

Coaching for enhanced performance: Comparing cognitive and behavioral approaches to coaching.

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Abstract

There has been increasing interest in the use of coaching to enhance work performance and life experience. Typically coaching interventions employ techniques derived from cognitive and behavioural clinical psychology. Although such techniques are effective in clinical populations, little is known about their efficacy when coaching individuals from non-clinical populations. Little is also known about the relative efficacy of cognitive compared to behavioural coaching. This series of three controlled studies represent a preliminary investigation of the effects of; a) cognitive-only; b) behavioural-only; and c) combined cognitive and behavioural approaches to coaching on trainee accountants' grade point average, study skills, self-regulation, mental health, private self-consciousness and self-concept. Participation in the cognitive-only coaching program was associated with increased deep and achieving approaches to learning, enhanced self-concepts related to academic performance, reduction in test anxiety and reductions in non-study-related anxiety and depression. Academic performance declined relative to the control group. Participation in the behavioural-only coaching program was associated with a decrease in test anxiety and an increase in academic performance. No other effects were found. Participation in the combined cognitive and behavioural program was associated with an increase in academic performance, deep and achieving approaches to learning, self-concepts related to academic performance, and a reduction in test anxiety. No program had a statistically significant impact on private self-consciousness, self-reflection or insight. A follow-up study one semester later found that academic performance increases were maintained only for combined cognitive and behavioural program participants.

Introduction

The use of coaching to enhance individual's work performance and life experience has grown considerably over the past five years (Garman, Whiston, & Zlatoper, 2000; Zeus & Skiffington, 2000). The cognitive and behavioural techniques and strategies used in coaching have found to be effective in clinical populations for the enhancement of mental health (Barlow, 1993). However, there is much less research with non-clinical populations which has examined the effect such strategies have on the enhancement of work performance or life experience (Druckman & Bjork, 1991; Grant, 2000). There is also little research which has examined the extent to which domain-specific coaching generalises across time and task (Miller, 1990; Olivero, Bane, & Kopelman, 1997). Little is also known about the relative effect of cognitive and behavioural coaching on individuals' ability to regulate their thoughts, feelings and behaviour in the pursuit of their goals (Wachholz, 2000). Further, there has not been a great deal of work which has examined the extent to which self-reflection and insight, central components of the self-regulatory process, are enhanced by cognitive or behavioural coaching interventions (Levinson, 1996).

This paper details three studies which present a preliminary investigation of the above issues and compared the effect of: a) behavioural-only, b) cognitive-only, and, c) combined cognitive and behavioural coaching on trainee accountants' grade point averages, study skills, self-regulation, mental health, private self-consciousness and self-concept.

What is coaching?

Derived from the familiar concept of a sports coach, the notion that one could use a coach to enhance performance in non-sports areas of life stems back at least to Sir John Whitmore's (1992) adaptation of the concepts presented in *The Inner Game of Tennis* (Gallwey, 1974). Coaching differs from counseling in that coaching is about enhancing performance or one's life experience rather than primarily treating dysfunctionality. Compared to coaching populations, counseling and clinical populations differ in terms of overall (higher) psychopathology. Of course, some coaching clients may well present for coaching due to perceived deficits in performance. However, such individuals do not typically display the dysfunctional, clinically-significant problem behaviors associated with, for example, the acute social phobic or the obsessive-compulsive clinical patient.

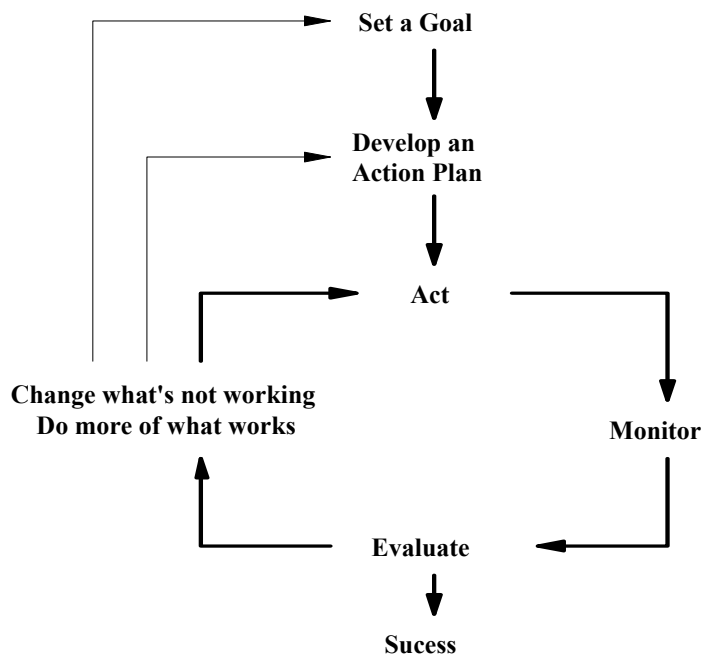
Coaching differs from teaching in that teaching and scholastic education are concerned with following a set syllabus and imparting domain-specific knowledge to the student. Although focused on goal attainment, coaching is also concerned with fostering the process of self-reflection and insight in the coachee, as self-reflection and insight are deemed to be important metacognitive processes which facilitate goal attainment (Landsberg, 1997; Whitmore, 1992; Whitworth, Kimsey-House, & Sandahl, 1998; Zeus & Skiffington, 2000).

The central constructs of coaching can be understood as including a collaborative relationship between coach and coachee, and a primary focus on constructing solutions. The Socratic method is central to the coaching methodology (Landsberg, 1997; Whitmore, 1992). Here the role of the coach is to ask questions which prompt the coachee to re-examine their assumptions about the situation or task in hand, and in this way develop a greater understanding. In short, coaching is about helping people to find better ways to set and reach their goals in their work and in their lives in general, and is thus focused on enhancing individuals' abilities to self-regulate and move systematically towards goal attainment.

Self-regulation, psychological mindedness, self-reflection and insight

The term 'self-regulation' refers to the process by which individuals control and direct their actions in the pursuit of their goals (Garcia, 1996). The central constructs of goal-directed self-regulation are a series of processes in which the individual sets a goal, develops a plan of action, begins action, monitors their performance, evaluates their performance by comparison to a standard, and based on this evaluation changes their actions to further enhance their performance and better reach their goals. Figure 1 depicts a generic model of self-regulation.

Figure 1. Generic model of self-regulation



The three key processes involved in instigating directed change and goal-directed self-regulation are; a) self-observation (i.e. self-monitoring the environment, one's thoughts, feelings or behaviors); b) self-evaluation (i.e. evaluating the environment, behaviors, thoughts or feelings); and c) self-reaction (making purposeful changes in order to achieve a defined goal) (Bandura, 1986). Thus, progress through the self-regulatory cycle is dependant on the individual's ability to self-reflect, and through a self-reflection process, develop insight and further enhance one's skills and ability to attain one's goals (Carver & Scheier, 1998).

Self-reflection and insight, that is, the interest and ability to understand the causes and meanings of one's behaviour, thoughts and feelings has been delineated as being indicative of psychological mindedness (Conte, Ratto, & Karasu, 1996; Fenigstein, 1997). Although psychodynamic clinicians have long valued psychological mindedness (Hall, 1992; Paolino, 1982), there has been little work in exploring the impact of cognitive-behavioural interventions or self-regulatory interventions on individuals' levels of self-reflection and insight. The present studies provide an opportunity to explore this issue. Given the previous discussion it can be hypothesised that individuals who are coached through a self-regulatory cycle towards goal attainment should show increases in self-reflection and insight.

A cognitive-behavioural model of coaching

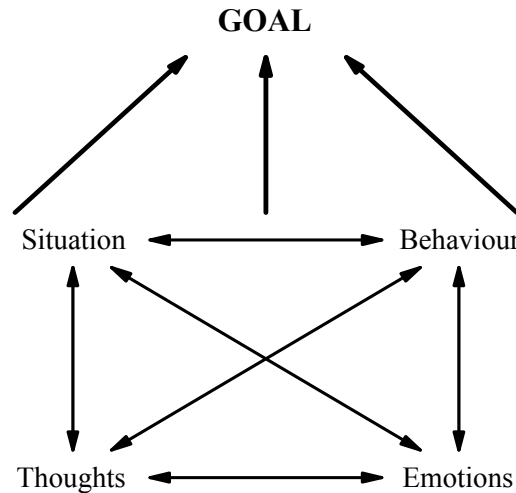
There are four facets of human experience which need to be purposefully regulated in order to better reach one's goals; the environment or situation and one's thoughts, feelings and behaviour (Figure 2). There is a quadratic reciprocity between these, for example how we think impacts on how we feel and how we feel impacts on how we behave (and *visa versa*) (Beck, Rush, Shaw, & Emery, 1979; Ellis & Harper, 1961). Change can be purposefully instigated by the use of structured cognitive and behavioural interventions (Sharp, 1997), and this notion is central to cognitive-behavioural coaching.

From this model it can be predicted that coaching interventions that facilitate self-regulation of all domains should be more effective than interventions which only regulate some of these domains. The present series of studies sought to examine the relative impact of cognitive, behavioural and cognitive-behavioural coaching on individuals' self-regulation, goal attainment and their ability to self-reflect and develop insight.

To date there has been little research on the relative efficacy of cognitive-behavioural coaching psychology (Brotman, Liberi, & Wasylshyn, 1998). Empirical research to date has typically examined the impact of coaching on leadership skills (e.g. Conway, 2000; Kilburg, 1997; Saporito, 1996) or emotional competencies (e.g. Laske, 1999; Tobias, 1996). Few studies have examined the impact of coaching on objective performance (Olivero et al., 1997), and none to date have attempted to disentangle the relative

merits of cognitive or behavioural factors, although there have been comparisons between behavioural and psychodynamic approaches (Laske, 1999).

Figure 2. Quadratic reciprocity between the four dimensions of human experience and goals



Education is one area where the purposeful enhancement of self-regulatory skills has been extensively studied (Zimmerman, 1994). Given that the processes and strategies used by self-regulated adult learners are the same as those used in cognitive-behavioural coaching (Zeus & Skiffington, 2000), adult learners provide a useful population in which to examine the relative effects of cognitive and behavioural coaching.

Self-regulation, adult learners and academic performance

Most educators have little problem in recognizing the self-regulated student. Such students always seem to be genuinely interested in their studies, try harder, and consistently produce good quality work. Students who assume personal responsibility for self-regulating their academic activities not only outperform students who fail to self-regulate (Krouse & Krouse, 1981; Zimmerman & Martinez-Pons, 1990), but have higher self-esteem and self-concepts, and are less anxious and more self-accepting (Borkowski & Thorpe, 1994).

Zimmerman (1989) argues that students can be described as being self-regulated to the degree that they are metacognitively, motivationally and behaviorally active participants in their own learning processes, initiating and directing their own efforts rather than relying on others. Effective self-regulated learners do not simply focus on the learning processes of acquisition, transfer and recall per se. Rather, they recognize that there is a reciprocity between personal, environmental and behavioural factors, and that the personal processes involved in learning are significantly influenced by environmental and behavioral factors (and vice versa). Thus they seek to regulate all of these domains in order to maximize their performance and achieve their goals.

Environmental regulation could involve the purposeful structuring of the student's study environment, for example, the elimination of noise, and the minimization of disturbances. Personal self-regulation includes emotional and motivational self-regulation, and the use of cognitive strategies which facilitate learning. Examples of behavioural self-regulation are self-reinforcing or self-rewarding behaviour when goals are achieved, the proactive use of self-evaluation strategies (e.g. record keeping) and the use of visual motivational aids.

As in all self-regulation, a key component of the self-regulated learning process is a self-oriented feedback loop. In this cyclic process self-regulated learners self-monitor, evaluate the effectiveness of their strategies, and where necessary instigate change in order to maintain progress towards their goals (Bandura, 1986). To a degree most students use some self-regulatory strategies. However, self-regulated learners are distinguished by their awareness of the functional relationship between self-regulation and their

academic goals, and their purposeful, systematic use of these strategies in order to achieve their goals (Zimmerman, 1989). Interventions designed to foster self-regulated learning are often successful in fostering deep, self-regulated learning styles (Biggs & Rihn, 1984), and result in increases in performance across a wide range of ages, intellectual abilities, tasks and educational settings (Boekaerts, 1997; Davey & McBride, 1986; Hadwin, 1996; Lan, 1996; Schunk, 1997).

Self-regulation, transfer of training and coaching

Students who are successful self-regulated learners purposefully regulate the situational, behavioural, cognitive and emotional domains of their studies in order to maximize the probability that they will reach their goals (of better academic performance). This holistic approach to self-regulation in the pursuit of enhanced performance and goal attainment may have important implications for the design of training programs.

Typically skills taught in training do not readily transfer from the training situation to application in 'real life' situations (Hesketh, 1997). It may be that this lack of transfer occurs because training is typically about imparting theoretical knowledge or behavioral competencies, rather than teaching participants cognitive and emotional self-regulatory skills. In such training programs participants learn theoretical concepts or behavioural skills, but tend not to be taught to address the more personal cognitive and emotional factors related to goal attainment; they do not learn to regulate their anxieties related to performance. In short, training does not explicitly seek to change participants' sense of self. In contrast to training, coaching seeks to foster self-directed learning, self-reflection and insight. Coaching is about facilitating learning and change, rather than merely dispensing information, and focuses on enhancing self-understanding and insight in relation to the task in hand (Whitmore, 1992).

If performance can be enhanced by helping individuals increase their emotional and cognitive self-regulation, then training programs that include coaching as an adjunct to training should result in increased performance. Indeed Olivero et al. (1997) found that coaching following a training program significantly improved productivity. Thirty-one managers in public sector agencies underwent a training program which was followed by eight weeks of one-to-one coaching. The training program increased productivity by 22.4%. Following the coaching program productivity increased by 88%. However, although a useful investigation of the effects of coaching on performance following training, Olivero et al. (1997) did not investigate the impact of coaching on the participants' sense of self, nor the extent to which the coaching and training process impacted on the participants' self-regulatory abilities.

The three studies presented in the present paper extend previous research and sought to examine the relative impact of cognitive, behavioural and cognitive-behavioural coaching on trainee accountants' study-related goal attainment, their ability to self-regulate their emotions and behaviours, and their ability to self-reflect and develop insight. Clearly, it is impossible to completely separate cognitive from behavioural strategies. The delineation in the paper between cognitive and behavioural approaches to coaching refers to the focus of the specific strategy, that is whether the strategy is primarily focused at enhancing doing (behavioural) or thinking (cognitive) skills.

Specifically, it was hypothesised that participation in all three coaching interventions would be associated with increased academic performance, increased self-regulation and increased self-reflection and insight. It was hypothesised that participation in all interventions would be associated with reduced anxiety, stress and depression, and the adoption of better task-specific skills. It was also hypothesized that the effects of participation in a coaching program designed to enhance academic self-regulation should generalise to other, nonstudy-related areas of life. However, in accord with the model previously presented (Figure 2) it was anticipated that combined cognitive and behavioural coaching would be superior to either cognitive or behavioural coaching alone. The three studies were run at the same point in the academic semester and were conducted over three consecutive years.

Study 1: The Cognitive-based Coaching Program

The aim of Study 1 was to explore the above issues using a cognitive-only coaching program. The coaching program was seminar-based, with both didactic and group process components. Total program time was 17 hours, over six separate sessions. The first session was a full day, 7-hour seminar. There were five, 2-hour follow-up workshops. All participants were required to attend all sessions. Where absence from a session was unavoidable the subjects attended an individual make-up session.

The stated objective of the program was to help participants improve their academic performance. Participants were unaware of the various hypotheses under test until they were debriefed at the end of the

program. The coaching program was based on applications of cognitive self-regulatory skills derived from cognitive therapy. Participants were coached to monitor, evaluate and restructure their emotions and cognitions in order to better reach their goals.

Drawing on Locke (1996), and Latham and Locke (1991) participants were taught how to set specific, stretching, realistic, attractive and time-framed goals. The Transtheoretical Model of Change (TTM; Prochaska & DiClemente, 1983) provided a framework from which participants were informed about the nature of the change process. The Transtheoretical Model posits that change is a process comprised of six stages; pre-contemplation, contemplation, preparation, action, maintenance and relapse. A key point here was to enable participants to self-assess their readiness to change, and to emphasise that change is not a linear process, rather it is cyclical with relapse to old behaviours being a natural part of the process of changing behaviours. In this way any setbacks were reframed as a part of the natural change process, thus facilitating continued progress towards goals. Participants were also shown how to use cognitive strategies to help them maintain movement through the stages of change. These strategies and techniques were derived from Motivational Interviewing (Miller & Rollnick, 1991), and in line with their recommendations included the self-enhancement of motivation using cost-benefit analysis techniques, and consciousness raising; the enhancement of knowledge about self or situation through self-revaluation, self-reflection and self-appraisal.

Participants were also taught to monitor their feelings using techniques derived from cognitive therapy. These included the downward arrow technique (Burns, 1989) and the laddering technique (McKay & Fanning, 1991). Essentially these technique are series of self-questioning statements which lead the questioner to an understanding of any underlying dysfunctional schemata, self-defeating beliefs and feelings. A large body of research supports the utility of these techniques in clinical populations, but little is known about their effectiveness in non-clinical use (Andrews, Crino, Hunt, Lampe, & Page, 1994; Barlow, 1993). Participants were also taught to modify negative or self-defeating thoughts and feelings by using motivational self-talk (Manning & Payne, 1996; Neck & Manz, 1992; Nelson-Jones, 1997). Participants also received instruction in problem solving techniques, as poor problem solving contributes to anxiety and depression (Cassidy & Long, 1996), impairs academic performance (Blankstein, Flett, & Watson, 1992; Priester & Clum, 1993) and can prevent individuals becoming engaged in the self-regulated learning process. Underpinning the program was the use of self-monitoring and self-evaluation tools and techniques. Self-monitoring is an essential component of self-regulated learning and a powerful technique for behavior modification (Dean, Marlott, & Fulton, 1983; Febraro & Clum, 1998; Lan, Bradley, & Parr, 1993). Participants were provided with self-monitoring diaries to use in the monitoring of their thoughts and feelings. In line with the cognitive emphasis to this study, participants did not monitor behaviours.

Following the initial workshop, five weekly 2-hour follow-up sessions were held. In these the participants were coached using the Socratic method central to the coaching methodology. The facilitator/coach asked probing discovery questions designed to get the participants to self-reflect and construct their own solutions to any problems encountered during the preceding week.

Method

Subjects and Design

Participants were 20 2nd year undergraduate students enrolled in a management accounting course at a major Australian university. Participants were randomly allocated to treatment or control. The control group did not receive any coaching and merely completed the per and post intervention questionnaires. Demographic details are presented in Table 1.

Table1. Participants in Study 1 by age and gender

	Treatment (n = 10)	Control (n = 10)
Male	4	4
Female	6	6
Mean Age	21.75	22.8

Measures

Academic achievement.

Measures of academic performance were participants' pre and post-intervention Grade Point Average (GPA). GPA is an accumulative, averaged indication of academic performance and reflects the combined overall grades of a student. It is calculated by assigning a value of 0 for a Fail, 1 point for a terminating pass (CQ), 2 points for a C grade, 3 points for a B grade and 4 points for an A grade.

Approaches to learning and study.

The Study Process Questionnaire (SPQ) (Biggs, 1987) is a 42-item, self-report questionnaire that assesses students' study processes. There are three major scales: Surface Approach, Deep Approach and an Achieving Approach. A Surface Approach would be to reproduce the bare essentials of a course through rote learning. A Deep and Achieving approach encompasses a strong desire to succeed, deep intrinsic interest in the subject and good study skills. Biggs (1987) reports alpha coefficients of .73 (surface approach), .81 (deep approach) and .78 (achieving approach).

Nonstudy-related self-regulation.

The 36 item self-report Self-Control Schedule (SCS) (Rosenbaum, 1980) was used to assess participants' emotional, cognitive and behavioural self-regulation in nonstudy-related areas of life. For example, "When I feel a pain in my body, I try to divert my attention away from it". The SCS has been found to have adequate-to-good internal consistency ($\alpha = 0.70$) (Richards, 1985), and a test-retest reliability of .86 over four weeks (Rosenbaum, 1980).

Study-related self-regulation.

Study-related self-regulation was assessed using the meta-cognitive self-regulation scale of the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich & de Groot, 1990). This scale consists of nine items such as "Before I begin studying I think about all the things that I will need to do to learn". Pintrich, Smith, Garcia and McKeachie (1991) report an alpha coefficient of .79 for this scale.

Psychopathology: Study-related anxiety.

The Test Attitude Inventory (Spielberger, 1980), a 20-item self-report questionnaire, was used to measure test anxiety as a situation-specific psychopathological anxiety trait. Spielberger (1980) reports a test-retest reliability of .80 to .81 and an alpha coefficient range of .92 to .96.

Psychopathology: Nonstudy-related depression, anxiety and stress.

The 21-item version of Depression, Anxiety and Stress Scales (DASS 21; (Lovibond & Lovibond, 1995) was utilized as a measure of nonstudy-related psychopathology. The DASS 21 has been used to assess psychopathology in both clinical (Brown, Chorpita, Korotitsch, & Barlow, 1997) and community populations (Antony, Bieling, Cox, Enns, & Swinson, 1998). Internal consistency (coefficient alpha) for the scale is good; depression ($\alpha = 0.91$), anxiety ($\alpha = 0.84$) and stress ($\alpha = 0.81$) (Lovibond & Lovibond, 1995) and test-retest reliability has been found to be satisfactory to good ($r = .71$ to $.81$) (Brown et al., 1997).

Private self-consciousness, self-reflection and insight.

Self-reflection and insight were assessed using the subscales, self-reflection (SR) and internal state awareness (ISA) of the Private Self-consciousness scales (PrSCS) (Fenigstein, Scheier, & Buss, 1975). The PrSCS consists of 10 items such as 'I'm always trying to figure myself out' and 'I'm alert to changes in my mood'. Fenigstein et al. (1975) report a test-retest reliability of .79. Following Anderson, Bohon, and Berrigan (1996), the items used to assess self-reflection were "I'm always trying to figure myself out"; "I reflect about myself a lot"; "I never scrutinise myself" (reverse scored), and "I'm constantly examining my motives". Internal state awareness, or insight, was assessed using the items "Generally, I'm not very aware of myself" (reverse scored); "I'm generally attentive to my inner feelings"; "I'm alert to changes in my mood", and "I'm aware of the way my mind works when I work through a problem".

Self-concept.

If the intervention actually impacted on the participants' sense of self then there should be difference in the participants' self-concept following the coaching program. Further the differences should only be

evident in those self-concepts related to academic performance. To examine this, participants' self-concepts were assessed using the Self-Perception Profile for College Students (SPPCS; (Neemann & Harter, 1986). The SPPCS is a self-report multi-dimensional measure of Self-concept which consists of 13 subscales each comprised of either four or six items. Alpha coefficients reported by Neemann and Harter (1986) are presented in brackets. For brevity only nine scales were used in the present study: Global self-worth (.85), scholastic competence (.84), intellectual ability (.86), appearance (.85), close friendships (.82), creativity (.89), humour (.80), romance (.88), and social acceptability (.80).

Results

These studies are primarily exploratory and there were a number of subscales in the dependant variables. In this study and the following studies, the experimentwise error rate was not controlled for, and this should be born in mind when considering the findings. To assist interpretation effect sizes are reported.

Two-way ANOVA were used to test for statistical significance. Alpha was set at 0.05. Effect sizes d for the difference between pre and post-intervention means were calculated as recommended by Wolf (1986): $d = (2\sqrt{F}) / \sqrt{df}(\text{error})$. Results are presented in Table 2.

Academic performance.

The hypothesis that participation in the coaching program would enhance academic performance was not supported. Compared to the control subjects GPAs for the subjects in the intervention program decreased significantly ($F_{1,18}$ (12.60), $p < .01$; $d = 1.67$). Participants had significantly greater increases in deep ($F_{1,18}$ (8.13), $p < .01$; $d = 1.34$) and achieving approaches to learning ($F_{1,18}$ (13.31), $p < .01$; $d = 1.72$). There were no differences between the groups in surface approaches to learning.

Self-regulation.

The hypotheses that the intervention would enhance both study-related and nonstudy-related self-regulation was supported. Compared to controls, intervention participants had increased self-regulation in both the study-related ($F_{1,18}$ (10.73), $p < .01$; $d = 1.54$) and nonstudy-related domains ($F_{1,18}$ (4.78), $p = .04$; $d = 1.03$).

Private self-consciousness, self-reflection and insight.

Participation in the coaching program appeared to have minimal effect on participants' private self-consciousness. There was no significant difference between groups for the full PrSCS scale ($F_{1,18}$ (1.61), $p = .22$; $d = 0.60$). For the self-reflection scale there was no significant change ($F_{1,18}$ (0.38), $p = .55$; $d = 0.29$). The difference for the internal state awareness subscale approached significance ($p = 0.055$) with a one-tailed test ($F_{1,18}$ (2.85), $p = .11$; $d = 0.79$).

Psychopathology.

As can be seen from Table 2, participation in the intervention significantly reduced test-anxiety ($F_{1,18}$ (4.57), $p = .05$; $d = 1.02$). Depression ($F_{1,18}$ (4.69), $p = .04$; $d = 1.02$) and nonstudy-related anxiety ($F_{1,18}$ (5.33), $p = .03$; $d = 1.08$) were significantly reduced, but the effect on stress ($F_{1,18}$ (0.82), $p = .38$; $d = 0.28$) was not statistically significant.

Self-concept.

As hypothesised, only self-concept domains related to learning changed following the intervention; the intervention participants had larger increases in self-concept than control subjects in the domains of scholastic competence ($F_{1,18}$ (7.08), $p = .02$; $d = 1.25$), intellectual ability ($F_{1,18}$ (13.59), $p < .01$; $d = 1.74$), and global self-worth was significant with a one-tailed test ($F_{1,18}$ (3.07), $p = .04$; $d = 0.82$). The global domain was considered to be related to learning, because, as university students concerned with improving their academic performance, these subjects' global sense of self is related to their academic competence (McCombs, 1986).

Discussion

In terms of effect sizes, the intervention had the greatest impact on achieving approaches to study, study-related self-regulation, intellectual ability self-concept, with a lesser but still medium to large impact on deep approaches to study, scholastic competence self-concept, test anxiety and non-study-related anxiety and depression. Contrary to predictions participants did not improve their academic performance. In fact the control group's performance increased whilst the participant's academic performance decreased.

As hypothesised, only study-related self-concepts (scholastic competence, intellectual ability, and global self-worth) were significantly enhanced by the intervention. This specificity of treatment effect lends support to multi-dimensional theories of self-concept (Karoly, 1993), and also provides evidence for the validity of the procedures used in this study to measure self-concept (Marsh & Hattie, 1996). The program was also effective in enhancing mental help through a reduction in psychopathology. Test anxiety was significantly reduced but the effect on stress was less pronounced.

In relation to study-skills, it would appear that the intervention was effective in enhancing self-reported study skills. Participants had increases in their deep achieving approach to learning, but not their surface approaches.

There was no significant change in private self-consciousness using the full scale of the PrSCS, and no change in self-reflection. However, there was a borderline significant increase in insight as measured by the internal state awareness subscale of the PrSCS. Given that participants showed an increase in both study-related and non-study related self-regulation, and that self-reflection and insight are key processes in the self-regulatory cycle (Carver & Scheier, 1998), the minimal impact on self-reflection and insight was unexpected. There are at least two possible explanations for this which warrant further investigation. Firstly, it may be that the PrSCS scale is not an effective measure of the self-reflection and insight processes inherent in self-regulation. Secondly, the finding that insight showed an increase approaching statistical significance ($p = .11$; two-tailed test) and a greater effect size ($d = 0.79$) compared to self-reflection ($p = .55$; $d = 0.29$), suggests that the relationship between coaching, self-reflection and insight may be more complex than originally thought. Although somewhat counter-intuitive, it may be that insight is independent of the process of self-reflection as measured by the PrSCS subscale.

Clearly the cognitive coaching program had beneficial effect on mental health and self-regulation. However, participation in the coaching program was not associated with increased academic performance. In fact the control group's academic performance increased whilst the participants' performance declined. This is somewhat surprising given the increase in deep achieving self-reported study skills, the increase in study-related self-regulation and the reduction in test anxiety.

Although substantial relationships between self-regulated learning and academic performance (as indicated by GPA) have been found (e.g. Lindner & Harris, 1992; Williams, 1996), this relationship is by no means unequivocal. Biggs (1987) cites a correlation of .30 between deep achieving approaches to study and academic performance in Arts and Economics undergraduates. Similarly, Pintrich et al. (1991) report that the metacognitive self-regulation scale of the MSLQ correlates .30 with final grade. As such measures only account for about 9% of the variance in academic performance, increases in these measures may not necessarily lead to increased performance.

Participants in this cognitively-based coaching program made significant changes in the way they saw themselves. They experienced an increase in both study-related and nonstudy related self-regulation and a reduction in psychopathology. However, their academic performance was not enhanced, indeed, the control group's performance was superior. This study's findings appear to suggest that, despite beneficial effects on mental health, cognitive self-regulation alone is not enough to improve performance. It may be that these participants mistakenly saw themselves as having increased competencies and in this way were lulled into a false sense of security. It appears that in some cases focusing solely on enhancing cognitive processes may in fact be detrimental to performance.

Study 2: The Behavioural-based Coaching Program

The aim of Study 2 was to extend to work of Study 1 using a behavioural-only approach. Again, the coaching program was seminar-based, with both didactic and group process components. Total program time was 17 hours, over six separate sessions. The first session was a full day, 7-hour seminar. There were five, 2-hour follow-up workshops. All participants were required to attend all sessions. Where absence from a session was unavoidable the subjects attended an individual make-up session.

As before, the stated objective of the program was to help participants improve their academic performance, and participants were unaware of the various hypotheses under test until the debrief at the end of the program evaluation. The coaching program was based on applications of behavioural self-regulatory skills derived from behaviour therapy.

As in Study 1, participants were taught how to set goals and were introduced to the Transtheoretical Model of Change. The information about the Transtheoretical Model differed from that presented to the participants in Study 1 in that the strategies taught in order to move through the stages of change were behavioural rather than cognitive. The Transtheoretical Model provided a framework from which participants were informed about the nature of the change process. This was designed to help participants understand that change is not necessarily a linear process, and that if they slipped back into old unhelpful study behaviours, they should not give up, rather they should “get back on the program” as quickly as possible. In line with the behavioural basis to Study 2, participants were taught self-reinforcement strategies such as rewarding themselves if they completed a study-related task.

Particular attention was paid to teaching participants how to monitor study-related behaviour. Students were required to keep a log book in which they set explicit goals for each study session. They self-evaluated their understanding of the study material, and recorded the results of such self-evaluation in their log books. As regards environmental regulation; participants used visual aids and cues in their study environment to remind them of their goals and study plans. To help them allocate enough time to their studies participants were also taught basic time-management skills. As in Study 1 there were five follow-up sessions.

Method

Subjects and Design

Participants were 18 2nd year undergraduate students enrolled in a management accounting course at a major Australian university. Participants were randomly allocated to treatment or control. The control group did not receive any coaching and merely completed the pre and post intervention questionnaires. Demographic details are presented in Table 3.

Table 3. Participants in Study 2 by age and gender

		Treatment (<i>n</i> = 9)	Control (<i>n</i> = 9)
	Male	2	3
	Female	7	6
Mean Age	20.44	21.44	19.44

Measures

Study 2 used the same measures as those used in Study 1.

Results

Two-way ANOVA were used to test for statistical significance. Alpha was set at 0.05. Effect sizes *d* for the difference between pre and post-intervention means were calculated as recommended by Wolf (1986): $d = (2\sqrt{F}) / \sqrt{df(\text{error})}$. Results are presented in Table 4 (see Appendix)

Academic performance.

The hypothesis that participation in the coaching program would enhance academic performance was supported. Compared to the control subjects GPAs for the subjects in the intervention program increased using a one-tailed test ($F_{1,16}$ (3.23); $p = .045$, $d = 0.89$). There were no differences in surface approaches to learning ($F_{1,16}$ (1.40), $p = .25$; $d = 0.59$), deep approaches to learning ($F_{1,16}$ (.30), $p = .59$); $d = 0.27$) or achieving approaches to learning ($F_{1,16}$ (.01), $p = .96$); $d = 0.02$).

Self-regulation.

The hypotheses that the intervention would enhance both study-related and nonstudy-related self-regulation was not supported. There were no differences in self-regulation in nonstudy-related domains ($F_{1,16}$ (0.00), $p = .99$; $d = 0$) or in study-related domains ($F_{1,16}$ (.09), $p = .77$; $d = 0.15$).

Private self-consciousness, self-reflection and insight.

Participation in the coaching program had no effect on participants' private self-consciousness. There was no significant difference between groups for the full PrSCS scale ($F_{1,16}$ (0.00), $p = 1.0$; $d = 0$). There were no significant changes for the self-reflection ($F_{1,16}$ (0.03), $p = .86$; $d = 0.09$) or internal state awareness subscales ($F_{1,16}$ (0.31), $p = .59$; $d = 0.28$).

Psychopathology.

Participation in the intervention significantly reduced test anxiety ($F_{1,16}$ (8.11), $p = .01$; $d = 1.42$). There was no difference for depression ($F_{1,16}$ (.48), $p = .50$; $d = 0.34$), nonstudy-related anxiety ($F_{1,16}$ (1.85), $p = .19$; $d = 0.68$), or stress ($F_{1,16}$ (1.99), $p = .18$; $d = 0.70$).

Self-concept.

There were no significant change in any self-concepts. Using a one-tailed test the differences in global self-worth were found to approach statistical significance ($F_{1,16}$ (2.95), $p = .055$; $d = 0.85$).

Discussion

In terms of effect sizes, and in order of magnitude, the relative impact of the program was greater for test anxiety, academic performance, global self-worth, and (unexpectedly) romantic self-concept. However, the behaviourally-focused intervention failed to make a statistically significant change on all but two of the dependant variables: test anxiety and academic performance. Using a one-tailed test the impact on global self-worth approached statistical significance.

Although academic performance increased, the hypotheses that participation would be associated with increased self-regulation and approaches to learning were not supported. Indeed there was virtually no effect on either study-related or non-study-related self-regulation, nor on the participants' surface, or achieving approaches to learning, echoing the somewhat equivocal relationship between self-regulated learning styles and actual academic performance (Pintrich et al., 1991).

The intervention focused on coaching the participants in the use of behaviourally-based skills and techniques. The fact that such a skills-based intervention was associated with an increase in academic performance and a reduction in test anxiety indicates support for a learning deficit model of test anxiety (Hodapp & Henneberger, 1983). That is to say that it may be that these individuals were anxious about taking exams or tests because they did not have the necessary skills to learn effectively. However, it must be noted that assumption that these participants actually increased their skills is somewhat speculative, given that the approaches to learning variables did not change following the intervention.

What is clear is that the behaviourally-based program had little impact on participants' self-concepts. In terms of effect size there was some impact on global self-worth and this approached statistical significance, but there was no statistically significant impact on any of the other self-concept domains. This indicates that the participants felt somewhat better about themselves in general, but their perceptions of themselves in terms of intellectual ability or scholastic competence did not alter following participation in the program. Further there was no statistically significant changes in depression, nonstudy-related anxiety or stress.

There was no change whatsoever in participants' private self-consciousness. As self-reflection and insight are key processes in the self-regulatory cycle, and given that there was no increase in either study or nonstudy-related self-regulation, this is could be expected.

In short, the key learning points to be gleaned from this second study are as follows; imparting behavioural skills appears to lead to a slight improvement in performance and a reduction in test anxiety. This finding is in line with previous work (e.g. Hattie, Biggs, & Purdie, 1996; Kirschenbaum & Perri, 1982). It appears that this behaviourally-based program did not impact to the participants' sense of self, either in terms of self-concept or in terms of nonstudy-related mental health.

Study 1 indicated that a cognitively-based program can increase mental health, self-regulation and self-concept, but was not effective at enhancing academic performance. Study 2 has indicated that behavioural approach to coaching can improve academic performance, but does not appear to positively impact on the participants' sense of self. Study 3 examined the effect of combining both cognitive and behavioural coaching.

Study 3: The Cognitive and Behavioural Coaching Program

The aim of Study 3 was to investigate the effect of a combined cognitive and behavioural coaching program. As in Studies 1 and 2, the coaching program was seminar-based, with both didactic and group process components. Total program time was 17 hours, over six separate sessions. The first session was a full day, 7-hour seminar. There were five, 2-hour follow-up workshops. All participants were required to attend all sessions. Where absence from a session was unavoidable the subjects attended an individual make-up session.

The stated objective of the program was to teach practical applications of both cognitive and behavioural self-regulatory skills derived from cognitive-behavioural therapy, and to encourage the participants to utilise these skills in the pursuit of their study-related goals. The participants were unaware of the various hypotheses under test until the debrief following the evaluation of the program.

The content of the program was an amalgamation of the previous cognitive program and the behavioural program. Participants were taught how to set goals, and again the Transtheoretical Model of Change was used to inform the participants about the nature of change. In this study participants were taught a range of both cognitive and behavioural strategies in order to move through the stages of change. As in Study 1 there were five follow-up sessions.

In order to draw a valid comparison between these three studies, it was important that the actual face-to-face coaching time was to be the same across the three studies. However, care was taken to ensure that this time restriction did not lead to participants in the combined program receiving less facts about either cognitive or behavioural approaches than were presented in the previous studies.

Method

Subjects and Design

Participants were 24 2nd year undergraduate students enrolled in a management accounting course at a major Australian university who were randomly allocated to treatment or control. Demographic details are presented in Table 5

Table 5. Participants in Study 3 by age and gender

	Treatment (<i>n</i> = 12)	Control (<i>n</i> = 12)
Male	5	7
Female	7	5
Mean Age	19.95	20.00

Measures

The measures used were the same as those used in Studies 1 and 2.

Results

Two-way ANOVA were used to test for statistical significance. Alpha was set at 0.05. Effect sizes d for the difference between pre and post-intervention means were calculated as recommended by Wolf (1986): $d = (2\sqrt{F}) / \sqrt{df}(\text{error})$. Results are presented in Table 6.

Academic performance

The hypothesis that participation in the coaching program would enhance academic performance was supported. Compared to the control subjects GPAs for the subjects in the intervention program increased ($F_{1,22} (15.07), p < .01; d = 1.65$). Participation in the coaching program was associated with significant increases for deep approaches to learning ($F_{1,22} (14.04), p < .01; d = 1.60$) and achieving approaches to learning ($F_{1,22} (7.28), p = .01; d = 1.15$). There were no differences in surface approaches to learning ($F_{1,22} (0.03), p = .87; d = 0.07$).

Self-regulation

The hypotheses that the intervention would enhance both study-related and nonstudy-related self-regulation was also supported. There were significant differences in self-regulation for both study-related domains ($F_{1,22} (4.72), p = .04; d = 0.93$) and nonstudy-related domains ($F_{1,22} (5.163), p = .03; d = 0.97$).

Private self-consciousness, self-reflection and insight

Participation in the coaching program had no effect on participants' private self-consciousness. There was no significant difference between groups for the full PrSCS ($F_{1,22} (1.48), p = .24; d = 0.52$). There were no significant changes for the self-reflection ($F_{1,22} (0.12), p = .73; d = 0.15$) or internal state awareness subscales ($F_{1,22} (1.92), p = .18; d = 0.59$).

Psychopathology

Participation in the intervention significantly reduced test anxiety ($F_{1,22} (7.80), p = .01; d = 1.19$). However, there were no significant differences for depression ($F_{1,22} (0.49), p = .49; d = 0.30$), nonstudy-related anxiety ($F_{1,22} (2.47), p = .13; d = 0.67$), or stress ($F_{1,22} (1.454), p = .24; d = 0.51$).

Self-concept

As hypothesised, only self-concept domains related to learning changed following the intervention; the intervention participants had higher self-concepts than control subjects in the domains of scholastic competence ($F_{1,22} (7.08), p < .01; d = 1.16$), global self-worth ($F_{1,22} (5.062), p = .04; d = 0.96$) and intellectual ability ($F_{1,22} (3.28), p = .08; d = 0.77$).

Discussion

In order of magnitude of effect size, the combined cognitive and behavioural program had a statistically significant impact on academic performance, deep approaches for learning, test anxiety, scholastic competence self-concept, achieving approaches to learning, nonstudy-related self-regulation, global self-worth, study-related self-regulation, and (with a one-tailed test) intellectual ability self-concept.

There was a significant increase in GPA for course participants. This enhancement of academic performance is in line with previous studies that focused on enhancing metacognitive processes (Hattie et al., 1996). The mean GPA for the program participants increased from 1.97 to 2.11. Although a mean increase of 0.14 on a scale of 0 to 4, may not be large in absolute terms, it should be borne in mind that GPA is a relatively insensitive measure of performance.

The intervention had a significant impact on participants' study skills with deep and achieving approaches to learning being enhanced. There was no change in surface skills. This finding indicates that the intervention, which specifically targeted the deep and achieving dimensions, did in fact fulfil its objectives. This specificity of effect on participants' approaches to learning echoes previous work (Biggs, 1987; Biggs & Rihn, 1984; Jackson, Reid, & Croft, 1981).

As regards mental health, there was again a clear domain-specific effect; only domains related to study were effected by the intervention. Test anxiety was significantly reduced. There was no change in

nonstudy-related anxiety, stress or depression. This domain-specific effect was also found for self-concept. Of the nine self-concept domains measured, only scholastic competence, intellectual ability and global self-worth changed. As could be expected, given the nature of the intervention, the largest effect size was for scholastic competence. In relation to self-regulation, there was significant improvement in both study-related and nonstudy-related domains. There was no significant increase in private self-consciousness, self-reflection or insight.

In short, it would appear that the combine cognitive and behavioral coaching program is an effective means of enhancing both performance and well-being.

Follow-up Study

To assess the relative generalization effects of the three studies over time, the academic performance of the participants was tracked for an additional semester. Means for the three studies are presented in Table 7 Effect sizes d for the difference between treatment and control groups were calculated as recommended by (Wolf, 1986): $d = 2t / \sqrt{df}$.

t -tests for the differences between the treatment and control groups at follow-up found non-significant differences for Study 1 (t_{18} (0.34), $p = .72$; $d = 0.17$), Study 2 (t_{16} (0.08), $p = .94$; $d = 0.04$); whereas the differences for Study 3 were statistically significant (t_{22} (2.70), $p = .01$; $d = 1.15$).

Table 7. Mean GPA for all studies at follow-up

	GPA Treatment		GPA Control		t	p	d
	Mean	SD	Mean	SD			
Study 1 Cognitive Study	1.83	0.65	1.92	0.44	t_{18} (0.37)	.72	0.17
Study 2 Behavioural Study	1.97	0.41	1.94	0.75	t_{16} (0.08)	.94	0.04
Study 3 Combined Study	2.28	0.35	1.76	0.57	t_{22} (2.70)	.01	1.15

As can be seen from Table 7 participants in the cognitive-behavioural study maintained their enhanced performance at follow-up. The behavioural study participants' performance did not differ from the control group at follow-up and there was no significant difference between the cognitive study participants and their control group at follow-up. Figures 3 to 5 present GPA for all three studies over time.

Figure 3. GPA for Study 1 (Cognitive Group) at Pre, Post and Follow-up

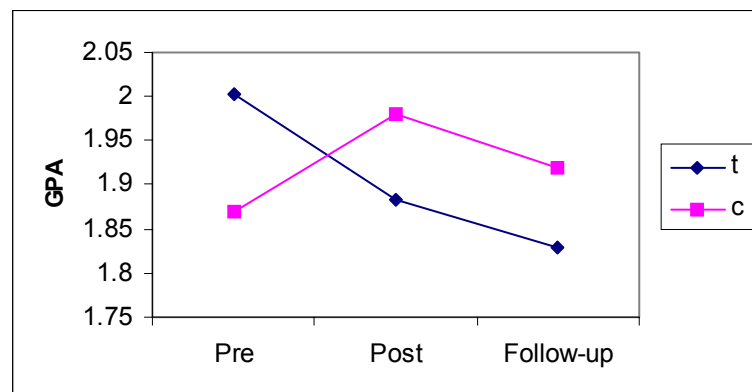


Figure 4. GPA for Study 2 (Behavioural Group) at Pre, Post and Follow-up

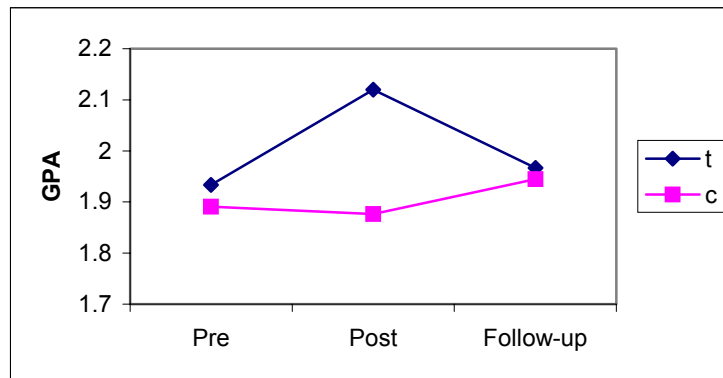
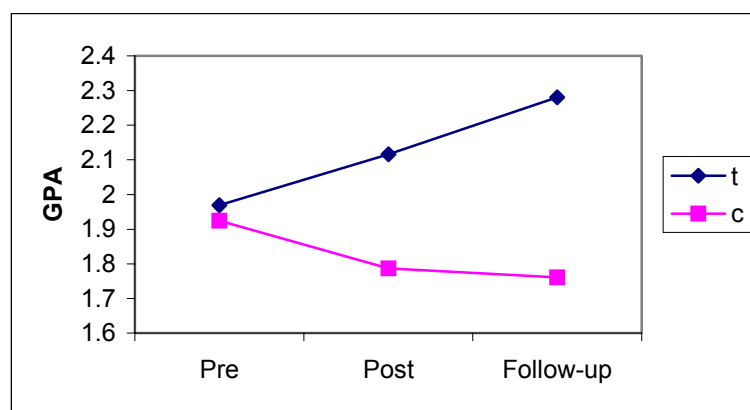


Figure 5. GPA for Study 3 (Cognitive-Behavioural Group) at Pre, Post and Follow-up



Main Discussion

The hypotheses being tested in this series of studies were that participation in all three coaching interventions would be associated with increased academic performance, increased self-regulation and increased self-reflection and insight. Further, it was hypothesised that participation in all interventions would be associated with reduced anxiety, stress and depression, and the adoption of better task-specific skills. It was also hypothesised that the effects of participation in a coaching program designed to enhance academic self-regulation would generalize to other, nonstudy-related areas of life. It was anticipated that a combined cognitive and behavioural coaching program would be superior to either cognitive or behavioural coaching alone.

For academic performance, both the cognitive-behavioural and behavioural programs enhanced academic performance, whilst the cognitive study participants' performance declined in comparison to the control group. This suggests that behavioural skills-based training is necessary for enhanced performance whereas cognitive skills-training alone is not sufficient.

The superiority of the cognitive-behavioural program, in terms of longer-term academic performance enhancement, was emphasised by the finding that the initial post-program increase in academic performance was still evident at follow-up. In comparison, the academic performance of the participants in the behavioural study declined from post to follow-up, suggesting that the combined cognitive-behavioural program was the more effective.

The apparent superiority of the combined cognitive-behavioural program in the maintenance of performance enhancement over time lends support to Latham and Seijts (1997) notion that multi-modal coaching programs which incorporate the setting of proximal and distal goals, relapse prevention training (presented in the present study in relation to the Transtheoretical Model of Change) and training in functional self-talk would facilitate the transfer of training.

The question remains as to why the combined cognitive-behavioural program was superior at follow-up. Hesketh (1997) has argued that to be truly effective and maintain benefit over time training needs

to be effortful, that is, participants need to exert effort in order to develop the higher-order cognitive skills associated with transfer, in addition to acquiring the necessary task-specific behavioural competencies.

The present series of studies suggests that it may be more than the exertion of effort that facilitates transfer. Participants in all three programs exerted effort during the course of the coaching programs. However, only the cognitive-behavioural study participants improved and maintained their performance. It may be that a re-evaluation and restructuring of one's sense of self is a key factor in being able to integrate new competencies into one's behavioural repertoire. Such restructuring goes beyond simplistic 'positive thinking' and involves an examination and evaluation of one's beliefs and anxieties. In this way individuals can alter their conception of themselves.

The self-concept is a far broader construct than self-efficacy. Self-efficacy is a domain-specific competency belief, one's confidence in one's ability to perform a specific task. Self-concept is a hypothetical multi-faceted construct comprised of a person's self-perceptions which are formed through experience with, and interpretations of, his or her environment (Marsh & Hattie, 1996).

Numerous studies have illustrated the positive relationship between self-efficacy and performance on a wide variety of tasks (Multon, Brown, & Lent, 1991; Neck & Manz, 1996). However, there have been very few studies (e.g. Ryan, Krall, & Hodges, 1976) which have investigated the differential effects of self-regulatory training on self-concept using multi-dimensional measures. As changes in self-concept represent changes at the schematic level (Oyserman & Markus, 1993) the use of multi-dimensional measures of self-concept provide a means of assessing the individual's self-schemata, that is the beliefs that individuals hold about themselves in relation to various areas of their life experience.

Only the cognitive and cognitive-behavioural programs impacted on participants' self-concepts. A key hypothesis investigated in this series of studies is the notion that enhanced cognitive self-regulatory skills, developed through coaching, will help enhance performance, goal attainment and mental health. If effective, a program with explicit cognitive self-regulatory components should change the way participants think about themselves, and this change should be reflected by difference in the measures of self-concept. Thus, the observed changes in participant's self-concepts provide support for the effectiveness of the cognitive component of this program in changing individuals' beliefs about themselves. Only study-related self-concepts (scholastic competence, intellectual ability and global self-concept) were significantly enhanced by the intervention. This specificity of treatment effect lends support to multi-dimensional theories of self-concept (Karoly, 1993).

The present cognitive-behavioural study has indicated that cognitive-behavioural coaching which impacts on participants' sense of self can improve academic performance and that such improvements are maintained over time. There is a considerable amount of research in clinical populations indicating that increasing individuals' ability to self-regulate their emotions, cognitions and behaviour through cognitive-behavioural therapy has significant long-term benefits in terms of reduced depression and anxiety, and increases in subjective well-being (Barlow & Hofmann, 1997; Wells & Hackmann, 1993; Wills & Sanders, 1997; Young, 1994). Self-regulatory training which encompasses both cognitive and behavioural domains, can also enhance mental health in the general population (Seligman, 1991) and underachieving student populations (Sapp, Farrell, & Durand, 1995), and such interventions can have long-lasting beneficial effects (Allen, Tarnowski, Simonian, Elliott, 1991).

Of the three studies, only the cognitive and cognitive-behavioural programs increased self-regulation. In these programs self-regulation was enhanced in both study and non-study-related domains. Brackney and Karabenick (1995) suggested that self-regulatory interventions would be especially beneficial if change was found to generalise between study and nonstudy-related domains, and hypothesised that such generalisation would be associated with interventions that focused on enhancing participants' self-concepts. The present intervention was specifically designed to foster self-regulated learning, and the remediation of dysfunctional or self-defeating beliefs were a central focus of these coaching programs. Although targeted specifically at study-related issues, both study-related self-regulation and nonstudy-related self-regulation were enhanced, indicating a generalization of study-related self-regulation skills to the nonstudy-related domain. Such generalization supports the assertion that study-related self-regulation is part of a general self-regulatory process or skill (Patrick, 1997; Winne, 1995).

However, it should be noted that the generalisation of self-regulation was measured using self-report measures. Future research should examine the extent to which cognitive-behavioural coaching generalises across domains by means of objective performance-based indices. For example it may be useful to investigate whether coaching for personal productivity also enhances inter-personal relationships, sports performance or health. Indeed, one participant in the cognitive-behavioural study spontaneously reported that the techniques he had learnt had helped increase his sports performance, another reported that her

relationship with her partner had improved due to her increased self-management skills, and two others reported enhanced physical health which they attributed to the use of the skills learnt in the cognitive-behavioural program.

There was an increase in both GPA (goal attainment) and self-reported self-regulation for the cognitive-behavioural group. This indicates that the participants had moved through the self-regulatory cycle towards goal attainment (Figure 1). Thus one might expect the cognitive-behavioural group to show an increase in self-reflection and insight, these being hypothesised products of the self-regulatory process.

Contrary to predictions for the combined cognitive and behavioural study there was no statistically significant increase in private self-consciousness, self-reflection or insight. For the cognitive study the increase in insight approached statistical significance with a one-tailed test ($p = .055$; $d = 0.79$), and the effect size for insight for the combined cognitive and behavioural program was of a similar magnitude ($d = 0.59$) (Cohen, 1992). Interestingly, for the behavioural program there was no impact on insight whatsoever ($d = .00$). This suggests that the cognitive parts of the coaching programs indeed increased participants' insight.

It is not clear why no study impacted on participants' levels of self-reflection. All three studies had similarly negligible-to-small effect sizes. Given the theoretical link between self-regulation, insight and self-reflection this was unexpected. It may be that the self-reflection scale of the PrSCS is an insensitive measure of self-reflection. Indeed there have been calls for the PrSCS to be substantially revised or replaced (Creed & Funder, 1998; Reeves, Watson, Ramsey, & Morris, 1995; Trapnell & Campbell, 1999). Future research could focus on constructing a new, reliable measure of PrSCS with separate self-reflection and insight scales, and examine the role of these constructs in the self-regulation cycle and their responsiveness to the coaching process.

As regards the effect of the coaching programs on mental health; all three coaching programs significantly reduced test anxiety. However, it is of interest that only the cognitive program significantly enhanced nonstudy-related health. This was an unexpected finding. It was anticipated that all programs would have an impact on nonstudy-related mental health domains. The relative efficacy and superiority of cognitive therapy compared to behaviour therapy has been long debated (see Sweet and Loizeaux (1991) for a concise overview of the debate). Generally cognitive and cognitive-behavioural therapy are deemed to be superior to a purely behavioral approach in the treatment of depression (Beck et al., 1979; Blackburn & Moorhead, 2000; Clark, Beck, & Alford, 1999; Gillham, Shatte, & Freres, 2000; Harrington, Whittaker, & Shoebridge, 1998; Rehm, 1995), and cognitive and cognitive-behavioural treatments are effective in alleviating a wide range of anxiety disorders (Durham & Turvey, 1987; Ladouceur et al., 2000).

The magnitude of the present study's cognitive intervention's alleviation of participants' nonstudy-related depression, stress and anxiety compares favourably with clinical interventions which have been specifically designed to treat adult problem behaviors. Febraro and Clum's (1998) meta-analysis found that cognitive-behavioral self-regulatory treatments of adult problem behaviors such as depression, anxiety and health-related problems had mean effect size $d = 0.45$ overall. Ergene (2000) found a mean effect size of $d = 0.65$ for cognitive and behavioural psychological treatment for anxiety programs, and effect sizes for psychological treatments for depression range from $d = 0.28$ to $d = 1.03$ (cf. Febraro & Clum, 1998; Lewinsohn & Clarke, 1999; McDermut, Miller, & Brown, 2001; Reinecke, Ryan, & DuBois, 1998).

The observed effect sizes for mental health for the cognitive-only program were $d = 1.02$ for depression and $d = 1.08$ for anxiety. The impact of the cognitive intervention on psychopathology is particularly impressive when one considers that the present intervention did not specifically target psychopathology but focused on imparting cognitive self-regulatory skills related solely to study.

There are a number of limitations inherent in the present series of studies. These studies were exploratory in nature. Because multiple hypotheses were being tested and the experimentwise error rate was not controlled for, some of these findings may be a result of capitalising on chance. Further, the participants in these studies were motivated volunteers, and who formed a highly homogeneous group. Thus, the findings of this study may not directly map on to other populations.

Directions for future research

Future research could seek to extend, and replicate these studies' findings by investigating individual rather than multiple hypotheses. Research along the lines of the present studies should be conducted within other populations to test the generalisability of these findings by focusing on performance enhancement in non-academic areas. For example, is the combined cognitive-behavioural coaching approach effective in helping adults reach "real life" goals such as establishing businesses or enhancing work performance?

Self-reflection and insight are central to the process of self-regulation. These findings indicate that the PrSCS is not a satisfactory method of measuring self-reflection and insight. Future research should seek to develop a new measure of self-reflection and insight, thus facilitating the examination of the impact of the coaching process on individuals' self-reflection and insight, and in this way elucidate the role of these constructs in the self-regulation cycle and coaching.

Summary

The present study has found that a 17 hour, six-session cognitive-behavioural coaching program can improve study-related self-regulation and academic performance, enhance self-concept and foster generalisation of domain-specific self-regulatory skills. A cognitively-focused coaching program appears to be effective in enhancing mental health and self-concepts, but is ineffective for actually improving performance. Conversely, a behaviourally-focused coaching program can improve performance but may not enhance participants' sense of self. Coaches who seek to enhance both performance and well-being should incorporate similar cognitive-behavioural techniques into their coaching programs.

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