



Pre-detoxification Cognitive Behaviour Therapy Group intervention for dependent alcohol users

A process study

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January 2016

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This report was funded by Alcohol Research UK. Alcohol Research UK is an independent charity working to reduce alcohol-related harm through ensuring policy and practice can be developed on the basis of reliable, research-based evidence.

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EXECUTIVE SUMMARY

There is evidence that repeated alcohol detoxifications have an adverse negative cognitive impact, which may contribute to relapse. The Abstinence Preparation Groups (APG) are based on Cognitive Behaviour Therapy and are aiming to help drinkers to regain control over their drinking, initiate lifestyle changes and enhance self-efficacy.

The current project aimed to explore the theoretical mechanism behind the effect of the APG: whether self-efficacy, urges to drink, positive expectancies and negative expectancies from drinking changed during the group therapy; whether these changes are consistent with theory prediction; and whether they are correlated with reduction of drinking as expected.

All clients ready to enter the APG in a community alcohol service in Surrey were invited to participate and were assessed at baseline before starting APG (t0), immediately after completion of the group (t1) and at 1 month post detoxification (t2).

Thirty-five participants were recruited. Results suggest that APG was effective in reducing the amount of alcohol consumed and the associated symptoms of dependence both during the period of intervention and in 1 month post detoxification.

All key CBT investigated concepts have changed significantly both during the period of intervention and 1 month afterwards with the exception of negative expectancies, for which change was significant only in 1 month post detoxification.

All of the above changes were consistent with theory prediction.

The findings improve our understanding of the important components of the Abstinence Preparation Group. This is the only intervention that aims to reduce the adverse cognitive impact of alcohol detoxification.

BACKGROUND

There is strong consensus that medically assisted withdrawal from alcohol should be planned and part of a structured treatment package for alcohol dependence (NICE, 2011). Relapse prevention interventions following assisted withdrawal based on Cognitive Behaviour Therapy models put the emphasis on enhancing the ability of the person to regain control over the decision-making process involved in resisting or lapsing into alcohol use (Marlatt and Donovan, 2005; Monti et al, 1989). The key components include: a reduction of positive expectancies towards drinking, the development of negative expectancies towards drinking, the development of self-efficacy and coping skills in relation to specific high risk situations, and finally development of overall lifestyle changes compatible with an abstinent way of living. Several such interventions are well established and supported by evidence (Raistrick et al, 2006).

However, empirical evidence suggests that less than 60% of people completing a medically assisted withdrawal attend aftercare interventions, which demonstrates the importance of starting CBT interventions while people are drinking (Kouimtsidis et al, 2012). In addition, there is accumulating evidence that repeated detoxification attempts might have a negative impact on cognitive functioning. People with alcohol dependence, as they experience more detoxifications (medically assisted or not) and their alcohol dependence increases, show withdrawal-induced impairment in prefrontal subfields and an inability to perform a task that captures two of the basic features of addictive behaviour – cue-induced motivation to seek a reward, and failure to inhibit such motivation when reward seeking is inappropriate. Furthermore, under emotional challenge multiple detoxified alcohol dependent people show an increase in the integration of neural networks in sub-cortical regions, underlying a bottom-up emotional input. These changes may confer inability in conflict resolution and increased sensitivity to stress, both of which may contribute to relapse (Duka et al, 2004; Duka et al, 2011).

From 2009, a six-week programme of Preparation for Alcohol Detoxification (PAD) groups based on CBT principles was implemented in all Community Drug and Alcohol Teams (CDATs) in Hertfordshire. To our knowledge this programme was the first to successfully complete the preparation intervention (stabilise and gradually reduce drinking and implement lifestyle changes) that is compulsory prior to progressing to medically assisted withdrawal, if still required. Evaluation suggested that of 106 clients with alcohol dependence, seventy-four (70%) completed PAD groups, whereas the rest were treated outside PAD. 74% of PAD clients and 43% of non-PAD clients were abstinent at one month post-withdrawal (Fisher Exact 10.87, $df(1)$, p 0.001) and 49% and 40% respectively at three months post-withdrawal (Fisher Exact 3.94, $df(1)$, p 0.047) (Kouimtsidis et al, 2012).

In 2011, a qualitative study, funded by Alcohol Research UK, provided a client-centred evaluation of this intervention. This found the client experience of attending PAD to be very positive and reported a strong sense of group belonging and empathy. As regards CBT and the underlying theoretical approach of the groups, clients demonstrated high self-efficacy through reducing their drinking with

the positive belief that they could continue to reduce down, or maintain the stability or abstinence they had achieved (Croxford et al, 2015).

An adapted version of PAD groups, incorporating the recommendations and findings of the evaluations, was developed and implemented in Surrey in July 2013. PAD groups were renamed as Abstinence Preparation Group (APG). Evaluation of the first six months suggested that sixty-four out of ninety-four (68%) of new referrals with alcohol dependence entered the pathway. From these, sixty started the APG - of whom forty-six completed (77% of those who started). A very promising finding was that during the APG eighteen people were able to complete a guided gradual withdrawal from alcohol (51% of those completed APG during this period) and that seventeen of these were abstinent one month afterwards. Nine (50%) and ten (55%) were abstinent at three and six months respectively (Kouimtsidis et al, 2015).

It is not enough to show that a treatment is effective: understanding how a treatment works is also crucial for supporting further development by helping identify effective components and valid theoretical concepts (Llewelyn & Hardy, 2001). To establish support for the mechanisms of a treatment, trial data should provide evidence for the following:

1. The experimental treatment reduces symptoms more effectively than alternative treatment.
2. The experimental treatment produces more change in the theoretical mediator than alternative treatment.
3. Changes to the theoretical mediator precede changes in symptoms.
4. Inclusion of the mediator as a covariate reduces the treatment effect on symptom change (Morgenstern & Longabaugh, 2000).

In reviewing the alcohol literature, Morgenstern & Longabaugh found no studies that fulfilled the criteria of the fourth step. They also noted the relatively small sample sizes, and limited number of sessions offered / attended, in the majority of the studies reviewed.

AIMS AND OBJECTIVES

This project explored the theoretical mechanism behind the effect of the Abstinence Preparation Group (APG), in order to inform necessary modifications of its content.

Its objectives were:

1. To explore whether self-efficacy, urges to drink, positive expectancies and negative expectancies towards drinking changed during the group therapy.
2. To evaluate if these changes are consistent with theory prediction.
3. To assess if those changes are correlated with reduction of drinking as expected.

Research Hypotheses

The research hypothesised that under treatment:

1. Both drinking and SADQ score will be reduced.
2. Urges will be reduced and will positively correlate to SADQ score.
3. Positive expectancies will be reduced and will positively correlate to SADQ score.
4. Negative expectancies will be increased and will negatively correlate to SADQ score.
5. Self- efficacy will be increased and will negatively correlate to SADQ score.

METHODS

Participants and setting

Participants were recruited from the Windmill Drug and Alcohol community team. This team also piloted the Abstinence Preparation Group in Surrey and evaluated its first six months (Kouimtsidis et al, 2015). All clients who had presented to the service, were assessed as alcohol dependent and were able to enter the APG were invited by their keyworker to participate in the evaluation. Participants were assessed at baseline just before starting APG (time 0), immediately after completion of the group and before entering detoxification (time 1) and one month post completion of detox/withdrawal (time 2). Participants received a £5 incentive for each follow-up assessment (which are additional to the standard clinical practice).

Analyses

Descriptive statistics are presented as means and standard deviations for continuous data and frequencies and % for categorical outcomes.

To assess for changes over time a linear mixed effects model with clinical outcome at baseline (time 0), post-treatment (time 1) and 1 months follow-up (time 2) was used. Time was included as a categorical fixed effect. To model the dependency of the repeated observations of the same subjects we modelled the covariance between the residuals using an unstructured covariance pattern model, which allows unequal variances and covariances (Brown and Prescott 2006). Model assumptions were assessed by visual inspection of the residuals.

Pearson's correlations were used to assess if change in SADQ score from baseline to follow-up were associated with similar changes in the other clinical outcomes.

Measurement tools

1. Severity of Alcohol Dependence Questionnaire (SADQ) (Stockwell et al., 1983) with a score range of 0-60.
2. The Alcohol Urge Questionnaire (Bohn et al., 1995) with a score range of 8-56.
3. The Drug Taking Confidence Questionnaire (DTCQ-8) (Sklar and Turner, 1999) adapted for alcohol dependence (Kouimtsidis et al, 2014a) to measure self-efficacy, with score range of 0-800.
4. The Substance Use Beliefs Questionnaire (SUBQ) (Kouimtsidis et al, 2014a) to measure positive and negative expectancies. This is a 28-item questionnaire (14 positive and 14 negative expectancies items), with good concurrent validity for both subscales, and good discriminant and predictive validity for the negative expectancies subscale.

RESULTS

Table 1 shows the demographic characteristics of clients. The majority of clients were male (74.3%) and almost half lived alone (45.7%). The majority were unemployed (40%) or invalid/sick (17.1%).

Table 1: Demographics of sample

		N	Mean (SD) or %
Age		33	45.15 (9.08)
Gender	Male	26	74.3
	Female	9	25.7
Living with	Alone	16	45.7
	Partner/Spouse	5	14.3
	Parents	4	11.4
	Self & Children	2	5.7
	Partner & Children	5	14.3
	Friends	1	2.9
	Other	2	5.7
	Total	35	
Occupation	Unemployed	14	40.0
	Employed	8	22.9
	Self-Employed	5	14.3
	Retired	2	5.7
	Invalidity/Sickness	6	17.1
	Total	35	

Table 2 presents means and standard deviations of the five clinical outcome variables at baseline, end of treatment and one-month follow-up. Mixed effect model reveals that, with the exception of NegSUBQ, clients scored significantly better after treatment and continued to improve at one-month follow-up (Table 3). NegSUBQ scores were not significantly different at post-treatment but clients scored significantly better at one-month follow-up compared to both baseline and post-

treatment. Figures 1 to 5 shows the temporal changes of the five outcomes graphically, which were all as predicted.

Figure 1: Temporal change of SADQ



Figure 2: Temporal change of AUQ

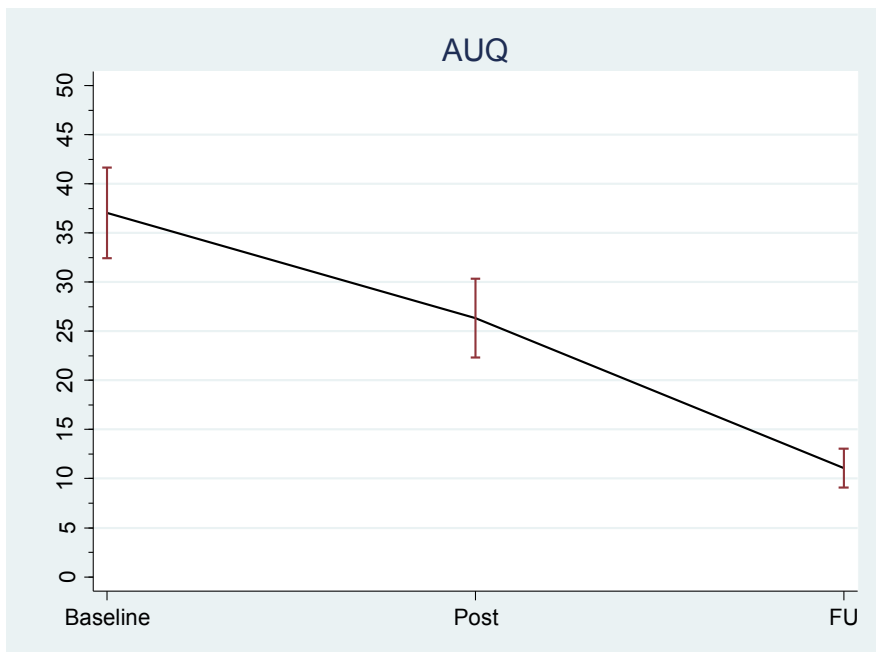


Figure 3: Temporal change of DTCQ

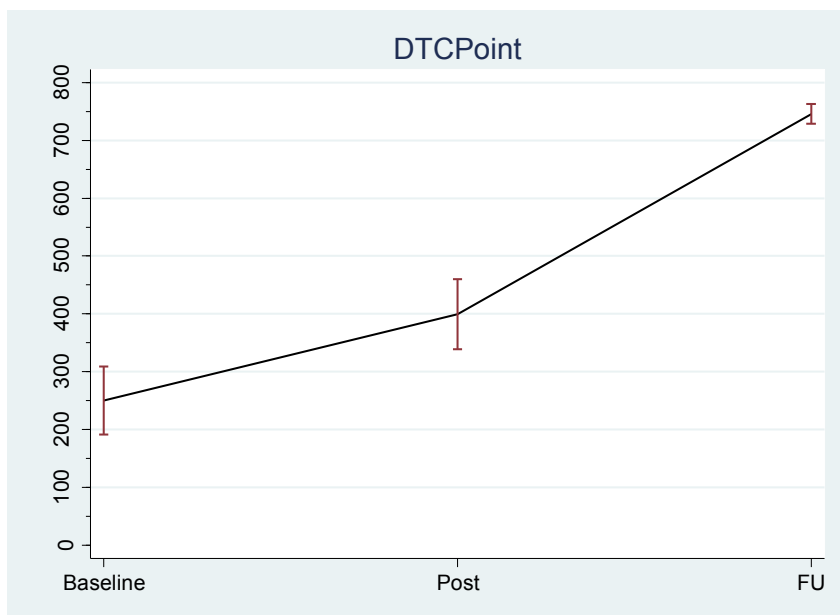


Figure 4: Temporal change of PosSUBQ

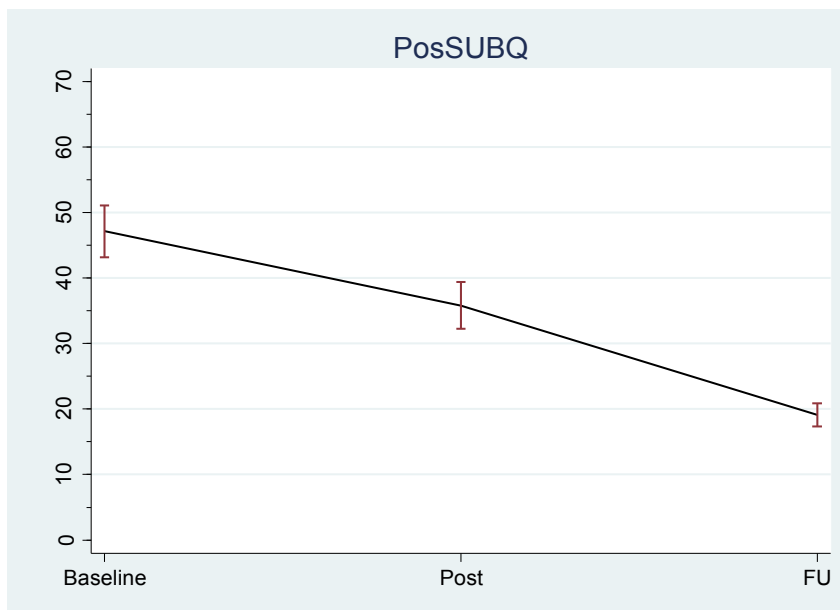
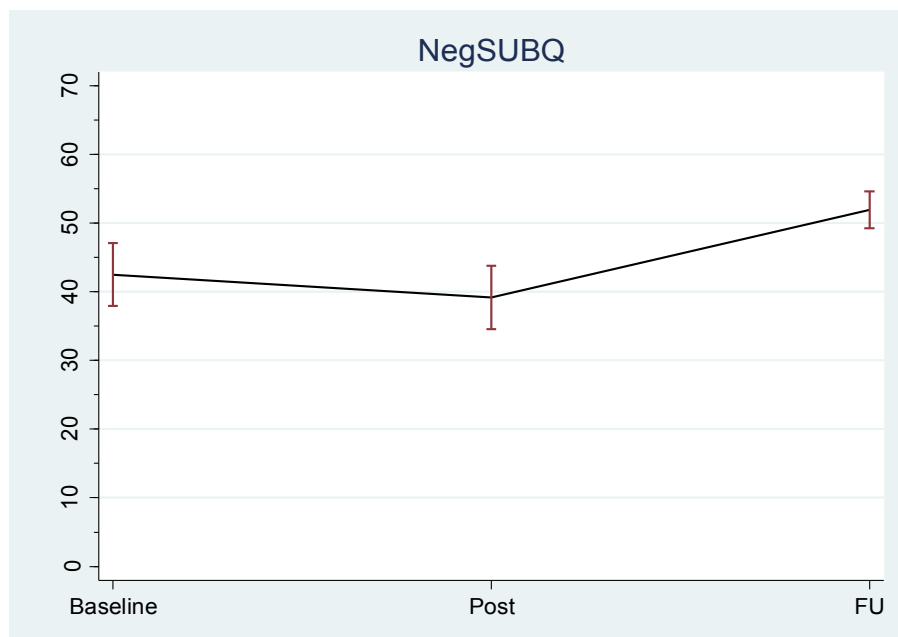


Figure 5: Temporal change of NegSUBQ



Including age and gender as covariates resulted in only marginal variations of the estimated changes and did not alter any conclusion. Both covariates were non-significant in all five models (all $p > 0.1$).

There were significant correlations between changes in SADQ score from baseline to one-month follow-up and changes in AUQ score ($r=0.47$, $p=0.005$, $N=34$) and DTC score ($r=-0.44$, $p=0.008$, $N=35$) but not between SADQ with PosSUBQ ($r=0.20$, $p=0.25$, $N=35$), and Neg SUBQ ($r=0.08$, $p=0.67$, $N=33$). Table 3 shows the results of the mixed effects model analyses. The reference category is baseline. In addition we performed a pairwise comparison between follow-up at one month and end of treatment (Follow-up – End). Differences between time points with 95% confidence intervals are presented together with Wald z test and p values.

Table 2: Means and standard deviations of the five clinical outcomes at baseline, post-treatment and 1-month follow-up.

	Baseline		End of study		Follow-up	
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
SADQ	35	32.03 (12.76)	32	25.91 (13.69)	35	10.83 (10.37)
AUQ	34	37.06 (13.74)	33	26.33 (11.81)	35	11.09 (5.96)
DTC	35	250.29 (178.05)	34	399.41 (180.67)	35	745.71 (51.69)
PosSUBQ	35	47.14 (11.89)	35	35.83 (10.69)	35	19.11 (5.35)
NegSUBQ	33	42.52 (13.45)	34	39.15 (13.75)	35	51.91 (8.09)

Table 3: Results of the mixed effects model analyses.

Variable		B (95% C.I.)	z	p
AUQ				
	Baseline	0		
	End	-10.61 (-14.79 to -6.43)	-4.97	<0.0001
	Follow up	-25.97 (-31.49 to -20.44)	-9.21	<0.0001
	Constant	37.05		
	Follow-up - End	-15.36 (-19.87 to -10.84)	-6.67	<0.0001
DTC		B (95% C.I.)	z	p
	Baseline	0		
	End	148.25 (86.46 to 210.04)	4.7	<0.0001
	Follow up	483.18 (429.16 to 537.19)	17.53	<0.0001
	Constant	262.54		
	Follow-up - End	334.92 (285.29 to 384.56)	13.23	<0.0001
Neg SUBQ		B (95% C.I.)	z	p
	Baseline	0		
	End	-2.96 (-7.25 to 1.34)	-1.35	0.177
	Follow-up	9.96 (6.04 to 13.89)	4.97	<0.0001
	Constant	41.95		
	Follow-up - End	12.92 (8.55 to 17.29)	5.79	<0.0001
Pos SUBQ		B (95% C.I.)	z	p
	Baseline	0		
	End	-11.31 (-14.48 to -8.15)	-7	<0.0001
	Follow-up	-28.03 (-32.26 to -23.8)	-13	<0.0001
	Constant	47.14		
	Follow-up - End	-16.71 (-20.44 to -12.99)	-8.79	<0.0001
SADQ		B (95% C.I.)	z	p
	Baseline	0		
	End	-6.36 (-9.08 to -3.64)	-4.58	<0.0001
	Follow-up	-21.2 (-25.63 to -16.77)	-9.38	<0.0001
	Constant	32.03		
	Follow-up - End	-14.84 (-19.83 to -9.85)	-5.82	<0.0001

DISCUSSION

We anticipated that we would recruit 46 participants within 7 months (October 2014-April 2015) and therefore within the original duration of the study (9 months).

Unfortunately, the service went into tender in April 2015, which impacted on recruitment. Following a brief extension period, the final sample size was n=35.

The reduction of SADQ score is an indication that APG is effective. The reduction of the SADQ score at the end of the group but before the detoxification, indicates that the stabilisation of drinking reduces the severity of dependence. In addition it indicates that APG helps clients to reduce their drinking during the intervention. This was also shown in the evaluation of the first six months of the APG implementation in Surrey (Kouimtsidis et al, 2015), as 51% of those attending the APG were able to detoxify gradually during the intervention. The SADQ score is even more reduced at one month following detoxification, indicating that clients who complete either the gradual or medically assisted detox were able to maintain their abstinence for one month after completion.

AUQ, DTC and PosSUBQ also reduced, suggesting that the underlying theoretical concepts addressed by the intervention, such as urges, self-efficacy and positive expectancies from drinking changed as predicted by the theory. These changes were significantly correlated to changes in SADQ score. These are indications that the APG intervention works as expected according to the underlying CBT theory.

Only the negative expectancies from alcohol use (measured with the NegSUBQ) failed to change in the direction predicted by theory. The reduction of NegSUBQ was in the opposite direction than expected (though non-significant). However, NegSUBQ scores increased significantly in the period after the detoxification, as predicted by theory.

The concept of negative expectancies and their role into treatment has not been investigated as thoroughly as the concept of positive expectancies (Kouimtsidis et al 2014b). There is some evidence to suggest that their increase is crucial for treatment effectiveness and that, together with increased self-efficacy (confidence), it is the most important predictor of treatment effectiveness in smoking, alcohol, opioids and stimulant misuse (Kouimtsidis et al 2014 c). However, we don't yet know though if this increase in negative expectancies, which is important in the maintenance of the behavioural changes, is a delayed effect of treatment or a change that is required or necessary during the early stages of treatment.

CONCLUSION

Our findings suggest that APG is effective and works according to the predictions of Cognitive Behaviour theory. These findings contribute to our improved understanding of the treatment components required during the structured preparation period prior alcohol detoxification. It is important to note that, to our knowledge, APG is the only psychological intervention reported in the literature that aims to protect patients from the adverse cognitive effects of the detoxification itself by reducing relapse rates and the need for repeated detoxifications. This is alongside stabilising the amount and pattern of drinking, promoting gradual change and enhancing self-efficacy through lifestyle changes required for sustainable abstinence.

Dissemination

The study protocol and preliminary results have been presented as a poster, at the 2015 Royal College of Psychiatrists annual conference in Birmingham in July. Final results have been presented in a roundtable discussion at the International Society of Addiction Medicine 2015 conference in Dundee in October and as a poster at the Society for the Study of Addiction 2015 annual meeting in York in November. CK has been invited to present his work including findings of this study at the Royal College of Psychiatrists Addiction Faculty meeting in April 2016.

The results of the study will be disseminated to Surrey and Borders Partnership NHS Foundation Trust alcohol specialist services, in which the APG has been implemented. The results will be presented in the relevant local service users forums.

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