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Qualitative analysis of a Self Administered Motivational Instrument (SAMI): implications for students, teachers and researchers

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Tim Duffy is Research and International Project Manager within the School of Health, Nursing and Midwifery at the University of the West of Scotland. He is a qualified social worker and specialised in working with people with alcohol and drug related problems. For six years he was National Training Officer with responsibility for training social work and health care personnel to develop strategies to motivate clients and patients to tackle alcohol and drug related problems. During this time he regularly delivered programmes focussing on motivational interviewing, problem solving and goal setting. He evaluated the effectiveness of this training and also the effectiveness of a minimal intervention for people with alcohol problems.

Since 1995 he has supported the development, delivery and evaluation of a range of undergraduate and post-graduate programmes. In this role he has supported students to focus and improve their approaches to study. His PhD study evaluated the impact of the SAMI in a UK Higher Education setting. This study borrowed and built on techniques used to motivate clients with alcohol and drug problems and applied them to students wishing to improve their approaches to study. Tim is currently researching student learning styles and approaches to study; student motivation; methods of supporting students online and student retention.

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Qualitative analysis of a Self Administered Motivational Instrument (SAMI): implications for students, teachers and researchers

Abstract

The SAMI (Self Administered Motivational Instrument) is a low-cost intervention that uses motivational interviewing, aspects of the RASI learning-style instrument and analytical decision making to assist students' to reflect on approaches to study and motivate change. It is a self-help guide which can be completed within 30 minutes.

The impact of the SAMI on deep and strategic approaches to study and student attainment was established earlier (Duffy and Rimmer, 2008). These results were based on a quantitative analysis of data using SPSS and AMOS. Students who completed the SAMI increased their strategic approach to study and had a higher chance of obtaining the top two grades of A or B1 in assessments. Further, a small to moderate effect size of 0.32 was noted in changes in strategic scores on the RASI.

The current paper concerns qualitative SAMI information gathered from 88 first-level, pre-registration nursing students studying at a university in the west of Scotland. Their SAMIs were transcribed and a thematic analysis carried out using NVivo, with independent- and multiple checking employed in an effort to ensure reliability and validity. Further, Prochaska and Di Clemente's cycle of change and changes in students' RASI scores were used to interpret students' qualitative responses. Groups of themes were identified and within grouped responses it became apparent that: some students do not want to change; some want to change but cannot; and some make considerable changes to time allocation in relation to study, family, work and social life.

It is concluded that while the SAMI is an innovative, cost effective method of encouraging students to think through the process of change in relation to their approach to study, consideration should be given to including a preliminary section that assesses students preparedness for change. Moreover, the results of this current research suggest that a comparison with SAMI material provided by post-registration nurses studying for degrees could Prochaska and Di Clemente's reveal substantial differences.

Keywords: motivational interviewing, deep- and strategic learning, dissonance, decision making and action

Introduction

A low-cost intervention (known as the SAMI or Self Administered Motivational Instrument) has been developed using motivational interviewing, learning-style theory and analytical decision making. Its originators saw this as the first application of an instrument based on motivational interviewing to assist students' to reflect on changing their approaches to study and motivate actual change. It is a self-help guide which is self-administered within 30 minutes.

This instrument has been trialled with pre- and post-registration nursing students at a Scottish university. Students who completed the SAMI increased their strategic approach to study and had a higher chance of obtaining the top two grades of A or B1 compared with those who did not. Further, a small to moderate effect size of 0.32 was noted for strategic scores. That is, the SAMI was found to have quantitatively significant effects on academic performance and on change to a more strategic approach to learning (Duffy & Rimmer 2008).

The focus in this paper is qualitative, drawing on responses to items prompting students to:

1. reflect on the benefits and costs of changing approaches to study; and

2. take decisions and enact them to form new study regimes, where appropriate.

A concentration on qualitative evidence from the SAMI is important because, while the statistical results of applying the instrument suggest strongly there are effects on learning style and academic outcomes, it cannot be assumed that every student is ready to change his or her approach to study. For example, what induces a traditional student

(one going straight from school to university) to study more or less intensively is likely to differ to the study effort and scope for change of a 45 year old, working mother with aged parents to consider. Hence, via the qualitative responses to the SAMI, students' readiness to respond to the instrument can be assessed. It is hoped that this will guide researchers and teachers to consider the evolution and refinement of the instrument and to interpret the evidence contained in SAMI responses.

In the next section, an overview is provided of the literature underpinning the SAMI. Following this, the method of assessing evidence is discussed. This involved finding correspondences and reaching agreement between the three authors on themes and the groupings of SAMI responses. The groups are discussed using: (i) changes in scores on deep- and strategic learning over the course of the research; (ii) and using Prochaska and DiClemente's (1982) stages of change to attempt to understand different learning-style changes for students giving similar responses to SAMI items. The groups are presented and discussed in the fourth section of the paper. Finally, conclusions and areas for further research are presented.

Theory and design of the SAMI

The sections of the SAMI involve:

1. students estimating of how well they are doing with their studies currently and how well they could do if they 'tried their hardest' (Together, these items are referred to as the 'How well' questions.);

2. measurement of deep and strategic learning;

3. setting out advantages and disadvantages of making changes to study approach;

4. students defining their main study issue(s) or problem(s) and generating possible solution(s); and

5. consideration of barriers to achieving planned changes.

The first two sections of the SAMI were intended to raise awareness of issues students may have had with their studies. The aim was to introduce a key part of motivational interviewing – self review (Miller & Rollnick 2002). The first question posed in Section 1 was taken from the ASSIST questionnaire (Tait & Entwistle 1996); while the second question was set in the same form as the first, with the intention of fostering ambivalence or dissonance – another key aspect of motivational interviewing (Miller & Rollnick 2002) – about current study practice.

Self review and the possibility of ambivalence were again foci of Section 2, in which students responded to 20 items (ten on strategic learning and ten on deep learning) from the RASI learning style inventory (Duff 1997). Duffy and Rimmer (2008; 2009) discuss the validity and reliability of these items, the changes in inventory outcomes over the course of the research and how the changes relate to academic grades. The

RASI was used because it met all of the benchmarks of Coffield *et al*. (2004) in relation to reliability and validity.

Students were next invited in Section 3 to consider decisional balance (listing and reflecting on the costs and benefits of change) in relation to: (i) continuing their current study practises; and (ii) alternatively amending study approaches. In this section, most students could and did make 'self-motivational statements' and embark on 'change talk' (Miller & Rollnick 2002). Given the emergence of self-motivational statements and/or change talk, this indicates the possibility of a student considering change and is seen as a further key aspect of motivational interviewing (*ibid*.), which 'encourages respondents to make links between [their] situation, their behaviour and likely consequences' (Duffy & Rimmer 2009).

Section 4 of the SAMI is about analytical problem solving, in which students identify the main problems they have with their study approaches (Whetten & Cameron 2006). Brainstorming is then encouraged to compile many possible solutions to the main problems. The SAMI provides scope for up to 10 potential solutions. Following this, Section 4 is used to lead students to evaluate potential solutions, decide on which to implement and then set realistic and achievable goals for their study outcomes.

The final section of the SAMI invites students to consider barriers to achieving goals and study outcomes. 'The awareness of potential obstacles provides students with the opportunity to consider ways to either remove, avoid or get around obstacles, should they arise' (Duffy & Rimmer 2008, p. 35). Bringing students to consider barriers to achievement also has elements of fostering dissonance or ambivalence about

interruptions to effective change, the importance of being alert for barriers and being prepared to overcome them.

As noted earlier, students may not be in the same state of readiness for change. This may be associated with internal or external influences. Prochaska and Di Clemente (1982) discuss the cycle of personal change in terms of the following stages.

- *Pre-contemplation*: In this stage a student may benefit most from the emergence of an awareness of having study difficulties. Such students may be dismissive of this or subsequent items in the SAMI (or any other form of counselling or assistance) aimed at planning for change. That is, pre-contemplative students may not even perceive the existence of problems, let alone the need to change.

- *Contemplation*: Students at the contemplation stage are likely to experience dissonance or be ambivalent about study issues and adhering to a planned programme of change. Such students are therefore likely to respond positively to the decisional balance components of the SAMI and of generating possible and realistic solutions to the issues causing ambivalence. These components and the first two sections of the SAMI may therefore serve to 'tip the balance' towards a commitment to completing the instrument and attaining the desired goals.

- *Determination*: Students at the determination stage of the cycle developed by Prochaska and Di Climente may identify the need for change via the decisional-balance components of the SAMI. They may be induced in subsequent sections to problem solve and devise changed approaches to study. However, they may lack the confidence or skills required for planning or

carrying out planned change. This may constrain their engagement with the

sections of the SAMI following the decisional-balance components.

To revisit the previous stage, it is possible determination-stage students are

already aware of the decisional-balance components, so pay scant attention to

this in completing the SAMI; but, they may excel when equipped with

problem-solving and planning skills in subsequent sections.

- *Action*: Some students who are at the action stage might benefit from doing the

  SAMI, revisiting ambivalence about aspects of study and the subsequent

  identification of issues and potential solutions. However, it is conceivable most

  students at the action stage see the SAMI as a frustration, in that they have

  moved beyond, for example, awareness raising and/or the need to be

  introduced to analytical problem solving. Consequently, the administration of

  the instrument to people at the action stage may produce at best sparse

  responses to many SAMI items.

- *Maintenance*: Students in this stage may be assisted by SAMI components

  relating to decisional balance to reinforce the motivation for planned change

  and reaching desired goals. Alternatively, such students may not see the need

  to re-visit problematic areas of their study regimes, because they are doing

  sufficiently well not to be worried or to have experienced ambivalence.

- *Relapse*: For students in this situation, the SAMI can serve to renew student

  commitment to change, reviving plans that lapsed and re-asserting goals that

  remain unattained. There are two aspects to consider. First, regarding obstacles

  to change, students completing the SAMI could identify problematic situations

  that lead to lapsing, relapse or collapse of their planned change. The second

  feature is that, having had a breakdown of plans, students may regress to one of

the stages of change above. Some may regress and become stuck in pre-contemplation; while in contrast others may quickly recover from a stage such as contemplation to reach the action stage.

Students may go around the cycle from pre-contemplation to relapse one or more times, before changing their behaviour in line with the determinations they have made. They may stay in each stage for differing amounts of time and while in a particular stage, students may be assisted to change by different influences, depending on the stage (Duffy 2010).

The Prochaska and Di Clemente approach suggests that the SAMI may not be as effective for some students as for others. On the other hand, the SAMI may assist students to move speedily from one stage to another. In the context of this investigation of qualitative responses to SAMI items, it should be remembered that whatever the intensity of ambivalence felt by an individual student, there may be other factors, such as position in the cycle of change, which will affect responses.

In the commentary above on the stages of change, it was noted that being in some of them may be associated with a reduction in the volume of material written by respondents. However, nowhere was it noted that being in a particular stage was likely to affect disproportionately, positively or negatively, the numerical responses of students to the first two sections of the SAMI. In the next section the method of investigation is discussed and how use is made of the quantitative responses along with the extraction of themes from qualitative information supplied by students.

Method

The focus in the current paper is to investigate qualitative SAMI responses provided by students on first-year, *pre-registration* nursing programmes at a university in the west of Scotland. Pre-registration students are those who do not have any nursing qualifications, but were embarking on a three-year professional training programme. Eighty eight respondents completed the SAMI in week 2 of their first semester studying at university. Participants' ages were from 17 to 51, and 91 per cent were female. These students again did the RASI component of the SAMI in week 11 of Semester 1, before academic course assessment outcomes were known.

Major concerns in coding the qualitative responses were to ensure reliability and validity (Golafshani 2003). To ensure the latter, attempts were made to reconcile the qualitative themes with the quantitative data gathered via the RASI responses. This form of convergence with other data is reported in the next section. Moreover, as is explained below, checks on emerging themes were carried out by each of the researchers. This is one form of independent/multiple checking available to a team of authors (see Ratcliff 1995). Multiple coding of transcripts by the authors was also undertaken to facilitate reliability of the process (Morse *et al*. 2002; Golafashani 2003).

Data derived from completion of the SAMI were transcribed and a thematic analysis carried out by one author using NVivo. The themes that emerged concerned each area of the SAMI (see the list of five stylised parts of the instrument given at the beginning of the previous section).

Next each author worked directly with some of the hardcopy SAMI items to code responses and then to cross-reference these to NVivo themes and the coding reports. Each coding was then reviewed by the other authors to confirm satisfactory levels of correspondence and agreement on constructs.

In a second phase, the themes from NVivo were re-visited, with the authors undertaking a second level of analysis to group themes – again guided by correspondence of authors' groupings. Four groups emerged. These are discussed in the next section, using the stages of change identified by Prochaska and Di Clemente to illuminate examples of student responses.

Grouped themes

From the NVivo encoding, 14 initial themes were identified. An indication of the range of responses is that students expressed concern (in the very first section of the SAMI) that their scores on the 'How well' questions differed, through to issues of identifying study related problems and planning solutions (in sections towards the end of the instrument). As indicated in the previous section, the efforts made by the authors to guarantee validity and reliability led to the formation of four groups of themes, which are shown in the columns of Table 1. The groups were given the descriptive titles:

     Group 1: Initial reflection and identification

     Group 2: Benefits of action

     Group 3: Identified issues

     Group 4: Application

For each group, typical responses are shown in Tables 2 to 5, along with changes in deep and strategic scores from week 2 to week 11 of the semester. The annotations D+, D-, S+ and S- are used to indicate what changes in deep- (indicated as D) and strategic scores (indicated S) occurred. Where there was no change, a D or S is not given. (Note that the RASI scores are reliable and valid. See Appendix 1.)

NVivo theme	Group 1	Group 2	Group 3	Group 4[i]
'How well' scores differ	✔			
Deep and strategic scores were liked	✔			
Deep and strategic scores were disliked	✔			
Problems with study approach	✔			
Worried about difficulties of change			✔	
Drawbacks to change			✔	
Benefits of change		✔		
Obstacles to change			✔	
Reasons for change		✔		
Specific steps to be taken		✔		
First solution				✔
Action for first solution				✔
Concerns about plans			✔	

Table 1 Grouped themes from SAMI responses

Across Tables 2 to 5, the greatest magnitude changes in deep- and strategic scores are 10 and 14 respectively. More than 70 per cent of students changed their deep or strategic score by as much as +5 or −5 points between weeks 2 and week 11. With this use of quantitative information and the use made below of Prochaska and DiClemente's

stages of change, it is hoped that greater insight can be gained into the responses made by students to the sections of the SAMI. In turn, the objective is to find ways of improving the instrument and of helping stakeholders (respondents, lecturers and researchers) to interpret completed SAMIs.

The pairing of learning-style changes with themes in Group 1 is shown in Table 2. It appears that if students expressed concern about differences in the two 'How well' scores (see the first box in Table 2), then there were likely to be changes of four or more in strategic scores, provided the students were more specific than merely noting they 'need to study more'. In the same section of Table 2, a decline of six in deep score accompanies one respondent's claim that 'It doesn't bother me'. This student may be pre-contemplative or in a stage of maintenance in terms of Prochaska and DiClemente's taxonomy. However, the change of six in deep score with no change in strategic score, suggests changed study approach, but relapse may have occurred, perhaps to being pre-contemplative.

The theme of recognising problems with current study approaches (the second box of Table 2) is associated with no change in strategic score through to an increase of 14. Two responses mention time and are associated with increases in deep scores of eight or nine, although one involved no strategic change and the other +14, the maximum observed among the pre-registration nurses. Apparently, becoming deeper brings an awareness of needing to find time for study. The fact that one respondent did not experience an increase in strategic score could be associated with the general tendency for strategic scores to be higher relative to deep scores when measured initially in week 2. The student was already highly strategic in study approach.

Group 1: Initial reflection and identification	
	'How well' scores differ It doesn't bother me (D-6) I need to study more I am able to better juggle work and family (S+4) I am able to do better (S+14) I need to try harder (S+14)
	Problems with approach to study Juggling commitments Difficulty concentrating, getting started, distractions; (S+4) Finding time in a suitable environment (D+8) Time management (work, family, health, study, leisure) (D+9, S+14)
	Like deep- and strategic scores It shows me there is room for improvement It's fair, what I expected It's higher than I expected I liked it was not too low I like that it was quite high - it boosts my confidence (D-2, S+1)
	Dislike deep- and strategic scores Not bothered There is room for improvement (D-4, S+4) It could have been higher (D+8, S-3)

Table 2 Examples of responses in Group 1: Initial Reflection and Identification

The theme of students liking their deep- and strategic scores appears to be characterised by no change through to slight changes in deep- and strategic scores. The statements shown are consistent generally with these students being pleased with their initial approaches to learning and so being in the maintenance stage. However, the response about room for improvement, with no change in deep- or strategic scores, may indicate pre-contemplation or a determination to change that could not be put into action.

In the final theme collected into Group 1, disliking deep- and strategic scores, is associated with no change over the semester (for someone who didn't like the score, but claimed to be 'not bothered') through to a deep change of eight and a small reduction in strategic score for someone who felt 'it could have been higher'. At the time of

completing the SAMI, the first response may have been elicited from a student who was pre-contemplative or in a stage of maintenance; while the other examples were from students who were ready to contemplate change.

In Table 2 there are examples of similar responses to SAMI items being associated with similar changes in approaches to study, at least as measured by changes in deep- or strategic scores. See for example the two statements in the first box of the table that are associated with changes of +14 in strategic score and no change in deep scores. Other examples of this in Table 2 are the statements in the third box (other than the first) for which there has been no change in learning-style scores.

On the other hand, the final statements in Table 2 are similar in that they indicate scores could be higher or improved. Yet, one statement is associated with a decrease in deep score and an increase in strategic score, while the changes are reversed for the other. Also, the deep changes differ considerably, bearing in mind that the greatest individual deep-score change was of magnitude 10. On the basis of this evidence, it would seem that students could make similar responses to the SAMI but in practice undertake different changes to their study approaches. This of course may reflect the students having different study approaches initially.

Turn now to the second group of themes, shown in Table 3. The first responses in each box include the word 'none' and are indicative of being in the maintenance or pre-contemplative stages of the cycle of change. Further, on the evidence of changes in deep- and strategic scores, the students concerned appear to have made few adjustments to their study regimes. Also, the fourth response in the third box of 'Other priorities

(family, work, leisure)' probably came from someone who is pre-contemplative about study, as the rest of life is more important. Note that this response was followed by a decline in strategic score.

However, other students whose deep- and strategic scores did not change perceived benefits (such as higher grades and self worth), reasons (better grades and understanding) and specific steps to take (time management and concentration). In the first box of Table 3, examples are given of students who saw specific benefits of change and whose strategic scores increased over the nine weeks from week 2 to week 11 of the semester. Of the three examples in the first box, two also experienced increases in deep scores.

Group 2: Benefits of action	
	Benefits of change
	None, my current approach is fine (D-1)
	Higher grades, learn more
	Achieving what I am capable of
	Self worth, feel good
	Become a nurse, my chosen career (D+3, S+3)
	Less stress (D+4, S+5)
	Feel more in control (D-2, S+6)
	Reasons for change
	None, comfortable with current study approach (D-1)
	Better grades, marks
	Understand coursework better
	Really want to pass and be a nurse
	Increase self esteem, pride
	Better myself, make most of ability (D-3, S+6)
	Specific steps to be taken
	None
	Distractions, concentration
	Time management
	Other priorities (family, work, leisure) (S-2)
	Getting started and getting organised with study (D+6, S+10)

Table 3 Examples of responses in Group 2: Benefits of Action

Many responses in Table 3 are from students who were, or had become, determined to change when completing the SAMI. For example, consider the statements in the first box. These were elicited in response to the prompt 'If I changed my approach to study the benefits would be' and appear to be consistent with students reaching the determination stage in the Prochaska and Di Clemente cycle when completing this part of the SAMI. The responses (other than the first) shown in the second box of the table are similarly suggestive of students who have reasons to underpin their determination to change; while the statements (with exception of the first and the fourth) shown in the third box are indicative of the action stage being reached.

The third group of themes were labelled 'Identified issues' to indicate that respondents were aware of factors that could hamper the attainment of goals and the realisation of planned actions. Examples of student responses in this group are shown in Table 4. Note first that individual responses are arranged differently than in the previous two tables. That is, responses of the form 'None' are located at the bottom of boxes rather than at the top. This is because, in this group, such statements may correlate with having changes in mind. In the other groups, a response of 'None' or 'Not bothered' was suggestive of taking no action or not being bothered.

Half of the 'None' responses in Table 4 are accompanied by changes in deep- and strategic scores. One incidence of 'None' is associated with increases of 9 and 14. As this occurs in the 'Drawbacks to change' box, it would seem this student was saying in week 2 'I can see no obstacles and I should get on with it'. The positive changes in deep- and strategic scores are consistent with action being taken to implement a change plan over the nine weeks between instances of completing the RASI.

However, the combination 'None' with (D-6, S-5) in the first box is suggestive of no obstacles to change and so the student being in the stage of determination when completing the SAMI, but by week 11 of the semester, the student could have regressed. The other example of 'None' in the first box is accompanied by no change in scores. Another example of this occurs in the third box. It is possible that these responses are associated with students who moved from action- to maintenance stages over nine weeks.

Overall, as noted earlier, students are seen in Table 4 to make similar statements in the SAMI, but make different adjustments in study regimes. For example, see the responses 'Family' and 'Work' in the first box and the slightly different changes in strategic scores associated with each. More striking, there was no change in scores for a student who wrote 'Time/balance of study, family, work' and the change of S+14 for another student who wrote 'Time management'. Making changes that resulted in slight strategic changes may be consistent with the students being in the maintenance stage; experiencing a much larger strategic change may indicate moving from the determination stage to action. Thus, in terms of Prochaska and Di Clemente, students may make similar statements about items in the SAMI, but at the time they were in different stages of the cycle of change.

If, in Table 4, 'None' indicates readiness to change, then indicators of resistance to change lie in responses such as: 'Social life' and 'My attitude, motivation' in the first box; 'Impact on family and friends' and 'Less time' in the second; 'Leave study too late' in the third; and 'Losing touch' in the fourth box. As such the students making these statements may be pre-contemplative.

Group 3: Identified issues		
	Obstacles to change Impact on work (S+14) Time management (S+14) Family (S+6); Family (S+2) Work (S+6); Work (S+2) Time/balance of study, family, work Social life My attitude, motivation None (D-6, S-5) None	
	Drawbacks to change Impact on family and friends (D-4, S-2) Less time Reduce working hours Poor module, course result Let down self, others None (D+9, S+14)	
	Worried about difficulties Impact on standards as student and mother (D-4, S-1) Not achieve goal, fall behind (D+5, S+5) Not study effectively (D+8, S+10) Poor marks, fail Leave study too late None	
	Concerns about plans Fear of failure (module, course, career) (D+10, S+8) Upsetting family/friends (D+3, S+5) Performance, not achieving what is achievable Let self/others down Losing touch	

Table 4 Examples of responses in Group 3: Identified Issues

There are responses in Table 4 that indicate clearly students have particular concerns about drawbacks to change. For example, the response 'Reduce working hours' may not be a realistic possibility because of the associated reduction in income, suggesting an economic reason for not changing. Consistent with this there were no differences in deep- and strategic scores. Another statement reflecting influences from the rest of life is 'Impact on standards as student and mother'. The student writing this had slight declines in deep- and strategic scores. It may be that this respondent was led to reflect

on all of life's tapestry and realised that there were greater priorities elsewhere, thus falling into the pre-contemplative or maintenance stages or tending to relapse.

The occurrence of the sentiments 'My attitude, motivation' in the Obstacles box; 'Poor module, course result' and 'Let down self, others' in the Drawbacks box; all but the first two statements in the Worried box; and 'Fear of failure (module, course, career)' and 'Performance, not achieving what is achievable' in the Concerns box suggest that students frequently 'fear failure'. This phenomenon has been recognised in addiction research (McMahon & Jones 1993).

Fear of failure may arise because many pre-registration nursing students have little experience of how to plan and carry through a plan of action. Whether this is the case for post-registration nursing students will be taken up in subsequent research.

Two statements in the Concerns box have not been considered so far. First the remark 'Let self/others down' may indicate fear of failure in regard to letting oneself down. It may indicate external considerations in letting others down. This student did not make changes that resulted in different deep- and strategic scores. On the other hand, the respondent who wrote 'Upsetting family/friends' undertook changes in study regime that resulted in slight increases in deep- and strategic scores. In each case it seems the students preferred to ensure that people external to the learning situation were not upset or let down, one by making no change, the other by taking a more strategic approach (coupled interestingly with a deeper approach). Schuller and Bamford (2000) gave cases of initial family support for study that later dissipated.

Houston, Knox and Rimmer (2007) saw this phenomenon as being an explanation for some student outcomes at the same university as the site of the current study.

The final group of themes and examples of student statements are shown in Table 5. As for similar statements in Tables 2 and 3, the response 'None – I am doing fine' is consistent with being in the maintenance or pre-contemplative stages. The next statement, 'Plan time better' suggests contemplation of change when completing the SAMI relative to other written responses in the first box of Table 5. That is, planning time better seems less specific (even if it is forward looking and constitutes change talk), compared with statements such as 'Reduce working hours, give up work', 'Weekly timetable ...', 'Get help from …' a wide network of contacts and 'Study somewhere else ...'. These remarks are indicative of being in, or reaching, the action stage while doing the SAMI.

Group 4: Application	
	Main solution identified
	None – I am doing fine
	Plan time better
	Reduce working hours, give up work
	Weekly timetable (balance study, work, family, leisure) (S+14)
	Get help from friends, family, neighbours, childminder (D+8, S+7)
	Study somewhere else (quieter, no distractions) (D-4, S+4)
	Action for first solution
	Employer
	Allocate personal free time
	Get baby sitter, childminder
	More contact with tutor, fellow students for support
	Change study environment (D-2, S-1)
	Allocate specific time to study, work, family (D+1, S+6)
	Discuss problem with family (D+5, S+5)

Table 5 Example of responses in Group 4: Application

Note again that specific actions are associated with different changes in approaches to study. For example, consider actions relating to time use. One case, 'Weekly timetable (balance study, work, family, leisure), is associated with the maximum

observed change in strategic score; yet the notion to 'Reduce hours of work, give up work' has no change in scores associated with it. In the former case, some re-balancing is required that may involve being much more strategic about time management; in the latter case, the existing study regime might be preserved if erosions due to work are reduced or eliminated. Yet, another respondent intended to 'Allocate specific time to study, work, family'. This too carried a change of strategic score, which was outside the range of -5 to +5 experienced by 70 per cent of students, but was less than the maximum change.

Conclusion

NVivo and multiple checking were used to identify themes emerging from comments made by pre-registration nurses when completing the SAMI. The different stages of change outlined by Prochaska and Di Clemente and changes in deep- and strategic scores were considered when interpreting students' qualitative comments.

It is clear that some pre-registration nurses did not want to change their approaches to study. This would suggest that they may not wish to seriously consider change as they are content with their approach. Alternatively they may have previously considered changing their approach but found such change too difficult to maintain and consequently opted for the status quo. Other students made statements which suggest that they wished to change their approaches. However, from the changes in their deep and strategic scores, it appears they were unable to bring about intended study changes. Further, some students made some attempt to change but it appears they were unsuccessful, perhaps because they relapsed to an earlier stage in the cycle of change. Finally, some students do indeed progress to the action stage, with some

making minor adjustments to their approaches, while others made considerable changes specifically to time allocations to study, family, work and social life. Thus, from the student's perspective, students in a number of the stages of the Prochaska and Di Clemente cycle have been assisted by completing the SAMI.

From the tutors' perspective, it appears that they may require a greater understanding of how students juggle their study, work, family and social commitments. In this connection, the current study provides evidence to support Coffield *et al*'s statement:

> 'Learners are not all alike, nor are they all suspended in cyberspace … they live in particular socio-economic settings where age, gender, race and class all interact to influence their attitudes to learning' (Coffield et al, 2004, p. 60).

To understand qualitative responses, the Prochaska nd Di Clemente cycle of change proved to be helpful. Its use assisted in understanding why some students did not change study approach, why some may changed only a little and other made substantial changes. Use of the cycle of change also suggests that a preliminary assessment of students may be appropriate before they do the SAMI. To this end, it would appear sensible to have a preliminary step designed to position students in the cycle of change. Depending on responses to this, students might be directed to all or specific sections of the SAMI. Those students who are already in the maintenance stage of the cycle could be directed to delay completion of the SAMI.

As measured by deep- and strategic scores, changes in study approaches do occur over the course of a semester. Tutors can assist students to make adjustments by

introducing students to the SAMI. Further, tutors could play a more active role by helping students to set and review goals and targets. For example, as time management is often a difficulty, tutors could run a time-management course early in academic programmes and reinforce this throughout the academic year.

In the current paper, the SAMI has been tested as a brief intervention with little assistance from academic staff. Further, planned studies will assess the impact of the SAMI when it is more actively supported by academic staff with groups within a classroom setting. In addition, future studies will evaluate the SAMI with students from different academic disciplines, academic settings and different cultures. While the current paper addressed the qualitative information provided by pre-registration nurses, an analysis of the responses of post-registration nurses is underway.

Appendix Statistical reliability and validity of the RASI

Reliability		
Cronbach's alpha	*Required*	*Actual*
Deep approach	0.70	0.78
Strategic approach	0.70	0.81
Validity	*Required*	*Actual*
χ^2/df	Less than 3.0	2.83
CFI	Greater than 0.9	0.97
TLI	Greater than 0.9	0.93
NFI	Greater than 0.9	0.95
RMSEA	Less than 0.08	0.07

Note: [ii]Table drawn from Duffy (2005)

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Endnote

[i] One further theme was included in Group 4, namely *Reviewing plans*. It relates to the final stages of the problem-solving process and broadly covers monitoring of actions taken to change approaches to study. This occurred in the final section of the *SAMI* and was not completed by many respondents. Because there were relatively few responses, it was decided to exclude this theme.