Thinking Minds - a cognitive skills intervention: A preliminary study capturing treatment effects, with forensic psychiatric patients

Jane L. Ireland,* Carol A Ireland, Maria Atiénzar Prieto, Katie Lambert

ABSTRACT

Presented is a preliminary study into the effectiveness of a cognitive skills programme, *Thinking Minds*, conducted with an adult male forensic psychiatric population (n = 27; 18 treatment, nine waiting list controls). It also addresses the approach to evaluating treatment effectiveness by capturing both group and individual effects. All participants were given a series of measures, to assess domains where treatment effect was thought likely to occur. This included impulsivity, coping, emotional control and self-esteem. It was predicted the treatment group would evidence positive change following the intervention, with no change in waiting list controls. Results indicated partial acceptance of the group effect prediction, with the waiting list control demonstrating no group change across time and the treatment group demonstrating improvement in rational and detached coping and in the social component of self-esteem. The individual change results demonstrated a mixed picture. It confirmed improvement in adaptive coping and social self-esteem for the treatment group but widened positive effects to cover aggression control. It also indicated evidence of deterioration on outcome measures. Deterioration was noted across all measures for the control group, suggesting that a degree of deterioration may be a naturally occurring process on self-report measures, regardless of intervention. This is an issue that future evaluations need to reflect on and accommodate. Results are discussed with regards to how the findings can begin to influence our approach to treatment evaluation.

Keywords: Cognitive Skills; Thinking Minds; Forensic patients; Treatment Evaluation; Clinical change.

* Corresponding author JLIreland1@uclan.ac.uk

INTRODUCTION

Cognitive skills interventions have been considered valuable in the rehabilitation of offenders. Such interventions capture several aspects of how individuals perceive and engage effectively with others. They do this by focusing on social problem solving, managing impulsivity, enhancing coping skills, developing perspective taking (i.e., considering the views of others) (Friendship et al., 2003; Ireland et al., 2016), and by tackling offence-supportive beliefs (e.g., Wilson, Bouffard & MacKenzie, (2005).

Among prison-based studies, mixed results have been noted. These have focused on group effects. Some have reported a positive treatment effect (Friendship et al., 2003; Roberts, 2004), while others have failed to do so (Falshaw et al., 2004), or reported only limited effects (Cann, Falshaw, Nugent & Friendship, 2003). However, this treatment effect has generally focused on re-conviction as an outcome measure. This arguably provides limited application of the potential for a treatment effect and, at most, re-conviction represents a measure of the successful detection and conviction of an offender. They also fail to account for therapeutic impact. There has, however, been use of psychometrics to also ascertain therapeutic outcome, in some studies. Positive impacts have been reported, with improvements in impulsivity, offence-supportive attitudes (McDougall et al., 2009; McGuire & Hatcher, 2001) and increased personal responsibility indicated (McDougall et al., 2009). Such findings have extended to studies that consider a treatment-group only (e.g., Gobbett & Sellen, 2014). In addition, in Ireland et al. (2016) we reported positive change in the prisoner treatment group in relation to cognition, problem-solving (namely coping with social situations), impulsivity and self-esteem. The latter was also found by McGuire and Hatcher (2001). Thus, there appears some consistency in the application of an expected treatment effect following engagement in a cognitive skills programme, at least to some degree, even if this does not routinely translate to a reduction in reconviction.

Interventions have focused, however, on application to male prisoners, as opposed to those detained in forensic psychiatric settings. In addition, here has been a focus on examining group effects, as opposed to

individual client change (Ireland et al., 2016). Research considering such change argues for *levels* of positive change to be considered. In Ireland et al. (2016), we argued for levels of individual change as particularly important, noting how *progress towards* treatment aims were key potential indicators of programme success as opposed to evidence solely of *absolute clinical change*. This is far from a new proposal, with Wise (2004) noting value in considering *improvement* as opposed to clinical *recovery*, when determining a treatment effect. Wise (2004) was not, however, concerned with the forensic application of treatment change, which is perhaps why it was not immediately identified by forensic intervention studies. Such studies have demonstrated a clear preference for analyses of group treatment effect.

The value in refining consideration of what is meant by a treatment effect is worthy of revisiting. Indeed, in Ireland et al. (2016), using adult male prisoners, although 'recovery' was not indicated using a strict application of clinical change, there was evidence for 'improvement' in relation to offence-supportive cognition, problem-solving, locus of control and self-esteem. The value of accounting for improvement was noted, particularly in relation to forensic samples being unique and where seeking a statistical means of assessing 'recovery' could consequently be challenged. Evidence for 'improvement' would not have been identified by group analysis alone. This points to a need to consider in more detail how we conduct treatment evaluation analyses and not just focusing attention on the content of our evaluation programmes. It appears the latter has represented a dominating feature in the literature, with additional focus on what promotes engagement/responsivity to such treatment (Cornet et al., 2015). There remains remarkably little commenting on the analysis component of such programmes (Hanson, 2000; Serin et al., 2013). Although there has been research emerging in the forensic arena that has sought to apply a more sophisticated approach to the analysis of treatment effects (e.g. Walters, 2017), such publications are rare, with the reason for this unclear.

The current preliminary study examines the effectiveness of a cognitive skills treatment programme - Thinking Minds (TM) – to a high risk forensic psychiatric sample, with a further aim of considering

approaches to the analysis of treatment effects. It aims to achieve the following, 1.) Consideration of the treatment effectiveness of a cognitive skills programme to a neglected population of clinical study - forensic psychiatric patients; 2.) To identify both group and individual treatment effects and, in doing so, to consider what future approaches to analysis could reflect on. It was predicted that those completing TM would evidence improvements in impulsivity, effective coping, emotional-control and self-esteem, with no differences found for waiting-list controls. It was further predicted that those completing TM would evidence individual recovery across on these domains.

METHOD

Participants

All participants (n = 27) were adult men detained in a high secure forensic psychiatric hospital, which houses men with complex presentations with regards to mental health and/or personality. Their placement was an indication of a high level of risk to themselves and/or others, thus requiring conditions of enhanced security. All had a history of offending and were detained due to their risk in this regard. The hospital houses approximately 200 patients at any one time, with most presenting with comorbid major mental illness and personality disorder. The current sample represented all patients referred for a cognitive skills programme, over a 36-month period. The waiting list represents those who were awaiting treatment. Patients were placed onto the treatment programme when one became available. No further details were permitted to be gathered for the evaluation.

Treatment evaluated: Thinking Minds

Thinking Minds (TM: Ireland & Gredecki, 2009), is a 45 session cognitive skills programme, conducted at a frequency of three sessions a week, with each session lasting two hours. It comprises 10 modules, as follows; Module 1 (getting started), Module 2 (looking forward), Module 3 (coping with difficult situations), Module 4 (what is problem solving), Module 5 (understanding what goes on around me), Module 6 (developing my thinking), Module 7 (decision making), Module 8 (putting it in to practice), Module 9 (building resilience) and Module 10 (planning for my future). It is conducted with groups of between five and seven participants, with two

trained facilitators running each session. Facilitators are either psychologists or qualified psychiatric nurses. Programme integrity (e.g., manual adherence) was maintained through regular supervision, including via direct observance of sessions by a treatment lead.

Measures

The following measures were completed by all participants. Higher scores on each measure reflected a greater endorsement of the construct under study. For the treatment group these were completed prior to and post therapy completion (Time 1/Pre and Time 2/Post). The control group completed the same self-report measures at two time points, equal to the treatment group:

- *Barratt Impulsivity Scale* (BIS: Patton et al., 1995), a 30 item measure of attentional, cognitive and behavioural impulsivity. Previous internal reliability has been assessed, as 0.83 (Stanford et al, 2009).
- *Coping Style Questionnaire* (CSQ: Roger, Jarvis & Najarian, 1993), a 41 item measure of adaptive (i.e. detached and rational) and maladaptive (emotional and avoidant) coping. Internal reliability has been assessed as .85 for rational coping, .90 for detached, .74 for emotional and .69 for avoidance coping (Roger et al., 1993).
- *Emotional Control Questionnaire* (ECQ: Roger & Najarian, 1989), a 56 item measure capturing four elements of control; (cognitive) rehearsal, emotional inhibition, aggression control and benign control. Internal reliability for each of the four elements has been reported as .77 (emotional inhibition), .79 (benign control), .81 (aggression control) and .86 (rehearsal) (Roger & Najarian, 1989).
- *Culture Free- Self Esteem Inventory* (CSE: Battle, 2002), a 40 item measure of self-esteem that captures general, social and personal self-esteem. Internal reliability has ranged from .74 to .78 (Shine et al., 2002).

Procedure

All participants were approached and asked to complete the measures. The data analysis were completed by those unconnected to the development or

delivery of the treatment programme (i.e., authors KL & MAP). This managed the conflict of interest in the outcome of the treatment programme. The group and individual analyses were also completed separately, so each were blind to the results. KL undertook the group analyses and MAP the individual.

RESULTS

Collected data were screened for missing entries. Any missing data were replaced with the mean item score, except when a whole measure had not been completed by the participant. In such instances this remained a missing value. A Kolmogorov-Smirnov test of normality demonstrated that the data were not normally distributed. Consequently, group effects were assessed using a non-parametric, paired samples Wilcoxon test. These are presented in Table 1 for each measure and its respective subscales.

Table 1. Group effects for treatment (n = 18) and waiting list controls (n = nine).

Measure	**Pre/Time 1**		**Post/Time 2**	
	Treatment Mean (SD)	Control Mean (SD)	Treatment Mean (SD)	Control Mean (SD)
Impulsivity Total (BIS)	59.5 (10.6)	54.4 (15.18)	57.6 (12.6)	55.6 (14.19)
Attentional	17.9 (3.98)	16.4 (4.27)	16.9 (4.32)	16.4 (3.75)
Motor	19.9 (4.42)	18.3 (6.20)	20.2 (6.37)	19.3 (5.77)
Cognitive	21.7 (4.06)	19.7 (5.98)	20.5 (3.75)	19.7 (5.63)
Coping Style* (CSQ)				
Rational	**39.4 (5.59)**	41.9 (10.68)	**44.0 (5.66)**	44.2 (9.11)
Detached	**31.2 (3.82)**	34.2 (3.67)	**34.6 (3.79)**	33.7 (4.96)
Emotional	37.9 (5.27)	34.6 (8.19)	37.4 (5.33)	35.3 (6.96)
Avoidant	31.5 (5.09)	29.1 (5.90)	30.9 (4.91)	27.8 (6.03)
Emotional Control (ECQ)				

Rehearsal	5.5 (3.05)	3.3 (3.57)	5.4 (3.88)	3.8 (3.49)
Emotional Inhibition	6.7 (2.63)	8.6 (3.47)	6.0 (3.47)	8.2 (3.70)
Aggression Control	8.4 (2.12)	8.1 (2.71)	8.6 (2.77)	7.3 (2.71)
Benign Control	8.6 (2.41)	9.2 (3.12)	8.4 (3.23)	9.1 (3.52)
Self Esteem Total (CSE)	20.2 (4.14)	20.3 (4.87)	19.5 (4.60)	20.6 (5.04)
General	10.6 (2.65)	10.3 (2.35)	9.7 (2.59)	10.2 (2.68)
Social	**5.1 (1.17)**	5.7 (.97)	**5.8 (1.34)**	5.7 (1.92)
Personal	4.5 (2.00)	4.2 (2.94)	3.9 (2.20)	4.6 (2.52)

*n = 17 for the treatment group, with 1 missing; **Significant difference pre and post are in bold.

There were no differences between Time 1 and Time 2 for the waiting list control group. Differences pre and post for the treatment group were restricted to significant improvements post in CSQ rational coping (p = .03, r = 0.38), CSQ detached coping (p = .004, r = 0.50) and social self-esteem (p = 0.03, r = 0.37).

Following an assessment of group effects, focus moved to individual change. This was examined using:

1. Reliable change (RC) criterion using pre-group/time 1 SD and published reliabilities of the outcome measures. A confidence level of 95 per cent was utilised (1.96) and SE of change calculated;
2. Determination of a clinical cut-off to indicate if post therapy/time 2 scores moved into a "recovery" (i.e. functional population) range, determined as 2 SD or more from the pre-therapy mean (Atkins, Bedics, McGlinchey & Beauchaine, 2005). This method is also used for the Jacobson-Truax approach to determine clinical significance, whereas others argue that 1 SD and 0.5 SD cut-offs can be employed to indicate improvement/partial response and minimal positive response, respectively, with an RCI (Reliable

Change Index) criterion of 1.96 considered too conservative (Wise, 2004). Consequently, the full range of possible outcomes are indicated (i.e. recovered, improved/partial response, minimal).

3. Classification of participants using the stringent Jacobson-Truax method into "recovered", "improved", "unchanged" and "deteriorated" (see Ireland et al., 2016).

This were completed for the treatment group and waiting list control group. The results are shown in Table 2 and Table 3 respectively.

Table 2. Individual change effects for treatment group (n = 18; CSQ n = 17).

Measure				**Cut-off***	**Jacobson-Truax method**
	SE of Change (RC)	Reliable Improvement n (%)	Reliable Deterioration n (%)	n (%) recovered n (%) improved/ partial response n (%) minimal	n (%) recovered n (%) improved n (%) unchanged n (%) deteriorate
Impulsive total (n=18)	6.18 (12.11)	1 (5.6)	8 (44.4)	1 (5.56) 4 (22.22) 3 (16.67)	0 1 (5.6) 9 (50.0) 8 (44.4)
Attentional impulsivity	3.52 (6.89)	6 (33.3)	5 (27.5)	1 (5.56) 3 (16.67) 2 (11.11)	1 (5.6) 5 (27.8) 7 (38.9) 5 (27.8)
Motor impulsivity	3.59 (7.04)	1 (5.6)	8 (44.4)	0 3 (16.67) 6 (33.33)	0 8 (44.4) 9 (50) 1 (5.6)
Cognitive impulsivity	3.04 (5.95)	6 (33.3)	7 (38.9)	1 (5.56) 3 (16.67) 2 (11.11)	1 (5.6) 5 (27.8) 5 (27.8) 7 (38.9)
Rational Coping	3.53 (6.91)	11 (61.1)	5 (27.8)	2 (11.1) 5 (27.78) 2 (11.11)	3 (16.7) 8 (44.4) 1 (5.6) 5 (27.8)
Detached	2.45	10 (55.6)	2 (11.1)	2 (11.11)	2 (11.1)

Coping	(4.81)			5 (27.78) 6 (33.33)	8 (44.4) 5 (27.8) 2 (11.1)
Emotional Coping	3.61 (7.07)	2 (11.1)	7 (38.9)	0 1 (5.56) 3 (16.67)	0 2 (11.1) 8 (44.4) 7 (38.9)
Avoidant Coping	3.94 (7.71)	2 (11.1)	6 (33.3)	0 3 (16.67) 3 (16.67)	0 2 (11.1) 9 (50) 6 (33.3)
Rehearsal	1.61 (3.16)	6 (33.3)	10 (55.6)	0 4 (22.22) 3 (16.67)	0 6 (33.3) 2 (11.1) 10 (55.6)
Emotional inhibition	1.78 (3.50)	7 (38.9)	5 (27.8)	0 8 (44.44) 2 (11.11)	0 7 (38.9) 6 (33.3) 5 (27.8)
Aggression Control	1.31 (2.56)	10 (55.6)	5 (27.8)	1 (5.56) 5 (27.78) 2 (11.11)	1 (5.6) 9 (50) 3 (16.7) 5 (27.8)
Benign control	1.56 (3.06)	6 (33.3)	7 (38.9)	0 2 (11.11) 8 (44.44)	0 6 (33.3) 5 (27.8) 7 (38.9)
Self esteem total (CSE) (n=18)	2.55 (5.00)	4 (22.2)	12 (66.7)	0 4 (22.22) 1 (5.56)	0 4 (22.2) 2 (11.1) 12 (66.7)
General esteem	1.59 (3.12)	2 (11.1)	11 (61.1)	0 2 (11.11) 3 (16.67)	0 2 (11.1) 5 (27.8) 11 (61.1)
Social Esteem	1.10 (2.15)	9 (50.0)	4 (22.2)	1 (5.56) 6 (33.33) 4 (22.22)	1 (5.6) 8 (44.4) 5 (27.8) 4 (22.2)
Personal Esteem	1.33 (2.60)	4 (22.2)	9 (50)	0 2 (11.11) 2 (11.11)	0 4 (22.2) 5 (27.8) 9 (50)

RC= Reliable Change Criterion; *SD positive cut-off; 'Recovered'= 2 SD from pre-mean; 'Improved/partial response'= 1 SD from pre-mean; 'Minimal'= 0.5 SD. The remainder represent no change.

When considering improvement, recovery and deterioration scores collectively (i.e. Jacobson-Traux, Reliable Improvement and Reliable Deterioration), an emerging pattern in the treatment group represented some improvement in impulsivity, but not uniformly so, and certainly not in relation to overall impulsivity. There was more consistency in relation to improvement on rational and detached coping, ECQ aggression control and social self-esteem. This was broadly consistent with the group effect findings, although the ECQ aggression control was not identified as an area of group improvement.

There was also deterioration noted, particularly with regards to emotional coping, avoidant coping, ECQ rehearsal (rumination) and self-esteem (overall, general and personal). This indicates a mixed picture of treatment effects, when accounting for individual change.

Table 3. Individual change effects for waiting list control (n = 9).

Measure				**Cut-off***	**Jacobson-Truax method**
	SE of Change (RC)	Reliable Improvement n (%)	Reliable Deterioration n (%)	n (%) recovered n (%) improved/ partial response n (%) minimal	n (%) recovered n (%) improved n (%) unchanged n (%) deteriorate
Impulsivity Total (n=9)	8.85 (17.35)	0	3 (33.3)	0 1 (11.1) 2 (22.2)	0 0 6 (66.7) 3 (33.3)
Attentional impulsivity	3.77 (7.39)	0	4 (44.4)	0 0 3 (33.3)	0 0 5 (55.6) 4 (44.4)
Motor impulsivity	5.04 (9.87)	0	5 (55.6)	0 0 2 (22.2)	0 0 4 (44.4) 5 (55.6)

Cognitive impulsivity	4.47 (8.77)	0	3 (33.3)	0 0 4 (44.4)	0 0 6 (66.7) 3 (33.3)
Rational Coping	6.74 (13.21)	0	2 (22.2)	0 2 (22.2) 1 (11.1)	0 0 7 (77.8) 2 (22.2)
Detached Coping	2.36 (4.62)	0	5 (55.6)	0 1 (11.1) 3 (33.3)	0 0 4 (44.4) 5 (55.6)
Emotional Coping	5.6 (10.98)	0	6 (66.7)	0 1 (11.1) 0	0 0 3 (33.3) 6 (66.7)
Avoidant coping	4.56 (8.94)	0	2 (22.2)	1 (11.1) 0 2 (22.2)	0 0 7 (77.8) 2 (22.2)
Rehearsal	1.89 (3.7)	0	4 (44.4)	0 0 3 (33.3)	0 0 5 (55.6) 4 (44.4)
Emotional inhibition	2.35 (4.61)	2 (22.2)	4 (44.4)	0 2 (22.2) 2 (22.2)	0 2 (22.2) 4 (44.4) 4 (44.4)
Aggression control	1.67 (3.27)	0	4 (44.4)	0 1 (11.1) 1 (11.1)	0 0 5 (55.6) 4 (44.4)
Benign control	2.02 (3.96)	0	5 (55.6)	0 2 (22.2) 1 (11.1)	0 0 4 (44.4) 5 (55.6)
Self esteem total (n=9)	3 (5.88)	0	4 (44.4)	0 1 (11.1) 2 (22.2)	0 0 5 (55.6) 4 (44.4)
General Esteem	1.41 (2.76)	2 (22.2)	5 (55.6)	0 2 (22.2)	0 2 (22.2)

				0	2 (22.2)
					5 (55.6)
Social Esteem	0.91 (1.78)	4 (44.4)	3 (33.3)	1 (11.1)	1 (11.1)
				4 (44.4)	3 (33.3)
				0	2 (22.2)
					3 (33.3)
Personal Esteem	1.95 (3.82)	0	1 (11.1)	0	0
				1 (11.1)	0
				3 (33.3)	8 (88.9)
					1 (11.1)

RC= Reliable Change Criterion; *SD positive cut-off; 'Recovered'= 2 SD from pre-mean; 'Improved/partial response'= 1 SD from pre-mean; 'Minimal'= 0.5 SD

The individual change approach demonstrated no notable improvements in the waiting list control group; the proportion of those falling outside of the 'unchanged' or 'deteriorated' was minimal, with most scores presenting with no Reliable Improvement. The main exception to this appeared to represent social self-esteem, where there was 44% Reliable Improvement across time points.

DISCUSSION

The results from this preliminary study demonstrated some group treatment effects in the expected direction, with an improvement in adaptive coping, namely rational and detached. There was also improvement in the treatment group with regards to a single discrete aspect of self-esteem, specifically social. These findings supported the prediction that there would be improvements in coping and self-esteem, but it presented as localised with regards to the latter. Nevertheless, the positive treatment effects regarding these variables were broadly consistent with treatment group effects noted by others (Ireland et al., 2016; McGuire & Hatcher, 2001). However, the absence of a group treatment effect in relation to impulsivity and emotional control indicated that the prediction was only partially supported, with the absence of support for a positive impact on impulsivity inconsistent with previous research (Ireland et al., 2016; McDougall et al., 2009; McGuire & Hatcher, 2001).

However, the lack of group changes for waiting list controls did support the prediction, providing an indication that what was being indicated in the treatment group was influenced by engagement on the Thinking Minds program. Furthermore, the current study demonstrated, with regards to individual change, a general 'unchanged' or 'deterioration' presentation in the waiting list controls. This was a distinct pattern from the treatment group, where individual improvements were clearly noted. The individual effects were broadly consistent with the group effects but, individually, there was also evidence for positive improvements in relation to some elements of impulsivity and particularly in relation to ECQ aggression control. This was consistent with the prediction that there would be individual improvements in the treatment group across the domains, which would not be replicated in the waiting list control group.

Individual clinical change improvements, in relation to self-esteem and coping, were broadly consistent with the earlier findings of Ireland et al. (2016), but only in relation to the subcomponent of self-esteem, namely social. Indeed, overall and general self-esteem demonstrated the largest proportion of deterioration in individual change scores, followed by personal self-esteem. This indicates that improvement to self-esteem, following a cognitive skills program such as TM, was likely specific to a domain (i.e., social), with this evidenced both as a group and individual treatment effect. However, a proportion of the waiting list control group (44.4%) were also able to evidence reliable improvement on social self-esteem. This suggests it is potentially a variable that fluctuates across time but may not be dependent on engagement in treatment.

Overall, the findings suggest additional positive treatment effects that can be accounted for, if the results are investigated individually. Nevertheless, there was also evidence of deterioration in the treatment group, most notably in relation to emotional and avoidance coping. This indicates a more complicated picture of treatment effectiveness is emerging than if we rely purely on a group effect. The point to be made, however, is that developing a view on treatment effectiveness is likely best achieved through consideration of *both* group and individual clinical change effects. This allows for a more integrated interpretation of treatment effects and post-treatment deterioration.

The treatment effects presented a relatively clear positive outcome on adaptive coping. This is arguably significant for a program of relatively short intensity. Indeed, broader changes in impulsivity and emotional control are arguably likely longer-term effects, unlikely to be detected in a short-term follow-up. This may be particularly the case for a high-risk sample, such as the current study, where challenges with impulsivity and emotional control, for example, likely represent entrenched difficulties. However, teaching individuals new *skills* they can begin to immediately apply (e.g. adaptive coping) are arguably amenable to a more rapid and positive treatment response. Thus, it could be speculated that improvement from the TM program was focused on the *skill-enhancement* aspect of a positive treatment outcome as opposed to the more entrenched challenges of impulsivity and control. It could be expected that application of these skills across time would prompt positive change in impulsivity and control. Improvement in coping could also, arguably, contribute to a raising of self-confidence in social interaction. Although speculative, the finding that it was social self-esteem that significantly improved for the treatment group suggests it is an avenue worthy of future research.

The current study is not without limitations, certainly when accounting for this representing the first evaluation of Thinking Minds, the sample size, a lack of randomisation and its specialised nature. This makes it a challenge to generalise beyond the current population and to make assertions about the ultimate treatment value of the program presented here. Equally, it is not possible to capture re-offending data (or re-conviction) on the sample since this information was not available and the clients were retained within secure services. However, a need to gather behavioural indicators of real-world change, such as incident data, could have been a consideration. Notwithstanding this, there are some important reflections and directions for future research that can be drawn from the findings and how treatment effectiveness was approached. The latter is not a new consideration, but it is one that appears rarely commented on (e.g. Hanson, 2000; Serin et al., 2013). Indeed, there appears a focus on what treatment programs such comprise and what outcome measures should be employed, as opposed to *how* the analysis should be approached. The current study demonstrated clear evidence of value in applying clinical change as an approach to analysis, and accounting for the concept of

improvement as opposed to recovery. In unique samples, where non-normality is arguably expected, there is a risk that determining progress using traditional measure cut-offs and reliability becomes challenged, making the use of RC and the Jacobson-Truax method more difficult to apply. Consequently, considering evidence for statistical 'improvement', a less stringent assessment, as opposed to 'recovery' may be more valuable in directing treatment providers on what aspects of their interventions are having at least some effect.

Equally, methods such as Jacobson-Truax also allow for an estimate of 'no change' and 'deterioration'. The latter is perhaps missed and, of course, we would not ethically wish to place individuals onto a treatment program knowing that it could afford them worse outcomes. Adopting a more individualised approach, as opposed to solely group effect, could potentially allow for these finer aspects of treatment delivery to be identified. Perhaps crucially, however, was the finding that the waiting list control group demonstrated deterioration on every measure. This is an important consideration since it would refine the issue of ethically placing clients onto programs where we expected deterioration in presentation, to one of not placing them onto a program where there would be a deterioration *in addition* to that expected for those not receiving treatment. It could be argued that deterioration is a natural function of the passage of time for some populations and our role is not to worsen their presentation beyond that which would occur 'naturally' (i.e. without intervention).

Of course, the issue of treatment evaluation will further be influenced by the intervention measures applied. Emphasis should not be placed on measures that are limited in identifying clinical progress. Indeed, a limitation of the current study, and general criticism of this area of research, is the relative absence of clinical measures sensitive enough to measure change across time. Instead, there seems a preference for research measures, which are not designed to be sensitive to change (e.g. Ireland et al., 2016; McGuire & Hatcher, 2001). This is an area future research could consider; one where we could perhaps focus more on the method of analysis applied to determining the impact of evaluation and the measures we choose to assess this impact.

Equally important is recognising evidence of deterioration within the treatment group; some treatment participants clearly deteriorated in certain areas (e.g. emotional and avoidant coping, impulsivity, several areas of self-esteem). Exploring the reasons for this deterioration becomes important, moving us beyond concluding an intervention is 'effective' on certain domains, when only group effects have been considered. It also becomes essential to determine why some individuals are not presenting with positive change or, at least, evidencing no change in those areas where the majority are improving. A standard treatment evaluation would miss such anomalies, with these perhaps crucial to consider for future research. This is equally important for domains where a group effect analysis concludes there was no treatment effect; the current research demonstrates that when individual effects were included there were areas, such as impulsivity, where participants were clearly worsening, even though there was no group effect. Concluding there is 'no effect' appears, therefore, overly-simplistic.

As noted, the current study is preliminary and it assessed a new program. Making firm conclusions is beyond the scope of the data. What we can suggest is evidence of improvement following the completion of this particular cognitive skills program in specific areas of adaptive coping and social self-esteem. Also recognised are the areas where change did not occur or where there was individual deterioration. Although we cannot generalise from such individual change with a limited sample, it highlights value in further researching this area along the lines indicated here and revisiting how we approach treatment evaluation. This may include taking a more pragmatic approach to including measures, which could include considering re-offending as opposed to reconviction.

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ABOUT THE AUTHORS

Professor Jane L. Ireland, MSc, PhD, GDL is a Chartered Psychologist, Forensic Psychologist, and Chartered Scientist. She holds a professorial chair at the University of Central Lancashire and is clinical lead for aggression therapies at a secure forensic psychiatric unit. **Dr. Carol A. Ireland, MSc, PhD** is a Chartered Psychologist, Consultant Forensic Psychologist, and Chartered Scientist. She is a Reader in Aggression at the University of Central Lancashire. She is also the Senior Research Lead in a secure forensic psychiatric research unit. She is also employed in clinical practice in a child and adolescent service. **Maria Atiénzar Prieto, MSc,** was a postgraduate researcher undertaking a forensic internship within the Ashworth Research Centre, Mersey Care NHS Trust at the time of the study. Her interests were in forensic psychology. **Katie Lambert, MSc**, is a Chartered Psychologist, Forensic Psychologist. She is employed in clinical practice in a child and adolescent service. She has a background in conducting research with forensic psychiatric populations.