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The integration of mindfulness training and health coaching: an exploratory study

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Coaching has attracted much attention from health professionals interested in collaborative, person-centred approaches to motivating behaviour change. Whilst initial research supports the efficacy of coaching in health contexts, more theoretical and empirical work is needed. Based on recent work demonstrating the important role that mindfulness plays in self-regulation, it was hypothesised that the efficacy of health coaching could be enhanced through the inclusion of Mindfulness Training (MT). To test this, 45 adult were randomly assigned to three health programmes for eight weeks. Using a crossover design, two groups received an alternative delivery of MT and cognitive-behavioural, solution-focused (CB-SF) coaching, whilst the third group participated in a series of health education seminars. Results showed that goal attainment was significantly greater in the facilitative/coaching format than the educative/directive format. No significant differences were found for goal attainment between the two MT/CB-SF conditions suggesting that the delivery sequence had little bearing on outcomes. After reviewing the results, the implications for health professionals are discussed.

Keywords: health coaching; mindfulness; mental training; meditation; attention; goal attainment scaling; self-regulation; cognitive-behavioural

Introduction

‘The man who has daily inured himself to habits of concentrated attention, energetic volition, and self-denial in unnecessary things . . . will stand like a tower when everything rocks around him, and when his softer fellow-mortals are winnowed like chaff in the blast.’ William James

Whilst a variety of physical, social and environmental factors appear to act as barriers to good health, anecdotal and empirical data suggest that many people find their psychological struggles hardest to resolve. For example, Myers and Roth (1997) report that common barriers to exercise adoption in young adults include perceptions that one is too lazy, bored, inconvenienced, ‘time poor’ or risking exposure to an embarrassing social situation (e.g. being at a gym). How people *relate* to psychological states like these seems to be a critical factor in effective self-regulation of health behaviour. For example, working out at a fitness centre appears to be a daunting experience for many new members because of its potential, among other things, to confuse (e.g. learning to use new equipment) and/or embarrass (e.g. sensitivity to body image). In this situation, establishing a regular, sustained pattern of exercise will be, in part, determined by how well a person is able to *accept* the discomfort associated with such thoughts and feelings. Most people are,

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however, motivated to *avoid* these unpleasant streams of consciousness, which can easily be done in the above example by eliminating the source of the discomfort (i.e. attendance at the gym) and disengaging from the goal. Hayes and Wilson (2003) have referred to this phenomenon as *experiential avoidance*.

This study was designed to investigate the efficacy of a new approach to health coaching. Whilst several studies have recently reported on the efficacy of coaching programmes based upon a cognitive-behavioural, solution-focused (CB-SF) framework (Grant, 2003a; Green, Oades, & Grant, 2006; Spence & Grant, 2007), there is reason to believe that cognitive-behavioural models may potentially be enhanced by acknowledging the important role that awareness and acceptance play in goal-directed self-regulation (Brown & Ryan, 2003; Longmore & Worrell, 2007). In this regard, this study has been informed by recent discussions in the literature about the role that *mindfulness* plays in effective human functioning and well-being (e.g. Bishop et al., 2004; Brown, Ryan, & Creswell, 2007; Grossman, Niemann, Schmidt, & Walach, 2004; Kabat-Zinn, 2003).

The paper begins by identifying the context within which the burgeoning interest in health coaching can be understood, before discussing a major limitation of the CB-SF approach and proposing how the integration of mindfulness training might enhance coaching outcomes. It concludes by testing the efficacy of an integrated programme, using an adult community sample, random assignment of participants to three experimental conditions and a crossover design.

The emergence of health coaching

As the prevalence rates for serious medical conditions (e.g. coronary heart disease and diabetes) increase around the globe, health professionals continue to wrestle with the problem of how to encourage clients to adopt positive health behaviours (Huffman, 2007; Myers & Roth, 1997). Growing dissatisfaction with traditional strategies for motivating behaviour change through the use of education and persuasion has resulted in calls for more collaborative approaches (E. Hayes & Kalmakis, 2007). Health coaching has been identified as one such approach and given its growing presence in the peer-review press, it appears to have struck a chord with many practitioners (Hayes & Kalmakis, 2007; Huffman, 2007; Vale, Jelinek, Grigg, & Newman, 2003). Early research is largely supportive of its use (Butterworth, Linden, McClay, & Leo, 2006; Holland et al., 2005).

Palmer, Tubbs and Whybrow (2003) define health coaching as ‘the practice of health education and health promotion within a coaching context to enhance the well-being of individuals and to facilitate the achievement of their health-related goals’ (p. 92). What sets health coaching apart from more traditional approaches is its focus on ‘partnering with patients’ (Huffman, 2007, p. 271), and facilitating their learning within a collaborative, supportive environment (Grant, 2005). As Hayes and Kalmakis (2007) describe it, the role of the health coach is to ‘encourage, support, and provide timely feedback, allowing the client to grow and excel, build on his or her own strengths and resources, and develop accountability in decision making directed towards goal attainment’ (p. 558).

Cognitive-behavioural, solution-focused coaching

Coaching in this study was underpinned by a CB-SF framework (Grant, 2003b). According to this approach, goal attainment is best facilitated by understanding the reciprocal relationships that exist between thoughts, feelings, behaviour and the environment, and managing these in ways that best support goal attainment. As Grant (2003b)

explains, the inclusion of solution-focused techniques within a cognitive-behavioural framework helps to orientate coaching towards personal strengths and solution construction, rather than perceived weaknesses and problem analysis.

Coaching is a dynamic process, wherein coachees are encouraged to work steadily towards their goals, amid shifting environmental conditions and changing psychological states. Regular coaching sessions are useful in this context as they provide coachees with opportunities to support goal progression by completing negative feedback loops (Carver & Scheier, 1998), which involve monitoring action, evaluating progress, and modifying goals, plans or behaviours as necessary (see Figure 1).

The movement toward mindfulness-based approaches

Whilst several studies have now been reported demonstrating the utility of Cognitive Behavioural (CB) techniques in coaching (Grant, 2003a; Green et al., 2006; Spence & Grant, 2007), the supremacy of Cognitive-Behavioural Therapy (CBT) within clinical settings has been increasingly contested (Hayes, Strosahl, & Wilson, 2003; Longmore & Worrell, 2007; Wells & Matthews, 1994). Within this debate an objection has been raised that because human cognition draws upon multiple memory systems and knowledge stores, not all of which are open to introspection, therapies should focus on an individual’s ‘way of being’ rather than on logically challenging beliefs (Lawson, 2005; Teasdale, 1997). Teasdale (1997) argues that CBT only exposes the logical flaws in a person’s thought

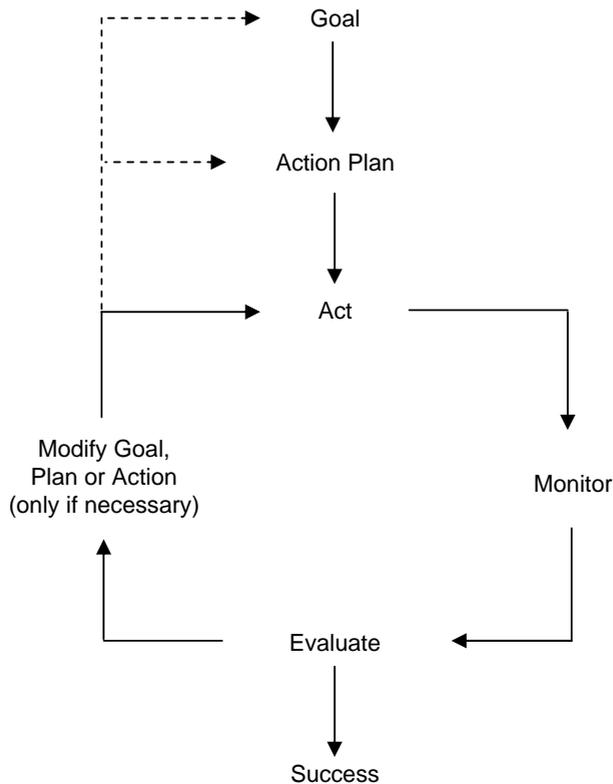


Figure 1. Generic model of self-regulation, adapted from Grant (2003b)

processes and yields little value because it focuses on semantic, declarative meanings without engaging emotional processes.

Other clinicians have advanced similar views. For example, Wells (2000) notes that CBT techniques are frequently ineffective because the maintenance of problems are often not tied to the content of cognitions (which CBT explicitly targets) but rather to repetitive self-attentional processing routines that need interruption. Arguing along similar lines, Hayes et al. (2003) and Linehan, Cochran, and Kehrer (2001) recommend that clinical interventions seek greater *acceptance* of mental events (via mindfulness), rather than the pursuit of greater *control* (through cognitive restructuring). Not surprisingly, this debate has fuelled the development of several alternative interventions, most of which focus on the development of mindfulness skills (Hayes et al., 2003; Linehan et al., 2001; Teasdale, 2004) and draw inspiration from the success of the Mindfulness-Based Stress Reduction programme developed in the early 1980s (Kabat-Zinn, 1990).

This debate has interesting implications for coaching practice. Whilst empirical support for the efficacy of CB coaching has already been noted, the authors' experience suggests the approach has limitations. For example, some coachees find its reductive, mechanistic approach unpalatable because it fails to honour the complexity of conscious experience, whilst others may be able to work through the process of logically disputing cognitions but gain little benefit ('I can see I'm not thinking rationally, but somehow it still feels right'). Anecdotal reports and observations like these seem to line up with the argument that human cognition consists of elements that are 'off limits' to introspection and direct modification (Lawson, 2005) and provide some justification for exploring how alternative approaches might further the development of evidence-based coaching. Before discussing this in more detail, it is important to acknowledge the role that attention and awareness play in the self-regulation.

The role of attention and awareness in self-regulation

According to Baumeister and Heatherton (1996), self-regulatory activity occurs when one internal process overrides another. As they conceive it, latent motivations and activating stimuli have the power to initiate undesired responses and, when this happens, the presence of a superordinate goal triggers a response that prevents it from running its typical course. For example, an invitation to dinner (an activating stimulus) may bring forth one's enthusiasm for French cuisine (a latent motivation) and create an impulse to accept the invitation. However, a person with the goal of lowering their cholesterol levels will seek to override a response sequence that might lead to the consumption of an unhealthy meal. According to this view, self-regulation is a controlled process. It overrides the usual consequences of an impulse, rather than preventing the impulse from occurring. As Baumeister and Heatherton (1996) point out, 'the problem is not that people have impulses; rather it is that they act on them' (p. 2).

How does one override an impulse? It is now widely acknowledged that attention and awareness are key to weakening the potency of impulses and other psychological states that initiate unwanted responses (Brown & Ryan, 2004; Watson & Tharp, 1997). Specifically, these authors argue that when consciousness is brought to bear on present realities an element of self-direction is introduced into behaviours that would otherwise be non-consciously regulated. As attention is generally considered to be the first stage of cognitive processing, self-regulation becomes difficult if problematic thoughts, feelings, sensations and behaviours go unnoticed (Baumeister & Heatherton, 1996).

As such, the training and management of attention and awareness seem important, with coaches able to provide a supportive role in helping coachees to manage their attentional processes effectively. Fortunately, research indicates that the attentional control required to cultivate mindful states is a trainable skill and can be cultivated through dedicated mental practice (e.g. Cavanagh, 2003; Davidson et al., 2003; Kabat-Zinn, 2003). Two such practices are outlined below.

Cultivating mindfulness

Kabat-Zinn (2003) defines mindfulness as “the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment” (p. 145). According to this definition and others like it (e.g. Brown & Ryan, 2003; Bishop et al., 2004), mindfulness represents a particular *quality* of consciousness experience typified by heightened awareness and an acceptance of current experience. Although Eastern scholars have studied mindfulness for some 2500 years, it is still relatively new to the Western scientific agenda. Despite this, interest in the construct has been increasing, with early work indicating that mindfulness carries many important cognitive, affective, physiological and behavioural benefits for those who seek to cultivate it (see Baer, 2003; Brown et al., 2007). Based on our experience and previous work (Cavanagh, 2003; Spence, 2008), two forms of mental practice appear to be especially promising for developing mindfulness within coaching contexts: Attention Training (AT) and Mindfulness Meditation (MM):

Attention training. Attention training is a clinical technique originally developed by Wells and Matthews (1994) as an alternative to CBT in the treatment of affective disorders. In brief, AT promotes a state of ‘detached mindfulness’ by reducing self-focused attention through the practice of *external* attentional focus and attention switching to an auditory mode. Individuals are asked to remain focused on presently occurring external stimuli (a soundscape of everyday sounds) in the face of competing stimuli that may spontaneously occur (i.e. bodily sensations, thoughts, feelings) (Wells, 2000). The procedure is thought to develop greater attentional ‘muscle’, as represented by enhanced attentional control and flexibility. A recent modification of this procedure by Cavanagh (2003) yielded a standard ‘menu’ of sounds (e.g. ticking clock, ringing telephone, birds singing) recorded in stereo and arranged to seem as though that occupy different spatial locations.

Mindfulness meditation. Unlike *concentrative* meditations that involve stilling the mind using a single stimulus, MM is cognitively focused insofar as it teaches individuals how to direct and hold the focus of their attention internally, whilst maintaining awareness of their unfolding internal experience (i.e. thoughts, feelings and bodily sensations) without being ‘captured’ by any one experience (Baer, 2003). According to Martin (1997), developing the skill of dispassionate self-observation is useful because it creates ‘an interval of time within which habits of meaning, thought, behavior, or emotion are suspended, reconsidered’ (p. 292). Whilst many different forms of mindfulness meditation exist, all seek to generate qualities of openness and acceptance via a sequence of simple steps that are flexible and able to be practiced in a variety of everyday situations, such as making tea or washing dishes (Hahn, 1976).

Research questions

This study was designed to investigate the delivery of Mindfulness Training (MT) and CB-SF coaching as a health intervention. More specifically, we were interested to see whether alternating the delivery sequence of these components would make a difference to a person's ability to attain health goals. Based on recent theoretical and empirical work presented in the literature, we hypothesised that the most sensible delivery sequence was MT *before* rather than *after* coaching. It was reasoned that participation in structured, mindfulness training would help people strengthen basic attentional skills that are heavily drawn upon during cognitive-behavioural coaching. To test this hypothesis, two experimental groups were included in the study to allow the delivery of MT and CB-SF coaching to be systematically varied, with each component 'crossing-over' midway through the intervention. It was further hypothesised that MT would be associated with significant increases in mindfulness, improvements in mental health (i.e. depression, anxiety and stress) and enhanced wellbeing (i.e. satisfaction with life, environmental mastery and self-acceptance). Given the conceptual links between mindfulness and metacognitive processing, MT was also expected to lead to reduced levels of rumination and increased self-reflection.

Method

Participants and procedure

Participants responded to local media advertisements and registered their interest via the internet or telephone. Fifty-seven adults participated in a series of information sessions that were designed to outline the research project and determine individuals' suitability for the study. Upon giving their consent participants completed a packet of questionnaires, including a pre-activity questionnaire used to screen for past or present medical conditions that might be exacerbated by participation in a health programme. This was done to ensure safety, not exclusion from the study. Screening identified 18 participants with conditions requiring medical certificates and, as only six certificates were provided, 12 participants effectively withdrew from the study, reducing the final sample to 45 participants.

After screening, participants were randomly assigned to one of three conditions: Mindfulness Training-Coaching (MT-C), Coaching-Mindfulness Training (C-MT), or General Health Education (GHE). Three participants decided not to continue beyond the first week and were excluded from the analysis ($n=42$). The characteristics of the final sample are presented in Table 1.

No control group was used in this study. Rather, the use of a crossover design allowed each participant to serve as their own control. Data were collected at four time points: the information session (Time 1), the goal setting workshops (Time 2), halfway through the programmes (Time 3), and at the conclusion of the programmes (Time 4). The control period of four weeks occurred between Times 1 and 2, whilst the study period of eight weeks occurred across Times 2, 3 and 4.

Goal setting workshops

A series of pre-programme workshops were conducted to assist participants set health goals. Aside from providing participants with this opportunity, the workshops were necessary to enable the use of Goal Attainment Scaling (GAS).

Table 1. Sex and age of participants in study 4.

| | MT-C (<i>n</i> = 14) | C-MT (<i>n</i> = 15) | GHE (<i>n</i> = 13) | Total (<i>N</i> = 42) |
|---------------|-----------------------|-----------------------|----------------------|------------------------|
| Female/male | 11/3 | 10/5 | 7/6 | 28/14 |
| Mean age (SD) | 35.5 (11.1) | 36.2 (12.3) | 36.2 (8.7) | 36.0 (10.6) |

Goal attainment scaling. Goal attainment scaling is a method of programme impact evaluation widely used across a variety of settings, including geriatrics, physical therapy, rehabilitation, and mental health (Schlosser, 2004). In brief, GAS can be used to structure multiple aspects of the goal striving process (i.e. goal-setting, monitoring and outcome measurement). This is accomplished by the use of a goal chart that specifies up to five different levels of attainment, arranged around a mid-point of attainment (i.e. 0) that represents the desired goal (see Table 1). Alternative levels of attainment are then specified to capture outcomes that both exceed (i.e. +2, +1) and fall short of (i.e. -1, -2) the goal, allowing for greater precision in measuring outcomes.

One feature of GAS that makes it attractive for coaching research is that it begins and ends with an interview. In the opening interview, the coach assists the coachee to articulate certain desired outcomes, assess their suitability and agree on differing levels of attainment and measurement methods. In the closing interview, coachee and coach conduct a review of the data contained in monitoring logs, diaries, etc to agree a level of goal attainment. It has been argued that this element of the GAS process would be helpful for maximising the objectivity of data sets in coaching research by removing various forms of distortion and bias, such as recall inaccuracy and performance rationalisations (see Spence (2007) for a detailed discussion of this and other issues related to the use of GAS in coaching research and practice).

GAS preparation. Participants were primed for the GAS interviews in two ways. First, prior to the workshop, they were asked to complete an exercise identifying what aspects of their health required attention and what outcomes they were seeking. Participants brought the completed exercise to the workshop. Second, to assist participants formulate sensible health goals, the workshops commenced with a 30-minute seminar facilitated by an experienced sports dietician. This presentation provided participants with basic information about nutrition and exercise management, followed by 20 minutes of open discussion to enable participants to ask questions and check their understanding of basic principles.

GAS interviews. After the health seminar, each participant took part in a 45-minute goal interview facilitated by a tertiary qualified coach. The purpose of these interviews was to develop a GAS chart for each participant (see Figure 2). Upon completion, charts were checked for specificity, measurability and consistency, with follow-up telephone calls conducted to ensure conformity to these basic standards. A check was then performed to determine whether the groups were equivalent in respect of their *current* (baseline) levels of attainment. Frequency counts revealed that one-third of all goals were reported at the -1 level of attainment, with the remaining two-thirds reported at the -2 level. As these proportions were consistent across all conditions, it was concluded that the groups had equivalent baseline levels of goal attainment.

Name: [REDACTED]

GAS Chart

| Goal Attainment Levels | Goal 1: Cardio Sessions | Goal 2: Yoga | Goal 3: Junk food free days |
|-------------------------------|---------------------------------------|------------------------------|--|
| Best expected outcome | <4 x 45min cardio Sessions per week | 7 yoga sessions per week | 7 junk food free days per week |
| More than expected outcome | 4 x 45min cardio session per week | 4-6 yoga sessions per week | 5 junk food free days per week |
| Expected outcome | 3 x 45min cardio sessions per week | 3 yoga sessions per week | 4 junk food free days per week |
| Less than expected outcome | 2 x 45min cardio sessions per week | 1 yoga sessions per week (C) | 2 junk food free days per week |
| Worst expected outcome | 1 x 45min cardio session per week (C) | No yoga sessions | 0 junk food free days per week (C) |

(C) = Current Level

Figure 2. Sample Goal Attainment Scaling (GAS) chart.

Health coaching programmes

The programmes commenced in the week following the goal setting workshops. At the first group meeting or coaching session participants received a workbook containing: (1) a personalised GAS chart; (2) eight data sheets (one per week) for monitoring goal progression; and (3) a selection of health promotion materials that covered basic information regarding exercise and nutrition.

Condition 1: mindfulness training-coaching

The MT-C group programme was conducted in two phases. In Phase I participants undertook four weeks of MT using specially designed training kits (description to follow). In Phase II participants were assigned a health coach for four weeks of one-on-one coaching. Both components were delivered using a blend of face-to-face and telephone-based instruction or coaching.

MT phase. To socialise participants to the intervention, a group meeting was held in Week 1 to outline the theoretical rationale for MT, introduce the MT protocol, explain the training schedule and hand out the training kits. Three follow-up sessions were provided to support participants through their training by giving them the opportunity to share experiences and discuss the relevance of MT to their health goals. This support was

provided in Weeks 2 and 4 via a telephone call to each participant (10-15 minutes), along with an additional group meeting in Week 3 (45 minutes).

Coaching phase. In this phase participants received two face-to-face and two telephone health coaching sessions (45 minutes each), delivered by six coaches with tertiary qualifications in coaching psychology. The coaching was consistent with the CB-SF framework employed in recent studies (Grant, 2003a; Green et al., 2006; Spence & Grant, 2007). Each participant received a workbook to enable note taking during coaching sessions and reflective journaling between sessions.

Condition 2: coaching-mindfulness training

In the C-MT group the delivery of MT and coaching was reversed. That is, it commenced with one-on-one coaching and concluded with MT. All other aspects of the programme were identical to the MT-C group (including the coaches).

Condition 3: general health education

Participants in this group received eight weeks of health education focused on basic principles of exercise and nutrition management. To ensure the group acted as a counterpoint to the coaching conditions, the health education was presented as a series of 45-minute seminar sessions that were ‘content rich’ and delivered with an instructive (rather than a facilitative) style. Participants attended four seminars (once a fortnight) and, each alternative week, received a telephone call to address any questions or concerns. These calls lasted between 5–10 minutes.

Mindfulness training kits

The training kits developed for this study will now be described. First, two sets of attentional exercises were designed based on the AT and MM protocols described earlier. A set of exercises was then digitally recorded for each, with verbal instructions added using GoldWave[®] (v5.10) digital editing software. This standardised the training by providing all participants with identical exercises and instructions. Attention training included one selective attention, one attention switching and one sustained attention exercise (5 minutes each) and were completed in a block format once a day (total 15 minutes). Mindfulness meditation included meditations focused on breathing, negative thoughts and emotions (15 minutes each; one per day). Finally, the six completed files were loaded onto an MPEG Audio Layer 3 (MP3) player.

A training manual was then developed to accompany the MP3 player, which included a rationale for MT, general information about the programme and practice completion logs. Also included was a training schedule that specified the amount of practice to be completed each day (to a maximum of 30 minutes), a set of earphones, an MP3 manual, spare batteries and a pencil for completing the practice logs. To encourage regular use, all materials were packaged in a small vinyl case. This made the kits portable and allowed participants the flexibility to complete their MT sessions wherever was most convenient.

Measures

Goal attainment. Goal attainment scaling charts were used to obtain data on goal attainment.

Mindfulness. Mindfulness was measured using the Mindful Attention Awareness Scale (MAAS) (Brown & Ryan, 2003). This 15-item measure uses a 6-point scale (1 = *almost always*, 6 = *almost never*) and includes items such as 'I rush through activities without being really attentive to them' and 'I find myself doing things without paying attention'. The instrument has good test-retest reliability and internal consistency ranging from 0.80 to 0.87 (Brown & Ryan, 2003). The sample alpha was 0.84.

Mental health. Psychopathology was measured using the 21-item Depression Anxiety and Stress Scale (DASS-21) (Lovibond & Lovibond, 1995). Measured using a 4-point scale (0 = *not at all*, 4 = *very much*), the scale has good test-retest reliability and internal consistency, with alpha coefficients between 0.87 and 0.94 reported in both clinical and community samples (Antony, Bieling, Cox, Enns, & Swinson, 1998). Sample alphas for depression, anxiety and stress were 0.89, 0.82 and 0.79, respectively.

Well-being. The well-being measures used in this study were the 5-item Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) and two subscales from the Scales of Psychological Well-Being (environmental mastery, self-acceptance) (Ryff, 1989). Sample alphas were 0.90 (satisfaction with life), 0.82 (environmental mastery) and 0.80 (self-acceptance).

Metacognition. Two aspects of private self-consciousness were measured using the Rumination-Reflection Questionnaire (RRQ) (Trapnell & Campbell, 1999), a 24-item self-report measure scored rated on a 5-point scale (1 = *strongly disagree*, 6 = *strongly agree*). Rumination items include 'often I'm playing back over in my mind how I acted in past situations' and 'it is easy to put unwanted thoughts out of my mind'. Reflection items include 'I love exploring my inner self' and 'I'm not really a meditative type of person'. The instrument has good test-retest reliability (interclass correlation = 0.81) and internal consistency ranging from 0.80 to 0.87 (Brown & Ryan, 2003). In this sample, Cronbach alphas were 0.93 for both subscales.

Results

On the opening night of the programmes, a check was conducted to determine overall understanding of the programme rationale and expectancy of benefit. Using a 100-point scale (0 = *not at all* 100 = *very much*), participants rated the extent to which they (i) understood the rationale for their programme, and (ii) expected it would benefit them. Mean ratings for all groups were >75, indicating a satisfactory understanding of the programme rationale and a reasonable expectation that they would be beneficial.

Goal attainment

To examine the differential effects of health coaching on goal attainment, GAS outcome data was collated according to each participant's post-coaching level of attainment. As frequency data were used to test this hypothesis, the chi-square (χ^2) test of independence

was conducted to assess whether goal attainment frequency patterns differed between the groups.

From a maximum total of 126 possible goals (i.e. 42 participants x 3 goals), GAS data was collected for 117 goals. Of the nine goals for which data were not available, one goal was excluded because the monitoring sheet could not be accurately deciphered, three goals due to the non-return of a GAS chart, whilst five goals were missing because five participants set only two goals. The remaining 117 goals were distributed across the groups as follows; MT-C = 42 goals, C-MT = 39 goals, and GHE = 36 goals. Table 2, 3 and 4 display frequency counts for all participants by group and level of goal attainment.

For the use of the χ^2 distribution to be valid, it is generally agreed that expected frequencies should be 5 or larger (Howell, 1997). As shown in Table 2, very small frequencies were observed at the scale's extremities (i.e. -2 and +2), resulting in *E* values of less than 5. To overcome this difficulty the cells were rearranged into the two categories of primary interest: *Below Goal*, which combined frequencies for the -2 and -1 cells; and *At or Above Goal*, which combined frequencies for the 0, +1 and +2 cells. The χ^2 test of independence was then conducted using the cell arrangement shown in Table 5.

Based on these cell counts, goal attainment patterns were significantly different between the groups ($\chi^2 (2) = 10.1, p < .01$), suggesting the health coaching programmes were not equally effective in facilitating goal attainment. Planned comparisons were then conducted to examine how these patterns of attainment differed between the conditions. To test the hypothesis that the delivery of MT *prior* to CB-SF coaching is more effective than the reverse sequence, goal attainment in the two coaching conditions were compared. Although no significant difference was found ($p = .07$), the observation of a trend towards higher levels of attainment in the MT-C group provides some support for the hypothesis. In addition, when the coaching conditions was compared to the GHE group, a significant difference in goal attainment was observed for MT-C condition ($\chi^2 (1) = 10.1, p < .005$) but not the C-MT group ($\chi^2 (1) = 2.1$).

Phase I and Phase II analyses

To better understand the impact of MT and CB-SF coaching on goal attainment, the GAS data for the two coaching groups were split into Phase I (weeks 1 to 4) and Phase II (weeks 5 to 8) data. This permitted a more detailed analysis of coaching outcomes because the effects of MT could be compared to CB-SF coaching at both the crossover point in the intervention (week 4), and the conclusion of the study (week 8). These frequency counts are displayed in Table 6 and 7.

Goal attainment frequency patterns for the groups significantly differed at the end of Phase I ($\chi^2 (2) = 7.4, p < .05$). Partitioning off Phase I data permit three observations to be made. First, as the two coaching conditions differed only in their use of MT or CB-SF

Table 2. Frequency of goal attainment across GAS outcome levels.

| Groups | GAS outcome levels | | | | |
|--------|--------------------|----|----|----|----|
| | -2 | -1 | 0 | +1 | +2 |
| MT-C | 2 | 4 | 23 | 10 | 3 |
| C-MT | 2 | 10 | 17 | 8 | 2 |
| GHE | 4 | 13 | 13 | 5 | 1 |
| Total | 8 | 27 | 53 | 23 | 6 |

Table 3. Extent of Goal Attainment in Relation to Baseline Level

| Groups | Goal frequencies in relation to baseline level | | | | |
|--------|--|----------------------|----------------------------------|---------------|---------------|
| | Regressed from baseline | Remained at baseline | Advanced but did not attain goal | Attained goal | Exceeded goal |
| MT-C | 0 | 3 | 3 | 23 | 13 |
| C-MT | 0 | 7 | 5 | 17 | 10 |
| GHE | 0 | 10 | 7 | 13 | 6 |
| Total | 0 | 20 | 15 | 53 | 29 |

coaching during this phase, a comparison of these two methodologies was possible. Interestingly, despite receiving one-on-one assistance during this phase, the C-MT group made less progress than participants who engaged in MT first (i.e. the MT-C group), a difference that approached significance at the .05 level ($p = .07$). Second, goal attainment patterns between the MT-C and GHE groups significantly differed during Phase I ($\chi^2(1) = 7.4, p < .01$). This suggests that engaging in structured mental practice for four weeks enhances self-regulation more effectively than merely learning basic principles of health management. Finally, comparing the MT-C and GHE groups enabled an assessment of the impact of CB-SF coaching on the attainment of health goals. Surprisingly, whilst the MT-C condition did report higher levels of attainment, this difference was not significant and indicates that coaching was no more effective than health education during Phase I.

The Phase II analyses revealed a similar pattern of differences (see Table 7), with no difference found between the coaching conditions and a significant difference observed between the MT-C and GHE conditions ($\chi^2(1) = 11.9, p < .001$). For the C-MT group, the introduction of MT during Phase II appeared to have had a positive effect on goal attainment, as a significant difference was found between it and the GHE group ($\chi^2(1) = 4.8, p < .05$). Finally, whilst the GHE group showed a small, non-significant drop in attainment ($p = .65$) compared to Phase I, overall attainment in this group was still positive, with 19 out of 36 goals (53%) reported at *At or Above* outcome levels of attainment.

In sum, these results provide some support for the hypothesis that goal attainment can be enhanced through the provision of mindfulness training. This was most clearly seen in the significantly higher levels of goal attainment that were reported by the MT-C group relative to the GHE group. However, the hypothesis that goal attainment would be greatest when MT was delivered *before*, rather than *after* coaching, was not supported. Goal attainment was indeed higher in the MT-C group than the C-MT group (consistent with

Table 4. Goal Attainment by Levels of Progression

| Groups | Attainment frequencies | | | | |
|--------|------------------------|--------------------|---------------------|-----------------------|----------------------|
| | Remained the same | Moved up one level | Moved up two levels | Moved up three levels | Moved up four levels |
| MT-C | 3 | 17 | 13 | 6 | 3 |
| C-MT | 7 | 12 | 12 | 7 | 1 |
| GHE | 10 | 14 | 6 | 5 | 1 |
| Total | 20 | 43 | 31 | 18 | 5 |

Table 5. Frequency of goal attainment relative to goal.

| Groups | Below goal | At or above goal |
|--------|------------|------------------|
| MT-C | 6 | 36 |
| C-MT | 12 | 27 |
| GHE | 17 | 19 |
| Total | 35 | 82 |

the prediction), however this difference only approached significant at the .05 level ($p = .07$) and support for the hypothesis cannot be claimed. One surprising finding was the observation that (during Phase I) participants who completed MT attained their goals at levels that were more than comparable to those who received one-on-one CB-SF coaching. This was unexpected as the coaching component was specifically designed to assist individuals attain their health goals, whereas MT was specifically designed to enhance strengthen attention and awareness (and was not explicitly goal focused).

Other study variables

The means and standard deviations for the mindfulness, mental health, metacognitive and wellbeing variables are shown in Table 8. To determine the impact of the programmes on these variables, data were analysed using a mixed design repeated measures ANOVA with one between-subjects factor (group) and one within-subjects factor (time). Planned comparisons were then performed to determine how the experimental groups performed relative to each other. To assist interpretation, effect sizes (Cohen’s *d*) are reported for the difference between pre-post intervention means. Values of *d* equalling .20, .50 and .80 were taken to represent small, medium and large effect sizes respectively (Cohen, 1992).

In general, MT appears to have had more impact on these variables when delivered *before*, rather than *after*, CB-SF coaching. Participation in the GHE group appears to have had minimal impact. The analysis of pre-post MAAS scores revealed a significant main effect for time ($F(2, 38) = 5.42, p < .01$) but not for group. No interaction effect was found. Although the MT-C group did report a statistically significant pre-post increase in MAAS scores ($p < .005$), these scores were not significantly higher than the C-MT or GHE groups. Whilst these conditions also reported increased levels of mindfulness, pre-post differences were not statistically significant.

As expected, participants who received MT prior to coaching (i.e. the MT-C group) reported significant pre-post decreases in anxiety ($p < .05$) and stress ($p < .001$). Whilst decreases in depression were also reported by this group, this difference was not significant ($p = .10$). Interestingly, when delivered after coaching MT appears to have had less of an impact on mental health, with a significant pre-post difference observed only for stress

Table 6. Goal attainment frequencies at end of Phase I.

| Groups | Below goal | At or above goal |
|--------------|------------|------------------|
| MT-C (MT) | 6 | 36 |
| C-MT (CB-SF) | 12 | 27 |
| GHE | 15 | 21 |
| Total | 33 | 84 |

Table 7. Goal attainment frequencies at end of Phase II.

| Groups | Below goal | At or above goal |
|--------------|------------|------------------|
| MT-C (CB-SF) | 5 | 37 |
| C-MT (MT) | 9 | 30 |
| GHE | 17 | 19 |
| Total | 31 | 86 |

($p < .05$). Participants in the GHE group did not report any significant changes in mental health.

Interestingly, minimal metacognitive change was reported in both coaching conditions. Despite reporting general improvements in mental health, participants in the MT-C group were only slightly less ruminative and no more reflective. Whilst a similar pattern was reported by participants in the C-MT group, the decrease in rumination did approach significance for this group ($p < .08$). The lack of improvement in these variables may be related to the brevity of the MT period, with four weeks being an insufficient timeframe to induce robust metacognitive change.

Finally, although pre-post increases were noted for almost all the wellbeing variables, the groups did not significantly differ on any of these variables. Within the groups themselves, differences in satisfaction with life approached significance for both the C-MT ($p < .07$) and GHE ($p < .08$), whilst in the MT-C condition only modest increases were observed for self-acceptance (during the MT phase) and environmental mastery (during the coaching phase).

Discussion

This study set out to test a general hypothesis that goal-directed self-regulation would be enhanced by the integration of MT and CB-SF coaching, and the more specific hypothesis that goal attainment would be greatest when MT was delivered *prior* to (rather than *after*) CB-SF coaching. Overall, the data provided mixed support for these hypotheses. First, the integration of MT and CB-SF coaching was found to result in greater levels of goal attainment compared to the non-coaching GHE group but only when the intervention commenced with MT (i.e. the MT-C group). This is an important finding for those interested in health coaching because it supports a growing belief within the health professions that improved health outcomes are possible through the use of approaches that rely on facilitation and support, rather than education and persuasion.

Second, whilst goal attainment was greater in the C-MT group compared to the GHE group, these differences were not statistically significant. Whilst this suggests the MT-C sequence might have been better at facilitating the attainment of health goals than the reverse sequence, this cannot be claimed because the difference between the two coaching conditions was not statistically significant. Nonetheless, a trend towards greater levels of attainment in the MT-C condition ($p = .07$) warrants further investigation.

When considering the performance of the MT-C group, at least two mechanisms can be proposed to explain the results: (i) the liberation of attentional resources, and (ii) the disruption of habitual thought-action sequences. First, the AT component of the training may have been helpful for strengthen attentional control, such that participants got better at directing attention towards stimuli that enhance self-regulation (e.g. presence of social

Table 8. Means and Standard Deviations for Mindfulness, Mental Health, Metacognition and Wellbeing Variables

| Measure | MT-C (<i>n</i> = 14) | | | | | C-MT (<i>n</i> = 15) | | | | | GHE (<i>n</i> = 13) | | | | |
|------------------------|-----------------------|---------------|---------------|----------|----------|-----------------------|----------------|----------------|----------|----------|----------------------|---------------|---------------|----------|----------|
| | Pre | | | Post | | Pre | | | Post | | Post | | | Pre | |
| | T1 | T2 | T3 | <i>p</i> | <i>d</i> | T1 | T2 | T3 | <i>p</i> | <i>d</i> | T1 | T2 | T3 | <i>p</i> | <i>d</i> |
| Mindfulness | 58.6 (11.3) | 61.9 (8.6) | 65.2 (8.2) | <.005 | 0.67 | 59.5 (9.0) | 61.2 (11.2) | 62.6 (12.8) | .27 | 0.28 | 58.1 (9.5) | 62.3 (8.6) | 62.5 (9.8) | .13 | 0.44 |
| Depression | 6.1 (4.9) | 3.8 (2.5) | 3.9 (3.4) | .10 | 0.51 | 3.1 (3.4) | 3.0 (3.6) | 3.0 (3.1) | .91 | 0.03 | 5.1 (4.3) | 4.5 (3.8) | 3.5 (5.1) | .17 | 0.33 |
| Anxiety | 4.5 (3.2) | 2.6 (2.5) | 2.6 (2.1) | <.05 | 0.70 | 2.7 (2.2) | 2.9 (3.2) | 2.5 (2.8) | .72 | 0.08 | 2.9 (2.6) | 2.4 (2.7) | 2.4 (3.4) | .43 | 0.16 |
| Stress | 10.1 (3.9) | 6.6 (3.7) | 5.9 (3.1) | <.001 | 1.19 | 8.2 (4.8) | 7.2 (5.4) | 5.8 (3.8) | <.05 | 0.55 | 7.7 (2.5) | 6.8 (3.4) | 7.5 (4.0) | .79 | 0.06 |
| Rumination | 42.5 (7.7) | 41.6 (9.8) | 41.3 (9.8) | .59 | 0.14 | 40.1 (11.2) | 39.6 (9.5) | 37.7 (10.4) | .08 | 0.22 | 38.1 (9.6) | 39.2 (9.0) | 37.5 (9.0) | .72 | 0.06 |
| Reflection | 45.4 (7.4) | 45.7 (9.6) | 45.1 (9.2) | .83 | 0.04 | 39.0 (9.1) | 38.9 (8.0) | 39.4 (8.6) | .72 | 0.05 | 39.3 (8.0) | 40.5 (6.2) | 41.9 (5.5) | <.05 | 0.38 |
| Satisfaction with Life | 22.9 (6.9) | 24.4 (7.1) | 23.7 (6.7) | .56 | 0.12 | 25.0 (8.4) | 27.4 (6.8) | 27.1 (7.2) | .07 | 0.26 | 23.1 (5.7) | 23.2 (4.7) | 24.9 (5.2) | .08 | 0.33 |
| Environmental Mastery | 36.4 (5.7) | 36.7 (5.8) | 38.6 (7.6) | .17 | 0.33 | 41.1 (9.5) | 41.8 (7.9) | 42.0 (7.7) | .40 | 0.10 | 39.2 (6.2) | 40.4 (6.2) | 40.4 (7.2) | .34 | 0.18 |
| Self-Acceptance | 41.3 (5.3) | 43.4 (7.1) | 43.9 (7.4) | .18 | 0.40 | 43.3 (8.3) | 43.6 (6.7) | 44.4 (7.0) | .44 | 0.14 | 40.5 (7.5) | 39.9 (7.3) | 40.0 (9.8) | .69 | 0.06 |

Note: All pre-post (T1-T3) tests of significance were conducted using paired *t*-tests. All *p*-values are 2-tailed.

support), where previously attention might have been captured by forms of self-relevant stimuli (e.g. worry) known to impede self-regulation. The noted decreases in anxiety and stress provide some support for this interpretation. Second, as mindfulness meditation was the other element of the MT programme, it is likely participants in this group became more adept at disrupting habitual (mindless) thought-action sequences (e.g. eating chocolate when bored) through the use of non-judgemental observation. If so, these disruptions may have been accompanied by the substitution of alternative behaviours that supported the attainment of health goals (e.g. going for a walk). That this group reported significant increases in mindfulness suggest such skills may have been developing, although the absence of significant changes in metacognitive or well-being variables suggests these effects may have been relatively weak.

Finally, the absence of significant effects in respect of these variables requires some comment. A plausible explanation for this seems to be that four weeks of MT may have been insufficient for generating these hypothesised outcomes. Whilst Phase I data revealed significant changes in mindfulness and mental health for the MT-C group, these effects were not accompanied by changes in variables such as rumination or self-acceptance. This suggests brief MT interventions may be effective for impacting a variety of psychological states, but have little overall impact on variables with trait-like qualities. Alternatively, the combination of attention training and mindfulness meditation may not have been the best configuration for MT in this context. Whilst the exercises were selected based on their demonstrated ability to strengthen attentional control, it may be these exercises are most effective when they stand alone. This would be an interesting question to address in future research.

Limitations

Some limitations need to be considered when interpreting these results. First, the small sample used in this study would have resulted in a loss of statistical power. As this increases the probability of a Type-II error (Howell, 1997), it is possible the interventions generated some of the hypothesised effects (e.g. decreased rumination) without being detected due to the lack of power. It is recommended that future studies avoid this problem by using larger sample sizes. Second, GAS was used in this study to give the measurement of goal attainment more objectivity. Unfortunately, due to resource limitations it was necessary to validate Time 4 GAS data via telephone, rather than by follow-up interviews. Whilst this was useful for 'cleaning' some of the data, it cannot be said to be free of distortion and bias. Nonetheless, the goal data reported would seem to be more objective than data presented in previous coaching studies.

Conclusion

This research represents a first attempt at integrating MT and CB-SF coaching into a practice framework for health coaching. Although the study yielded somewhat mixed results, the data indicated one very important finding. This related to the observation that greater health behaviour change was achieved by the programme that relied more on methods of facilitation and support (i.e. MT-C) rather than education and persuasion (i.e. GHE). This carries important implications for health professionals as it suggests that one has a better chance of being effective if they act as a facilitator rather than an expert, ask rather than tell, and guide rather than direct. This study also found enough evidence to recommend the further investigation of MT as a component

of health coaching interventions. Whilst the data presented in this study did not reveal the optimal configuration for MT and CB-SF coaching methods, enough theoretical and empirical work exists to suggest that the delivery of MT early in health coaching may be helpful for preparing people to meet a variety of psychological challenges that often accompany health change. Additional research into the use of these methods is strongly encouraged.

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Dr Anthony M Grant established the world's first Coaching Psychology Unit at the University of Sydney in 2000. A pioneer of coaching psychology, he has published six books on evidence-based coaching and over fifty coaching-related publications. In 2007 Anthony received a Special Award from the British Psychological Society in recognition of his outstanding professional and scientific contribution to coaching psychology.

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