary effect. Outcome data were available for three studies but the considerable between-study heterogeneity in the population and outcomes prevented estimations of treatment effect across studies. The inclusion of behavioural modification interventions in this review may be a confounding factor and therefore the results do not provide sufficient support for the efficacy of traditional psychological therapies.

Another review of cognitive-behavioural interventions for anger, by Hamelin, Travis, and Sturmey (2013), presented a large between-group effect size for randomised controlled trials of approximately 1.5. This estimate was based on the analysis of two trials, and the inclusion of studies that were not fully randomised studies reduced the effect size to 0.9. The lower limit of the 95 % confidence interval then dropped from 1.49 to 0.16. However, double counting of evidence occurred in this second analysis, as both the individual and group therapy arms of Rose, O'Brien, and Rose (2009) were included.

The final and most recent review was conducted by Nicoll, Beail, and Saxon (2013). They completed a meta-analysis of cognitive-behavioural interventions for anger yielding large treatment effects for individual and group therapy. Estimates of treatment efficacy were

based on uncontrolled effect sizes as studies with uncontrolled designs were included in the analysis. Their rationale was that the variety of comparison groups across studies would result in increased and potentially problematic heterogeneity in the analyses. Taking the small sample sizes into account the estimated treatment effect is likely to be more conservative.

Some authors have criticised the evaluation of cognitive therapy with people with IDs as being biased due to confounding with behavioural interventions that frequently constitute treatment packages (Sturmey, 2004, 2005). Beail (2005) argued that contrasting the efficacy of behavioural and cognitive-behavioural interventions would be problematic because they have been evaluated with different groups of people with IDs. For example, most “pure” behavioural interventions have been evaluated for challenging behaviour in people with severe to profound IDs, whereas CBT evaluation has focused on people with “mild to moderate” IDs and mental health problems living in the community. Hurley (2005) and Taylor (2005) further contend that relaxation and assertiveness training require cognitive skills, such as self-monitoring, in addition to the use of behavioural techniques, and many other common techniques within CBT are grounded within learning theory (e.g. graded exposure).

The efficacy of behavioural interventions for CB has been well-documented, but predominantly behavioural approaches may not be sufficient to address the mental health problems of people with IDs (King, 2005). The Royal College of Psychiatrists (2004) noted that psychological therapies, whilst employing disorder- or theory-specific psychotherapeutic interventions, should also aim to address the emotional needs of people with IDs. Self-reports of emotional regulation have proven to be a valuable predictor of emotional adjustment, whilst dysfunctional adjustment to a situation may cause behavioural problems (Berking, Orth, Wupperman, Meier, & Caspar, 2008). The prevention and treatment of mental health problems will hence have to address emotion regulation processes, a component of many

psychotherapeutic interventions.

As a consequence, considering the problems with some of the previous reviews in this area, it was considered timely to undertake a meta-analysis of the current literature in order to examine whether or not structured psychological therapy, such as cognitive behaviour therapy, is efficacious when used with people who have IDs. This review therefore has three aims: (a) identify and evaluate controlled outcome studies of psychological therapies with people with IDs, excluding approaches such as applied behavioural analysis, (b) conduct a meta-analysis to determine overall efficacy of treatment, as well as the efficacy of various psychotherapies for different mental health problems where possible, and (c) identify areas with limited available evidence to suggest directions for future research.

METHODS

Study Eligibility Criteria

A systematic search of the literature was conducted to identify all independent group trials examining the efficacy of psychological therapy for people with IDs. Eligible studies were published in English and in a peer-reviewed journal.

The psychotherapeutic approach adopted by studies had to encompass the systematic application of interventions based on well-established psychological principles and techniques aimed at the prevention or treatment of emotional, behavioural or mental health problems (Norcross, 1990, p. 218-220). Studies which aimed to evaluate treatments targeting behavioural problems and interventions using applied behavioural analysis were excluded. Primary outcomes of interest were measures of intensity and/or frequency of emotional and mental health problems.

Participants within studies should have a diagnosed intellectual disability in

accordance to the DSM-IV criteria (American Psychiatric Association, 1994), or ICD-10 (World Health Organisation, 1992). These criteria include an intelligence quotient (IQ)-score below 70 and impairments in social and adaptive functioning, whereby age of onset is before the age of 18. The full inclusion and exclusion criteria are found in Table 1.

Search Strategy

Studies were identified through systematic searches of PsychINFO, MedLine and CINAHLplus databases in July 2012. The search strategy combined population search terms for IDs with intervention search terms for psychological therapy, as illustrated in Table 1. References of key articles were examined and the ancestry method was used with key journals to identify additional studies.

Data Collection

Data collection and extraction was performed by the first author. Studies were reviewed regarding methodology, study quality and reported outcome measures. The data were entered in a database and prepared for meta-analysis.

Quality Appraisal

The use of quality assessment scales in systematic reviews has been both recommended and discouraged. The lack of objectivity in scoring methods makes it difficult to interpret the extent of bias in each study, as well as across the sample of studies. Furthermore, nearly half of the published systematic reviews fail to incorporate the findings of their critical appraisal of methodological quality in the overall interpretation and discussion of intervention effects (Moja et al., 2005). The presented review will therefore identify, but not score, the potential sources of bias in each study in the table of study

characteristics, hence facilitating the interpretation of the evidence in light of the critical appraisal. Study quality will be reviewed for potential bias in the selection and allocation of participants, blinding during assessment, the process for dealing with incomplete outcome data, attrition of participants and selective reporting. Hence, both study quality and reporting quality were addressed.

Meta-analysis

Studies comparing at least one intervention arm to a control, waiting-list control, or no-treatment control arm were included in the meta-analysis. Studies for which the results are included in a later study were excluded from the meta-analysis to avoid double counting of the evidence (Senn, 2009). For the same reason, data from various intervention arms was pooled when only one control arm was available.

A random-effects meta-analysis was conducted for standardised mean differences of independent groups for outcomes assessed immediately post intervention. The primary outcomes entered in the analysis are printed in bold in Table 2. The random-effects model was preferred because variations in treatment effect are likely to be associated not only with the ‘common factors’ in therapy, but also to differences in study designs and clinical populations. Therefore, the resulting heterogeneity cannot be accounted for by sampling error alone and a fixed-effects model would be unsatisfactory.

Effect sizes for each study were corrected using correction factor J , resulting in Hedges’ g (Hedges, 1981) as the estimate of effect size; hence, taking into account the likeliness of small study samples. Study weight was calculated using inverse variance methods to assign greater value to more precise studies with large samples or small variances. The treatment effect will be estimated using DerSimonian and Kacker's (2007) two-step approach based on the random-effects model estimate for τ^2 (DerSimonian & Laird, 1986).

This adjusted model is believed to provide a more accurate and conservative estimate of between-study heterogeneity and overall treatment effect.

Subgroup meta-analysis was conducted providing at least two studies fulfil the requirements for meta-analysis. Planned analyses include random-effects meta-analyses of randomised and non-randomised trials, individual and group therapy, and different clinical characteristics. Positive estimated effects should indicate improved mental health or reduction of mental health symptomatology. Therefore, the direction of computed effect-sizes of individual studies will be reversed where appropriate. Intention-to-treat analysis was not possible because the majority of studies did not provide sufficient data. The reported analysis is therefore based on participants who completed outcome assessments.

RESULTS

The search strategy identified 259 studies requiring full text review, of which twenty-two met all review eligibility criteria. The review process is illustrated in Figure 1. The main reasons for excluding studies were because they were single-armed studies or they lacked intervention outcome data. Table 2 provides an overview of the characteristics of included studies. The data from Willner et al. (2013) and Hassiotis et al. (In Press) were obtained from the authors following the publication of their respective study protocols (Hassiotis et al., 2011; Willner et al., 2011).

[Figure 1 about here]

The search results in Figure 1 illustrate the large quantity of research in this area. However, the majority of these were excluded because they concerned- interventions for challenging behaviour or life skills training programmes. Nearly half of the relevant

published work concerning psychological therapy with people with IDs comprised descriptive studies, narrative reviews and expert opinion. Single case studies made up nearly sixty percent of intervention studies, whereas only fifteen percent employed an independent groups design.

Cognitive-behavioural interventions, and group CBT in particular, make up the vast majority of studies. Rose et al. (2009) compared the efficacy of individual and group CBT for anger and therefore this study was classified as making use of both individual and group therapy (Figure 1).

Methodological Issues

There was marked variation within the included studies, which varied according to participant information, treatment length, delivery mode, and outcome measures.

Participants. The reported demographic information varied widely between studies. McGaw, Ball, and Clark (2002) and Silvestri (1977) reported an average IQ in the borderline IDs range for their intervention groups, whilst Dowling, Hubert, White, and Hollins (2006) included people with “severe” IDs. However, the majority of studies included samples of people with “mild” IDs. Only eight studies reported measures of intelligence for the treatment and control group, and one study (Lawrence, 2004) omitted any information regarding level of intellectual functioning.

Recruitment of research participants was mainly based on people being referred for psychotherapeutic interventions, rather than active recruitment by the researchers. These clinical referrals may be associated with the relatively small sample sizes found in most studies, ranging from as little as 14 (Willner, Jones, Tams, & Green, 2002) to 162 (Willner et al., 2013).

Study design. Ethical concerns in psychological therapy research for people with IDs encourage the use of TAU control groups as opposed to a no-treatment control group, whilst some studies opted to deliver two or more independent treatment packages, without a wait-list control group. For example, Benson, Rice, and Miranti (1986) compared the effects of four types of self-control training: relaxation, self-instruction, problem solving or a combined anger management package. The effects of reality therapy group counselling on self-determination were examined by Lawrence (2004), who employed a mutual support group as the independent comparison group. Finally, Dowling, Hubert, White, and Hollins (2006) delivered either an integrated bereavement intervention or traditional counselling to bereaved adults with IDs.

The eligibility criteria for this review required studies to employ an independent groups design. However, the study by McCabe, McGillivray, and Newton (2006) combined the baseline and outcome data of the intervention arm with intervention data from the waiting-list control group who had continued to receive treatment. Data from this study are hence not fully independent, as the waiting-list arm contributed data to both the intervention arm and the control arm. This semi-independence should be taken into account when interpreting results from the meta-analysis. Similarly, the study arms of Rose, Loftus, Flint and Carey (2005) are not fully independent because data from participants on the waiting-list who continued to receive treatment were included in their analysis.

Allocation to the treatment or control groups was mostly randomised based on setting, sex, date of referral, intensity of the mental health problem, or geographic location, to create balanced study arms. However, allocation procedures in Rose et al. (2008) and Rose et al. (2009) were based on the availability of a group treatment starting within two months upon referral, or the availability of a therapist for individual therapy; when this was not possible, participants were allocated to a waiting-list control group. Similarly, McGaw et al. (2002) did

not randomise participants, but rather allocated them to the intervention arm on a first-come first-serve basis.

There are issues associated with the lack of blinding across studies, with only five studies reporting that they attempted to blind the researchers who were responsible for measuring treatment (Benson et al., 1986; Hassiotis et al., In Press; Lindsay et al., 2004; Matson & Senatore, 1981; Willner et al., 2013). Six studies also reported the use of independent raters where masked assessment could not be guaranteed. Nearly half of the studies either did not employ blinding procedures or did not provide details regarding masked assessment.

Treatment mode. The majority of studies evaluated group-based interventions, and the majority of individually delivered treatments were conducted by the same authors (e.g. Rose et al., 2009; Rose et al., 2008; Taylor, Novaco, Gillmer, Robertson, & Thorne, 2005; Taylor et al., 2002; Taylor, Novaco, Guinan, & Street, 2004). Treatment was delivered by clinical psychologists, or by staff who were given training to deliver the treatment. Staff and carers who served as lay therapists generally received a two day training and were supervised by a clinical psychologist (Dowling et al., 2006; McGillivray, McCabe, & Kershaw, 2008; Willner et al., 2013; Willner, Brace, & Phillips, 2005).

Substantial variations were found in treatment length and time of follow-up. Fourteen studies conducted follow-up measurements within three to six months post treatment, whereas four studies did not collect any follow-up data. Lindsay et al. (2004) conducted the longest intervention with approximately forty group sessions of anger treatment over nine months which included up to thirty months of follow-up data for some participants.

Treatment integrity was likely to be best in anger management trials because of the use of treatment manuals and associated methods for monitoring treatment delivery.

Treatment fidelity was assessed by Willner et al. (2013) and Hassiotis et al. (In Press) only

and indicated that both lay-therapists and practicing therapists showed moderate to high levels of adherence to the respective treatment manuals.

Treatment outcomes. Outcome measures of anger treatments typically included the Novaco Anger Scale, Anger Inventory, and the Provocation Index. All trials providing psychological therapy for depression used either the Beck Depression Inventory -II or the Beck Depression Inventory – Youth to assess clinical symptoms of depression. In addition to outcome scales, studies employed idiographic measures such as participant behaviour in role-plays and direct behavioural observations by therapist or staff, which at times may make comparisons across studies problematic. Reasons for attrition were not consistently reported, whilst one study by Rose, Dodd, and Rose (2008) recorded that no participants dropped out. The majority of studies reviewed did not undertake an analysis of intervention data based on intention-to-treat.

Meta-Analyses

An initial meta-analysis was conducted for controlled trials with either a no-treatment or a waiting-list control group, employing cluster, matched or full randomisation procedures. Additional eligibility criteria were applied to exclude studies if data were included in a later study (Rose, West, & Clifford, 2000; Taylor et al., 2002), or if insufficient data were reported to perform the meta-analysis (Matson, 1981; Willner et al., 2005). Finally, the study by Silvestri (1977) was excluded because twenty-three out of thirty items of its primary outcome measure had been excluded from the original data-analysis. The selective reporting of outcomes in this study, if included, would have led to confounding results.

The inclusion of Rose et al. (2009) is based on a comparison of the combined interventions arms, individual and group therapy, versus the control group. This approach is recommended to avoid double counting the evidence of the comparison group, and is

preferred over selecting a single intervention arm for data-analysis as this might result in a loss of information or biased data-selection (Senn, 2009). The combination of data within the two intervention groups followed the recommendations of the Cochrane Handbook (Higgins, Deeks, & Altman, 2011).

The Beck Depression Inventory – Youth data was included as the outcome data from the study by Hassiotis et al., (In Press). This study concerned the treatment of both depression and anxiety with one manualised intervention. However, it could be argued that their respective treatments require different clinical formulations and as a consequence different cognitive-behavioural interventions could have been indicated. The data pertaining to outcomes for depression were included as this increased the data available to evaluate the cognitive-behavioural treatment of depression, from two to three trials.

Randomised versus non-randomised studies. The meta-analysis of randomised trials yielded an average treatment effect of, $g = .555$, 95% CI [.178, .932], $N = 388$, which is regarded as a moderate treatment effect (Cohen, 1988). The analysis highlighted a substantial amount of heterogeneity with 62 %, $p < .05$, of the variability in estimated treatment effect not explained by sampling error alone. The meta-analysis of non-randomised studies revealed an average large treatment effect, $g = .846$, 95% CI [.355, 1.337], $N = 275$, while the heterogeneity increased to 69%, $p < .01$. Combining randomised and non-randomised trials in the revealed a moderate treatment effect, $g = .682$, 95% CI [.379, .985], $N = 663$, and the heterogeneity was 67 %, $p < .001$. The Forest plots in Figure 2 included studies with their standardised mean differences and corresponding confidence intervals, as well as the estimated treatment effect and corresponding confidence interval for both the subgroup analysis and the overall meta-analysis. When adopting the two-step DerSimonian and Laird method (DerSimonian & Kacker, 2007) across all studies then the treatment effect increased to $g = .700$, 95% CI [.386, 1.015], $N = 663$. The adjusted τ^2 measure of heterogeneity also

increased from $\tau^2 = .207$ to $\tau^2 = .249$.

Leave-one-out analysis for the eight randomised studies highlighted the impact of the McCabe et al. (2006) depression trial. Exclusion of this study resulted in a small estimated treatment effect of, $g = .386$, 95% CI [.116, .656], $N = 339$. However, the estimated average effect increased to $g = .647$, 95% CI [.262, 1.031], $N = 367$, and to $g = .636$, 95% CI [.228, 1.044], $N = 358$, when excluding the study on interpersonal functioning by Matson and Senatore (1981) and the small-scale RCT by Hassiotis et al. (In Press) respectively.

[Figure 2 about here]

Individual versus group-based psychological therapy. Subgroup meta-analysis of combined randomised and non-randomised trials indicated individually delivered therapy, $g = .778$, 95% CI [.110, 1.445], $N = 124$, was more effective than group-based therapy, $g = .558$, 95% CI [.212, .903], $N = 477$, as illustrated in the Forest plot in Figure 3. It should be noted, however, that only half the number of trials delivering individual therapy were identified compared to those delivering group therapy. Furthermore, the large variability in the effectiveness of individual therapy is likely to be associated with differences in clinical diagnosis and primary outcome measures, as well as with the large within-study variance of Taylor et al. (2004). Rose et al. (2009) was not included in the analysis to avoid double counting of the control group. The shared control arm for both intervention arms in this study would induce correlated multiple comparisons that cannot be accounted for in the meta-analysis (Higgins et al., 2011).

Studies making use of individual therapy had a moderate to large effect size, while group-based therapy, regardless of clinical disorder, had a moderate effect. Within the group-based studies the average treatment effect and heterogeneity are negatively affected by

McGaw et al. (2002), Matson and Senatore (1981) and Willner et al. (2013). It should be noted, however, that McGaw et al. (2002) provided group intervention to support parents with IDs in the forming and maintaining of relationships, and to improve their self-concept. Likewise, Matson and Senatore (1981) delivered group therapy to improve interpersonal functioning. The latter two studies are therefore quite distinct from the other group interventions which are aimed to treat mental health problems.

[Figure 3 about here]

Clinical presentation. The variability in study samples supported a subgroup meta-analysis based on clinical presentation. These were completed for anger, interpersonal functioning and depression. The forest plots in Figure 4 show that the average treatment effect ranges from a null-effect for interpersonal functioning to a large treatment effect for people with IDs suffering from depression.

CBT for anger and aggression had an average estimated effect size of $g = .827$, 95% CI [.508, 1.146], $N = 494$. The inclusion of some studies with relatively large samples resulted in a narrow confidence interval, although there is considerable between-study variance, and individual and group therapy were combined (Figure 4).

Psychological therapy for interpersonal functioning was not supported by the analysis of data from Matson and Senatore (1981) and McGaw et al. (2002). Results are inconsistent from these studies and hence do not provide sufficient evidence that treatment is efficacious, as evidenced by the negative effect of $g = -0.342$, 95% CI [-.946, .262], $N = 43$. However, participants in the intervention arm of both studies did show improvements from pre-test to follow-up and from post-test to follow-up, indicating that treatment effects might take longer to establish for these therapies.

Turning to depression, studies evaluating group CBT generated a moderate to large effect size, $g = .742$, 95% CI $[-.116, 1.599]$, $N = 126$. The between-study variance is high, as only three studies with distinct study designs were identified. The feasibility study of Hassiotis et al. (In Press) caused methodological concerns due to its use of a single therapy for two separate clinical disorders. McGillivray et al. (2008) employed a staff-administered treatment programme, but there were no attempts to investigate whether or not the inclusion of staff within such an intervention is likely to increase efficacy.

[Figure 4 about here]

DISCUSSION

The results of the meta-analysis indicated that psychological therapy with people who have IDs is efficacious with a moderate effect size of $g = .682$ when calculated using all the studies included within the current review. However, this effect size varied depending on whether the studies made use of randomisation, individual or group based interventions, and also varied according to the type of problem being treated. Randomised studies were associated with a lower, but moderate effect size, $g = .555$, compared to non-randomised studies which had a large effect size, $g = .846$. Individual therapy, $g = .778$, appeared superior to group-based interventions, $g = .558$; treatment for depression, $g = .742$, and anger, $g = .827$, was associated with moderate and large effect sizes, while there was no evidence that therapy had an effect on interpersonal functioning, $g = -.342$.

There are some similarities and differences between the current analysis and some of the previous systematic reviews that have also attempted to synthesise the evidence for the efficacy of psychological therapies for people with IDs. Non-traditional psychotherapeutic interventions, such as relaxation or social skills training, that were included in the analysis by

Prout and Nowak-Drabik's (2003), but were excluded from the current study. By contrast, staff-delivered treatments, excluded in that review, were included in the current analysis because staff had received training and acted as lay therapists. All but one study in the present meta-analysis had been published the last decade, whilst the previous meta-analysis conducted by Prout and Nowak-Drabik (2003) mainly comprised research published in the 1980s.

The subgroup meta-analysis for anger problems may be comparable to the anger-specific reviews of Hamelin et al. (2013), Nicoll et al. (2013) and Hassiotis and Hall (2008). The estimated treatment effect of $g = 0.827$, presented in Figure 4, is slightly lower than the estimated 0.88 reported by Nicoll et al. (2013), and the un-weighted estimate of 0.89 presented by Hamelin et al. (2013), whereas Hassiotis and Hall (2004) did not perform such an analysis. However, there were some differences in how the effect size was calculated across these different studies; Hamelin et al. (2013) calculated standardised mean differences of pre-post changes in each arms to estimate the treatment effect, while Nicoll et al. (2013) relied on a fixed-effects analysis of uncontrolled mean differences calculated within the intervention arm. Nevertheless, the findings of these two reviews and the current study are remarkably comparable, despite the different inclusion criteria and methodology.

It is also worth noting that the methodological quality of psychological therapy research for children and adolescents with IDs is much lower than that involving adults, as no independent groups designs or RCTs were identified, bearing in mind that there are some RCTs involving children with autistic spectrum disorders (Sofronoff, Attwood, & Hinton, 2005; Wood et al., 2009). Ethical concerns in the recruitment of young people with IDs for intervention studies may partially explain the current lack of research, but should not be seen as justification for the lack of controlled outcome studies. It is unclear whether evidence from psychotherapy research with adults with IDs, or young people without IDs, can be adequately

generalised to this young population. Related to this, the search results indicated the proportion of single case studies involving adults has steadily increased over time and provide evidence for the trend towards more controlled psychotherapy research for adults with IDs.

There were no studies of psychodynamic therapy identified that fulfilled the eligibility criteria for inclusion within the current study. Expanding the inclusion criteria to single-armed pre-post studies revealed few psychodynamic intervention studies. Their analysis falls outside the scope of this review, but the apparent lack of well-conducted primary research in this area does not seem to support psychodynamic therapy as an empirically supported treatment for people with IDs.

Following the guidelines for empirically validated treatments, at least two well-conducted group design studies, conducted by different research groups, should be identified (Chambless et al., 1998). Although the search results did not yield two studies with a sufficiently large sample size, which also reported both detailed participant characteristics, as well as information regarding the treatment protocol, the criteria for probably efficacious treatments are met for cognitive-behavioural interventions for both anger and depression. As a consequence, across treatment modalities it can be assumed that both individual and group psychotherapy are probably efficacious treatments for mental health problems in adults with IDs.

However, there are some inherent difficulties with the literature included within the current study that need to be considered, as evaluations of psychological therapy efficacy are subject to variability in the methodological quality between studies. The inclusion of participants with varying levels of intellectual functioning, ranging from borderline to severe, and the absence of reported measures of general intellectual functioning make it difficult to compare study samples and lead to an increase in heterogeneity. General intellectual

functioning varied widely between studies, but more than half of the studies reported including samples with an average IQ above 65, indicating that people with “borderline” IDs were frequently included. Varying levels of intellectual functioning may affect the outcomes from cognitive therapy, at least theoretically, but the existing literature does not provide sufficient data to include general intellectual functioning as a covariate in the analysis. Similarly, therapy setting and treatment intensity are important factors that were not controlled in this review or any previous reviews. When providing psychological therapy to people with IDs, many may attempt to make changes to the intervention in an attempt to improve efficacy, and it remains unclear whether or not these changes are genuinely associated with improvements in treatment outcome. As a consequence, the results presented within this study do not account for differences in assessment or treatment, but rather yield a general indication of psychological therapy efficacy including both its common and specific factors (Kazdin, 1985).

These problems can be translated into four recommendations which should be considered by researchers undertaking clinical trials of psychological therapies with people who have IDs. First, researchers should measure and report the general level of intellectual functioning of their participants within publications. This will allow for a greater understanding of the participant sample and help to reduce heterogeneity across studies. Second, researchers need to describe their methods and their interventions thoroughly, and third, changes to psychological therapies, which are made in order to improve engagement, understanding, and outcomes for this population should be described. There is a literature that has attempted to elucidate some of these issues (Bruce, Collins, Langdon, Powlitch, & Reynolds, 2010; Dagnan & Chadwick, 1997; Dagnan, Chadwick, & Proudlove, 2000; Hatton, 2002; Joyce, Globe, & Moody, 2006; Sams, Collins, & Reynolds, 2006; Stenfert-Kroese, 1997), but further research is needed, not only to generate further evidence for the

effectiveness of psychological therapies, but for the effectiveness of any adaptations and changes that are made to psychological therapies for people with IDs. However, this recommendation is inherently flawed. Although it may be possible to broadly examine the utility of adaptations to CBT for people with IDs, psychological therapies, including CBT, are formulation-driven. Considering the heterogeneity within the population of people with IDs, individually tailored formulations will reflect this heterogeneity in presentation and ability, and as a consequence, any adaptations should be tailored to this formulation in order to meet individual need. As a consequence, it would be appropriate to consider these issues within any future trial involving participants with IDs. Finally, it is clear that further robust and well-designed clinical trials are needed which involve a range of mental health problems, involving not only adults with IDs, but also include children and adolescents with IDs.

CONCLUSIONS

The current meta-analysis evaluated the available evidence and indicated that psychological therapy has an expected moderate effect in reducing the mental health problems amongst people with IDs. This effect is biased by studies where allocation was not randomised. The results further suggest CBT to be at least moderately effective in the treatment of anger and depression. Individual therapy may be more effective than group psychotherapy, but this conclusion must remain tentative until further research is completed. As the more controlled psychotherapy research continues with people with IDs, it is expected that sufficient evidence will be available in the future to determine whether various psychological therapies can actually be regarded as empirically validated treatments.

REFERENCES

- Adams, Z. W., & Boyd, S. E. (2010). Ethical challenges in the treatment of individuals with intellectual disabilities. *Ethics & Behavior*, 20(6), 407–418.
doi:10.1080/10508422.2010.521439
- American Psychiatric Association. (1994). *Diagnostic and statistic manual of mental health disorders* (4th ed.). Washington, DC: American Psychiatric Publishing.
- Arntzen, E., & Almas, I. K. (1997). Reduction of phobic behaviour for animals in a boy with mental retardation. *Scandinavian Journal of Behaviour Therapy*, 26(3), 124–131.
- Arscott, K., Dagnan, D., & Stenfert-Kroese, B. (1998). Consent to psychological research by people with an intellectual disability. *Journal of Applied Research in Intellectual Disabilities*, 11(1), 77–83. doi:10.1111/j.1468-3148.1998.tb00035.x
- Arscott, K., Dagnan, D., & Stenfert-Kroese, B. (1999). Assessing the ability of people with a learning disability to give informed consent to treatment. *Psychological Medicine*, 29(6), 1367–1375.
- Ashman, L. L. M., & Duggan, L. (2008). Interventions for learning disabled sex offenders. *Cochrane Database Of Systematic Reviews*, (1), Art. No.: CD003682.
doi:10.1002/14651858.CD003682.pub2.
- Barrowcliff, A. L. (2008). Cognitive-behavioural therapy for command hallucinations and intellectual disability: A case study. *Journal of Applied Research in Intellectual Disabilities*, 21(3), 236–245. doi:10.1111/j.1468-3148.2007.00395.x
- Beail, N. (2005). Evidence base for behavioral interventions: Critical commentary. *Mental Retardation*, 43(6), 442–5.

- Becker, H., Roberts, G., Morrison, J., & Silver, J. (2004). Recruiting people with disabilities as research participants: Challenges and strategies to address them. *Mental Retardation*, 42(6), 471–5. doi:10.1352/0047-6765(2004)42<471:RPWDAR>2.0.CO;2
- Bender, M. (1993). The unoffered chair: The history of therapeutic disdain towards people with a learning difficulty. *Clinical Psychology Forum*, 54, 7–12.
- Benson, B. A., Rice, C. J., & Miranti, S. V. (1986). Effects of anger management training with mentally retarded adults in group treatment. *Journal Of Consulting And Clinical Psychology*, 54(5), 728–729.
- Berking, M., Orth, U., Wupperman, P., Meier, L. L., & Caspar, F. (2008). Prospective effects of emotion-regulation skills on emotional adjustment. *Journal of Counseling Psychology*, 55(4), 485–494.
- Bhaumik, S., Gangadharan, S., Hiremath, A., & Russell, P. S. S. (2011). Psychological treatments in intellectual disability: The challenges of building a good evidence base. *The British Journal Of Psychiatry*, 198(6), 428–430.
- Borthwick-Duffy, S. A. (1994). Epidemiology and prevalence of psychopathology in people with mental retardation. *Journal of Consulting and Clinical Psychology*, 62(1), 17–27.
- Bruce, M., Collins, S., Langdon, P., Powlitch, S., & Reynolds, S. (2010). Does training improve understanding of core concepts in cognitive behaviour therapy by people with intellectual disabilities? A randomized experiment. *British Journal of Clinical Psychology*, 49(Part 1), 1–13. doi:10.1348/014466509x416149
- Butz, M. R., Bowling, J. B., & Bliss, C. A. I. (2000). Psychotherapy with the mentally retarded: A review of the literature and the implications. *Professional Psychology: Research and Practice*, 31(1), 42–47.

- Chambless, D. L., Baker, M. J., Baucom, D. H., Beutler, L. E., Calhoun, K. S., Crits-christoph, P., Daiuto, A., et al. (1998). Update on empirically validated therapies , II. *The Clinical Psychologist*, 51(1), 3–16.
- Chiodo, J., & Maddux, J. (1985). A cognitive and behavioral approach to anxiety management of retarded individuals: Two case studies. *Journal of Child & Adolescent Psychotherapy*, 2(1), 16–20.
- Clarke, D. (2003). Diagnostic criteria for psychiatric disorders for use with adults with learning disabilities/mental retardation (DC-LD) and psychiatric phenotypes. *Journal of Intellectual Disability Research*, 47(1), 43–49.
- Cohen, J. (1988). A power primer. *Psychological Bulletin*, 112, 155–159.
- Cottrell, D. J., & Crisp, A. H. (1984). Anorexia nervosa in Down's syndrome: A case report. *The British Journal Of Psychiatry*, 145, 195–196.
- Dagnan, D., & Chadwick, P. (1997). Cognitive-behaviour therapy for people with learning disabilities: Assessment and intervention. In B Stenfert-Kroese, D. Dagnan, & K. Loumidis (Eds.), *Cognitive-Behaviour Therapy for People with Learning Disabilities* (pp. 110–123). London: Routledge.
- Dagnan, Dave, Chadwick, P., & Proudlove, J. (2000). Toward an assessment of suitability of people with mental retardation for cognitive therapy. *Cognitive Therapy and Research*, 24(6), 627–636.
- Deb, S., Thomas, M., & Bright, C. (2001). Mental disorder in adults with intellectual disability. 1: Prevalence of functional psychiatric illness among a community-based population aged between 16 and 64 years. *Journal of Intellectual Disability Research*, 45(6), 495–505.

- DerSimonian, R., & Kacker, R. (2007). Random-effects model for meta-analysis of clinical trials: An update. *Contemporary Clinical Trials*, 28(2), 105–114.
doi:10.1016/j.cct.2006.04.004
- DerSimonian, R., & Laird, N. (1986). Meta-analysis in clinical trials. *Control Clinical Trials*, 7, 177–187.
- Dowling, S., Hubert, J., White, S., & Hollins, S. (2006). Bereaved adults with intellectual disabilities: A combined randomized controlled trial and qualitative study of two community-based interventions. *Journal of Intellectual Disability Research*, 50(Part 4), 277–287.
- Emerson, E., & Hatton, C. (2007). Mental health of children and adolescents with intellectual disabilities in Britain. *The British Journal of Psychiatry*, 191, 493–499.
doi:10.1192/bjp.bp.107.038729
- Fernandez, A., Tom, S., Stadler, M., Cain, H., & Knudsen, S. (2005). A multidisciplinary approach in treatment of major depressive disorder with psychotic features and mild intellectual disability. *Mental Health Aspects of Developmental Disabilities*, 8(2), 45–51.
- Fernando, K., & Medlicott, L. (2009). My shield will protect me against the ANTS: Treatment of PTSD in a client with an intellectual disability. *Journal of Intellectual and Developmental Disability*, 34(2), 187–192.
- Gustafsson, C., Öjehagen, A., Hansson, L., Sandlund, M., Nyström, M., Glad, J., Cruce, G., et al. (2009). Effects of psychosocial interventions for people with intellectual disabilities and mental health problems: A survey of systematic reviews. *Research on Social Work Practice*, 19(3), 281–290.

- Haddock, G., Lobban, F., Hatton, C., & Carson, R. (2004). Cognitive-behaviour therapy for people with psychosis and mild intellectual disabilities: A case series. *Clinical Psychology & Psychotherapy*, 11(4), 282–298. doi:10.1002/cpp.414
- Hagiliassis, N., Gulbenkoglul, H., Di Marco, M., Young, S., & Hudson, A. (2005). The Anger Management Project: A group intervention for anger in people with physical and multiple disabilities. *Journal of Intellectual & Developmental Disability*, 30(2), 86–96.
- Hamelin, J., Travis, R., & Sturmey, P. (2013). Anger management and intellectual disabilities: A systematic review. *Journal of Mental Health Research in Intellectual Disabilities*, 6(1), 60–70. doi:10.1080/19315864.2011.637661
- Hassiotis, A., & Hall, I. (2004). Behavioural and cognitive-behavioural interventions for outwardly-directed aggressive behaviour in people with learning disabilities. *Cochrane Database Of Systematic Reviews (Online)*, (4), CD003406.
- Hassiotis, A., Serfaty, M., Azam, K., Strydom, A., Martin, S., Parkes, C., Blizard, R., et al. (2011). Cognitive behaviour therapy (CBT) for anxiety and depression in adults with mild intellectual disabilities (ID): A pilot randomised controlled trial. *Trials*, 12, 95.
- Hassiotis, A., Serfaty, M., Azam, K., Strydom, A., Martin, S., Parkes, C., Blizard, R., et al (In Press). Manualised Individual Cognitive Behavioural Therapy for mood disorders in people with mild to moderate intellectual disability: a feasibility randomised controlled trial. *Journal of Affective Disorders*.
- Hassiotis, A., & Hall, I. (2008). Behavioural and cognitive-behavioural interventions for outwardly-directed aggressive behaviour in people with learning disabilities. *Cochrane Database Of Systematic Reviews (Online)*, (3), CD003406.
- Hatton, C. (2002). Psychosocial interventions for adults with intellectual disabilities and mental health problems: A review. *Journal of Mental Health*, 11(4), 357–374. doi:10.1080/09638230020023732

- Hedges, L. V. (1981). Distribution theory for Glass's estimator of effect size and related estimators. *Journal of Educational Statistics*, 6(2), 107–128.
- Higgins, J., Deeks, J., & Altman, D. (2011). Chapter 16: Special topics in statistics. In J. Higgins & S. Green (Eds.), *Cochrane Handbook for Systematic Reviews of Interventions* (Version 5.). Available from www.cochrane-handbook.org.
- Hulbert-Williams, L., & Hastings, R. P. (2008). Life events as a risk factor for psychological problems in individuals with intellectual disabilities: A critical review. *Journal of Intellectual Disability Research*, 52(11), 883–895. doi:10.1111/j.1365-2788.2008.01110.x
- Hurley, A. D. (2004). Treatment of multiple phobias and agoraphobia in a man with Down syndrome. *Mental Health Aspects of Developmental Disabilities*, 7(4), 142–148.
- Hurley, A. D. (2005). Psychotherapy is an essential tool in the treatment of psychiatric disorders for people with mental retardation. *Mental Retardation*, 43(6), 445–448.
- Joyce, T., Globe, A., & Moody, C. (2006). Assessment of the component skills for cognitive therapy in adults with intellectual disability. *Journal of Applied Research in Intellectual Disabilities*, 19(1), 17–23. doi:10.1111/j.1468-3148.2005.00287.x
- Kazdin, A. E. (1985). The role of meta-analysis in the evaluation of psychotherapy. *Clinical Psychology Review*, 5, 49–61.
- King, R. (2005). Proceeding with compassion while awaiting the evidence: Psychotherapy and individuals with mental retardation. *Mental Retardation*, 43(6), 448–450.
- Klein-Tasman, B. P., & Albano, A. M. (2007). Intensive, short-term cognitive-behavioral treatment of OCD-like behavior with a young adult with Williams syndrome. *Clinical Case Studies*, 6(6), 483–492.

- Lawrence, D. H. (2004). The effects of reality therapy group counseling on the self-determination of persons with developmental disabilities. *International Journal of Reality Therapy*, 23(2), 9–15.
- Lemmon, V. A., & Mizes, J. S. (2002). Effectiveness of exposure therapy: A case study of posttraumatic stress disorder and mental retardation. *Cognitive and Behavioral Practice*, 9(4), 317–323.
- Lindsay, W. R., Allan, R., Parry, C., Macleod, F., Cottrell, J., Overend, H., & Smith, A. H. W. (2004). Anger and aggression in people with intellectual disabilities: Treatment and follow-up of consecutive referrals and a waiting list comparison. *Clinical Psychology & Psychotherapy*, 11(4), 255–264. doi:10.1002/cpp.415
- Matson, J. L. (1981). A controlled outcome study of phobias in mentally retarded adults. *Behaviour Research and Therapy*, 19(2), 101–107.
- Matson, J. L., & Senatore, V. (1981). A comparison of traditional psychotherapy and social skills training for improving interpersonal functioning of mentally retarded adults. *Behavior Therapy*, 12(3), 369–382.
- McCabe, M. P., McGillivray, J. A., & Newton, D. C. (2006). Effectiveness of treatment programmes for depression among adults with mild/moderate intellectual disability. *Journal of Intellectual Disability Research*, 50(4), 239–247.
- McGaw, S., Ball, K., & Clark, A. (2002). The effect of group intervention on the relationships of parents with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, 15(4), 354–366.
- McGillivray, J. A., McCabe, M. P., & Kershaw, M. M. (2008). Depression in people with intellectual disability: An evaluation of a staff-administered treatment program. *Research in Developmental Disabilities*, 29(6), 524–536.

- Mevissen, L., & De Jongh, A. (2010). PTSD and its treatment in people with intellectual disabilities: A review of the literature. *Clinical Psychology Review, 30*(3), 308–316.
- Mevissen, L., Lievegoed, R., & De Jongh, A. (2011). EMDR treatment in people with mild ID and PTSD: 4 cases. *Psychiatric Quarterly, 82*(1), 43–57.
- Moja, L. P., Telaro, E., D’Amico, R., Moschetti, I., Coe, L., & Liberati, A. (2005). Assessment of methodological quality of primary studies by systematic reviews: Results of the metaquality cross sectional study. *British Medical Journal*.
doi:10.1136/bmj.38414.515938.8F
- Nicoll, M., Beail, N., & Saxon, D. (2013). Cognitive behavioural treatment for anger in adults with intellectual disabilities: A systematic review and meta-analysis. *Journal of Applied Research in Intellectual Disabilities, 26*(1), 47–62. doi:10.1111/jar.12013
- Norcross, J. C. (1990). An eclectic definition of psychotherapy. In J. K. Zeig & W. M. Munion (Eds.), *What is psychotherapy? Contemporary perspectives* (pp. 218–220). San Fransisco, CA: Jossey-Bass.
- Oliver, P. C., Piachaud, J., Done, J., Regan, A., Cooray, S., & Tyrer, P. (2002). Difficulties in conducting a randomized controlled trial of health service interventions in intellectual disability: Implications for evidence-based practice. *Journal of Intellectual Disability Research, 46*(Pt 4), 340–5.
- Prout, H. T., & Nowak-Drabik, K. M. (2003). Psychotherapy with persons who have mental retardation : An evaluation of effectiveness. *American Journal on Mental Retardation, 108*(2), 82–93.
- Rose, J. L., Dodd, L., & Rose, N. (2008). Individual cognitive behavioral intervention for anger. *Journal of Mental Health Research in Intellectual Disabilities, 1*(2), 97–108.

- Rose, J. L., Loftus, M., Flint, B., & Carey, L. (2005). Factors associated with the efficacy of a group intervention for anger in people with intellectual disabilities. *British Journal of Clinical Psychology, 44*(3), 305–317.
- Rose, J. L., O'Brien, A., & Rose, D. (2009). Group and individual cognitive behavioural interventions for anger. *Advances in Mental Health and Learning Disabilities, 3*(4), 45–50.
- Rose, J. L., West, C., & Clifford, D. (2000). Group interventions for anger in people with intellectual disabilities. *Research in Developmental Disabilities, 21*(3), 171–81.
- Royal College of Psychiatrists. (2004). *Psychotherapy and learning disability. Council report: CR116*. London.
- Sams, K., Collins, S., & Reynolds, S. (2006). Cognitive therapy abilities in people with learning disabilities. *Journal of Applied Research in Intellectual Disabilities, 19*(1), 25–33.
- Senn, S. J. (2009). Overstating the evidence: Double counting in meta-analysis and related problems. *BMC Medical Research Methodology, 9*(10). doi:10.1186/1471-2288-9-10
- Silvestri, R. (1977). Implosive therapy treatment of emotionally disturbed retardates. *Journal of Consulting and Clinical Psychology, 45*(1), 14–22.
- Sofronoff, K., Attwood, T., & Hinton, S. (2005). A randomised controlled trial of a CBT intervention for anxiety in children with Asperger syndrome. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 46*(11), 1152–1160.
- Stenfert-Kroese, Biza. (1997). Cognitive behavioural therapy for people with learning disabilities: Conceptual and contextual issues. In Biza Stenfert-Kroese, D. Dagnan, & K. Loumidis (Eds.), *Cognitive-behavioural therapy for people with learning Disabilities* (pp. 1–15). London: Routledge.

Stenfert-Kroese, Biza, Dagnan, D., & Loumidis, K. (1997). *Cognitive-behaviour therapy for people with intellectual disabilities*. London: Routledge.

Stenfert-Kroese, Biza, & Thomas, G. (2006). Treating chronic nightmares of sexual assault survivors with an intellectual disability - two descriptive case studies. *Journal of Applied Research in Intellectual Disabilities*, 19(1), 75–80.

Sturmey, P. (2004). Cognitive therapy with people with intellectual disabilities: A selective review and critique. *Clinical Psychology & Psychotherapy*, 11(4), 222–232.
doi:10.1002/cpp.409

Sturmey, P. (2005). Against psychotherapy with people who have mental retardation. *Mental Retardation*, 43(1), 55–57.

Taylor, J. L. (2005). In support of psychotherapy for people who have mental retardation. *Mental Retardation*, 43(6), 450–453.

Taylor, J. L., Novaco, R. W., Gillmer, B. T., Robertson, A., & Thorne, I. (2005). Individual cognitive-behavioural anger treatment for people with mild-borderline intellectual disabilities and histories of aggression: A controlled trial. *British Journal of Clinical Psychology*, 44(3), 367–382.

Taylor, J. L., Novaco, R. W., Gillmer, B., & Thorne, I. (2002). Cognitive-behavioural treatment of anger intensity among offenders with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, 15(2), 151–165.

Taylor, J. L., Novaco, R. W., Guinan, C., & Street, N. (2004). Development of an imaginal provocation test to evaluate treatment for anger problems in people with intellectual disabilities. *Clinical Psychology & Psychotherapy*, 11(4), 233–246. doi:10.1002/cpp.411

Willner, P., Brace, N., & Phillips, J. (2005). Assessment of anger coping skills in individuals with intellectual disabilities. *Journal of Intellectual Disability Research*, 49(5), 329–39.
doi:10.1111/j.1365-2788.2005.00668.x

- Willner, P., Jahoda, A., Rose, J., Stenfert-Kroese, B., Hood, K., Townson, J. K., Nuttall, J., et al. (2011). Anger management for people with mild to moderate learning disabilities: Study protocol for a multi-centre cluster randomized controlled trial of a manualized intervention delivered by day-service staff. *Trials*, 12(1), 36. doi:10.1186/1745-6215-12-36
- Willner, P., Jones, J., Tams, R., & Green, G. (2002). A randomized controlled trial of the efficacy of a cognitive-behavioural anger management group for clients with learning disabilities. *Journal of Applied Research in Intellectual Disabilities*, 15(3), 224–235.
- Willner, P., Rose, J., Jahoda, A., Stenfert-Kroese, B., Felce, D., Macmahon, P., Stimpson, A., et al. (2013). A cluster randomised controlled trial of a manualised cognitive behavioural anger management intervention delivered by supervised lay therapists to people with intellectual disabilities. *Health Technology Assessment*, 17(21), 1–173.
doi:10.3310/hta17210
- Wood, J. J., Drahota, A., Sze, K., Har, K., Chiu, A., & Langer, D. A. (2009). Cognitive behavioral therapy for anxiety in children with autism spectrum disorders: A randomized, controlled trial. *Journal of Child Psychology and Psychiatry*, 50(3), 224–234.
- World Health Organisation. (1992). *ICD-10 Classifications of mental and behavioural disorder: Clinical descriptions and diagnostic guidelines*. Geneva, Switzerland.

Table 1.

Systematic Review Search Strategy and Eligibility Criteria.

Search Terms in Title and Abstract
mental* N2 (handicap* OR retard* OR disab* OR impair*) (learning OR intellect* OR develop*) N2 (difficult* OR disab* OR impair*) imbecile OR subnormal psycho* N2 (therap* OR treatment* OR intervention*) training OR management OR counsel* psychotherap* (1 OR 2 OR 3) AND (4 OR 5 OR 6)
Inclusion criteria
Intellectual disability: IQ < 70
Age > 5 years of age (targeting ‘talking’ therapies and interventions)
Psychotherapy: the systematic application of interventions based on well-established psychological principles and techniques aimed at the prevention or treatment of emotional, behavioural or mental health problems (Norcross, 1990, p. 218-220), excluding interventions primarily using applied behavioural analysis
Intervention studies: 2 or more independent groups
Published in English in peer-reviewed journals
Exclusion criteria
‘Strict’ behavioural interventions, unless embedded in wider psychotherapeutic treatment. For example: applied behavioural analysis, behaviour modification, behavioural relaxation only, restraint, differential reinforcement of other behaviour, and token economy.
Problem behaviours and challenging behaviour. For example: drooling, sleeping problems, and self-injurious behaviour.
Non-traditional and other psychotherapeutic interventions. For example: life skills training, vocational rehabilitation, electro-convulsion therapy, biofeedback training, occupational therapy, play therapy, milieu therapy, pharmacotherapy, community management.
Intervention based on well-established psychological principles aimed at teaching or improving behavioural patterns. For example: social skills training and assertiveness training.

Table 2.

Independent Group Trials Evaluating Psychological Therapies for People with IDs.

First author (Year)	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
Benson (1986) [†]	4 independent groups EG1: combined anger-management (EG2 + EG3 + EG4) EG2: problem solving group EG3: self-instruction group EG4: relaxation training	N = 54 Mean age = 32 37 M / 17 F IDs: only data for receptive vocabulary Anger control difficulties Country: USA	All EGs: 12 weekly 90-min sessions EG1: EG2 + EG3 + EG4 EG2: four-step plan to anger solving, role-plays EG3: discriminating coping and trouble statements, role-plays EG4: relaxation based on Jacobson tension release Group size: 5 – 9 Setting: vocational centre	All EGs: reduced aggressive gestures, reduced length of responses, and more appropriate responding as assessed by Self-report anger inventory (AI), Conflict Situations Test, videotaped role-play and supervisor ratings. No significant between-group differences.	4-5 weeks Effects maintained, except for aggressive gestures.	Selection: groups balanced on verbal ability, anger inventory score, gender, race and vocational training centre. Performance & detection: independent and masked raters. Attrition: 68 % of approached participants consented. Other: treatment fidelity not assessed; no control arm.
Dowling (2006) [†]	2 independent groups EG1: integrated interventions by carers EG2: traditional counselling by bereavement counsellors	EG1: N = 11 EG2: N = 23 Age = +18 IDs: mild – moderate – severe Bereaved adults Country: UK	EG1: Integrated support by family carer and day centre staff using bereavement-oriented activities, and discouraging continued grief at day centre. EG2: approximately 15 weekly or fortnightly 1-hour sessions with volunteer. Setting: at home or day centre.	EG2 improved more than EG1 regarding display of aberrant behaviour (Aberrant Behaviour Checklist – Community, and Health of Nation Outcome Scales for People with Learning Disabilities), as recorded by staff informants.	No follow-up conducted	Selection: cluster and individual randomisation, allocation sequence human generated and concealed. Performance & detection: no blinding. Attrition: 8% and 63% completion rate for consenting participants in EG1 and EG2 respectively, analysis on ‘intention-to-treat’ Other: 2-day training and supervision available to lay therapists; high withdrawal rate by carers in high-demand EG1; treatment fidelity not assessed; no control arm.
Hagiliassis et al (2005)	2 independent groups EG: cognitive-behavioural anger management CG: waiting-list, treatment as usual	EG: N = 14, mean age 45 CG: N = 15, mean age 44 IDs: none or borderline (8), mild (2), moderate (8), severe (11) Anger control difficulties Country: Australia	EG: 12-weekly 2-hour individual anger management training sessions, including physiological and cognitive components, based on Novaco’s theory of anger (1975).	Novaco Anger Scale: significant group x time interaction, anger control improved for EG only. Outcome Rating Scale: no main or interaction effects, but slightly better outcomes for EG.	4 months Improved anger control for EG maintained, no change for CG.	Selection: randomisation stratified by region and gender, concealed allocation. Performance & detection: no blinding, but assessment by independent researcher. Attrition: 85% of referred participants were offered and completed treatment. Other: treatment manual referenced,

						treatment fidelity not assessed.
Hassiotis et al (In Press)	2 independent groups EG: individual cognitive-behavioural treatment for depression and anxiety + treatment as usual CG: treatment as usual	EG: N = 16, mean age 34, 5 M / 11F CG: N = 16, mean age 38, 7 M / 9 F IDs: mild (30), moderate (2) Anxiety and/or depression Country: UK	EG: 16 weekly 1-hour sessions of manualised individual cognitive-behavioural therapy for anxiety and depression Setting: IDs service	Beck Depression Inventory – Youth , Beck Anxiety Inventory – Youth: no treatment effect, slight non-significant improvement for CG, not for EG. EG showed positive change only for participants with depression, but without anxiety.	6 months EG and CG improved slightly, yet non-significant, and CG fared better than EG.	Selection: permuted block randomisation, concealed allocation. Performance & detection: assessment by masked researchers. Attrition: 48 referrals, 32 entered of which 27 completed. Data-analysis based on N = 15 in EG and CG. Other: secondary outcome to assess quality of life inadequate for use with people with IDs; study protocol published, treatment manual available; treatment fidelity recorded as high.
Lawrence (2004) [†]	2 independent groups EG1: reality therapy group EG2: mutual support group	EG1: N = 16, mean age 40 EG2: N = 14, mean age 46 M/F: equal between groups IDs: no data presented Country: USA	Six-weekly 1-hour group sessions Group size: max. 8 Setting: vocational service	Arc's Self-Determination Scale: Improved self-determination self-regulation, and self-realisation for EG1 compared to EG2, but no effects on autonomy and psychological empowerment.	No follow-up conducted	Selection: randomised allocation, but not concealed. Performance & detection: no blinding. Attrition: 6% drop-out rate. Other: clear description of treatment plan and session contents; treatment fidelity not assessed; no control arm.
Lindsay (2004)	2 independent groups EG: Group CB anger management CG: 6-month waiting-list	EG: N = 33, mean age 28, 75 % M CG: N = 14, mean age 24, 57 % M IDs: EG mean IQ: 65 CG mean IQ: 66 Anger control difficulties Country: UK	EG: 40 group sessions, 40-60 minutes. Includes behavioural relaxation, stress inoculation, group discussions about anger responses, and role-plays. Group size:	Dundee Provocation Inventory : reduced anger response for EG, but not for CG Anger provoking role-plays: reduction in anger responses (only data reported for EG, N = 21) Daily reports of anger: reduced feelings of anger in self-reports of EG, but not CG	3 months, sometimes also at 9, 15, 21 or 30 months. Further reduction on all outcome measures at 3 months. Then stabilizes at post-test or 3 month follow-up level.	Selection: referrals-based randomisation. Recruitment/referral over +10 year period. Performance & detection: masked raters for role-plays. Attrition: attrition acknowledged but rates not reported, anger-provoking role-plays and anger reports missing for some participants. Reporting: no information on group size. Other: no baseline scores CG for anger-provoking role plays as considered inappropriate by authors; treatment fidelity not assessed.
Matson	2 independent groups	N= 24	EG: 3-weekly 1-hr group	Fear, as measured by approach	4 months	Selection: matched pairs: degree of fear, sex.

(1981) [#]	EG: group intervention of participant modelling for fear	Age: not reported 50 % M IDs: mild to moderate	sessions over 3 months. Training based on behaviour modelling and in vivo sessions.	behaviour, substantially decreased and number of adaptive verbal and non-verbal shopping skills performed improved for EG.	No follow-up specific data reported.	Performance & detection: 2 independent but not masked raters. Attrition: not reported.
	CG: no-treatment, waiting-list control	Phobia Country: USA	Group size: 5 Setting: mental health service, sheltered workshop	Less phobic avoidance registered by staff for EG.		Reporting: only results of ANCOVAs presented, no group means and standard deviations. No data on age, or level of ID. Other: Raters received training. 96% inter-rater agreement. Treatment plan detailed, but treatment fidelity not assessed.
Matson et al (1981)	2 independent groups	EG1: N = 11, EG2: N = 11, CG: N = 10	EG1: twice weekly 1-hr sessions discussing empathy, respect, concreteness and genuineness.	Behaviour in role-plays and during group meetings: significant improvements for EG2, only role-plays improved for EG1.	3 months.	Selection: randomising triads matched on pretest skills.
	EG1: traditional group psychotherapy	Age: mean 34, range 28-49 21 M / 11 F			Behavioural improvements for EG2, although lower than posttest.	Performance & detection: masked raters.
	EG2: group social skills training	IDs: mild to moderate	EG2: twice weekly 1-hr sessions with direct teaching of 3 target behaviours, role-play and modelling.	Nurses' Observation Scale for Inpatient Evaluation – 30: significant improvements for EG2.		Attrition: 35 consented; insufficient outcome data for one person in each group (reasons specified).
	CG: no treatment	Socially inadequate behaviour Country: USA	Group size: 3-5 Setting: workshop	No changes on Social Performance Survey Schedule.	EG1: only improved for role-plays	Other: Raters received training to reach 90% inter-rater agreement. Group attendance rates reported; treatment fidelity not assessed.
McCabe (2006)	2 quasi-independent groups	EG: N = 19, mean age 34, 10 M / 9 F	EG: 5 weekly 2-hr sessions. Session contents cover social support, activity setting, core beliefs, negative thoughts, problem solving and setting future goals.	Beck Depression Inventory – II , Social Comparison Scale, and Automatic Thoughts Questionnaire: significant improvements for EG on all measures (for N=34).	3 months (for N=18)	Selection: participants randomised
	EG: cognitive-behavioural group intervention	CG: N = 15, mean age 40, 6 M / 9 F			Gains maintained at follow-up but no further improvement	Performance & detection: no blinding.
	CG: no-treatment control	IDs: mild to moderate				Attrition: 1 person lost to follow-up, reason not specified.
		Depression Country: Australia	Group size: 3-5 Setting: workplace	Rosenberg Self-esteem Scale: no significant change noted.		Other: data of 15 CG participants who completed intervention after 3-month follow-up included in analysis. For N=15 these participants acted as own control. Session outlines reported, but treatment fidelity not assessed
McGaw (2002)	2 independent groups	EG: N = 12, mean age 29, 3 M / 9 F	EG: 14 weekly 2-hr sessions. home-based teaching program + group intervention to improve relationships and self-	Judson rating scale (self-concept subscale). Behaviour problem index, Malaise Inventory. No improvement for EG or	13 weeks	Selection: Not randomised, allocation on first-come, first-serve basis.
	EG: cognitive-behavioural group intervention	CG: N = 10, mean age 30, 4 M / 6 F			Improved self-concept from posttest to follow-	Performance & detection: no reports of blinding procedures.

	CG: control parent group	IDs: borderline or mild. EG mean IQ 73 CG mean IQ 72 Parents with IDs Country: UK	concept of parents with ID. CG: home-based teaching intervention Group size:	CG on parental relationships and parental self-concept.	up for EG. Social Changes Questionnaire showed increased parental support for EG.	Attrition: not reported. Other: no information on session content or treatment fidelity.
McGillivray (2008)	2 independent groups EG: staff-administered group CBT CG: waiting-list	EG: N = 20, mean age 38, 13 M / 7 F CG: N = 27, mean age 31, 19 M / 8 F IDs: mild, IQ range 50-70 Depression Country: Australia	EG: 12 weekly 2-hour sessions. Programme based on 'Think happy, feel happy, be happy'. Group size: 5-6	Beck depression inventory-II ; Automatic thoughts questionnaire – Revised; Social readjustment rating scale; Social comparison scale. Decrease in depressive symptoms and automatic thoughts for EG	3 months Gains maintained at follow-up.	Selection: cluster randomisation of 2 vocational agencies. Performance & detection: staff naïve to design, but not masked during delivery; assessment by independent research assistant. Attrition: 2 people removed from analysis due to illness. no follow-up data for further 2 people from CG who continued to receive treatment. Other: 2-day training for staff to act as lay-therapists. Session content outlined, but treatment fidelity not assessed.
Rose (2000) ^{##}	Data included in Rose 2005.					
Rose (2005)	2 quasi-independent groups EG: group cognitive-behavioural interventions for anger CG: waiting-list, treatment as usual	EG: N = 50, mean age 39, 40 M / 10 F CG: N = 36, mean age 35, 31 M / 5 F IDs: only data for receptive vocabulary Anger control difficulties Country: UK	EG: 16 weekly 2-hour group sessions to reduce aggressive behaviour. Group size: not reported	Anger inventory : lower expressed anger for EG, and increased expressed anger for CG. Post-hoc: presence of staff and receptive vocabulary associated with better treatment outcomes.	3 – 6 months Gains of EG maintained. No follow-up data for CG.	Selection: no randomisation or concealed allocation, allocation based on availability of treatment. Performance & detection: no reports of blinding procedures. Attrition: 11 out of 61 recruited participants dropped-out of EG1. Other: includes data from Rose (1999) and Rose (2000); data for CG N = 11 included in data-analysis for EG; assessed clinical relevance of outcomes; treatment content referenced and reported, but treatment fidelity not assessed.
Rose (2008)	2 independent groups EG: Individual cognitive-	EG: N = 20, mean age 37 13 M / 7 F CG: N = 21, mean age 37	EG: 14-18 individual sessions of 30-60 minutes of cognitive behavioural	Adapted Anger Inventory : EG showed significant decrease in self-reports of	3 – 6 months. Decreased anger	Selection: no randomisation or concealed allocation, allocation based on availability of treatment.

	behavioural intervention for anger CG: waiting-list	16 M / 5 F IDs: mild – borderline Aggressive behaviour UK study	interventions to reduce aggressive behaviour.	anger intensity. Decrease more pronounced for people with higher anger intensity at baseline.	intensity maintained for EG.	Performance & detection: no reports of blinding procedures. Attrition: no drop-outs occurred. Other: assessed clinical relevance of outcomes; brief outline of sessions presented, but treatment fidelity not assessed.
Rose (2009)	3 independent groups EG1: individual cognitive-behavioural intervention for anger EG2: group cognitive-behavioural intervention for anger CG: waiting-list, treatment as usual	EG1: N = 18, 12 M / 6 F EG2: N = 23, 14 M / 9 F CG: N = 21, 16 M / 5 F IDs: only data for receptive vocabulary Aggressive behaviour Country: UK	EG1: 14-18 individual sessions of 30-60 minutes of cognitive behavioural interventions to reduce aggressive behaviour EG2: 16 weekly 2-hour sessions of cognitive behavioural interventions to reduce aggressive behaviour. 3 groups. Group size:	Anger Provocation Inventory: EG1 & EG2 showed significant reductions; no difference in efficacy of EG1 and EG2.	No follow up conducted	Selection: not randomised, allocation based on availability of treatment. Performance & detection: no reports of blinding procedures. Attrition: EG2 had 2 drop-outs. Other: assessed clinical relevance of outcomes; treatment content referenced (Rose, 2000, 2008), but treatment fidelity not assessed.
Silvestri (1977) #	3 independent groups EG1: implosive therapy EG2: pseudo-treatment oriented discussions CG: no-treatment control	EG1, EG2, CG: N = 8 average 5 M / 3 F Mean age 21 IDs: mild to borderline, mean IQ 70.3 Anxiety Country: USA	EG1: 10 45-minute sessions of individual implosive therapy over 3 weeks. Therapy includes imagery exposure and role-plays to reduce anxiety. EG2: 10 45-minute sessions where people discussed dreams and fantasies.	Brief Psychiatric Rating Scale; Nurses' Observational Scale for Inpatient Evaluation (NOSIE-30); Modified version of Adjective Checklist; Occupational Rating Scale. EG1 improved on all outcomes compared to EG2 and CG.	6 weeks Gains of EG1 on NOSIE-30 not maintained at follow-up, deterioration occurred but not below pretest level. CG improved significantly from pretest and posttest to follow-up.	Selection: randomised allocation based on age, sex, race and IQ. Performance & detection: no blinding. Attrition: follow-up data for 2 people from EG2 not available due to drop-out. Reporting: NOSIE-30 data based on 7/30 items. Other: treatment procedures referenced, but treatment fidelity not assessed.
Taylor (2002) #	Data included in Taylor (2005)					
Taylor (2004)	2 independent groups	EG: N = 9, mean age 29 CG: N = 8, mean age 29	EG: 18 individual cognitive-behavioural sessions over 3	Imaginal Provocation Test: EG showed significant	No follow-up conducted	Selection: no randomised allocation, allocation procedures not specified

	EG: individual cognitive-behavioural treatment for anger CG: waiting-list, routine care	100 % M IDs: EG mean IQ 69.3 CG mean IQ 66.4 Anger control difficulties Country: UK	months, including stress inoculation training Setting: in-patient forensic service	improvement on anger reaction, behavioural reaction, and anger composite subscales . EG also improved anger regulation, not significant but large effect.		Performance & detection: assessment by independent but not masked research assistant. Attrition: 1 person in each arm did not complete study, attrition rate 2/19; data not included in analysis. Other: therapists supervised by developer of treatment, treatment content referenced, but treatment fidelity not assessed.
Taylor (2005)	2 independent groups EG: individual cognitive-behavioural treatment for anger CG: waiting-list, routine care	EG: N = 16, mean age 29 CG: N = 20, mean age 30 100 % M IDs: EG mean IQ 67.1 CG mean IQ 70.7 Anger control difficulties Country: UK	EG: 18 individual cognitive-behavioural sessions over 3 months, including stress inoculation training Setting: in-patient forensic service	Novaco Anger Scale (NAS), Provocation Inventory (PI) , Anger Expression Scale, Ward Anger Rating Scale. Significant treatment x time interaction for Novaco Anger Scale. No significant differences between trends of EG and CG on NAS or PI. EG trend appears positive.	4 months EG1 improvements maintained	Selection: randomised concealed allocation based on date of referral; EG significantly lower IQ than CG. Performance & detection: assessment by independent but not masked research assistant. Attrition: data of 2 drop-outs in EG and 2 people in EG lost to follow-up are not included in analysis; demographic data of these 4 people is reported. Other: therapists supervised; treatment content referenced; random reviews of treatment files to check treatment fidelity.
Willner (2002)	2 independent groups EG: cognitive-behavioural anger management group CG: waiting-list control	EG: N = 7, mean age 31, 4 M / 3 F CG: N = 7, mean age 30, 5 M / 2 F IDs: EG mean IQ 63.9, CG mean IQ 65.3 Anger control difficulties Country: UK	EG: 9 weekly 2-hour group sessions of cognitive-behavioural anger management; minimal attendance 5/9 sessions. Group size: 5 – 7.	Carer and client ratings on Anger Inventory, Provocation Index All anger ratings decreased significantly for EG and increased (non-significantly) for CG. Improved anger ratings highly correlated with verbal IQ and full-scale IQ. Improvements greater for participants accompanied by carers	3 months Treatment gains maintained and further improved at follow-up for EG. No follow-up conducted for CG.	Selection: randomised allocation based on alternate referrals Performance & detection: client & carer ratings not masked; some carer-ratings at baseline and post-treatment not by same staff. Attrition: 16 out of 21 referrals were allocated to study arms, 2 further participants swapped groups but later dropped-out. Other: treatment content referenced, but fidelity not assessed.
Willner (2005) [#]	2 independent groups EG: staff-delivered	N = 17 EG: N = 9, mean age 45, 7 M / 2 F	EG: 12 weekly 2-hour group sessions; intervention delivered by 2 staff; minimal	EG significantly lower scores than CG for both participant and carer ratings on	6 months EG maintained	Selection: allocation not randomised, but based on preference of participants and staff

	cognitive-behavioural anger-management group	CG: N = 8, mean age 32, 5 M / 3 F	attendance 8/12 sessions. Group size: 8 – 9	Provocation Index and significantly better anger coping skills.	gains for carer ratings and increased gains for client ratings of Provocation Index. Anger coping skills maintained for EG.	Performance & detection: no blinding, some staff involved in both delivering intervention and assessment of outcomes. Attrition: no drop-outs reported; missing data at baseline and follow-up replaced with post- treatment data for 2 participants Other: EG significantly lower PACS scores at baseline; staff lay-therapists trained and supervised by clinical psychologist; treatment content referenced.
Willner (2013)	2 independent groups EG: cognitive-behavioural group anger management CG: treatment as usual	EG: N = 91, median age 37, 71% M CG: N = 90, median age 39, 70% M IDs: EG median IQ 59.0 CG median IQ 55.0 Anger control difficulties Country: UK	EG: 12 weekly 2-hour psycho-educational cognitive-behavioural group sessions on anger- management delivered by lay-therapists. Group size: 5 + 2 lay therapists	Client ratings on Provocation Index EG showed small, but non- significant improvement for client ratings on Provocation Index. Key-workers' ratings showed significant improvements in anger management. Home carers' ratings showed less improvement.	6 months Treatment gains maintained for all ratings, except home carers' ratings.	Selection: cluster randomisation, clusters balanced on anger scores. Performance & detection: assessments by independent and masked researchers. Attrition: 179 participants randomised, 143 completed; intention-to-treat analysis. Other: Study protocol published; treatment content referenced; treatment fidelity 68.8 % (range: 19 – 86 %)

Note. Studies and outcome measures printed in bold were included in the meta-analysis.

[†] Excluded from meta-analysis because no control, waiting-list control, or no-treatment control arm was included.

[#] Excluded from meta-analysis because study did not provide sufficient data to calculate between-group effect sizes from post-treatment scores.

^{##} Excluded from meta-analysis because data included in later study.

EG, experimental group; CG, comparison group; N, number of participants included in the study's data-analysis; M/F, male-female ratio; IDs, level of intellectual disabilities.

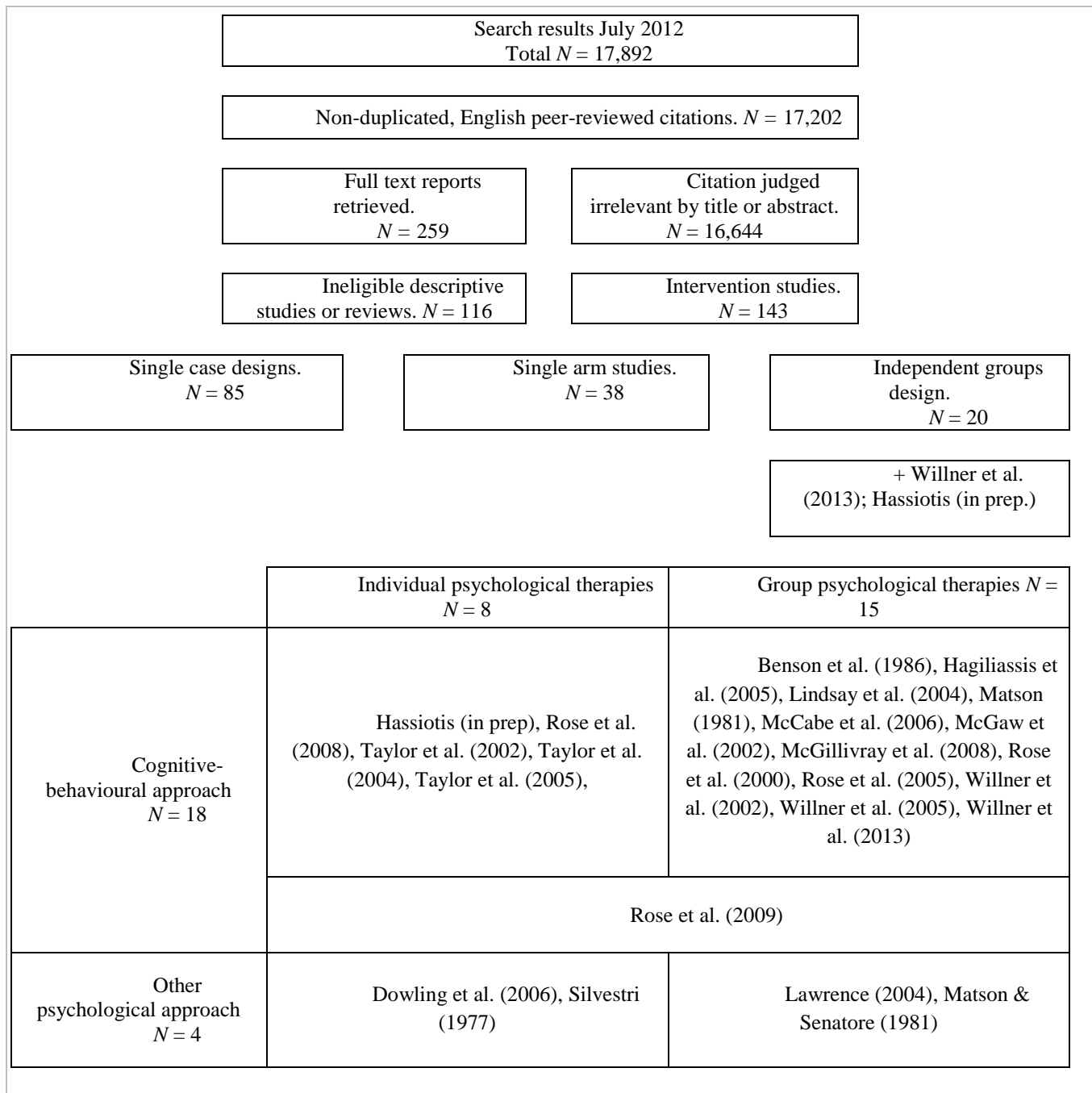
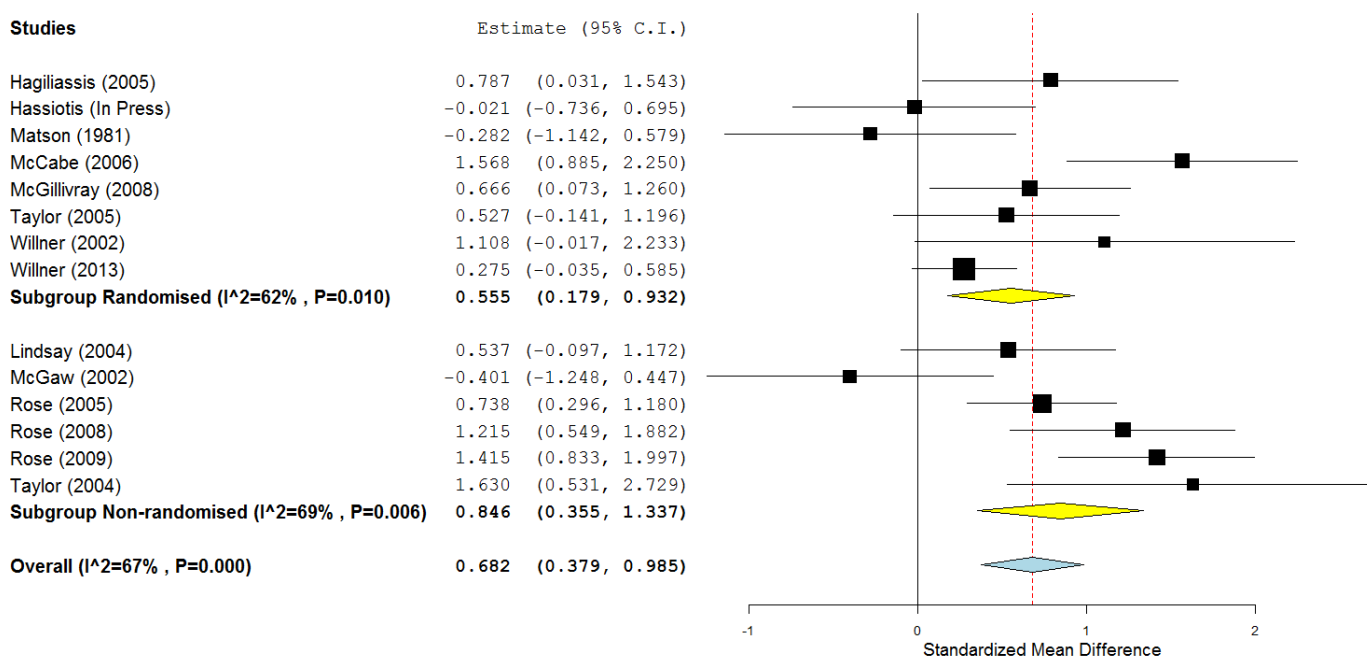
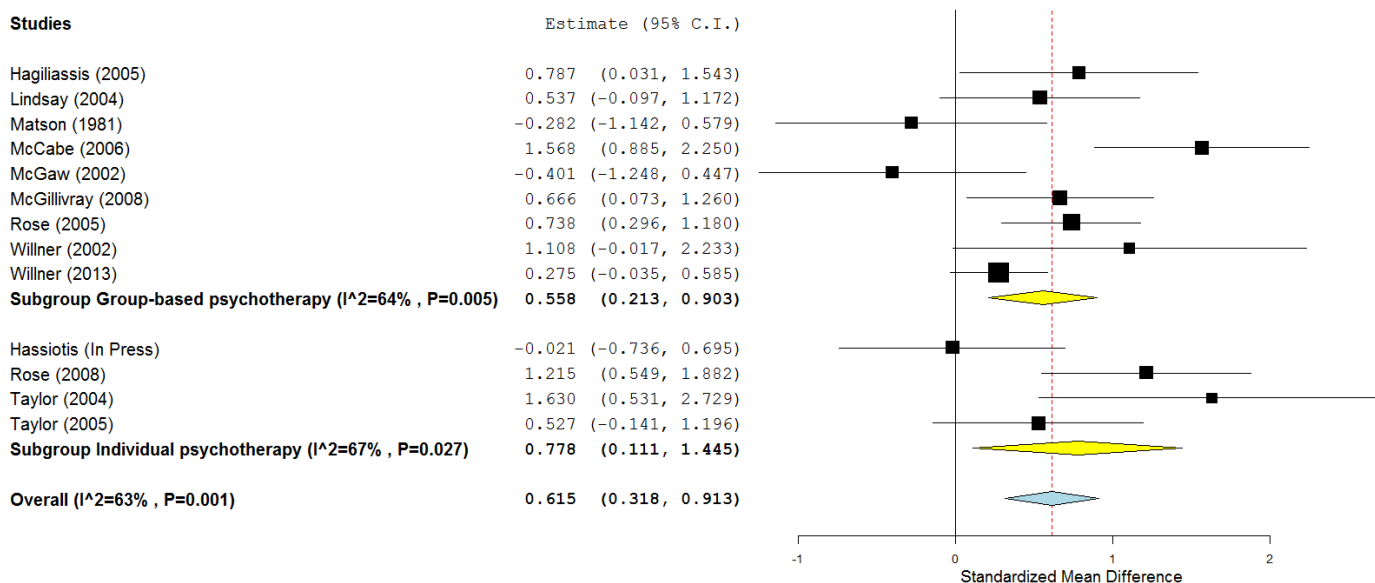
Figure 1. Flowchart of study selection for systematic review.

Figure 2. Forest plot of estimated treatment effect of psychological therapy for people with IDs.

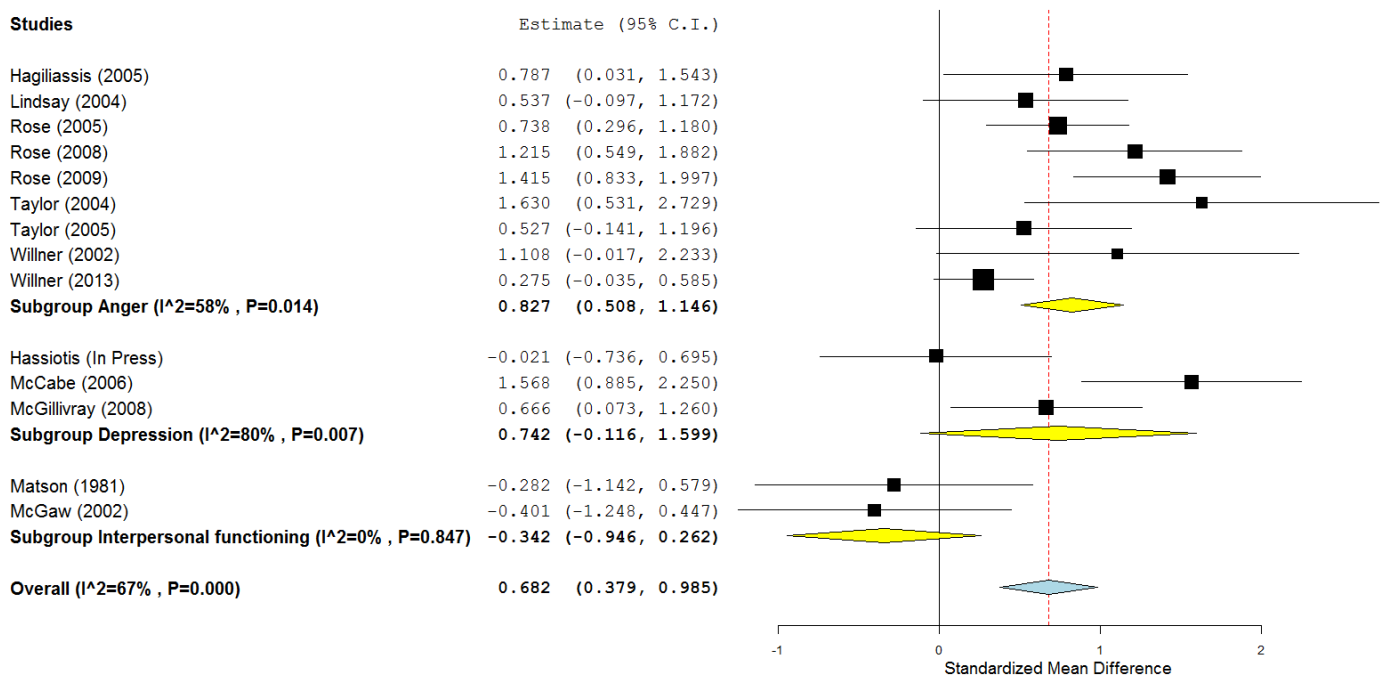
Horizontal lines represent the confidence interval for the standardised mean difference (black squares) of each study. The size of the black square is indicative of the study's sample size. The centre of the diamonds indicates the effect size for that subgroup analysis, while the width of the diamond covers the 95% CI. The vertical dashed line and bottom diamond indicate the overall size and its corresponding 95% CI.

Figure 3. Forest plot of subgroup meta-analysis for group-based and individual psychological therapy.



Horizontal lines represent the confidence interval for the standardised mean difference (black squares) of each study. The size of the black square is indicative of the study's sample size. The centre of the diamonds indicates the effect size for that subgroup analysis, while the width of the diamond covers the 95% CI. The vertical dashed line and bottom diamond indicate the overall size and its corresponding 95% CI.

Figure 4. Forest plot of subgroup meta-analysis based on clinical presentation.



Horizontal lines represent the confidence interval for the standardised mean difference (black squares) of each study. The size of the black square is indicative of the study's sample size. The centre of the diamonds indicates the effect size for that subgroup analysis, while the width of the diamond covers the 95% CI. The vertical dashed line and bottom diamond indicate the overall size and its corresponding 95% CI.