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UK ALCOHOL TREATMENT TRIAL: CLIENT-TREATMENT MATCHING EFFECTS

UKATT Research Team*

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ABSTRACT

Aim To test *a priori* hypotheses concerning client-treatment matching in the treatment of alcohol problems and to evaluate the more general hypothesis that client-treatment matching adds to the overall effectiveness of treatment.

Design Pragmatic, multi-centre, randomised controlled trial (the UK Alcohol Treatment Trial: UKATT) with open follow-up at three months after entry and blind follow-up at twelve months.

Setting Five treatment centres, comprising seven treatment sites, including NHS, social services and joint NHS/ non-statutory facilities.

Treatments Motivational Enhancement Therapy and Social Behaviour and Network Therapy.

Measurements Matching hypotheses were tested by examining interactions between client attributes and treatment types at both three and twelve months follow-up using the outcome variables of Percent Days Abstinent, Drinks per Drinking Day, and scores on the Alcohol Problems Questionnaire and Leeds Dependence Questionnaire.

Findings None of five matching hypotheses was confirmed at either follow-up point on any outcome variable.

Conclusion The findings strongly support the conclusions reached in Project MATCH in the USA that client-treatment matching, at least of the kind examined, is unlikely to result in substantial improvements to the effectiveness of treatment for alcohol problems. Possible reasons for this failure to support the general matching hypothesis are discussed, as are the implications of UKATT findings for the provision of treatment for alcohol problems in the UK.

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INTRODUCTION

The background, hypotheses, design and methods of the UK Alcohol Treatment Trial (UKATT) were described in UKATT Research Team [1]~~(2001)~~. The main aim of UKATT was to compare the effectiveness and cost-effectiveness of an established, briefer, motivationally-based treatment (Motivational Enhancement Therapy: MET) with a novel, more intensive, socially-based treatment (Social and Behaviour Network Therapy: SBNT).

In UKATT Research Team [2]~~(2005a)~~, it was reported that the novel SBNT did not differ significantly in main effects of treatment from the proven MET. Both treatment groups showed substantial reductions in alcohol consumption, dependence and problems and improvements in mental health and related quality of life at 12-months follow-up. UKATT Research Team [3]~~(2005b)~~ reported highly significant reductions in health, social and criminal justice costs from before to after treatment across all participants. However, although MET was significantly cheaper to deliver, there were no significant differences in cost-effectiveness between the two treatments.

The purpose of the present paper is to present findings relevant to hypothesised interactions between treatment modalities and client characteristics (i.e., predicted client-treatment matching effects). It also aims to evaluate the more general hypothesis that client-treatment matching can enhance outcomes of treatment for alcohol problems.

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Hypotheses

Five subsidiary hypotheses concerning client-treatment interactions were tested. In part, these hypotheses were based on and intended broadly to replicate the matching findings from Project MATCH [4-6](Project MATCH Research Group, 1997a,b; 1998).

i) *Clients with weak social networks at initial assessment will show better outcomes when treated with SBNT than with MET*

Project MATCH Research Group [6] (1998) reported that, at three years post-treatment in the outpatient arm of the study, Twelve-step Facilitation Therapy (TSF) was more effective than MET among clients with social networks supportive of drinking. Our subsidiary hypothesis i) was included to address this Project MATCH finding but, in line with the theoretical basis of SBNT [7](Copello *et al.*, 2002), the nature of the social support thought to moderate the differential effects of treatment was broadened in our hypothesis to refer to support from social networks in general rather than more specific network support for drinking. Thus clients with weak social networks and a poor level of social support in general were hypothesised to benefit more from a treatment like SBNT aimed at strengthening social support.

We also examined our data to see whether there was any evidence for the more particular matching effect reported by the Project MATCH investigators involving network support for drinking. The assumption that support for drinking would be reduced by SBNT through changing the social network, in an analogous manner to how it was reduced by TSF through AA [8](Longabaugh *et al.*, 1998), provided a direct attempt to replicate the finding reported in Project MATCH.

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ii) Clients with low levels of readiness to change drinking behaviour at initial assessment will show better outcomes when treated with MET than with SBNT

This hypothesis follows from Prochaska, DiClemente and Norcross' [9]~~(1992)~~ stages of change model (i.e., clients in Precontemplation or Contemplation stages will benefit more from an intervention, like MET, designed to increase motivation to change than from an intervention not primarily addressing motivational issues, such as SBNT.) In the Project MATCH 15-month follow-up results for the outpatient arm [4]~~(Project MATCH Research Group, 1997a)~~, it was found that clients less motivated to change who were given MET showed a better outcome in terms of number of abstinent days during the past 90 days than those given Cognitive-behavioural Coping Skills Therapy (CBT). However, this was not a robust effect over the time elapsing from the end of treatment and was therefore omitted from the list of hypothesised matching effects confirmed by the project. Nevertheless, to investigate this possibility further and because of its theoretical plausibility, subsidiary hypothesis ii) was included in UKATT. Although only one of the treatments involved in the putative matching effect identified in Project MATCH was included in UKATT (i.e., MET), it should be noted that SBNT contained many elements of a cognitive-behavioural approach [~~(see~~ 7]~~Copello *et al.*, 2002)~~, adding to the interest in seeing whether the MATCH finding could be replicated in a somewhat different form in UKATT.

iii) There will be an interaction between clients' severity of psychiatric morbidity and the relative effectiveness of MET and SBNT

Among primary matching hypotheses investigated in Project MATCH, the only robust finding to emerge at the 15-month follow-up point involved level of psychiatric severity [4]~~(Project MATCH Research Group, 1997a)~~. In the out-patient arm, clients initially low in psychiatric severity showed more abstinent days if they had received

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TSF than if they had received CBT. Hypothesis iii) was therefore included to see whether any matching effect involving psychiatric severity was present in the UKATT data. Other studies reporting psychiatric severity matching effects [10,11](McLellan *et al.*, 1983; Cooney *et al.*, 1991) increased interest in examining whether it could form the basis for client-treatment matching in the UKATT data. However, because neither of the treatments involved in the Project MATCH effect was repeated in UKATT, our hypothesis was non-directional.

iv) Clients high in anger at initial assessment will show better outcomes when treated with MET than with SBNT

In addition to predictions from primary matching hypotheses, other predicted matching effects were reported by the Project MATCH Research Group [5,6](1997b; 1998). In the out-patient arm, clients initially high in anger reported more days of abstinence and fewer drinks per drinking day if they had received MET than if they had received CBT. This effect persisted from one to three years post-treatment and makes theoretical sense in view of the deliberately non-confrontational nature of MET [12](Miller *et al.*, 1992). Hypothesis iv) was therefore included to see whether the same effect applied to a comparison of MET with SBNT in our data.

v) There will be an interaction between clients' level of alcohol dependence at initial assessment and the relative effectiveness of MET and SBNT.

The only significant matching effect to emerge fromin the aftercare arm of the MATCH study was that clients low in alcohol dependence at intake reported more days abstinence and fewer drinks per drinking day at 15-months follow-up with CBT than with TSF, whereas those high in dependence reported a better outcome with TSF than with CBT [5](Project MATCH Research Group, 1997b). Hypothesis v) was therefore included to see whether any matching effect based on level of dependence

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was present in the UKATT data. Again, because neither of the treatments involved in the MATCH interaction was studied in UKATT, our hypothesis was non-directional.

METHODS

The methods used in the trial, including recruitment of participants, screening, inclusion/exclusion criteria, randomisation procedures, follow-up arrangements and details of treatments and therapists, were described in UKATT Research Team [1]~~(2001)~~.

It is important to note that UKATT was a pragmatic trial [13]~~(Schwartz & Lellouch, 1967)~~ aimed at practical decision-making rather than theoretical explanation. In terms of the efficacy-effectiveness distinction [14]~~(Flay, 1986)~~, several aspects of the methods used were deliberately selected in an attempt to increase the external validity of any findings that might emerge [1]~~(see UKATT Research Team, 2001)~~ and the trial was thus mainly an effectiveness trial.

At screening, the client's status on four post-stratification variables was noted: (a) whether or not the client had been detoxified immediately prior to referral (i.e., within two weeks); (b) the client's stated preference for a drinking goal (abstinence or not) after discussion with the screener and according to the normal clinical practice of the treatment service; and whether they were willing to take (c) disulfiram or (d) acamprosate, if indicated, in treatment services where these medications were in routine use. These four variables were used as covariates in the analysis to be reported below.

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Measures

Hypothesis i) was tested by reference to the number of people in the social network that the client saw at least weekly, excluding heavy drinkers, and was derived from the *Important People and Activities Instrument* (IPAI) [15]~~: Clifford & Longabaugh, 1991)~~**.** This variable was termed Social Support (SS).

An alternative measure for the investigation of Hypothesis i) was the *Family Environment Scale* (FES) [16]~~.: Moos & Moos, 1986).~~ The FES measures the social-environmental characteristics of all types of family. The score used here was a combination of the "Freedom of Expression of Emotion" "Open Conflict" and "Family Cohesion" subscales, referred to by Moos and Moos [16]~~(1986)~~ as the relationship dimensions of the scale.

The more specific hypothesis regarding network support for drinking was tested by using the same measure as employed in Project MATCH. A complex composite variable, Social Support for Drinking (SSD), was calculated by summing the standardised scores of 11 indices relating to the client's social network from the IPAI.

Hypothesis ii) was tested by the *Readiness to Change Questionnaire (Treatment Version)* (RCQ[TV]) [17]~~: Heather *et al.*, 1999)~~, an instrument assessing readiness to change drinking behaviour specifically in the treatment-seeking population. The RCQ[TV] was scored both by allocating clients to one of three stages of change (Precontemplation, Contemplation, Action– see [17])~~Heather *et al.*, 1999)~~ and as a continuous variable by subtracting the Precontemplation subscale score from the sum of the Contemplation and Action subscale scores. ~~-~~

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An alternative measure for testing Hypothesis ii) was the *Negative Alcohol Expectancy Questionnaire* (NAEQ) [18]~~: McMahon & Jones, 1993)~~**.** This was selected to provide an alternative measure of the client's motivation to change drinking behaviour as reflected in alcohol outcome expectancies [19]~~(Jones & McMahon, 1998)~~. There is some evidence that, in treatment samples, the NAEQ is a more reliable predictor of outcome than a measure of positive alcohol expectancies (see [19, ~~Jones & McMahon, 1998,~~ pp. 84-85]~~)~~ and it is reasonable to hypothesise that increased negative expectancies mediate beneficial effects of MET. The "Proximal" and "Distal" scores were used in the analyses.

Hypothesis iii). The main instrument here was the *General Health Questionnaire* (GHQ-28) [20]~~: Goldberg, 1972)~~, a widely-used measure of psychiatric disturbance in the general population. Since subscale scores are highly correlated with the GHQ total score, only the total score was used for these analyses.

An alternative measure for testing Hypothesis iii) was the *Addiction Severity Index - Psychiatric Severity Composite Score* (ASI-PS) [21]~~: McLellan *et al.*, 1980)~~, thus allowing a more direct comparison with the relevant finding in Project MATCH [5].~~(Project MATCH Research Group, 1997b).~~

Hypothesis iv). The sole instrument here was the *State-Trait Anger Expression Inventory* (STAXI) [22]~~: Spielberger, 1988)~~, as used in Project MATCH. Scores for S-ang, T-ang and AX/EX were used in these analyses.

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Hypothesis v). The sole instrument here was the *Leeds Dependence Questionnaire* (LDQ) [23]~~: Raistrick *et al.*, 1994)~~, a measure of dependence on psychoactive substances adapted here specifically for alcohol. The LDQ is sensitive to change and can be used a measure of treatment outcome, as here.

Pre-treatment Assessment included interviewer-led recording of socio-demographic information and alcohol consumption by means of F*orm 90I* [24]~~(Miller, 1996)~~. Form 90I permitted the calculation of the primary outcome variables, percent days abstinent (PDA) to record frequency of drinking and drinks per drinking day (DDD) to record intensity of drinking. The self-completion *Alcohol Problems Questionnaire* (APQ) [25]~~: Drummond, 1990)~~ was included as a measure of alcohol-related problems. Form90, APQ and LDQ were included in instruments given at the three~~3-~~ and ~~-~~twelve ~~12 -~~month follow-up points.

Statistical analysis

Regression analyses were used to investigate the significance of the interaction term. The model was set up in a similar way as for the primary analysis [2]~~(UKATT Research Team, 2005a)~~, using the covariates of treatment centre and the four post-stratification factors as stated at baseline. The baseline score of the dependent variable was also included, as was the baseline score of the variable to be used in the interaction term. A variable for treatment type was included. The term of importance in this analysis was the interaction between treatment type and the potential predicting~~ed matching~~ variable. The variable to be used in the interaction term~~matching variable~~ was used as a continuous variable rather than splitting at the median which is statistically weaker. All variables were inserted into the model, and

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model checking was performed with ~~and the~~ residuals examined to ensure the model was an adequate fit for the data. Alpha was set at $p < 0.05$.

~~As the subsidiary hypotheses tested relate to the prognostic power of two modality-specific variables within regression-like relationships, the statistical power of the corresponding tests is difficult to estimate. However, lower bounds for the power of these tests may be estimated by dividing both the SBNT and MET groups into two subgroups at the median of the relevant matching variable (e.g., Social Support score). Call these sub-groups S(high), S(low), M(high) and M(low). Suppose first that the true mean outcome in both S(high) and S(low) is +δ/2; the true mean outcome in both M(high) and M(low) is -δ/2; and the standard deviation of the outcome is 1 in all 4 subgroups. Then there is no interaction, the true main effect size (defined as the difference between the mean outcome in the S group and the mean outcome in the M group) is δ, and the ensuing t test will have 80% power to detect this effect using a significance level of 5%. Suppose next that the true mean outcome in both S(high) and M(low) is +δ/2; the true mean outcome in both S(low) and M(high) is -δ/2; and the standard deviation of the outcome is again 1 in all 4 subgroups. Then there is no main effect, the true treatment-matching variable interaction (defined as the difference between the mean outcome on the S(high)-M(low) diagonal and the mean outcome on the S(low)-M(high) diagonal) is δ, and the ensuring t test will have 80% power to detect this interaction using a significance level of 5%. Thus, this simple mathematical model using 4 subgroups shows that the trial's power to detect interactions is essentially the same as its power to detect a main effect of treatment (i.e., less than 0.25 standardised difference between group means – see UKATT Research Team, 2005a). The real power of the analogous but more complex tests using analysis of covariance is almost certain to be greater.~~

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Despite the fact that DDD has no true zero value, Project MATCH investigators assigned a DDD value of zero to clients who were totally abstinent at follow-up [4,5](Project MATCH Research Group, 1997a,b), presumably because of the need to reflect changes on drinking intensity over time in the total follow-up sample. However, Miller, Walters and& Bennett [26] (2001) recommended that the measurement of DDD be confined to drinkers, with values for total abstainers being regarded as missing on this variable. This latter option reduces the power of analyses in which DDD is the dependent variable because clients who have made large changes on drinking intensity (i.e., to zero drinks) are excluded from the analysis. Moreover, since one of our aims was to determine whether matching contingencies identified in Project MATCH could be replicated, it was necessary to carry out the same form of analysis as had been reported from that project. Thus our solution to this problem was to test hypothesised interactions using both versions of DDD as a form of sensitivity analysis. Following Miller *et al.* [26](2001), these will be called DDD_d (DDD among drinkers) and DDD_t (DDD in the total follow-up sample).

A methodological issue in research on client-treatment matching effects concerns the possibility that such effects are non-linear [27](Finney & Moos, 1986). In particular, it is possible that an advantage of one treatment over another occurs only at the extreme values of the matching variable [28](McClelland & Judd, 1993). At the conclusion of their review of methodological features of research on client-treatment matching in the alcohol field, Moyer *et al.* [29](2001) state: "To be productive, future research will need to focus on patients at the extremes of matching dimensions …" (p.62). To investigate this possibility, we closely examined residuals following

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interaction analyses to see whether they were larger at the extremes of the matching variable distribution and therefore suggested a non-linear relationship.

RESULTS

Characteristics of the sample at baseline (n=742) were given in UKATT Research team [2](2005a). The summaries of the interaction variables are given in Table 1. Follow-up rates were 93% at three 3 months and 83% at twelve 12 months. Details of main effects of treatment may be found in UKATT Research Team [2](2005a).

Tests of matching hypotheses

Table 2 shows results of those tests of matching hypotheses at either follow-up point that were significant at the 5% level or approached significance at the 10% level. It will be seen that only two results were significant at the 5% level, while a further four approached significance. No specific interaction was significant or approached significance at both the three3 and twelve 12 month follow-up points. Given that we conducted 1320 tests (132 matching variables x 5 outcome variables x 2 follow-up points), we regard the interactions shown in Table 1 as a random consequence of multiple comparisons and as having occurred by chance. Any adjustment for multiple testing would render all apparently significant results non-significant at the 5% level.

It should also be noted that the two results involving the NAEQ Distal variable that were *prima facie* significant at the 5% level (see Table 2) were in the opposite direction to that predicted by our Hypothesis ii. Clients with lower negative

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expectancies of drinking at baseline who had received SBNT tended to show a better outcome in terms of DDD_{dt} at 3 months or LDQ score at 12 months than those who had received MET, contrary to the hypothesis (details available on request). Since there seems to be no theoretical support for these putative relationships, we regard them along with the other relationships shown in Table 2 as spurious consequences of multiple testing.

.TABLE 1 ABOUT HERE

As stated above, following interaction analyses we carefully inspected residuals to see whether any suggested a non-linear relationship between the matching and outcome variables. The residuals were evenly distributed throughout the distribution of the matching variables, indicating that non-linear relationships were not present in these data. All models were an adequate fit for the data. H~~, h~~owever, as drinking outcome~~s~~ variables are often skewed, ~~are (~~Transformations of the drinking outcomes were examined (l~~L~~og~~,~~ and ~~-~~square~~-~~root transformations) but these did not improve model fit ~~any~~ further~~.~~.

DISCUSSION

No hypothesised matching effects were observed. The matching hypotheses in question were either based on findings previously reported by Project MATCH investigators or had theoretical plausibility or both. ~~, and the trial had adequate statistical power to detect small interaction effects.~~ It is difficult to estimate the statistical power of the study to detect client-treatment interactions but UKATT was one of the largest investigations of treatment for alcohol problems ever carried out and provided an ample opportunity to discover client-treatment matching contingencies if they existed. The absence of significant matching effects applied to

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both three~~3~~ ~~-~~month and ~~-~~twelve ~~12-~~month follow-ups and to analyses employing two versions of one of the dependent variables (DDD_d and $DDD_{t)}$. Moreover, inspection of residuals following interaction analyses provided no grounds for supposing that interaction effects were missed because they were non-linear with respect to the matching variables. Thus our findings are fully consistent with the conclusion of the Project MATCH Research Group [4] ~~(1997a)~~ that: "Despite the promise of earlier matching studies…, the intuitive appealing notion that treatment matching can appreciably enhance treatment effectiveness has been severely challenged" (p. 1690). UKATT results have extended this negative conclusion on matching beyond those treatments compared in Project MATCH to include a comparison of individual, motivationally-based treatment and treatment involving social networks.

More particularly, the present analysis failed to replicate any of the specific matching effects identified in Project MATCH [4-6~~(Project MATCH Research Group, 1997a,b;1988)~~]. There are a number of possible reasons for this. It may have been due to differences in the treatments studied, differences in instrumentation or differences in characteristics of the client samples in question. It is also relevant that the matching effect involving network support for drinking in Project MATCH appeared only at the three year follow-up [6]~~(Project MATCH Research Team, 1988)~~ and was not present at earlier follow-ups, so it is conceivable that a longer follow-up of the UKATT sample might detect this effect (although none is planned). However, none of the matching effects identified in Project MATCH was present in both aftercare and outpatient arms of the trial. Three of the four significant matching effects reported favoured one of the treatments over a second but not the third treatment and one significant effect applied to PDA but not to DDD. Further,

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subsequent analysis by Project MATCH investigators has shown that the increases in success rates that could be expected if all clients were allocated to treatments according to the confirmed hypotheses are relatively modest [30,31]~~(Stout *et al.*, 2003; Randall *et al.*, 2003)~~. Thus it may be that these slight and inconsistent matching effects, assuming they still applied to the different treatments under study in UKATT, failed to transfer from an efficacy trial to what was mainly an effectiveness trial.

To return to the issue of the general matching hypothesis, in view of the interest and optimism previously generated by it as a means of enhancing treatment effectiveness [32-35], ~~(Finney & Moos, 1986; Institute of Medicine, 1990; Mattson & Allen, 1991; Lindstrom, 1992),~~ its inherent plausibility in a heterogeneous treatment-seeking population and the routine application of matching principles in other branches of health care [~~(~~e.g., 36]~~Brown, 2001)~~**,** an attempt at explanation is required as to why it should have fared so badly in Project MATCH and UKATT. We take as a starting point for this attempt the three general explanations discussed by Project MATCH Research Group [5]~~(1997b)~~.

Study designs prevented matching effects from being observed. A criticism of Project MATCH was that an efficacy trial with high internal validity may have been unrepresentative of the treatment population in the real world, and this may have blunted the appearance of potential matching effects [37]~~(see Heather, 1999)~~. In addition to the possible effects of restricted eligibility criteria [38]~~(Humphreys *et al.*, 2005)~~, clients were assessed before treatment began for up to eight hours and after treatment took part in relatively intensive follow-up interviews on five scheduled occasions during the first year. This could have led to assessment and/or follow-up

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reactivity effects [39-42](Sobell & Sobell, 1981; Ogborne & Annis, 1998; Clifford & Maisto, 2000; Clifford *et al*., 2000) that may have swamped the effects of treatment and prevented the appearance of client-treatment matches. In addition, high success rates of treatment, presumably due to rigorously supervised and monitored treatment delivered by highly trained therapists as well as the foregoing design factors, may have resulted in a ceiling effect making client-treatment matches difficult to detect.

However, these criticisms apply far less to UKATT which was an effectiveness trial in which every effort was made to include clients typically representative of the treatment population in the UK and in which assessment was restricted to three hours pre-treatment and only two follow-up interviews. While therapist training and monitoring in UKATT were as rigorous as in Project MATCH, success rates, although associated with statistically significant reductions in drinking and on other variables, were substantially lower than those reported in the US project [2](see UKATT Research Team, 2005a) and could not be described as forming a ceiling effect. It is possible that design features of UKATT may have contributed to potential matching effects being blunted but, if so, it is not obvious what these design features were. Thus, the UKATT general finding has increased confidence in the conclusion that client-treatment-matching of the kind studied is unlikely to lead to an increase in overall treatment effectiveness by extending the relevance of this conclusion to the real world of routine treatment provision in the UK.

Matching hypotheses tested were too simplistic. The Project MATCH investigators speculated that their failure to identify more client-treatment matching effects could have been due to an inadequate theory of matching from which their hypotheses were

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derived [5](Project MATCH Research Group, 1997b). For example, rather than interactions with treatment types involving single client attributes, it may be that client profiles consisting of different levels on more than one variable need to be specified. A multidimensional approach using clustering techniques could result in groups of client that respond differentially to different treatments. These speculations clearly apply to UKATT data too.

Another possibility is that different *forms* of matching beyond client-treatment matching may be important. These include matching client attributes or profiles to inpatient versus outpatient, psychosocial versus pharmacological or individual versus group treatments [43](Bühringer, 2006). So too, matches involving client attributes with therapist characteristics could be investigated, as originally suggested by McLachlan [44](1972) and recently reported by Karno and Longabaugh [45]().

It is always possible, of course, that simple client-treatment interactions exist in the UKATT data but have not been detected because they were not hypothesised. With this in mind, we will examine theoretically-based *post hoc* client-treatment interactions that could form the basis for matching hypotheses in future research.

Client matching contingencies in the real world are either trivial or non-existent. This proposed explanation is equivalent to the combined null hypotheses under test and to the *general* null hypothesis that attempts to match clients to treatment types or other aspects of treatment provision will not result in improvements to overall treatment outcomes. While it is not possible to prove the null hypothesis, it is possible under certain conditions to draw the reasonable inference that a causal relationship between

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two phenomena does not exist [46](Hall & Einfeld, 1990). The conditions in question here are that two large, rigorous, multicentre randomised controlled trials in two different health systems and with adequate power to detect matching effects if they did exist have failed to do so or, at least, have failed to demonstrate any clinically meaningful increment to treatment effectiveness. It therefore seems warranted to consider the possibility that there were no substantial matching contingencies waiting to be discovered.

This possibility must be seen in the context of the other main finding from both Project MATCH and UKATT that no statistically significant or clinically meaningful differences in the main effects of the treatments under study were found. With the addition of UKATT results, this equivalence now applies to four theoretically distinct and practically discriminable treatment modalities that were firmly supported in the treatment evidence-base, widely implemented in clinical practice or developed on the basis of strong support from previous theory and research. This is reminiscent of what has become know as the "dodo bird effect" in the literature on general psychotherapy [47-49](Stiles, Shapiro & Elliott, 1986; Beutler, 1991; Wampold *et al.*, 1997). An explanation of this phenomenon is that "the technological model" of treatment [35](Lindstrom, 1992) in which specific theory-based treatment techniques are held to be responsible for effectiveness is invalid. Rather, all effective treatments share one or more non-specific ingredients that are able to facilitate the required change in behaviour [(e.g., 50,51]Truax & Carkhuff, 1973; Franks, 1976). A related idea is that any kind of credible treatment represents a culturally sanctioned opportunity that gives the client "permission" to change behaviour; once an intentional decision to solve the alcohol problem has been made, a process of change is instigated that

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proceeds independently of any particular component of treatment [52](Cooney *et al.*, 2003). If such speculations are correct, there are no grounds for expecting that matching effects will occur. (It should be noted that there are many studies in other fields that are not consistent with the dodo bird phenomenon; in fact Beutler [48](1991) argues that the dodo bird is extinct.)

One innovative aspect of UKATT was the addition of a qualitative study that provided some insight into the client's perspective on reasons for change [53](Orford *et al.*, 2006). It was concluded that the results of UKATT "are due to the effectiveness of both MET and SBNT in promoting a linked system of change processes within a wider set of common change-promoting processes" (p.67). These latter include additional treatments and counselling sessions, trigger events, recognising accumulating problems, UKATT assessment and pressure from others. This complex system of change might be seen as undermining attempts to identify client-treatment interactions within just one part of the system. Thus, from this perspective, any client-treatment matches that might exist are an insignificant part of the total system of change.

With regard to the provision of treatment for alcohol problems in the UK, previous research has supported the effectiveness of adaptations of motivational interviewing [54](Miller & Rollnick, 2002) such as MET ([55] Burke, Arkowitz & Menchola, 2003) and UKATT results have confirmed the finding of Project MATCH that MET gives substantially the same outcomes as more intensive treatment, in this case a more intensive socially-based treatment. At the same time, the findings suggest that the novel treatment, SBNT, is no less effective or cost-effective from a societal

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perspective than the established treatment, MET. Thus UKATT findings support the clinical application of both MET and SBNT. But in the absence of any confirmed client-treatment matches to guide the selection of these two treatments, how should clinicians decide when to offer them to clients? There are four possible answers to this question.

i. *Availability of trained therapists.* The most obvious answer concerns the availability of a pool of trained and competent therapists capable of delivering either of the treatments. It is also known that treatments are likely to be more effective when therapists feel enthusiasm for them [56]~~(Wampold, 2001)~~, so that too should be considered. Further problems for selection arise only when accredited therapists are available for and equally enthusiastic about both treatments.

ii. *Clinical judgement.* Negative findings on client-treatment matching from research apply only to *systematic* matching based on assessment of client attributes before treatment begins and a set of matching rules allocating clients to appropriate treatments. They say nothing about the traditional "clinical art" [57]~~(Finney, 1999)~~ of tailoring the contents of treatment, before and during treatment, to the unique set of needs and characteristics of the individual client. An experienced clinician may judge that a particular client could benefit from either MET or SBNT, or perhaps a combination of both, at any time during the treatment process.

iii. *Client preference.* It is now commonplace to allow client preference to play a part in the treatment process [58]~~(Department of Health, 2003)~~. There is some evidence that this improves treatment outcomes [59,60]~~(Kissin, Platz & Su, 1970;~~

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~~Booth *et al.*, 1998)~~. Client preference for treatment, or "self-matching", has been recommended in the literature [61,62]~~(Ewing, 1977; Miller, 1989)~~ and the inclusion of client values is now an accepted part of evidence-based practice [63]~~(Sackett *et al.*, 2000)~~. More generally, research on human motivation shows that people are more likely to carry through a course of action chosen by themselves than one that has been chosen for them [64,65]~~(Brehm & Brehm, 1981; Deci & Ryan, 1985)~~, making it more likely that clients will at least comply with and complete the treatment programme. Clients asked to choose between MET and SBNT should be provided with clear and thorough descriptions of each and should show that they fully understand their implications.

iv. *MET as the first step in a stepped-care treatment programme.* In the absence of clear clinician or client preferences for either MET or SBNT, MET might be considered for the first step in a stepped-care programme of treatment [66]~~(Sobell & Sobell, 2000)~~. While there were no significant differences in cost-effectiveness between the two treatments from a full, societal economic perspective [3]~~(UKATT Research Team, 2005b)~~, MET is clearly the briefer and cheaper to implement of the two, thus fulfilling the basic requirement of the stepped-care model that clients initially be offered the least intrusive and expensive intervention that is likely to be effective. If a follow-up at the end of MET or shortly thereafter shows that the client has failed to improve according to predetermined criteria, he or she can be offered another more intensive treatment that seems clinically advisable. There may also be special circumstances in which the clinician judges that SBNT should be the first step and, again, the client's views on what would be preferable as the first step in the treatment programme

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should be taken into account. There is an urgent need to carry out evaluations of the stepped care model in the UK ~~-~~treatment system [67]. ~~(Raistrick, Heather & Godfrey, 2006).~~

The main conclusion from the analysis reported here is that none of five hypothesised client-treatment matching effects was confirmed and that there is therefore no evidence from UKATT data that client-treatment matching can lead to an overall increase in the effectiveness of treatment for alcohol problems.

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TABLE 1

Baseline scores of predictor variables

Predictor variables Mean (St dev)	Randomised Group MET	 SBNT	 Total
Hypothesis i: Social Support (see text)	N=421 4.33 (2.30)	N=319 4.35 (2.37)	N=740 4.34 (2.33)
Hypothesis 1: FES relationship score	N=310 10.95 (5.73)	N=235 10.68 (5.35)	N=545 10.83 (5.57)
Hypothesis i: Social Support for Drinking	N=416 0.09 (5.22)	N=316 -0.20 (5.48)	N=732 -0.04 (5.33)
Hypothesis ii: RCQ stage N(%)			
Action	204 (49.4)	174 (55.8)	378 (52.1)
Contemplation	206 (49.9)	138 (44.2)	344 (47.4)
Precontemplation	3 (0.7)	0 (0)	3 (0.4)
Hypothesis ii: RCQ continuous score	N=413 18.05 (7.62)	N=312 18.27 (6.90)	N=725 18.15 (7.31)
Hypothesis ii: NAEQ Proximal	N=408 6.96 (3.08)	N=308 7.19 (3.25)	N=716 7.06 (3.15)
Hypothesis ii: NAEQ Distal	N=409 52.54 (18.44)	N=310 51.78 (17.77)	N=719 52.21 (18.14)
Hypothesis iii: GHQ Total	N=416 36.91 (18.10)	N=314 39.22 (17.85)	N=730 37.91 (18.01)
Hypothesis iii: ASI-PS	N=400 0.27 (0.26)	N=300 0.29 (0.25)	N=700 0.28 (0.26)
Hypothesis iv: STAXI - S-ANG	N=410 13.91 (6.42)	N=313 14.54 (6.88)	N=723 14.18 (6.62)
Hypothesis iv: STAXI- T-ANG	N=412 22.25 (7.36)	N=312 21.88 (7.59)	N=724 22.09 (7.46)
Hypothesis iv: STAXI - AX-EX	N=413 40.12 (8.32)	N=314 40.17 (8.82)	N=727 40.15 (8.53)
Hypothesis v: LDQ	N=419 15.44 (7.94)	N=313 15.99 (8.22)	N=732 15.68 (8.06)

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TABLE 2

Tests of matching hypotheses at 3- and 12-months follow-up that were statistically significant ($p < 0.05$) or approached statistical significance ($p < 0.1$)

Follow-up interval	Outcome variable	Matching variable	Treat* β	Matching β	Int β MET*Matching	Significance p =	R^2
3 months	DDD_{td}	NAEQ Distal	-5.071	-0.141	0.098	0.047	0.321
3 months	DDD_{td}	GHQ	2.997	0.072	-0.085	0.090	0.302
3 months	DDD_{td}	LDQ	2.790	0.377	-0.183	0.086	0.336
3 months	APQ Common	GHQ	1.549	0.057	-0.037	0.089	0.285
12 months	LDQ	NAEQ Prox	-3.637	-0.479	0.403	0.072	0.155
12 months	LDQ	NAEQ Distal	-5.539	-0.108	0.093	0.021	0.160
12 months	LDQ	NAEQ Prox	-2.427	-0.479	0.403	0.072	0.155
12 months	LDQ	NAEQ Distal	-3.775	-0.108	0.093	0.021	0.160

*(*SBNT = 0, MET = 1)*

High score more severe – DDD, APQ, LDQ, GHQ)
Low score more severe - NAEQ

APPENDIX

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Christine Godfrey (Health Economics)
Nick Heather (Research Co-ordination)
Ray Hodgson (Research and Clinical Management - South Wales)
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Treatment Sites

Cardiff Community Addiction Unit
Cardiff Community Alcohol Team
VADT Alcohol and Drug Team, Barry
Community Drug and Alcohol Team, Mid-Glamorgan
Leeds Addiction Unit
North Birmingham Community Alcohol Team
Community Alcohol Team Addiction Services, Wolverhampton

TABLE 1
Baseline scores of predictor variables

Predictor variables Mean (St dev)	Randomised Group MET	 SBNT	 Total
Hypothesis i: Social Support (see text)	N=421 4.33 (2.30)	N=319 4.35 (2.37)	N=740 4.34 (2.33)
Hypothesis 1: FES relationship score	N=310 10.95 (5.73)	N=235 10.68 (5.35)	N=545 10.83 (5.57)
Hypothesis i: Social Support for Drinking	N=416 0.09 (5.22)	N=316 -0.20 (5.48)	N=732 -0.04 (5.33)
Hypothesis ii: RCQ stage N(%)			
Action	204 (49.4)	174 (55.8)	378 (52.1)
Contemplation	206 (49.9)	138 (44.2)	344 (47.4)
Precontemplation	3 (0.7)	0 (0)	3 (0.4)
Hypothesis ii: RCQ continuous score	N=413 18.05 (7.62)	N=312 18.27 (6.90)	N=725 18.15 (7.31)
Hypothesis ii: NAEQ Proximal	N=408 6.96 (3.08)	N=308 7.19 (3.25)	N=716 7.06 (3.15)
Hypothesis ii: NAEQ Distal	N=409 52.54 (18.44)	N=310 51.78 (17.77)	N=719 52.21 (18.14)
Hypothesis iii: GHQ Total	N=416 36.91 (18.10)	N=314 39.22 (17.85)	N=730 37.91 (18.01)
Hypothesis iii: ASI-PS	N=400 0.27 (0.26)	N=300 0.29 (0.25)	N=700 0.28 (0.26)
Hypothesis iv: STAXI - S-ANG	N=410 13.91 (6.42)	N=313 14.54 (6.88)	N=723 14.18 (6.62)
Hypothesis iv: STAXI- T-ANG	N=412 22.25 (7.36)	N=312 21.88 (7.59)	N=724 22.09 (7.46)
Hypothesis iv: STAXI - AX-EX	N=413 40.12 (8.32)	N=314 40.17 (8.82)	N=727 40.15 (8.53)
Hypothesis v: LDQ	N=419 15.44 (7.94)	N=313 15.99 (8.22)	N=732 15.68 (8.06)

TABLE 2

hing hypotheses at- and 12-months follow-up that were statistically significant ($p < 0.05$) or approached statistical signifie ($p < 0.1$)

Follow-up interval	Outcome variable	Matching variable	Treat β	Matching β	Int β MET*Matching	p-value Interaction	R^2
			β (95% CI)	β (95% CI)	β (95% CI)		
3 months	DDD_t	NAEQ Distal	-5.071 (-10.450, 0.309)	-0.141 (-0.220, -0.062)	0.098 (0.001, 0.195)	0.047	0.321
3 months	DDD_t	GHQ	2.997 (-1.132, 7.127)	0.072 (-0.004, 0.148)	-0.085 (-0.183, 0.013)	0.090	0.302
3 months	DDD_t	LDQ	2.790 (-0.899, 6.480)	0.377 (0.215, 0.539)	-0.183 (-0.393, 0.026)	0.086	0.336
3 months	APQ Common	GHQ	1.549 (-0.253, 3.352)	0.057 (0.022, 0.091)	-0.037 (-0.08, 0.006)	0.089	0.285
12 months	LDQ	NAEQ Prox	-3.637 (-7.085, -0.189)	-0.479 (-0.817, -0.140)	0.403 (-0.036, 0.843)	0.072	0.155
12 months	LDQ	NAEQ Distal	-5.539 (-9.905, -1.173)	-0.108 (-0.174, -0.042)	0.093 (0.014, 0.171)	0.021	0.160

*(*SBNT = 0, MET = 1)*

High score more severe - DDD_t, APQ, LDQ, GHQ
Low score more severe - NAEQ