

The Impact of a Socio-Cognitive Training Program on Self-Processes and the Self-Regulatory Functioning of Low Achieving Students in Singapore

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This study investigates the effects of a classroom-based intervention program aimed at enhancing low achieving students' self-perceptions of their own ability, agency, control, and efficacy. The quasi-experimental study with 89 secondary school students was carried out over ten 35–45 minute weekly sessions in two Singapore schools. By adopting a socio-cognitive perspective in which self regulatory processes and personal agency beliefs are incorporated, the program aimed at fostering the students' will through helping them to appraise their role in assuming personal responsibility in change processes, and their skill through using various metacognitive and cognitive strategies to effect personal changes. The exposures to the instructional activities showed a positive impact on the self-efficacy and self-regulation in the academic domain but not on aspects of self-concept, social efficacy and social regulation, suggesting that these two socio-cognitive variables may be more amenable to change than social constructs

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that are less definable and more general conceptually. Qualitative data provided useful feedback on how the concepts could be refined to help create greater metacognitive knowledge and awareness of school-related skills in the students. Educational implications for the classroom were discussed in the light of these findings.

Key words: self-regulation; self-efficacy; low achieving

Introduction

Recent educational reforms in Singapore call for education to foster a new mindset that embraces “a spirit of continual improvement, a lifelong habit of learning and an enterprising spirit in undertakings” (Wee, 1998, p. 2). Such initiatives encourage students to construct and experience learning that are personally meaningful, and therefore require them to assume more active involvement and participation, greater independence, and self-direction. In the process, such undertakings provide opportunities to reinstate personal control over learning and life processes, thereby reinforcing antecedents of personal agency. To develop such capabilities, educators must begin to consider providing learning contexts in which students can draw on personal resources to engage actively and strategically in their learning activities.

This focus on personal agency in learning is in line with current educational research that has come to recognize the constraints of theoretical approaches emphasizing the role of contextual influences. Indeed, a growing body of studies has advocated moving responsibility back to the individual to allow one to gain control over learning and life processes and reinforce the antecedents of personal agency. Of interest is this focus on how an individual’s beliefs can have the capability to exert considerable impact on development and adaptation. People do not act solely on their skills and knowledge, but the beliefs they develop about their capabilities have been shown to determine what they do with what they know and possess. It is

the things that people believe that give them the psychological energy to determine the things to attempt (Madewell & Shaughnessy, 2003). Therefore, in the context of education, when learning experiences or processes are aimed at enhancing one's belief in the mastery of the environment through promoting self-regulatory abilities, strengthening self-efficacy, improving self-concept, and helping students move toward an internal locus of control, a better platform is provided for them to make lasting changes in their beliefs about learning.

Self-regulatory processes have primarily been linked to the study of academic achievement (e.g., Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). The goals and standards we set for ourselves, the extent to which we monitor and evaluate our own behavior, and the consequences we impose on ourselves for our successes and failures are all aspects of self-regulation. There is already a considerable body of research evidence on the relationship between self-regulated learning and academic performance. In general, the consistent finding has been that self-regulated learners are likely to have more adaptive cognitive, motivational, and achievement outcomes than their classmates who fail to self-regulate (Schunk & Zimmerman, 1997). Such learners are shown to be highly competent in purposeful and strategic learning, and monitoring of their own learning process in a variety of subjects (Chang & Smith, 1999). Furthermore, those who are high achieving tend to possess better and a greater variety of self-regulatory abilities than the ones who are low achieving (Zimmerman & Martinez-Pons, 1990).

Some research has indicated that such processes do not appear to influence academic performance alone (Patrick, 1997). Social competence, which involves skills in social goal setting, problem-solving capabilities, feelings of social support and trust and ability to exercise self-control in the face of social pressure, is found to require the execution of self-regulatory skills (Wentzel, Weinberger, Ford, & Feldman, 1990). For instance, the ability to exercise restraint-related behaviors (such as being able to respond appropriately to requests from authority figures, control impulses, being cooperative and socially responsible in the classroom) has been shown not

only to have social value in the classroom, but is also indirectly related to the acquisition of knowledge. In the same manner, poorly regulated academic behaviors can be expected to have repercussions on one's social adaptation. Consequently, teachers, by supporting students' efforts to internalize and regulate social behaviors are unintentionally assisting with regulating their academic efforts. Since both academic and social learning share common self-regulatory features, it would appear that promoting the development of either aspect of behavior could have an impact on the other behavior domain. Therefore, educators who are concerned with student learning should seriously consider the contribution of students' social relationships with peers and teachers in educational attainment.

Developing regulatory skills alone will not contribute much if students do not apply them persistently in the face of difficulties. Research (e.g., Pajares, 1997) has repeatedly indicated that self-regulation can be effective in influencing educational outcomes if the individual has positive beliefs about the personal ability to negotiate difficulties and work towards the desired learning outcome(s). Bandura (1995) argued that the beliefs people have of themselves are key elements in the exercise of control and personal agency. Self-efficacy and self-concept are two such sets of self-beliefs found to influence students' motivation in regulating their behavior, thoughts, and learning, and asserting a powerful influence in the conception of their personal competence and appraisal for successful school functioning. Self-efficacy consists of those "beliefs in one's capability to organize and execute the course of action required to manage prospective situations" (Bandura, 1997, p. 2). Efficacious students are known to be better able to regulate their own learning activities, master difficult learning tasks, persevere in the face of difficulties, influence their academic motivation, interest and achievement performance, manage their emotions in interpersonal relationships, and resist peer pressure (Bandura, 1995). Students' perceptions of their academic efficacy can therefore provide an important window for understanding individual differences in achievement and learning (Zimmerman & Martinez-Pons, 1986).

While self-efficacy is primarily concerned with the “cognitively perceived capability of the self” (Bong & Clark, 1999, p. 141) in a specific domain of behavior, self-concept focuses on cognitive and affective self-descriptions and self-evaluations in more general domains of behavior. There is research indication that although dimensions of the Asian self-concept do not differ structurally from the Western model, the content of specific self domains may vary across cultures. Cheng (1997), for instance, has found the relevance and significance of a family and moral dimension in conceptualizing the Chinese self-concept, underlining the salience of moral and ethical values in the Asian self-construal. In addition, the content of their academic self-concept was found not just to focus on specific subjects but also a wide range of academic and intellectual entities (such as, school activities, attitude and discipline in the classroom, their role as students). This finding is particularly meaningful in the conception of change programs in that interventions need not necessarily target at specific subject domains to be effective, but could include aspects of intellectual and family life that are important to one’s functioning. Educators therefore have a wider repertoire of strategies in which to engage students to enhance their personal agency.

Self-concept is sometimes viewed as a generalized form of self-efficacy. Current research however shows a conceptual distinction between these two constructs (Bong & Clark, 1999). In essence, self-efficacy is concerned with judgments of what one can do with whatever skills one possesses, while self-concept pays attention to the skills and abilities one thinks one has (Skaalvik, 1997), which tends to include affective factors such as feelings of self-worth or anxiety. In general, people do not just hold general beliefs about themselves but also specific beliefs about their capability to perform specific tasks (e.g., controlling one’s anger, making friends, doing algebra sums), which may come to influence their general self-conception of competence. Both facets are therefore equally important in the process of personal appraisal and evaluation.

To reiterate, both academic and social self-regulation, and self beliefs are critical in enhancing strategic learning. In a highly competitive and

achievement-oriented Singapore education system, this is particularly important for low achieving students at the secondary school level where the syllabi are more cognitively demanding, the influence of peer becomes pervasive and regulation of one's behavior is increasingly called upon. For those who are already encountering academic or other school-related problems, the need to build in the appropriate support is more urgent since school interest and the motivation to succeed is often not there. A profile study of secondary students in the lowest ability stream in the Singapore education system showed that their gross lack of self-discipline and efficient study skills were major blocks to successful school achievement (Chang, Goh, Moo, & Chen, 1997). Such problems not only interfere with school performance but also increase students' proneness to involvement in activities that conflict with academic pursuits (Bandura, Barabarnelli, Caprara, & Pastorelli, 1996). Substantial research already attests to this close link between poor academic performance and a range of at-risk and delinquent behaviors (Berndt, 1999).

Educational research is past the point in demonstrating the relationships between academic self-regulation, self-efficacy, academic attainment (Madewell & Shaughnessy, 2003) and self-concept, and instead what needs to be put into practice are interventions and schooling strategies that arise from insights obtained from current research findings. In this respect, empirical evidence suggests that there are many routes to enhance student functioning and development. School-based intervention programs aimed at enhancing personal, learning and social factors usually utilize varied approaches, such as group counseling, prosocial skill training and specific cognitive competency training to bring about the desired shifts in behavior (e.g., Elbaum & Vaughn, 2001). However, Ford and Tisak (1983) observed that educational interventions designed to enhance social competence through generally specific social skills programs do not necessarily ensure effective social behavior or improve academic achievement than social-cognitive skill training that emphasizes interpersonal goal setting, planning, and evaluation skills. Similarly, Bandura (1997) noted, from a review of studies on efficacy

beliefs, that simply imparting sexual information without developing the self-regulative skills and sense of efficacy needed to exercise personal control over sexual relationships had little impact on patterns of sexual behavior. On the other hand, change programs incorporating elements of the self-regulative model produced significant reductions in risky sexual behavior in both male and female adolescents. It therefore appears that underlying issues of student motivation may need to be adequately addressed and suggests that interventions aimed at strengthening the underlying beliefs may be more effective in influencing educational and social outcomes than strategy training alone. There is, as such, a need to broaden research interest in intervention studies by examining composites of the different cognitive, motivational and social components and their interactions in real-life settings (Pintrich, 2000).

To promote the development of self-regulatory functioning, McCombs and Marzano (1990) suggested that interventions aim at fostering the students' will through helping them to appraise their role in assuming personal responsibility in change processes, and their skills through using various metacognitive and cognitive information processing strategies, to effect personal changes. The will that evolved from this sense of personal agency orchestrates the use of metacognitive, cognitive and affective processes to work out intentions, make choices and achieve personal goals, and generate positive self-beliefs. The skill component facilitates the organization of learning efforts and successful learning, which in the process further generate and reinforce positive feelings of personal agency and competence. The self-regulatory skills developed in the process then help to further self-determined goals. In the deliberation of the conceptual framework for intervention, caution has also to be exercised in not just focusing on enhancing self beliefs but also on improving students' accurate calibration of their self-perceptions. This is so that they can come to understand and appreciate what they know and not know, and may therefore be more effective in deploying appropriate strategies as they respond to the demands of a task or interpersonal situation (Pajares, 1997).

This approach to change is particularly appealing to students in secondary schools, where a growing sense of personal awareness and an emerging self-identity increasingly come to affect their developmental trajectory. From the students' viewpoint, such conceptualization is empowering because it generates a strong sense of personal agency. School counselors and teachers working with these adolescents would therefore find this a proactive model that encourages and facilitates a growth process centered on helping students appreciate their determining role in shaping life experiences. This paper reports the findings of a classroom intervention program aimed at enhancing the academic and social efficacy beliefs, aspects of self-concept, and academic and social self-regulatory capabilities of two classes of low achieving 13-year-olds in their first year at secondary school in Singapore.

Method

Subject

A quasi-experimental research design was used to evaluate this classroom-based intervention. A total of 89 secondary one students from two schools with a low achieving stream made up the Experimental ($n = 46$) and Control ($n = 43$) groups. There were an equal proportion of participating students across group conditions in the two schools. An equal proportion of boys and girls participated across both schools and group conditions. Prior achievement was ascertained from the PSLE (Primary School Leaving Examination) results. An Independent Samples t Test indicated that the PSLE scores of the two group conditions were statistically significant at $p < .01$ (two-tailed) in the second school with $t(44) = 6.53, p < .01$, and when students from the two schools were combined into the respective conditions with $t(87) = 5.23, p < .01$. There was however no significant differences in the PSLE scores between gender, $t(87) = 1.14, p < .01$.

The students comprised the bottom 20% of the cohort that sat for the PSLE at the end of six years primary school education in Singapore. Their

four-year skill-based secondary education (comprising of subjects like Design and Technology [metal and wood work], Office Administration, Computer Application, Visual Arts) is unlike the more academically demanding program for those high and average performing students, and prepares them for further vocational training. These students showed many of the attributes of learners with motivational, affective, and cognitive skill deficiencies (McCombs & Marzano, 1990). Specifically, they are low in motivation to learn, lack or have few personal goals, exercise little self-discipline or personal responsibility and control for learning, and lack the awareness of effective skills necessary in reasoning, comprehension, decision-making and/or problem-solving (Vauras, Rauhanummi, Kinnunen, & Leopola, 1999). Behavior problems in the classroom (e.g., inattentiveness, talkativeness, being rude to teachers, sleeping in class) were more frequently reported. While many were not posing serious school disciplinary problems, they remain potentially at-risk both academically and socially.

Instrument

Five pencil-and-paper self-report questionnaires, earlier validated with factor analyses on a separate sample of 1,304 13- and 14-year-old Singapore students, were administered. All the items were measured on a 4-point Likert scale, from 1 being Not True of Me, 2 being Somewhat True of Me, 3 being Quite True of Me to 4 being Very True of Me. The questionnaires involved:

1. *Academic Efficacy (AE)* asked students to judge their capability in organizing or exercising control over their performance, that is, efficacy in schoolwork. Five questions from the Motivated Strategies for Learning Questionnaire (MSLQ) Post-secondary and Secondary versions (Pintrich & De Groot, 1990) were selected. The Cronbach alpha internal reliability coefficient obtained was 0.72.
2. *Academic Self-Regulation (ASR)* was measured by the degree to which various cognitive and metacognitive and self-regulatory learning strategies were adopted by students in negotiating their schoolwork. This was

assessed with the post-secondary version of the MSLQ constructed by Pintrich, Smith, Garcia, and McKeachie (1991), and secondary version (Pintrich & De Groot, 1990). The eleven learning strategy items selected were classified into three categories: cognitive, metacognitive and resource management strategies. The Cronbach alpha obtained was 0.81.

3. *Social Efficacy (SE)* measured how well the student assesses the ability to manage interpersonal relationships and responds to group pressure in specific situations. Bandura's Multidimensional Efficacy Scale (Bandura, 1990) was adapted for use in this study. The nine questions yielded a Cronbach alpha of 0.60.
4. *Social Self-Regulation (SR)* assessed the ability to monitor and regulate one's social interactions. The items measured four distinct behavioral domains: anger management, impulse control, prosocial skills and social goal-setting and planning (Weinberger, 1991). The Cronbach alpha obtained was 0.70 for the sixteen items.
5. *Self-Concept (SC)* was measured with the Chinese Adolescent Self-Esteem Scales (CASES) constructed by Cheng (1997) with Hong Kong adolescents. This scale, constructed within an Asian context is most appropriate for the present purpose, considering that both Hong Kong and Singapore share somewhat similar ethnic, social and economic backgrounds. Only the General, Social, Intellectual, Moral and Family domains were used. Factor analyses yielded eighteen items, with a Cronbach alpha of 0.81.

Both the Control and Experimental groups completed the five questionnaires before and after the intervention. An Independent Samples *t* test indicated that there were no significant pre-existing differences between the two groups except with Family Self-Concept, $t(87) = 2.06$ ($p < .05$). The Experimental group obtained a lower pretest mean score of 9.11 ($SD = 2.45$) as compared to 10.09 ($SD = 2.01$) for the Control group.

Qualitative information was obtained through student evaluation forms every two sessions. Focused interviews with groups of randomly selected

students from the Experimental group were also conducted. Both sources of information provided information about the students' learning experiences and the usefulness of the instructional materials taught.

Procedure

Ten 35–45 minute weekly sessions were conducted in the respective classrooms by two psychology trained instructors who were blind to the hypotheses of the research. In view of the limited time available for each session, the activities were carried out within typical classroom setting in which students' desks were lined in rows and instructors facilitated in front of the class. The class size averaged 23 students in each Experimental group. Such group arrangement, while not conducive to group facilitation, did ensure that the physical structure and delivery across group conditions were similar. When the Experimental groups were in session, the Control groups carried on with their usual class activities.

Treatment integrity measures with periodic classroom observations were carried out by the author to ensure that the instructors complied with training procedures. The instructors also completed a session evaluation form and checked that each step in the lesson plan was completed, noting any disruptions or interference in the course of training. A weekly instructor training session provided them with a dry run and an opportunity for discussion to stream line procedures across the two classrooms.

The training program consisted of the following activities:

Session 1. Personal Agency: Taking Personal Responsibility

Objective. Students learn that they can have personal control over aspects of their lives and can exercise personal responsibility and choice.

Activity Focus. Discussion centered on a newspaper article about a real-life character who struggled against difficulties to succeed and how this individual chose to exercise a measure of control, responsibility and choice instead of giving up. This was followed by reflection of a personal life situation in which concepts of responsibility and choice could be applied.

Session 2. Personal Agency: Exercising Positive Self-Control

Objective. Students learn how their choice of words can affect perceptions about themselves and their competencies. They also learn to identify negative words and replace these with positive coping words.

Activity Focus. Students sorted out words that convey different kinds and extent of control one can personally exercise — “have to”, “able to”, “must do”, “can’t”, “won’t” and so forth. The discussion then focused on how personal choices of words can affect feelings and perceptions about self and personal competencies, that is, words shape the outlook of life.

Session 3. Beliefs about Myself

Objective. Students learn to be aware of the role of personal beliefs and values in defining themselves, identify and explore conflicts in these beliefs and values with family, peers, teachers and significant others.

Activity Focus. The discussion focused on how personal values and beliefs may conflict with that of parents, peers and teachers and that, while it may not be possible to resolve such conflicting views, surfacing and sharing them can help each other to discover useful ways of dealing with the difficulties. This also helped them to understand that accepting personal responsibility is not without attendant issues.

Session 4. Personal Affirmation through Positive Self-Talk

Objective. Students learn to use the positive technique of self-talk in affirming themselves and controlling negative attitudes.

Activity Focus. Students were asked to reflect on the content, feelings and thoughts of their self-talk and a discussion ensued on how such personal statements affect self perceptions, thoughts and feelings. Students were asked to rewrite some personal statements into positive ones and identify situations in which they could be applied.

Session 5. Understanding Myself

Objective. Students learn to be aware that their thinking and feeling relates to self-knowledge and the influence of significant others.

Activity Focus. Discussion centered on a short article in which the character described her confusion over who she thought she really was when she presented different facets of herself at home, in school and with friends. Students then reflected on the meaning of the issues surfaced in their personal life.

Session 6. The Thought Cycle and Effective Communication

Objective. Students learn how their thoughts affect their personal motivation, behavior and learning. They also learn to use the Thought Cycle as a tool to help exercise control over their thoughts.

Activity Focus. Discussion focused on the Thought Cycle, in which a cycle involving Thought → Feeling → Behavior → Result → Thought was generated and then repeated to reinforce earlier perceptions of self and others (McCombs & Pope, 1998). Students were provided with an opportunity to make a personal application.

Session 7. Setting Goals and Making Decisions

Objective. Students appreciate the relevance of goal setting in their personal lives and have an opportunity to define and generate some meaningful and achievable personal goals.

Activity Focus. Students used a personal wish list and a case study to learn about the importance and relevance of planning and goal setting in their personal lives. They also deliberated on the issue about how parents or peers can exert influence on their goals and how to resolve dilemmas where there is a mismatch of goals.

Session 8. Prioritizing My Life

Objective. Students identify obstacles to goal attainment and consider the importance of priority setting in effectively managing the process of goal attainment.

Activity Focus. Discussion centered on a case study involving a real-life situation in which students were asked to rank some common tasks (school work, household chores, fun time with friends, personal time) in

order of importance and the reasons for that order. This session integrated the various concepts introduced in earlier sessions.

Session 9. Problem Solving

Objective. Students are aware of a systematic approach to problem solving and learn to use this approach in identifying and proposing possible solutions to obstacles in achieving their goals.

Activity Focus. The problem solving approach was presented to the students who discussed the kind of dispositions or skills useful in solving problems effectively. They then worked first on a hypothetical and then a personal situation. The importance of learning to exercise personal choice, control and responsibility despite outcome was reinforced, particularly in situations when the problem cannot be solved or there is no one way to resolving it.

Session 10. Evaluating Personal Effectiveness — The Self-Regulatory Cycle

Objective. Students review the use of motivational, cognitive and metacognitive strategies introduced in earlier sessions within the framework of the self-regulatory cycle.

Activity Focus. The session began with a review of the relevance of earlier sessions in providing students with effective thoughts and actions to deal with themselves, so that they need not feel being victims of circumstances. The self-regulatory cycle — being aware of their thinking; constructing a personal plan of action; being aware of the necessary resources to harness; being sensitive to feedback; taking note of the effectiveness of actions through periodic evaluation — was then presented and discussion of its applicability in a case study and personal situation ensued.

Results

Quantitative Analyses

A Multivariate Analysis of Covariance (MANCOVA) was performed on the dependent variables of Academic Efficacy, Social Efficacy, Moral, Social,

Family, Intellectual and General Self-Concepts, and the two self-regulatory variables of Academic and Social Self-Regulation, to analyze for significant differences between the combined Experimental and Control groups in the two participating schools. Assumptions of normality, homogeneity of variance-covariance (with Box's M), linearity and multicollinearity were deemed satisfactory for most dependent variables. Possible group difference resulting from pre-testing was adjusted, with the pretest scores of the dependent variables used as covariates.

Table 1 Results of MANCOVA for the Posttest Measures Between Control and Experimental Groups Using Pretest Measures as Covariates

| Questionnaire & Subscale | Experimental Group (<i>n</i> = 46) | | Control Group (<i>n</i> = 43) | | <i>F</i> value | Effect Size |
|---------------------------|--|---------------------------|-----------------------------------|---------------------------|----------------|-------------|
| | Pretest | Posttest | Pretest | Posttest | | |
| | <i>M</i> (<i>SD</i>) | <i>M</i> (<i>SD</i>) | <i>M</i> (<i>SD</i>) | <i>M</i> (<i>SD</i>) | | |
| Academic Efficacy | 12.26 (2.62) | 13.24 (2.95) | 13.28 (2.69) | 12.49 (2.48) | 9.21* | .30 |
| Social Efficacy | 15.11 (2.98) | 15.98 (2.86) | 15.72 (2.71) | 15.61 (2.32) | 1.89 | ns |
| Moral Self-Concept | 13.46 (3.28) | 13.17 (3.58) | 13.93 (3.76) | 13.47 (3.03) | .15 | ns |
| Social Self-Concept | 12.17 (2.57) | 11.91 (2.91) | 12.30 (2.81) | 12.33 (2.62) | .49 | ns |
| General Self-Concept | 10.72 (3.36) | 10.11 (3.09) | 9.63 (2.54) | 9.54 (2.61) | .01 | ns |
| Family Self-Concept | 9.11 (2.45) | 9.04 (2.72) | 10.09 (2.01) | 9.79 (2.26) | .00 | ns |
| Intellectual Self-Concept | 4.50 (2.07) | 4.87 (1.87) | 4.56 (1.59) | 5.21 (1.46) | .01 | ns |
| Academic Regulation | 30.65 (6.79) | 30.76 (7.89) | 30.91 (5.75) | 29.23 (5.08) | 4.49** | .30 |
| Social Regulation | 41.94 (6.72) | 41.30 (7.31) | 42.35 (5.32) | 41.19 (5.50) | 1.42 | ns |

Note: * $p < .05$. ** $p < .01$.

The analyses revealed a main effect on group, with the intervention demonstrating an effect on the Experimental group in two dependent variables. Statistical significance was obtained with the Wilk's Lambda at .78 and $F(9, 68) = 2.27$ ($p < .05$). Further univariate analyses confirmed both Academic Efficacy ($F(1, 76) = 9.21$, $p < .05$), and Academic Self-Regulation ($F(1, 76) = 4.49$, $p < .01$) of the Experimental group to be

significantly different from the Control group (Table 1). A MANCOVA analysis further indicated that Metacognitive Strategy Use contributed to the significant effect in Academic Self-Regulation, with $F(1, 78) = 6.55$, $p < .01$). There was no significant interaction between group and gender, $F(9, 68) = 0.56$, $p > .05$). No statistically significant main effect on gender was found ($F(9, 68) = 1.15$, $p > .05$), but univariate tests revealed a significant effect on General Self-Concept ($F(1, 76) = 4.77$, $p < .05$). A Pair-Samples t test comparing the pretest and posttest mean scores was further computed, showing a significant decrease in the General Self-Concept mean scores for boys ($t(23) = 2.93$, $p < .05$) with intervention. The means score on this variable shifted from 11.75 ($SD = 2.77$) to 9.92 ($SD = 2.50$).

Qualitative Analyses

The students completed an evaluation form on their thoughts and feelings about the training content after every two preceding sessions. Two forms were designed to alternate between each evaluation session to provide for variety. Table 2 presents the percentage of responses by the students to the training sessions. Not all students returned the evaluation but the response rate was high, ranging from 85% to 100% depending on the sessions.

The qualitative analyses with the students and instructors validated the appropriateness of the concepts introduced to enhance the students' functioning. On average, 82% of the students found the program useful, interesting and applicable to their personal lives. The sessions on "Understanding Myself and The Thought Cycle" were found most useful by 91% of these students. In Session Five, the objective was to help students become aware and construct greater knowledge of themselves, the influence of significant others, moods and their motivation. Students were asked to think about "Who Am I", use positive adjectives to describe themselves in different situations (e.g., in school and at home) and appreciate varying behavioral responses to different people (e.g., parents and friends) and situations. Session Six on "The Thought Cycle" sought to help students

appreciate and identify how positive or negative thoughts can affect their feelings which in turn influence their behavior and subsequent choice of actions in a specific real-life example. They were then to think of a current situation and reflect upon how the thought cycle evolves in that specific life episode. Sessions on “Setting Goal and Prioritizing My Life” followed the same format requiring students to provide a specific life episode in which they would like to learn how to set realistic goals or priority, after a demonstration with a real-life example.

The least useful sessions on “Beliefs about Myself and Self-Talk”, “Personal Control and Individual Responsibility” and “Effective Communication and Learning to Solve Problems” received 74%, 76% and 78% positive responses respectively. These sessions followed a similar format as those that the students had found most useful. However, in these sessions they were asked to identify beliefs and values they have about learning in general, instead of specific aspects of behavior or situation that they can work on. There was more ambiguity in the meaning of the concepts introduced. For instance, the students found it difficult to delineate situations in which they could assume personal control and responsibility from those that require them to adhere to parental expectations and control. In the same way, effective ways of communication depends on personal intent and a host of situational factors. Identification and evaluation of personal values and beliefs are therefore more complex and abstract for application. Feedback from the instructors and students has indicated that these concepts were difficult to comprehend. Their application depended very much on situational demands, which often became confusing as the students had difficulty grasping principles that could be used to guide them across situations.

It must be commented that the positive feedback received were generally brief and non-specific, sometimes mere regurgitation of words from the worksheets. The written feedback from students was also heavily constrained by their poor command of the English language. Most of the positive responses described the sessions as just fun, exciting, interesting and useful.

The comments made by students should be taken with caution as these may be more an indication of their perception of the usefulness and relevance of the content taught.

About 15% of the students did not find the training useful. It was noted that similar negative responses came from the same students across all the feedback sessions. This is likely to be the group of students who had little or no initial interest, and which the program had failed in capturing their enthusiasm as the sessions progressed.

In sum, the sessions on Personal Responsibility and Control, Goal Setting, Problem Solving and the Thought Cycle were found to be particularly meaningful and useful in helping the students think about being effective learners. The concepts of personal responsibility, choice and control were new to many and they agreed that the exposure to these ideas helped them realize they are personally responsible in shaping their successes. The students found the sessions involving self-beliefs and positive self-talk to be particularly cognitively demanding, difficult to understand and apply. The feedback received from the instructors was that the students seemed to understand the lesson better when the instructional materials were contextualized and the beliefs were explicitly demonstrated in the characters of the case study. Real-life short stories therefore facilitated personal application as they could readily identify with the characters.

Table 2 Percentage of Positive and Negative Responses to the Evaluation of the Training Program

| Training Sessions | Positive Response (%) | Negative Response (%) | Total No. |
|---|-----------------------|-----------------------|-----------|
| Sessions 1 and 2 | 35 | 11 | 46 |
| <i>Personal Control & Individual Responsibility</i> | 76.1% | 23.9% | |
| Sessions 3 and 4 | 29 | 10 | 39 |
| <i>Beliefs about Myself and Self-Talk</i> | 74.4% | 25.6% | |
| Sessions 5 and 6 | 42 | 4 | 46 |
| <i>Understanding Myself & The Thought Cycle</i> | 91.3% | 8.7% | |
| Sessions 7 and 8 | 40 | 6 | 46 |
| <i>Setting Goals and Prioritizing My Life</i> | 87.0% | 13.0% | |
| Sessions 9 and 10 | 31 | 10 | 41 |
| <i>Effective Communication & Learning to Solve Problems</i> | 77.5% | 24.4% | |

Discussion

This study describes an intervention that was carried out under naturalistic classroom conditions and the findings indicated that a social cognitive model incorporating self-regulation and personal agency beliefs may have merit in helping low achieving secondary school students in Singapore to be more effective learners. Specifically, the exposures to the instructional activities showed a positive impact on the self-efficacy and self-regulation in the academic domain but not on aspects of self-concept, social efficacy and social regulation, suggesting that these two socio-cognitive variables may be more amenable to change than social constructs that are less definable and more general conceptually. The qualitative data provided useful feedback on how the concepts could be refined to help create greater metacognitive knowledge and awareness of school-related skills in the students. It must be acknowledged, though, that such awareness may not be sufficient in motivating significant changes. Further efforts are required to help facilitate students' construction of metacognitive knowledge about strategic processing in different tasks (or situations) which is an important pre-requisite for attitudinal change in developing "responsible learners".

It is unclear what possibly explain for the lack of impact on social efficacy, aspects of self-concept and social self-regulation, as the training components did not lend themselves to any strong academic focus. One reason may be that effective interpersonal relationships involve the use of a greater repertoire of social strategies that are more difficult to delineate and require greater discernment for use in social situations that have varying demands (e.g., knowing under what kind of circumstances sharing or helping are appropriate, what kind of pressure not to succumb to.). Time constraints also limited exposure and elaboration of this aspect of training. In addition, posttest measures may not have been able to capture any changes in these aspects within such a short space of time after the training. Furthermore, shifts in behavior resulting from intervention need not always be directly revealed in overt actions but its impact may be manifested more subtly in

other behavioral dimensions that were not incorporated in the measures used (Markus & Wurf, 1987). Finally, the gender difference observed in General Self-Concept suggests that the underlying mechanisms activating different aspects of self processes and shaping the general self-conceptions of boys and girls may be different. This study failed to pay attention to these aspects and suggests that they be considered in future investigations.

This program is, however, not without difficulties and limitations. First of all, one must bear in mind that this intervention was conducted under less than ideal conditions, considering the physical layout of group-based learning through discussions and activities and the somewhat above average group size that made facilitation a challenge. It is acknowledged that a quasi-experimental research design also lends itself to a number of constraints in terms of the interpretation of the data and the generalizability of findings. Qualitative feedback further suggests that many of the students had difficulty with understanding the applicability of the more abstract and complex concepts, like self-beliefs, in their personal lives. They valued the real-life short stories in that these facilitated personal application as they could readily identify with the characters. Aside from cultural factors, these groups of students, with their limited capacity in English, experienced difficulty articulating their ideas and expressing their thoughts and feelings. This suggests that the students are still very much concrete thinkers. A structured approach, using exemplars, guided individual reflection exercises before articulating concerns in group, and provision of visual aids (e.g., feelings chart, thought cycle) are necessary anchors for successful program delivery.

There is little by way of literature and research on the use of a socio-cognitive framework to facilitate attitudinal change and developing students to be “responsible learners”, or focus on building strength rather than ameliorating personal deficits. This intervention indicates that it may be feasible for instructional training to alter feelings of agency and efficacy, and bring about corresponding changes in students’ perception of choices and their theories about self-conception, self-competence and learning. At this stage of development, students could benefit from learning to develop a

greater sense of control through being shown how to make academic and social goals personally relevant, to acquire adequate self-management skills and to foster a balanced view of success and failure, through an appreciation of the influence of their underlying beliefs, values and attitudes. It is hoped that this attempt provides the impetus for further thoughts on the use of self-regulatory and self processes to facilitate change, and in shaping the model further for effective intervention.

A classroom implication arising from this study is that teachers may find it useful to adopt instructional and management practices that encourage and foster students' perceived efficacy as a means to enhance self-regulatory capability and optimize learning outcomes. This does not necessarily occur under special intervention conditions. As a cognitive belief, self-efficacy is teachable and trainable since sources of this belief are readily identifiable — through opportunities to experience task mastery, modeling of successful experiences, verbal persuasion by significant models and an awareness of personal physiological states like anxiety and fear (Bandura, 1995, 1997). Educational practices that incorporate elements of self-monitoring and self-evaluation, and emphasizing personal responsibility and control in learning through offering more choice, feedback, problem-solving, and decision-making opportunities in the classrooms are other possible initiatives to strengthen these malleability beliefs. These classroom efforts need not require a major overhaul of the teacher's management of the classroom. However, an important point to note is that the function of efficacy beliefs is not to provide the skills necessary for success but what it does is to generate the effort and perseverance required to obtain those skills (Madewell & Shaughnessy, 2003). A balanced focus on developing the necessary self-regulatory skills is important. With low achieving and poorly motivated students, this is particularly valuable.

To conclude, this study renders some preliminary support to the Western literature that has already firmly established the link between efficacy beliefs and self-regulatory ability in the academic domain. Although the study did not measure either subsequent academic performance associated with

training or seek to demonstrate any causality between academic efficacy and self-regulation, it remains possible that perceived efficacy could have facilitated academic self-regulation. This finding is in line with current research showing that effective self-regulation depends on feeling self-efficacious for using skills to achieve mastery, which should evolve into higher academic attainment (Zimmerman & Martinez-Pons, 1990).

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