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When does change begin following screening and brief intervention among depressed problem drinkers?

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Running head: Depressed problem drinkers.

Abstract

Brief interventions are effective for problem drinking and reductions are known to occur in association with screening and assessment. The present study sought to assess, amongst participants ($n = 202$) in a clinical trial, how much change occurred between baseline assessment and a one-session brief intervention (S1), and the predictors of early change. The primary focus was on changes in Beck Depression Inventory fastscreen scores and alcohol consumption (standard drinks per week) prior to random allocation to nine further sessions addressing either depression, alcohol, or both problems. There were large and clinically significant reductions between baseline and S1, with the strongest predictors being baseline scores in the relevant domain and change in the other domain. Client engagement was also predictive of early depression changes. Monitoring progress in both domains from first contact, and provision of empathic care, followed by brief intervention appear to be useful for this high prevalence comorbidity.

Keywords: Depression, Alcohol dependence, Comorbidity, Brief intervention, Screening, Assessment

1. Introduction

Alcohol use disorders and major depression frequently co-occur in the community (Degenhardt, Hall, & Lynskey, 2001; Farrell et al., 2001; Grant et al., 2004; Kessler et al., 2003; Teesson, Slade, & Mills, 2009). Of individuals with a 12-month alcohol use disorder, 18% have a coexisting affective disorder and 17% of those with an affective disorder have an alcohol use disorder (Burns & Teesson, 2002). These comorbidities are even more common in clinical settings ranging from 50% to 70% for depression and alcohol use disorders (Flynn & Brown, 2008; Rush & Koegl, 2008; Weaver et al., 2003). This high-prevalence comorbidity is associated with poorer outcomes and greater utilisation of services when accessed (Sullivan, Fiellin, & O'Connor, 2005), however, treatment for these comorbid conditions is often considered more complicated and difficult, and hence is often not provided (Roeloffs, Fink, Unutzer, Tang, & Wells, 2001).

Whilst much is known about the epidemiology and characteristics of people with comorbid alcohol use and depressive disorders, comparatively little is known about the effectiveness of treatment for this comorbidity. Experts have called for urgent attention to be paid to this issue, particularly on improving the screening and treatment options for primary care practitioners, who are often responsible for the management of people experiencing these conditions. In the alcohol field, brief interventions have been shown to be effective for problem drinking (e.g., Moyer, Finney, Swearingen, & Vergun, 2002; Vasilaki, Hosier, & Cox, 2006), but this approach to treatment has only recently been applied to people with comorbid depression and alcohol use problems. A randomised controlled trial (Baker et al., 2010) was conducted among a sample of 284 people with coexisting depression and alcohol use problems in Australia, comparing several variants of a ten-session treatment program with a one-session brief intervention. In this study, significant change occurred across all treatment conditions, including the brief intervention group, in both problem drinking and coexisting depression. This phenomenon has also been observed in research applying brief interventions to problem drinkers (e.g., Bernstein, Bernstein, & Heeren, 2010; Jenkins, McAlaney, & McCambridge, 2009), suggesting that minimal interventions incorporating an

assessment and brief intervention may be as effective as more intensive approaches in targeting depression and alcohol misuse comorbidity.

Other factors, such as gender (Moyer et al., 2002; Sanchez-Craig, Spivak, & Davila, 1991), readiness to change (Prochaska & DiClemente, 1983) and initial therapeutic alliance (Kay-Lambkin, Baker, Lewin, & Carr, 2011a) may moderate the impact of brief interventions, or otherwise alter the initiation or rate of improvement. In addition to formal brief interventions, volunteering for treatment, participating in assessments, and the general motivational effect of answering questions about their problems may have an impact (Bernstein et al., 2010). Thus, changes in behaviour, symptoms and functioning may begin to occur relatively early and we need to better understand these processes and the factors that contribute to them. More broadly, attention also needs to be paid to inter-relationships between changes in depressive symptoms and alcohol consumption. Reciprocal relationships have been demonstrated, for example, between changes in negative affect (depression and anger expression) and alcohol use during the first post-treatment year in large samples with alcohol use disorders (Witkiewitz & Villarroel, 2009).

The study conducted by Baker et al. (2010) included both initial screening and extensive assessment before the brief intervention began. The opportunity therefore arose to measure changes in depressive symptoms and alcohol consumption over this initial period. Hence, in the current analyses, drawn from the same study, we sought to determine: (i) how much change occurred between screening or baseline and an initial intervention session (S1); (ii) whether change occurred in both drinking and depression during this period; and (iii) the predictors of change between baseline and S1. In attempting to quantify the magnitude of early change, it is useful to establish a reference frame, which, in this instance, was identified as the overall change occurring during the treatment phase. Consequently, for participants in the current study who received further intervention following the initial session, we additionally sought to compare early changes in drinking and depression (i.e. between screening/baseline/S1) with those occurring by mid-treatment (session 5, S5) and treatment completion (session 10, S10).

2. Materials and methods

2.1. Design and hypotheses

Ethics approval for this project was obtained from the Hunter New England, the University of Newcastle, the University of Queensland and the Queensland University of Technology Ethics Committees. The overall clinical trial is also registered with the Australian New Zealand Clinical Trials Registry (ANZCTR) – Trial acronym: DAISI (Depression and Alcohol Integrated and Single-focused Interventions); registration date: 18th January, 2007 (ACTRN12607000057482).

As described in more detail by Baker et al. (2010), following telephone screening, potentially eligible participants ($n = 284$) attended for baseline assessment and provided written informed consent. All participants were offered a single initial session, after which they were randomized to no further treatment (brief intervention only; $n = 70$) or to nine further sessions focused on depression ($n = 71$), alcohol ($n = 68$) or alcohol and depression (integrated; $n = 75$); original power calculations were based on projected retention rates of 80 participants per condition. Brief assessments of levels of depression and alcohol consumption were conducted by therapists upon conclusion of S1 for all participants and at S5 and S10 for those assigned to the ten session conditions. Allocations were stratified by gender and receipt of pharmacotherapy. We predicted that between baseline assessment and S1: (a) significant decreases in depression and alcohol use would be reported; and that (b) self-report assessments completed at the conclusion of S1 would be positively associated with baseline level of functioning in each domain, primacy of the relevant domain, change in the other domain, therapeutic alliance, and for alcohol consumption, readiness to change drinking. As depression scores (not alcohol) were available at screening, the change in depressive symptoms between screening and baseline assessment is also reported.

2.2. Participants

Inclusion criteria were: (i) aged over 16 years; (ii) a BDI-II (Beck, Steer, & Garbin, 1988) full score $\geq$ 17; and (iii) hazardous alcohol consumption in the month before baseline ($\geq$ an average of four 10g ethanol drinks per day for men, $\geq$ two per day for women) (Baker et al., 2010). Potential participants were excluded if they: (i) were currently diagnosed with a psychotic disorder; (ii) reported a history of traumatic brain injury; (iii) lacked fluency in English; or (iv) lived too far away to attend sessions. The study was implemented between October 2005 and April 2007 across two east-coast Australian cities (Newcastle and Brisbane). Most participants self-referred, after seeing advertisements in local media (76%) or hearing about the study from others (7%), while 14% were referred by other agencies; please see Figure 1 in Baker et al. (2010) for overall recruitment and retention profiles. Participants attended sessions in research clinics, community mental health, or alcohol and other drug centres. As the primary focus of this paper was on early changes (and comparisons with the remainder of the treatment phase), the target sample for the current analyses comprised study participants who completed S1 and the 18-week post-treatment assessment ($n =$ 202, or 71.1% of the recruited sample), which included the following treatment group membership: brief intervention only ($n = 50$); depression-focused intervention ($n = 55$); alcohol-focused intervention ($n = 44$); and integrated intervention ($n = 53$).

2.3. Measures

The Structured Clinical Interview for DSM-IV-TR (SCID; First, Gibbon, Spitzer, & Williams, 1995) provided current and lifetime diagnoses of a Major Depressive Episode, Alcohol Abuse and Dependence. During screening and periodically throughout the intervention phase, depressive symptoms were assessed using the seven-item Beck Depression Inventory-Fast Screen (BDI-FS; Beck, Steer, & Brown, 2000). The full 21-item BDI-II was used at baseline and on all subsequent assessment occasions, from which a BDI-FS score could also be calculated (Beck et al., 2000; Beck et al., 1988). The Opiate Treatment Index (OTI; Darke, Hall, Wodak, Heather, & Ward,

1992) estimated the average standard drinks per day in the previous month. A 2-week Time Line Follow Back (TLFB; Sobell & Sobell, 1992) procedure was used to measure the mean number of standard (10g ethanol) drinks per week. The Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de le Fuente, & Grant, 1993) provided a measure of severity of alcohol problems during the six months prior to baseline. The Readiness to Change Questionnaire (Rollnick, Heather, Gold, & Hall, 1992) was employed to yield scores on pre-contemplation, contemplation and action regarding readiness to change problematic drinking. Scores are totalled for the items particular to each subsection, and the subsection with the highest total score is the baseline stage of change. Therapist opinion on whether depression or alcohol problems were primary or secondary (based on a review of the status of each problem over time) was also recorded at baseline. Additional measures at baseline (e.g., neurocognitive assessments) and 18 weeks are reported elsewhere (Baker et al., 2010; Hunt, Baker, Michie, & Kavanagh, 2009). The Agnew-Davies Relationship Measure (ARM; Agnew-Davies, Stiles, Hardy, Barkham, & Shapiro, 1998) was used to measure therapeutic alliance. It contains 28 self-report items regarding client- and therapist-based domains and impressions of the client-therapist relationship. Each item is rated according to a 7-point Likert scale, with higher scores indicating more positive perceptions. Five subscales are derived, namely bond, partnership, confidence, client initiative and openness. The client engagement measure in analyses below is derived from ratings of bond, partnership, confidence, and openness, while client initiative was used separately; this decision was guided by factor analyses of ARM's scores from the current and previous studies (Baker et al., 2010; Kay-Lambkin et al., 2011a; Kay-Lambkin, Baker, Kelly, & Lewin, 2011b). The ARM has been used in several trials of CBT for depression (Agnew-Davies et al., 1998). Participants completed the ARM after S1 (following randomisation, all participants), and, where assigned to 10-session treatments, after S5 and S10 immediately following the session, and returned completed forms to the clinic receptionist in a sealed envelope.

2.4. Interventions

The treatment manual (Kay-Lambkin, Baker, & Bucci, 2005) was adapted from that evaluated in the study by Kay-Lambkin et al. (Kay-Lambkin, Baker, & Bucci, 2002; Kay-Lambkin et al., 2005) and the interventions have previously been described (Baker et al., 2010). S1, received by all participants, comprised assessment feedback, case formulation (covering the development and maintenance of coexisting depression and alcohol problems), motivational interviewing (MI), planning for behaviour change, and education about depression and hazardous alcohol use. Where nine weekly one-hour sessions followed, therapy consisted of MI and cognitive behaviour therapy (CBT), including a range of mindfulness components. Integrated sessions addressed the way in which depression and alcohol use impacted on each other as well as addressing the two conditions in parallel. Baseline assessment and therapy were conducted by therapists who worked across the four intervention conditions.

2.5. Procedures

Following informed consent, baseline assessments were typically completed over two 1.5 hour sessions a week apart, and reimbursement of up to $20AUD was given for travel and other costs (but not for treatment sessions). Randomisations were generated at the beginning of the study and linked to a unique identification code. Allocations were concealed (from therapists and participants) in individual sealed envelopes, which were opened by participants at the end of S1, ensuring that the content and experience of the initial session would be unaffected by knowledge of the allocation. Randomisation was stratified by study site, gender, and presence of concurrent antidepressant or anti-craving medication. Of relevance to the current study, post-baseline assessments were conducted by the participant's treating psychologist at the conclusion of S1 (post-allocation), S5 and S10. Blind follow-up assessment occurred at 18 weeks post-baseline, irrespective of treatment completion. For the current analyses, 18-week assessment results were

only used in the imputation of missing assessment data from the treatment phase and are not reported as separate outcomes.

2.6. Statistics

While the primary focus of the statistical analyses was on early change (i.e., from screening to the conclusion of S1), these effects need to be contextualised against the overall changes occurring during the active treatment phase; consequently, S10 was chosen as the key reference point, against which to estimate proportionate early change. To manage missing data for participants allocated to the extended therapy conditions, multiple imputation techniques were used, in which missing S5 and S10 data were imputed based on age, gender and all available data for the relevant domain (i.e., BDI-FS depression or TLFB alcohol consumption) from screening/baseline to the 18-week follow-up assessment; 75 S5 scores (26%) and 136 S10 scores (48%) were imputed in this manner. Change in each domain was then calculated as the difference between the selected time points (using actual or imputed scores). The proportionate change was calculated as the change occurring in each adjacent time period divided by the estimated total change by S10.

Analyses were performed using STATA (Release 10.1 College Station; Stata Corporation, TX, USA), SAS (Version 9.1; SAS Institute Inc., NC, USA), and SPSS (Version 17.0; SPSS, Chicago, IL, USA). Descriptive statistics characterised the cohort at baseline. Chi-square analyses were used to compare baseline differences for the categorical variables, while one-way analyses of variance (ANOVAs) were used for the continuous variables. Paired sample t-tests were used to measure the change between selected time points for BDI-FS depression and TLFB alcohol consumption. Separate multiple linear regressions were conducted to explore predictors of S1 depression and alcohol consumption scores, with simultaneous entry of the predictors. To partially account for multiple testing, the significance level was set at $p<0.01$.

3. Results

Detailed descriptions of the overall sample at baseline (n = 284) have been reported elsewhere, along with the short-term (6-month) impact of the interventions on key symptoms (Baker et al., 2010). Only selected results that are relevant to the current paper are repeated here.

3.1. Baseline characteristics (n = 202)

Socio-demographic and clinical characteristics of the selected sample are summarised in Table 1. On average, participants were aged 46.3 years, with an approximately equal split for gender and current antidepressant medication status; typically, those taking antidepressants had done so for 2 years (104.4 weeks, SD 126.5). For the majority of participants (82.4%), alcohol related problems were viewed as primary, with approximately one-quarter (27.2%) at the action stage of change. No significant differences existed between treatment groups on the variables of interest at baseline.

Table 1 about here

3.2. Treatment attendance and retention

As reported by Baker et al. (2010), on average, participants offered ten sessions (n = 214) attended 5.76 (SD 4.07) sessions, with no significant differences in attendance between the treatment groups. The corresponding value for the selected sample (n = 152) was 7.27 (SD 3.56) sessions, of whom, 81 (53%) attended all ten sessions; in addition, there were 50 S1 participants who were not allocated to one of the more intensive interventions. Likewise, there were comparable rates of retention in the current analyses across the treatment groups (ranging from 64.7% to 77.5%). However, relative to the 202 participants in the selected sample, the remaining 82 participants (who did not complete S1 and the 18-week post-treatment assessment) tended to report higher TLFB mean drinks per week at baseline [57.3 (SD 33.8) *vs*. 70.7 (SD 58.6), $F_{(1, 282)} = 5.84$, p = 0.016] and to be less likely to be at the action stage of change for alcohol [27.2% vs. 13.4%, $\chi^2_{(1)} = 6.24$, p = 0.013].

3.3. Change from screening and baseline to intervention session one (S1)

The average interval between the initial baseline assessment and S1 was 31.5 days (SD 20.4, range: 7-149 days); within that period, the second baseline assessment typically occurred within 12.0 days (SD 10.6) of the first assessment. For 44 participants, there was an overlap in the assessment periods, in that the 2-week TLFB completed at S1 partially covered the timeframe for the initial baseline assessment; however, for 30 of these 44 participants, this represented only one day of overlap. Therefore, measurement issues are less of a concern than the fact that this subgroup had less time within which they could potentially manifest change.

For the selected sample, a statistically significant reduction occurred in depression, with BDI-FS scores reducing from a mean of 11.9 (SD 3.13) at screening to 10.4 (SD 3.44) at baseline. This accounted for 18.2% of the overall change in depression by S10 (paired-t = 7.47, df = 179, p<0.001, 99% CI of the early change 0.96-1.98), which further reduced to a mean of 8.21 (SD 4.06) by the conclusion of S1 (26.4% of overall change by S10; paired-t = 8.48, df = 191, p<0.001, 99% CI of the early change 1.47-2.77). The BDI-FS manual suggests that scores of 4-6 are indicative of mild depression, 7-9 moderate depression, and 10-21 severe depression (Beck et al., 2000). Consequently, at S1 the mean BDI-FS was in the middle of the moderate range; for readers more familiar with the full BDI-II, the observed mean change by S1 of 3.59 BDI-FS units equates to approximately a 7.80 unit reduction on the full BDI-II. Mean alcoholic drinks per week (as per the TLFB) also underwent significant change between baseline and S1, reducing from a mean of 56.5 (SD 33.8) to a mean of 45.7 (SD 37.7) (35.2% of overall change; paired-t = 4.43, df= 185, p<0.001, 99% CI of the early change 4.47 – 17.18) during this time period.

3.4. Predictors of S1 BDI-FS depression and TLFB alcohol consumption

The left-hand columns of Table 2 display the predictor variables associated with BDI-FS depression scores at S1. There were three significant predictors in the multiple linear regression

analysis: baseline BDI-FS depression; client engagement; and concurrent change in alcohol consumption. Specifically, after adjusting for baseline depression, higher client engagement during (and prior to) the initial treatment session predicted lower S1 depression, as did the magnitude of the reduction in alcohol consumption from baseline to S1. The right-hand columns of Table 2 report similar analyses for S1 alcohol consumption. Once again, there were three significant predictors: baseline alcohol consumption; the time interval from initial assessment; and concurrent change in BDI-FS depression. Specifically, after adjusting for baseline alcohol consumption, those who took longer to return for S1 tended to have higher S1 alcohol consumption, while participants with a greater reduction in BDI-FS depression from baseline to S1 also reported lower TLFB mean drinks per week at S1.

Table 2 about here

3.5. BDI-FS and TLFB change profiles across the recruitment and treatment phases

Raw and proportionate changes over the selected study phases (e.g., baseline to S1, S1 to S5, S5 to S10) for depression and alcohol consumption for each treatment group are displayed in Table 3, relative to the estimated overall change by S10. Cumulative overall improvements in depression and alcohol scores from screening to session 10 are also illustrated in Figure 1.

Table 3 and Figure 1 about here

As Table 3 shows, with respect to changes in raw BDI-FS depression scores and TLFB alcohol consumption scores, there were reductions between all pairs of time points (i.e., all mean change scores were negative). Most of these comparisons were statistically significant, with the obvious exception of the S5 to S10 changes in the single-focused depression and alcohol intervention conditions – which may partially reflect differences in participation rates across treatment sessions. As a check on the sensitivity of the results to the data imputation strategies, we repeated the S1 to S5, and S5 to S10 comparisons without any data substitution. The findings were similar to those in Table 3, with the exception of the S1 to S5 comparison in the single-focused

alcohol intervention condition, where there was a statistically significant mean reduction of 13.6 standard drinks (p<0.001) (compared with 11.7 in Table 3, p=0.067).

Of greater relevance to the current paper are the proportionate changes between baseline and S10 displayed in the right-hand columns of Table 3, within each outcome measure. Not surprisingly, the largest changes occurred during the most active of the treatment phases, between S1 and S5 (e.g., 34.5% of change in depression and 39.7% of change in alcohol use). However, there were substantial changes before the first session. For example, the baseline assessment to S1 changes in BDI-FS depression accounted for 21.5% of the change for the depression condition, 25.4% for the alcohol condition and 30.4% for the integrated condition. The corresponding proportions for TLFB alcohol consumption were: 31.4% for the depression condition, 32.9% for the alcohol condition and 37.0% for the integrated condition.

While the overall and proportional change relative to session 10 cannot be calculated for the brief (one session) condition, the early changes which occurred in both BDI-FS depression and TLFB alcohol consumption were statistically significant (see Table 3), and generally comparable to those reported by participants at similar intervention phases in the extended treatment conditions. Moreover, as shown in Table 2, pharmacotherapy status was not associated with BDI-FS or TLFB scores at S1, although changes in the opposite domain were predictive.

4. Discussion

4.1. Identification of early changes

To our knowledge, this is the first study to demonstrate improvement in both levels of depression and alcohol consumption in association with the screening and assessment process prior to extended intervention for this common comorbidity. There were large and clinically significant reductions across the four intervention conditions in depression (ranging from 21.5% to 30.4%) and alcohol consumption (ranging from 31.4% to 37.0%) between baseline assessment and S1. There was also a substantial reduction in depressive symptoms between screening and baseline (ranging

from 15.7% to 22.7%). Reductions occurred for the entire sample, irrespective of the primacy of either alcohol or depression (see Table 2), suggesting that change from baseline may not be contingent on addressing primacy. This is an important finding, which may help to reduce the complexity and improve the efficiency of management of patients presenting to primary care with this comorbidity.

It is well recognised that reductions in alcohol consumption occur in association with screening and assessment (e.g., Bernstein et al., 2010; Jenkins et al., 2009; Kypri, Langley, Saunders, & Cashell-Smith, 2007), however, this has not previously been demonstrated with a comorbid sample with depression and hazardous alcohol use. Several hypotheses have been proposed to account for this phenomenon, including social desirability bias, regression to the mean (Finney, 2008), and screening or assessment reactivity (Bernstein et al., 2010). It seems likely that the process of entering treatment, including the decision making involved in contacting the researchers, undergoing screening, entering the study and participating in assessment was associated with the change reported. From a clinical perspective, identifying the most active components of this process would be of great interest.

The strongest predictors of BDI-FS depression and TLFB alcohol consumption scores at S1 were baseline scores in the relevant domain (i.e., depression or alcohol consumption) and change in the other domain; the latter finding reinforces research by Witkiewitz and Villarroel (2009) about the dynamic relationship between changes in negative affect and alcohol use. These influences may be direct (e.g., less drinking in association with fewer low mood episodes) or indirect (e.g., improving self-efficacy, or by generalisation of change strategies across domains). Qualitative studies investigating the process of change would be of interest. The finding that client engagement was predictive of lower depression scores at S1 indicates that therapeutic alliance is important during the assessment process and in the early phase of intervention. In the present study, the same therapists conducted baseline assessments and S1, so engagement was likely to have been built in this process, as would be the case in clinical settings. Thus, a relatively simple inquiry about levels

of depression and levels of alcohol use, coupled with feedback, a warm engaging approach, and initial goal setting may be sufficient to produce significant early change in both depressive and alcohol use domains.

There was a tendency ($p = 0.021$) for superior reductions in alcohol consumption at S1 to be associated with being female. It is possible that this difference partially reflects gender differences in overall consumption. Differential social desirability or other reporting biases might also need to be considered, with women possibly wishing to be seen as treatment responsive. On the other hand, a higher baseline level of drinking for men may have been expected to confer a greater opportunity for regression to the mean. Furthermore, Sanchez-Craig (1991) has previously reported that problem drinking among women responds well to brief intervention while problem drinking among men responds comparatively better to a longer therapist intervention. Moyer et al. (2002) have argued that men and women benefit from different sorts of brief interventions. In a primary care sample in the USA, Roeloffs et al. (2001) further reported that females with comorbid depression and alcohol use problems were less likely to access counselling for their conditions, potentially due to the perceived stigma of problematic alcohol/other drug use for women.

Several of the study's findings highlight the often reported difficulties associated with engaging individuals with substance use problems. For example, the subgroup excluded from the current analyses (because of non-completion of S1 and/or the 18-week post-treatment assessment) reported higher baseline alcohol consumption and less preparedness to change. Similarly, those who returned later for S1 were likely to have been drinking more at that time, suggesting a greater reluctance to change (although stage of change was not re-assessed at that point). Being at the action stage of change is also likely to reflect an individual's capacity to change without treatment (Prochaska & DiClemente, 1983). Conversely, longer intervals between baseline assessment and S1 tended to be associated with lower S1 depression scores, suggestive of greater spontaneous recovery from depression, ongoing assessment/feedback effects, regression to the mean, or some

combination of these influences. How best to harness motivation for change during the pre-treatment phase is worthy of further investigation.

4.2. Limitations

There are several limitations of this study. Not all participants received two assessment sessions, so the effect of the assessment process was variable across the sample. Likewise, the time between the initial baseline assessment and S1 was reasonably variable, being less than two weeks for 44 subjects, which meant that for this subgroup there was a small overlap in measurement time. The latter is unavoidable in a clinical trial in which appointments cannot always be precisely scheduled. The assessments of depression and alcohol use at S1, S5 and S10 were initiated by the treating clinician (although standardised self-report measures were used), so the potential for reporting biases is somewhat higher than at the other assessment time points. While data imputation techniques were used (to estimate missing S5 and S10 scores), the key hypotheses related to the period up till the end of S1, for which no data substitution occurred.

Since the initial assessments were conducted by trained clinicians, they may have been perceived as 'therapy sessions'; furthermore, the early changes observed here may not have been as strong if trained field staff had conducted the assessment interviews, as opposed to therapists. Client engagement was assessed following randomisation after S1, so it is possible that any differences between groups could potentially reflect knowledge of intervention allocation and/or impacts associated with the brief intervention; however, there were no significant S1 group differences in therapeutic alliance (see Table 1). In future studies, alliance might be better measured before randomisation. Finally, motivation to change may have been relatively high in the current sample, as they could be viewed as predominantly self-referred 'treatment seekers'; on the other hand, many participants had been using antidepressants for a considerable time, presumably with unsatisfactory outcomes, so the proportion of treatment resistant cases could have been higher. Receipt of pharmacotherapy was not associated with initial improvement (see Table 2), suggesting that the

observed assessment/initial intervention effects may be generalisable to other real world treatment settings.

4.3. Conclusions

This study is the first to show that coexisting depression and problem drinking both improve during the post-recruitment period as well as during early treatment. The impact of participant characteristics (e.g., previous treatment experiences, motivation to change, social desirability factors) and the episodic nature of depressive disorders may have also contributed to the early changes that were observed. There was an average interval of a month between the initial baseline assessment and S1, so there was sufficient time within which some recovery could have occurred, whether or not specific assessment or client characteristics played a part.

Difficulties have been reported in primary care settings in detecting and treating problematic alcohol use, with these disorders being less likely to be identified if patients are depressed (Roeloffs et al., 2001). Consequently, the current findings also have implications for primary and other health care professionals, in that it appears that the 'generalist' clinical skills involved in the process of referral, screening, and assessment/feedback are helpful for depression and problem drinking. We estimate that the typical Australian General Practitioner sees approximately two patients every day with similar comorbidity profiles to those targeted here – so, opportunities to initiate appropriate brief interventions (or referrals) are high. Although the assessments and intervention sessions conducted in this study were longer than would be provided in a primary care setting, it is also possible that practitioners working in these settings could schedule more appointments over time than was allowable in the present study. Thus, it is recommended that primary care and other health professions are encouraged to routinely screen and assess depressive symptoms and alcohol consumption in their patients, with the knowledge that this process, coupled with empathic care, followed by a brief intervention session, is potentially beneficial in reducing comorbid depression and alcohol problems.

Acknowledgments

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Table 1

Baseline characteristics by intervention condition (for participants who completed S1 and the 18-week assessment, *n*=202)

| | | Intervention condition | | | | | |
| | | *Brief (n=50)* | *Depression (n=55)* | *Alcohol (n=44)* | *Integrated (n=53)* | *Total (n=202)* | |
Variable	*Statistic or category*						*p-value*
Age (years)	Mean (SD)	45.0 (9.9)	46.5 (10.3)	47.3 (11.2)	46.7 (11.0)	46.3 (10.5)	0.738
Gender	Female	23 (46.0%)	26 (47.3%)	23 (52.3%)	23 (43.4%)	95 (47.0%)	0.852
Marital status	Single	12 (24.0%)	14 (25.5%)	10 (22.7%)	14 (26.4%)	50 (24.8%)	0.378
	Married/de facto	20 (40.0%)	12 (21.8%)	16 (36.4%)	21 (39.6%)	69 (34.2%)	
	Separated/divorced/widowed	18 (36.0%)	29 (52.7%)	18 (40.9%)	18 (34.0%)	83 (41.1%)	
Living arrangements	With another adult	27 (54.0%)	32 (58.2%)	25 (56.8%)	34 (64.2%)	118 (58.4%)	0.761
Current antidepressant medication	Yes	23 (46.9%)	31 (56.4%)	28 (63.6%)	28 (52.8%)	110 (54.7%)	0.433
Primary problem (according to therapist)	Alcohol	40 (80.0%)	39 (72.2%)	38 (88.4%)	47 (90.4%)	164 (82.4%)	0.060
Readiness to change (alcohol)	Yes (Action stage)	15 (30.0%)	16 (29.1%)	12 (27.3%)	12 (22.6%)	55 (27.2%)	0.837
Depression (BDI-FS score)	Mean (SD)	9.5 (3.3)	10.8 (3.6)	10.7 (3.5)	10.4 (3.1)	10.3 (3.4)	0.233
Standard drinks (mean per week)	Mean (SD)	55.6 (36.3)	58.3 (32.9)	53.5 (32.7)	61.2 (33.6)	57.3 (33.8)	0.703
Days from B (initial assessment) to S1	Mean (SD)	28.9 (18.8)	31.2 (17.1)	31.4 (19.3)	34.4 (25.4)	31.5 (20.4)	0.594
Client engagement (z-score S1 ARMS)	Mean (SD)	-0.17 (0.96)	-0.06 (0.79)	-0.03 (0.81)	0.22 (0.63)	-0.01 (0.81)	0.099
Client initiative (z score S1 ARMS)	Mean (SD)	0.02 (0.99)	0.10 (1.08)	-0.07 (1.04)	0.09 (1.02)	0.04 (1.03)	0.846

BDI-FS: Beck Depression Inventory - Fastscreen score; B: Baseline; S1: session 1; ARMS: Agnew Relationship Measure Scale; p-values are from one-way ANOVAs or overall chi-square tests.

Table 2
Predictors of depression (BDI-FS) scores and alcohol scores assessed at Session 1

	Outcome:	Depression (BDI-FS) scores at Session 1 (S1)		Standard drinks (mean per week) at Session 1 (S1)	
		($R^2 = 0.480$, n=183)		($R^2 = 0.479$, n=183)	
Predictor		Standardised regression weight	p-value	Standardised regression weight	p-value
Socio-demographic and baseline measures:					
Age		-0.002	0.972	-0.006	0.913
Gender (Male=0, Female=1)		0.090	0.135	-0.139	0.021
Living arrangements (With another adult=0, Alone or with kids=1)		-0.027	0.638	0.088	0.122
Current antidepressant medication (No=0, Yes=1)		0.089	0.127	-0.087	0.133
Primary problem (according to therapist) (Alcohol=0, Depression=1)		0.034	0.557	0.015	0.799
Readiness to change (alcohol) (Yes=0, No=1)		0.042	0.468	0.085	0.138
Depression (BDI-FS) – baseline score		0.646	<0.001	-0.102	0.099
Standard drinks (mean per week) – baseline score		0.148	0.029	0.514	<0.001
S1 and change measures:					
Days from B (initial assessment) to S1		-0.108	0.070	0.159	0.007
Client engagement (z-score S1 ARMS)		-0.158	0.008	0.006	0.918
Client initiative (z score S1 ARMS)		-0.129	0.025	0.020	0.735
Change in other outcome (Standard drinks or BDI-FS) (S1 minus B)		0.291	<0.001	0.266	<0.001

B: Baseline; S1: Session 1; BDI-FS: Beck Depression Inventory Fastscreen score; ARMS: Agnew Relationship Measure Scale; p-values are from multiple linear regression analyses. Participants with missing scores for any of the predictors were excluded from these analyses.

Table 3
Changes in depression (BDI-FS) scores and alcohol scores between sessions: overall and separately for each intervention condition

Intervention condition (n for BDI-FS, n for Standard drinks)	Period	Depression (BDI-FS) scores			Standard drinks (mean per week)		
		Change during period	p-value	Proportion of estimated overall change by S10	Change during period	p-value	Proportion of estimated overall change by S10
Brief (one) session (*n*=48, 46)	Sc to B	-1.65	<0.001	-			
	B to S1	-2.27	<0.001	-	-12.34	0.013	-
Depression (*n*=52, 50)	Sc to B	-1.14	0.006	15.7%			
	B to S1	-1.56	0.002	21.5%	-8.2	0.182	31.4%
	S1 to S5	-3.02	0.001	41.5%	-11.1	0.004	42.5%
	S5 to S10	-1.55	0.158	21.3%	-6.8	0.128	26.1%
Alcohol (*n*=41, 41)	Sc to B	-1.83	<0.001	22.7%			
	B to S1	-2.05	<0.001	25.4%	-9.1	0.030	32.9%
	S1 to S5	-2.50	<0.001	31.0%	-11.7	0.067	42.2%
	S5 to S10	-1.68	0.043	20.8%	-6.9	0.242	24.9%
Integrated (*n*=51, 49)	Sc to B	-1.39	0.001	16.2%			
	B to S1	-2.61	<0.001	30.4%	-13.5	0.002	37.0%
	S1 to S5	-2.75	<0.001	32.1%	-13.8	0.006	37.8%
	S5 to S10	-1.83	0.008	21.3%	-9.2	0.007	25.2%
Total (*n*=192, 186)	Sc to B	-1.47	<0.001	18.2%			
	B to S1	-2.12	<0.001	26.4%	-10.8	<0.001	35.2%
	S1 to S5	-2.77	<0.001	34.5%	-12.2	0.002	39.7%
	S5 to S10	-1.69	0.005	21.0%	-7.7	0.022	25.1%

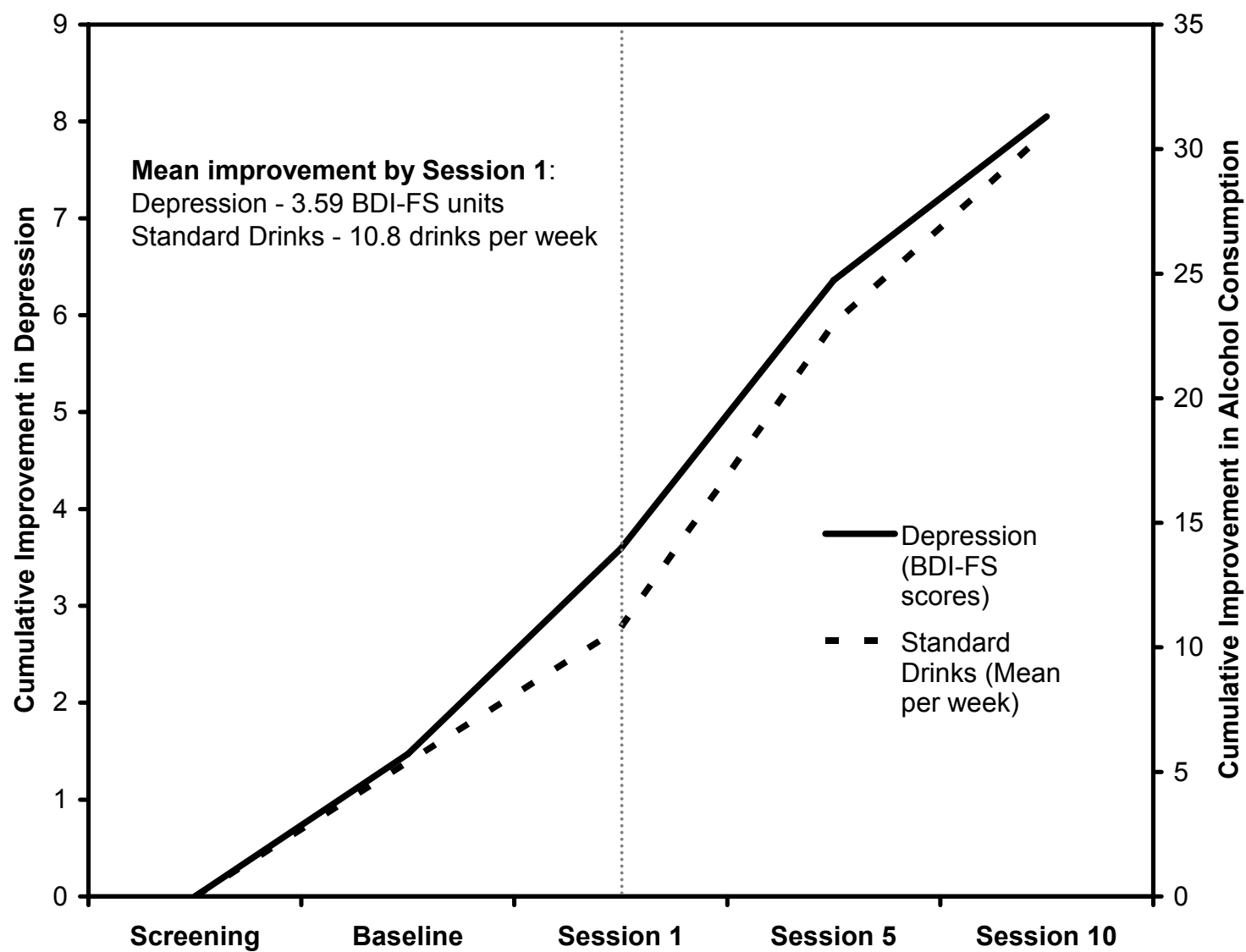Sc: Screening; B: Baseline; S1, S5 and S10: Sessions 1, 5 and 10, respectively.

Fig. 1. Cumulative improvement in depression scores (BDI-FS, *n*=192) and alcohol scores (*n*=186) from screening to session 10