Talking your way to success? Effects of self-belief training on students' performance and aspirations

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Abstract

We report evaluation of a training program aimed at developing academic self-belief and motivation in Key Stage 4 students, mainly by encouraging the use of positive self-talk. 263 Year 10 students from five schools completed multidimensional measures of self-efficacy, self-esteem, and academic motivation and aspirations prior to, immediately following, and around 20 weeks after completing the Pacific Institute's *Go For It!* program. Their scores were compared with those of 322 students from five schools matched on performance and socio-economic status and tested at similar intervals. We found no evidence of sustained positive effects of the intervention on any self-belief or motivational measures, or on aspirations or academic performance. We attribute lack of effects to poor student uptake of the self-talk strategies taught during the program, and possibly to the general ineffectiveness of seeking to develop self-efficacy by persuasion.

Introduction

Teachers and education policy makers typically assume that for a student to perform well in an academic discipline they need not only knowledge and understanding, but also a belief in their ability to learn and to achieve. This is expressed, for example, in a recent policy emphasis on developing students' aspirations. A central thrust of the Aimhigher initiative, set up in response to the 2003 Higher Education white paper (DFES 2003), is that in addition to developing the necessary knowledge and learning skills, school students also need to have sufficient self-belief to see university entry as an attainable goal. More generally, developing students' self-belief is seen as an important function of school education across all ages. Self-esteem is mentioned in upwards of 400 separate documents on the DCSF Standards website (DCSF 2007).

This possibility of a relationship between self-belief and performance has considerable intuitive appeal: students who are confident that they are able to learn are more likely to be motivated to do so; students who enter an examination believing that that they have the necessary knowledge are more likely to apply effort to finding the right answers. There has, however, been considerable controversy over whether or not research evidence supports these intuitions (Kahne 1996), with recent reviews arguing that the emphasis on developing self-esteem in educational and other contexts is misguided (Baumeister et al. 2003; Emler 2001). The psychological literature breaks self-belief down into a number of different, overlapping constructs. Self-

efficacy relates specifically to an individual's belief in their ability to perform well with respect to a particular task or task-domain (Bandura 1997; Bandura et al. 1977; Pajares 1996; Zimmerman 2000). Self-efficacy measures can be quite strongly predictive of performance (Multon et al. 1991), and this is particularly the case when the measure of self-efficacy is closely tied to the particular task that is being assessed (e.g., Pajares & Miller 1994). The self-efficacy/performance relationship remains, though is substantially weaker, even after controlling for prior ability (e.g., Pajares & Kranzler 1995; Pajares et al. 1999; Pajares & Valiante 1999; Skaalvik & Skaalvik 2004). This suggests that a student's belief in their ability to perform well on a specific task is, in itself, a predictor, and perhaps a cause, of good performance.

Self-esteem is a broader concept, with measures including an affective component. Questionnaire items typically ask either globally whether students feel good about themselves, or more specifically whether they feel good about themselves in the context of a particular area of functioning (e.g., in relation to their school work). The relationship between global self-esteem and performance measures tends to be very weak (see Hansford & Hattie 1982, for a review). However, domain-specific measures of self-concept – a construct closely related to self-esteem – provide better performance predictions (Marsh 1990; Marsh et al. 1999). For example, in a carefully controlled study Marsh and Köller (2004) found that mathematics self-concept measured at 7th grade contributed unique variance to mathematics performance at 10th grade, independently of 7th grade mathematics performance, and 7th grade literacy self-concept partly explained 10th grade literacy performance, independently of 7th grade literacy ability. Effect sizes were modest (.23 and .14 respectively) but not negligible.

There is, therefore, some evidence of a casual relationship between self-belief and performance although effects are relatively small and are moderated and/or mediated by complex sets of social and parental factors (Bandura et al. 1996). However, effects on performance aside, most parents and educators would feel that children are better off if they think positively about themselves. This belief is supported by evidence linking poor self-image and self-efficacy to poor mental health (e.g., Ehrenberg et al. 1991; Patton 1991). Therefore, even if an increased self-belief does not result in improved performance it is, in and of itself, a worthwhile educational goal.

Strategies for improving students' self-belief are an important part of individual teachers' day-to-day classroom practice: students are praised when they perform well, not just to reinforce good performance but also so that students feel good about themselves (e.g., Brophy 1981). Personal development planning, which encourages students to explore their own strengths and weaknesses, is increasingly a part of secondary school curricula. Arguably, however, students require not only external reinforcement, but also strategies that allow them to maintain self-belief when external reinforcement is absent. Praise from others is necessarily unreliable, and access to this outside of school time will vary considerably across students. By contrast, internal reinforcement is potentially always available. However this requires that students have self-regulated strategies for developing and maintaining positive self-belief. In some contexts and for some students these strategies will develop without explicit intervention. In other cases, they may need to be trained. This paper reports an evaluation of one approach to training students to develop their own self-beliefs.

In contrast to the large number of correlational studies exploring self-belief / performance relationships few have examined whether interventions to change self-

belief actually succeed in doing so and, if changes to self-belief are achieved, whether these then result in improved performance. In a clinical context there is evidence that a range of therapies are effective in increasing self-esteem in children with emotional or behavioural difficulties (see meta-analysis by Haney & Durlak 1998). There is also evidence that classroom interventions can result in improved self-belief (see meta-analysis by O'Mara et al. 2006). O'Mara *et al* found that interventions were particularly effective when they were focussed on particular domains rather than general self-esteem. It is less clear, however, that where an intervention results in improved self-belief this then benefits performance. Laboratory studies in which self-efficacy is artificially manipulated do tend to show performance effects (Boyer et al. 2000, but see Heggestad & Kanfer 2005). Studies in real-world educational contexts have, however, been rare, and evidence equivocal. An early review (Scheirer & Kraut 1979) failed to find evidence of performance benefits for self-esteem training, and there is some more recent evidence that in some contexts increasing self-efficacy can result in a decline in performance (Forsyth et al. 2007; Vancouver et al. 2001; but see Bandura & Locke 2003).

The intervention evaluated in this paper was created by The Pacific Institute, a commercial organisation that offers a range of programs devoted to "open[ing] people's minds to their own potential and how to achieve it" (TPI 2007). Their educational programs are used widely across secondary schools in the UK. The specific program evaluated in our study is called *Go For It!* (GFI). GFI is intended for students at Key Stage 4 (KS4 – the highest compulsory-education curriculum level, associated with Years 10 and 11) and is typically administered to whole Year 10 cohorts. It comprises twelve units that combine from-the-front presentations (typically partly video-based) and practical exercises designed to develop students' belief in their ability to perform well, and to give them cognitive strategies for maintaining their self-belief. The intervention also encourages students to set educational and personal goals and teaches strategies for doing so. Units can be delivered as a single, three day course, with students taking time out from the normal curriculum and, in some cases, going to an off-campus venue. They can also be combined with the normal curriculum and delivered over several weeks, typically within Personal, Health and Social Education (PHSE) classes. The intervention is not targeted specifically at academic functioning and the principles that it teaches could be applied across a range of domains, including behaviour management and relationships with parents. However, the context in which GFI is delivered, and the focus of the exercises, make clear to the students that one of the main areas in which they need to develop self-belief and to set goals is in relation to their school work, which for this age group and in the UK means a focus on good performance in their final curriculum assessment (Key Stage 4) exams and coursework.

Table 1 gives a summary of the main focus of each of the twelve units. A central focus is the "Self-Talk Cycle": Positive self-image encourages good performance, good performance provides a stimulus for positive self-talk, and positive self-talk increases or maintains positive self-image. This captures the self-belief / performance relationships discussed above, but introduces the possibility of directly manipulating self-belief. There is also considerable focus on raising aspirations, with students being encouraged to set, visualise and rehearse personal goals. They are told that reaching these goals is within their own control, and that change can only really be achieved through intrinsic motivation, and not by acting to please parents and teachers. Goals will only be achieved if a student believes in their own ability. Raising belief in their own ability comes from the use of positive self-talk. To support self-talk students are

taught to write and rehearse positive affirmations – short positive statements about themselves. They are also taught that to be effective, writing and rehearsing affirmations needs to be a regular and habitual activity.

GFI therefore draws, either implicitly or explicitly, on a mixture of psychological theories and approaches including social-cognitive theory (Bandura 2001b), self-handicapping theory (Berglas & Jones 1978; Zuckerman et al. 1998), achievement goal theory (Dweck & Leggett 1988; Nicholls 1984), and theories of locus of control (Rotter 1990). The intervention is not solely targeted on improving self-belief but also on developing motivational regulation strategies. There is evidence that these are also valuable in academic contexts (Callicott & Park 2003; Schimel et al. 2004; Wolters 1999).

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There is anecdotal evidence for the efficacy of GFI, with teachers reporting substantial effects on students' attitudes towards their work. To our knowledge, there have only been two other systematic evaluations of Pacific Institute educational interventions, neither of which have been published. Johnson (2002) conducted satisfaction surveys immediately after an intensive delivery of GFI in one secondary school. He found some demographic variation in students' responses, but overall they reported enjoying the course, and anticipated that they would find what they had learned useful. Proudfoot and co-workers (Proudfoot et al. 2001) examined the effectiveness of a different, but very similar intervention, with unemployed 16 to 19 year old school leavers. They assessed effects on eight psychological measures, including self-esteem and job-seeking self-efficacy. They found sustained effects on one of these measures (participants showed a more internal locus of control) and shorter term benefits for levels of psychological distress, but no effects on the remaining six measures. There was no evidence of an effect of the intervention on the single performance measure (whether or not participants moved on to further education).

The present study is motivated, generally, by the lack of knowledge about the efficacy of training students in strategies for building self-belief, and, specifically, by the lack of rigorous evaluation of GFI and similar interventions despite their widespread use in UK secondary schools. It was designed to explore student satisfaction in a larger sample and, as its main focus, answer two additional questions: Does participation in GFI result in improved self-belief and motivation – the intended proximal effects, and does participation in GFI add value to students' academic performance?

Method

Context

The study took place within ten schools all within the same UK education authority. The authority had implemented a range of Pacific Institute interventions with first use of GFI dating back to 2000. Schools within the authority were encouraged but not required to adopt GFI. In the year in which our evaluation was conducted, GFI was being used with Year 10 cohorts in eleven schools, either as a three day intensive course or as a series of sessions spread over a more extended period. Given the substantial investment in financial and teaching time required to implement GFI, the

authority solicited and funded both Johnson's satisfaction survey (Johnson 2002), and the present research, which was completed between December 2003 and January 2005.

Sample and Design

Our evaluation was prospective and quasi-experimental. It involved comparing self-belief and academic motivation and performance in students who participated in GFI with students from schools that did not run GFI. Samples drew on Year 10 cohorts in 10 schools (5 intervention, 5 control). Intervention and control groups were roughly matched in terms of students' socio-economic status and Year 9 academic performance. Self-belief and motivation were measured using established psychometric tools and were assessed (a) prior to the intervention (*baseline*), (b) immediately following the end of the intervention (*post-test*), and (c) around 20 weeks after the end of the intervention (*follow-up*). Students in control schools completed the same self-belief and motivation measures at the same time intervals and on similar dates as the intervention group. Prior academic performance was measured by National Curriculum (SAT) tests that are taken by UK students at the end of Key Stage 3 (KS3) in Year 9, the year prior to the intervention. Post-intervention performance was measured by curriculum assessments during and at the end of KS4 in Year 11, the year immediately following the intervention. Both psychometric and curriculum assessments are described in the next section. Students' own evaluations of GFI were collected from the intervention group at post-test and again at follow-up. At follow-up we also asked about the extent to which students had adopted the self-motivational and esteem-building strategies taught during the course.

A total of 1498 students took part in one or more components of the study. From these we identified 1173 students (507 intervention, 666 control) for whom we were able to obtain KS3 (SAT) and KS4 (GCSE or GCSE equivalent) curriculum assessment scores, in each of English, mathematics and science. Table 2 gives a breakdown of the characteristics of this sample. There were a greater proportion of students in the intervention sample with identified special educational needs. Special educational needs, demographic factors and pre-intervention performance were all controlled for statistically in our analyses. There was substantial attrition between testing at baseline and at post-test, and again between testing at post-test and follow-up, and some analyses therefore involved smaller samples. Comparison between the full sample and subsamples did not, however, suggest systematic differences in either prior ability (KS3 performance) or socio-economic status.

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GFI implementation

In all intervention schools GFI was delivered to whole Year 10 cohorts by trained facilitators, and all of these schools covered the content outlined in Table 2. There was, however, some variation in how GFI was implemented. In four schools facilitators were members of the existing school staff who had completed GFI facilitator training. However, one school did not have suitably trained staff and so employed external facilitators. Three schools delivered GFI as a short, intensive course, with between 10 and 13.5 hours of instruction over two or three days. One of these schools took the whole Year 10 cohort to a location away from school premises,

one took a high proportion of students (about 65%) away and taught the remainder on-site, and the third school ran the intervention entirely on-site. The other two schools delivered GFI on-site with sessions distributed across a term, either as three four-hour sessions or as weekly one-hour sessions replacing normal PHSE lessons.

There was also variation across schools in the extent to which GFI content was revisited after students had completed the course. This occurred in four of the five schools. Three schools made formal and quite extensive reference to GFI content in the period between post-testing and follow-up. GFI themes were incorporated into assemblies, registration sessions and PHSE classes. In one school this was reinforced by notices and posters around the school. In the remaining school reference to GFI content was less formal but brought into the life-skills programme by most staff. GFI content was also explicitly returned to in Year 11 (i.e., after follow-up testing but before final GCSE examinations). This occurred formally in two schools, with dedicated day-long sessions prior to mock and final examinations, and less formally in two other schools. The one school that did not return to the intervention content in any systematic way was the school that did not have trained facilitators on staff.

GFI was implemented at varying times of the year with dates for the first session ranging from mid December (towards the middle of Year 10) to early June (the end of the Year 10).

This variety in practice, while maintaining delivery of core content, allowed a robust test of the effectiveness of GFI across diverse implementations, and that controlled for time-of-year effects.

Measures

Self-belief and motivation

Perceived self-efficacy was measured using the Multidimensional Scales of Perceived Self-Efficacy (MSPSE; Bandura 1990; 2001a). All items were of the form "How well can you (perform specific task or process)?" Students responded on a 7-point scale from 1 = *not well at all* to 7 = *very well*. The MSPSE comprises 57 items which divide into nine subscales that assess self-efficacy in academic achievement, self-assertion, leisure time skills, meeting others' expectations, social interaction, self-regulation (ability to resist peer pressure to engage in high risk activities such as drug-taking and transgressive behaviours), self-regulated learning (efficacy to regulate ones' own learning activities), enlisting parental and community support, and enlisting social resources (these last two measures were very closely related).

Self-esteem was measured using the Self Perception Profile for Adolescents (SPPA; Harter 1988). In order to allow for more accurate and rapid completion, the response format was adapted from that originally used by Harter. Students responded to items in two stages, first choosing one of two opposing statements (e.g., *I am happy with myself most of the time / I am often not happy with myself)* and then identifying whether this is always like them or only sometimes like them. Combining these responses gave a single score of 1 to 4 points for each item. The SPPA comprises 45 items which divide into nine subscales measuring self-esteem in the context of athletic competence, behavioural conduct, close friendship, job competence, physical appearance, romantic appeal, scholastic competence, social acceptance, and global self-worth.

We explored students' locus of educational motivation using Harter's Intrinsic versus Extrinsic Orientation in the Classroom scale (Harter 1980), which has 30-items across five subscales. Students responded as for the self-esteem scale. The five

subscales measured (1) the extent to which students are motivated by their own interest vs. the extent to which they are motivated by desire to satisfy the teacher and gain good marks, (2) the extent to which students are reliant of their own or on the teachers criteria for success, (3) the extent to which they are reliant on their own or on the teachers judgments about school situations, (4) the extent to which students prefer to seek help or to master a learning goal independently, and (5) the extent to which students have a preference for challenging school work.

All questionnaires were age-appropriate. A few changes were made to the wording of items to accommodate cultural differences among students and to adapt scales to the current UK context (e.g., by providing several alternative names for cannabis).

Academic performance

We used scores from Year 9 (KS3) SAT assessments in English, mathematics, and science as measures of pre-intervention academic performance. Scoring of these normally involves allocating each student to an ability band, ranging from 1 to 6, for each subject. We used finer grained "decimalised" SAT scores which draw on the same assessment data and weightings as the banded scores, but allow for graduation within each band.

Post-intervention performance measures were based on performance in GCSE assessments, again in English, mathematics, and science. These combine scores from examinations and specified coursework tasks. For English and science, GCSE scores were aggregated as follows: English – the English Language score was used except in rare cases where students did not take an English Language GCSE, but did take English Literature GCSE, in which case the English Literature grade was used. Science – in most cases students took only one science GCSE (or equivalent) and this score was used. Where students took more than one science GCSE (or General National Vocational Qualifications – GNVQ – equivalents) we took the mean of their scores across these. In cases where students took a GNVQ in foundation level science, which had a capped score, alongside other uncapped science GCSE or GNVQ qualifications, the foundation level score was ignored.

Student evaluations and reported use of GFI strategies

Students' perceptions of the intervention were assessed at post-test with questions asking about the extent to which they had enjoyed the course and whether or not they felt that what they had learned would be useful. We also asked about their intentions to use each of the strategies covered in the course. These are listed in Table 4. The same evaluation items were repeated at follow-up but were reworded to reflect the fact that students had now had an opportunity to put what they had learnt into practice. That is, items about strategy use were reworded so as to ask about students' behaviour rather than their intentions (*To what extent have you done…?* rather than *Do you intend to do…?*).

Educational aspirations

Students were asked questions about both medium- and long-term educational and training goals. Medium-term goals were assessed by asking students to select from a list of ten possible destinations that best represented their future plans after leaving school (ranging from "going on the dole" to "going to sixth form college and then university"). Long term goals were assessed in a similar way, with students choosing

their anticipated highest level of academic achievement from five options (ranging from "leave school with no qualifications" to "attend university").

Demographic variables

Free-school-meal eligibility and ACORN scores were used as socio-economic status proxies. ACORN scores (CACI 2006) are postcode-based estimates of household wealth. These and a cultural capital measure were held as covariates in our analyses. The cultural capital measure was based on student's responses to questions about the extent to which they have access to cultural and learning resources (books, libraries, museums) outside of school time. This measure came from Middle Years Information System data collected by Durham University Curriculum, Evaluation and Management Centre.

Procedure

Self-belief, motivation, and student-evaluation measures were all completed as pen-and-paper questionnaires during PHSE lessons. The questionnaires were administered by researchers to whole classes or, in some cases, larger student groups, and took between 40 minutes and one hour to complete. Attendance at PHSE lessons was compulsory for students at the schools that we sampled but in practice was somewhat sporadic which led to the high levels of attrition. Testing followed near-identical patterns in intervention and control schools, with closely matched testing dates. Intervals between post-test and follow-up were dependent upon when schools were able to give access and varied between 17 and 24 weeks. Intervals were, however, similar in control and intervention conditions (mean for intervention = 21 weeks, mean for control = 20 weeks). Performance and demographic data were obtained directly from central records held by the education authority.

Results

In reporting our findings we first examine whether GFI resulted in a change in students' self-belief, academic motivation, and academic aspirations. Second, we examine whether GFI resulted in improved academic performance. Third, we describe students' own experiences of GFI and their self-reported use of the strategies that it taught. Finally, we explore whether, independently of intervention effects, there was a relationship between students' self-perception and their academic performance.

Effects of intervention on self-belief and educational motivation

We identified a sample of students such that no self-belief or motivation measures at baseline, post-test, or follow-up had more that 5% missing values. This comprised 585 students (322 control, 263 intervention). Remaining missing data were imputed using an expectation maximization algorithm. Analyses in this section were by multivariate analysis of covariance (MANCOVA) with test (either baseline vs. post-test or baseline vs. follow-up), condition (control vs. GFI), gender, special-educational-needs status, and free-school-meal eligibility as independent variables (IVs) and age, ACORN scores and cultural capital as covariates. We conducted separate analyses for baseline vs. post-test and baseline vs. follow-up to establish whether there were, respectively, short and long term effects of GFI. We conducted separate MANCOVAs for the nine self-efficacy measures, for the nine self-esteem measures, and for the five academic motivation measures. We therefore report a total

of six different analyses: baseline vs. post-test comparisons for each of self-efficacy, self-esteem, and academic motivation, and baseline vs. follow-up for each of self-efficacy, self-esteem, and academic motivation.

In each case we tested a model that comprised the test-by-condition interaction (to establish whether there were different patterns of means across pre- post- and follow-up tests in the intervention and control groups, and thus establish effects of GFI), three-way test-by-condition-by-other IV interactions and test-by-condition-by-covariate interactions (to establish whether any effects of GFI, if any, were moderated by students' demographic and educational characteristics), and main effects of gender, and free-school-meal status, and special-educational-needs status (tangential, but perhaps interesting). If GFI affects self-belief or motivation we should observe statistically significant test-by-condition interactions. Effects are reported as not statistically significant if $p > .05$ unless otherwise stated. Power analyses indicated that with this alpha level and sample size there was an 80% chance of finding test-by-condition interactions with effect sizes of 4.5% or greater statistically significant. This increases to 5.5% for $\alpha = .01$.

There were no statistically significant multivariate test-by-condition interaction effects for either the baseline / post-test comparison or the baseline / follow-up comparison (Baseline / Post-test: self-efficacy, $F(9,563) = 1.57$; self-esteem, ($F(9,563) = 1.37$; motivation, $F(5,567) = 1.03$. Baseline / Follow-up: self-efficacy, $F(9,563) = 1.29$; self-esteem, ($F(9,563) = 1.09$; motivation, $F < 1$.) Despite the absence of significant multivariate effects we also looked to see whether there were any effects on individual self-belief or motivation variables. Univariate ANCOVAs with the same model as above but with alpha set at .01 to reduce the possibility of Type 1 errors due to multiple testing identified just one statistically significant test-by-condition effect: Students who attended GFI showed greater increase in self-efficacy for self-regulated learning between baseline and post-test ($F(1,571) = 11.4$, $p = .001$, $\eta^2 = .020$). This effect was small and was not sustained at follow-up.

Three-way interactions were, with one exception, also not statistically significant and the pattern of means for this one, very small effect was not consistent with GFI having benefited students. We therefore did not find evidence of GFI benefiting specific sub-groups of students.

Looking at the main effects of other variables, gender and special educational needs status both predicted self-efficacy (gender, $F(9,563) = 7.40$, $p < .001$, $\eta^2 = .11$; special educational needs, $F(9,563) = 3.39$, $p < .001$, $\eta^2 = .05$ for multivariate main effects). Female students showed significantly lower academic self-efficacy, and greater social self-efficacy and self-efficacy for enlisting social resources. Students with identified special educational needs showed significantly lower self-efficacy in all areas except for enlisting parental or community support. Gender and having special educational needs status were also associated with lower self-esteem scores (gender, $F(9,563) = 22.7$, $p < .001$, $\eta^2 = .27$; special educational needs, $F(9,563) = 2.07$, $p = .03$, $\eta^2 = .03$ for multivariate main effects). Female students tended to show higher close-friendship related self-esteem. Males tended to have greater self-esteem related to physical activity and athletic competence, and to score higher on the general self-worth subscale. Students with identified special educational needs showed significantly lower self-esteem related to academic competence, social acceptance, and close friendship. Only gender showed a main effect on motivation ($F(5,567) = 3.32$, $p = .006$, $\eta^2 = .03$) with female students less likely to show a preference for challenge, more likely to report seeking help from teachers than attempting

independent mastery, and more likely to be dependent on teachers' rather than their own criteria for success. Differences between genders were, however, small.

We also repeated the analyses above, but removing all covariates and all independent variables apart from test and condition from the model. This analysis also failed to find statistically significant test-by-condition interactions for any of the self-belief or motivation variables.

Effects of intervention on academic aspirations

A total of 638 students (372 control, 266 intervention) provided useable answers to questions about short and long term educational aspirations at each of baseline and post-test, and 607 students (335 control, 272 intervention) at baseline and follow-up. MANCOVAs with the same design as used in the analyses reported in the previous section and with medium- and long-term aspiration scores as dependent measures failed to find evidence of an effect of GFI (baseline / post-test, $F(2,623) = 2.00$; baseline / follow-up, $F < 1$ for test-by-condition interaction). There was no evidence of univariate effects. Three-way interactions were not statistically significant, with the exception of the interaction between test, condition and special educational needs. This appeared, however, to be associated with a slight decline in educational aspirations (both short and long term) for special educational needs students in the intervention group at post-test and follow-up relative to baseline. This finding is clearly not consistent with the hypothesis that GFI benefits these students.

Repeating this analysis omitting the covariates and additional independent variables also failed to find a significant test-by-condition interaction.

Academic performance

Analyses in this section employed univariate ANCOVAs with condition (control vs. GFI), gender, and whether or not the child was entitled to free school meals (as a proxy for socio-economic status) as fixed factors, and age, cultural capital, and special educational needs status as covariates. We specified a model that included main effects of all factors (including covariates) and two-way interactions between condition and each of the other factors and covariates. Non-significant effects have $p > .05$. Effect size is reported as partial η^2 which can be interpreted as the percentage of variance explained by a specific predictor, controlling for effects of other predictors. Analyses used data from the full sample (1173 students; 507 intervention, 666 control). Detailed findings from these analyses can be found in Table 3.

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KS3 (pre-intervention) performance

We first tested this model on performance at KS3. This served both to check for ability-matching between intervention and control groups prior to the start of the intervention and, tangentially, to explore the effects of the various other factors KS3 scores. We found no evidence of a significant main effect of condition in any of the three areas of achievement ($F < 1$ for each of mathematics, science and English), and no evidence of interaction effects involving condition (again $F < 1$ for all interactions between condition each of the other factor, for each of mathematics, science, and English). This confirms that condition and control groups had similar academic abilities prior to participating in GFI. Age and cultural capital scores were both

positive predictors of KS3 performance, and free-school-meal entitlement, ACORN scores, and having identified special educational needs were negatively related to performance. There was some evidence of gender effects, with being male positively predicting performance in mathematics and science and being female positively predicted English performance. These effects were small.

Effect of intervention on KS4 performance

Students experienced GFI between their KS3 and KS4 tests. If GFI had a positive effect on academic performance then for the intervention group KS4 scores will exceed predictions based on performance at KS3. This will not be the case for the control. To explore this we tested the same model as for the KS3 analysis, but with KS4 performance as the dependent variable and KS3 performance in the appropriate subject area as an additional, autoregressive covariate. Findings are detailed in the lower half of Table 3.

Prior performance (KS3 scores) explained between 47% and 56% of variance in GCSE performance. We found no evidence that participation in GFI resulted in improved performance ($F < 1$ for the main effect of condition on KS4 scores in each of mathematics, science and English). We also found no evidence of an effect of the interaction between condition and any of the demographic factors.

There was some evidence of demographic factors affecting performance, even after controlling for prior ability. ACORN scores were negatively associated with performance in English and science but not mathematics. Free-school-meal entitlement, being male, and having special educational needs were all negatively associated with performance in English but were not related to performance in mathematics and English. Both gender and special needs effects were very small (< 1%). High cultural capital scores were associated with better GCSE performance in mathematics and science but not in English.

Finally, we tested the model again without controlling for KS3 scores. As might be expected this gave the same pattern of findings for the effects of demographic and socio-economic factors as for the analysis of KS3. However, we again found no evidence of statistically reliable differences in performance between intervention and control groups.

Experience of GFI and reported use of GFI strategies

Analyses reported in this section are of data from just those students who experienced GFI and who provided responses to the relevant questions at both post-test and follow-up (N = 265). As Table 4 indicates, at post-test 80% of students reported that they enjoyed GFI training, 76% reported that they felt they had learnt something useful, and 60% indicated that they thought GFI would help them make positive changes at school or at home. At follow-up slightly fewer students indicated that they felt GFI was useful and less than half said that GFI had, in fact, had a positive effect in school or at home. Intended use of techniques taught during the intervention, measured immediately after the intervention had finished, varied considerably with the particular behaviour that was asked about. The majority of students said that they planned to set goals, focus on solutions, and talk positively to themselves. Far fewer intended regularly reading or writing affirmations.

As might be predicted, action did not match intention, with reported use being consistently and substantially less for all strategies. Reading and writing affirmations, in particular, were reported by less than 10% of the sample. Mean scores for both

experience and strategy-use (i.e. all items shown in Table 4) declined significantly between post-test and follow-up (in all cases, $t(264) > 3.2$, $p \leq .001$).

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insert Table 4 near here

Relationship between self-belief and motivation, and academic performance

Regardless of whether or not GFI benefited students, it is worth first asking whether there was a relationship between students' self-beliefs and academic motivations and their academic performance, independently of prior ability: Regardless of condition and controlling for performance at KS3, does how a student perceives themselves and their locus of educational motivation contribute to their performance at KS4? For these analyses we identified a sample of students with complete sets of demographic and performance data, and only limited missing data for baseline self-belief and motivation measures (such that no variable had in excess of 5% missing values). Remaining missing values were imputed using an expectation maximization algorithm. The resulting dataset sampled a total of 932 students.

We conducted the following staged multiple-regression analyses. We conducted a total of nine regression analyses. Each was conducted in two stages. First we predicted KS4 scores from KS3 scores. We then added self-efficacy, self-esteem, or academic motivation measures to the model. A significant change in the variance explained by the addition of one of these sets of variables into the model (measured by change in R^2) suggests a contribution of those measures to KS4 performance, independent of prior academic ability. We conducted separate analyses for mathematics performance, for science performance, and for English performance. In light of the failure to find effects of condition, this factor was omitted.

KS3 performance, as might be expected and as established above, explained a large proportion of variance at KS4 (Mathematics adjusted $R^2 = .61$, $F(1,931) = 1433$, $p < .001$; science, adjusted $R^2 = .52$, $F(1,931) = 1016$, $p < .001$; English, adjusted $R^2 = .53$, $F(1,931) = 1063$, $p < .001$). Self-belief and motivation variables explained a small but statistically significant additional portion of the variance in KS4 scores in each of mathematics, science and English (with one exception). Self-efficacy measures explained between 1.5% and 3% of performance (Model 2: mathematics, R^2 change = .015, $F(9,922) = 4.1$, $p < .001$; science, R^2 change = .029, $F(9,922) = 6.8$, $p < .001$; English, R^2 change = .027, $F(9,922) = 6.4$, $p < .001$). Self-esteem measures explained between 1.3% and 2.9% of GCSE performance (mathematics, R^2 change = .013, $F(9,922) = 3.6$, $p < .001$; science, R^2 change = .028, $F(9,922) = 6.3$, $p < .001$; English, R^2 change = .029, $F(9,922) = 6.7$, $p < .001$). Academic motivation measures explained 1.6% of performance in science and 1.2% of performance in English, but did not show a significant effect for mathematics (mathematics, R^2 change = .004, $F(5,926) = 1.7$, $p = .11$; science, R^2 change = .016, $F(5,926) = 6.6$, $p < .001$; English, R^2 change = .012, $F(5,926) = 4.8$, $p < .001$).

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insert Table 5 near here

Table 5 gives standardized regression coefficients for individual self-belief and motivation measures. Generally, relationships between self-efficacy measures and performance were weak and did not show consistent patterns across subject areas. Self-efficacy for academic achievement only predicted performance in English. Self-

efficacy for self-regulated learning predicted performance in mathematics and science, but not in English. Self-esteem related to behavioural conduct predicted performance in all three subjects, as did self-esteem for scholastic competence. There was little evidence that academic motivation factors predicted performance, with the exception of preference for challenge which was relatively strongly predictive of performance in science and English.

Discussion

Our findings provide some evidence of a positive association between self-belief and KS4 performance, independently of students' ability. These effects were not large, ranging between 1% and 3%, although his might be expected given the relatively long period separating measurement of prior ability, self-belief, and subsequent (GCSE) performance. We also found that, consistent with anecdotal evidence and Johnson's (2002) findings, students enjoyed GFI and saw it as potentially useful. Students were a little less positive 20 weeks after the end of the course, but even at this time they remained enthusiastic. Our impression, based on discussions with the teachers involved in delivering GFI at the schools in our intervention sample, is that staff also value GFI and believe it has positive effects. Consistent with Proudfoot et al (2001 we found no evidence that GFI positively impacts students' self-esteem or self-efficacy. We also found no effect on locus of academic motivation, which is related to locus of control, for which Proudfoot et al did find an effect. There was no evidence that GFI resulted in increased aspirations or in improved academic performance.

One possible explanation for our failure to find evidence for the efficacy of GFI is that the design of the study was such that it would be unlikely to yield statistically robust effects even if GFI did, in fact, benefit the students. Sample sizes were sufficiently large to give a good probability of finding quite small effects statistically significant, as is evidenced, for example, by our finding a slight, but statistically significant effect of gender on GCSE English performance. Even with the smaller number of students who contributed self-belief and motivation data, analyses involving these will still have had sufficient power to find small effects statistically significant. We found main effects for both gender and special educational needs status. It is conceivable that the attrition that affected these analyses may in itself have acted against finding effects. It may have been that the students who were not sampled in this analysis, because they were unavailable to complete at each of baseline, post-test, and follow-up, benefited from the intervention, whereas those who were available did not. This is plausible but, we believe, unlikely, particularly given that there were no observable differences between sampled and attrited students across the variables that we measured. This would also only provide an explanation for failure to find self-belief and motivational effects, and not for failure to find effects on academic performance.

The design of the study was necessarily prospective, with non-random allocation to control and intervention conditions. However, control and intervention schools were reasonably well matched in terms of performance and student socio-economic status, and GFI was implemented across five different schools at different times and with varying patterns of delivery. The sample size was such that effects on self-belief and motivation in just one of these schools, between baseline and either post-test or follow-up, would have resulted in statistically significant test-by-condition interactions, and these were not found. Non-random allocation does not, we would argue, seem a very plausible explanation for our failure to find effects of GFI.

If design and sampling are not to blame for our failure to find effects, then this suggests that GFI, as implemented in the five schools that made up our intervention sample, is not effective to develop self-belief, motivation, and academic performance in a general sample of Year 10 students. One possible explanation for this is simply that students do not adopt the strategies that GFI teaches. Just attending GFI is clearly unlikely to have anything but very transitory effects on how students perceive themselves. Change will only occur if students become self-regulated users of the self-talk strategies that GFI teaches. Although immediately after the intervention the majority of students reported intending to write and read affirmations, to engage in positive self-talk, and to avoid putting themselves down, the numbers reporting at follow-up that they had engaged in these activities on a regular basis were substantially less. Unfortunately we failed to ask control group students about whether or not they engage in these activities. It is possible that the numbers of intervention students who reported talking positively to themselves, for example, were not substantially higher than the numbers engaging in this activity in the general student population. Less than 10% of students reported having regularly written or read affirmations, the one self-talk activity that was very specific to GFI. The most straightforward explanation for failure to find effects for GFI might, therefore, simply be that students do not engage in the strategies that it teaches.

Lack of student compliance is the most obvious explanation for GFI failing to affect self-belief. However, even with better uptake of the strategies taught in the course there are *a priori* reasons why interventions of this sort may have limited success. Bandura (1986, pp 399-400) identifies mastery experiences as the main mechanism for developing self efficacy. Self-efficacy develops as a result of repeatedly observing success at a particular kind of task – principally the individuals own success but observing success in others who are perceived as having similar competence ("if they did it, then so can I") may also result in some gains. Multiple successes on specific tasks can then result in a more generalised belief in ability to perform in other tasks in a similar domain. Bandura recognises the possibility of verbal persuasion – the principle focus of GFI – helping to develop self-efficacy, but this mechanism is very much secondary to mastery experience. He also cautions against raising unrealistic competence beliefs, suggesting that this is likely to result in a decrease in self-efficacy when performance falls short of expectations. It may be that self-talk based interventions applied indiscriminately across whole-year cohorts are too blunt an instrument to achieve any appreciable gains.

Whatever the reason for the apparent failure of GFI to affect either self-belief and motivation or academic aspirations and performance, it remains possible (a) that GFI does, in fact, have some positive effects, but these are in areas not measured in this study and, (b) that although GFI does not show effects across the breadth of a Year 10 student cohort, there are specific sub-populations that GFI might benefit. GFI is a broad and eclectic intervention and the present study necessarily only focussed on the psychological variables that we saw as central to its putative effect. It may, for example, be that students who have participated in GFI develop in areas such as ability to set goals or to communicate more effectively with teachers and peers. Positive effects in these areas might be reason in themselves to implement GFI across whole year groups, even if they did not translate into improved academic performance. Our findings also do not argue against targeted use of GFI for specific student subgroups. It is possible that within our sample there were small subgroups of students who did benefit from GFI, although exploratory analyses in our data did not identify specific systematic differences between benefiting and non-benefiting

students on the various demographic and performance variables that we had available. It is also possible that students with low academic competence might particularly benefit from self-belief focussed interventions. Students with identified special educational needs in this study tended to perceive themselves more negatively than other students both academically and in social contexts, although there was no evidence that these students benefited from GFI. However, GFI might benefit students with very low competence, and these students were not included in our sample. Anecdotally, special school teachers have found GFI content particularly helpful in supporting goal-setting and behaviour management in students with learning difficulties.

In conclusion, students in the present study did not tend to benefit from participation in GFI. Our findings do not allow us to draw the strong conclusion that GFI, or similar intervention, are never effective. However, despite anecdotal evidence to the contrary, our present research failed to find evidence that delivering GFI to whole Year 10 cohorts in mainstream UK schools has any general benefit either for students' self-belief and academic motivation or for their academic performance and aspirations. Until evidence is available to the contrary, therefore, there does not seem to be a case for the wholesale use of interventions of this kind, although this does not rule out the possibility that with further development and perhaps more specific targeting they are capable of delivering benefits in the future.

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Captions

Table 1. GFI content.

Table 2. Sample characteristics, by school. Standard deviations in parenthesis.

Table 3. Effects of demographic variables and intervention on academic performance.

Table 4. Students' perception of GFI and reported used of the strategies that GFI taught.

Table 5. Standardised regression coefficients (β) from regression analyses with previous academic performance, and self-efficacy, self-esteem or motivation measures as predictors, and performance at GCSE as dependent variable.

Unit	Unit content
1	Exercises/examples designed to demonstrate that "how you think affects the way you act". Covers the effects of mental set and expectations on perceptions. Compares the thinking patterns of successful and less successful people.
2	Discusses how self-belief is often obscured by negative expectations that have been internalised in the past and are embodied in the way we talk to ourselves (self-talk). Students are told that they can change the way they think about themselves by taking responsibility for *how* they think about themselves, (i.e. by changing their self-talk). Students are encouraged to move from an external locus of control to an internal locus of control.
3	Thoughts are controllable by explicit goal-setting. By changing thought in this way students can change their self-image and so their "reality". A series of examples are given of famous people - Churchill, Einstein, etc - who were written off as no-hopers by other people.
4	Students are taught that they have control over what they put in their minds. They are encouraged to identify problems with their current self-image and create an alternative and more positive set of expectations.
5	Self-image comprises or results from a range of positive and negative habits and beliefs. Changing self-image involves identifying negative habits and attitudes and changing them into positive habits and beliefs. Students discuss their current attitudes towards school subjects and the differences in the ways in which they think about subjects they like and dislike.
6	Self-talk constitutes self-image, and self-image controls performance. Changing self-talk changes self-image and, therefore, performance. The way in which you talk to other people can also influence their self-image/perceptions.
7	Self-esteem can have a large impact on performance. Students are encouraged to take control of how they feel about themselves and to control their self-talk. This involves identifying negative or problematic aspects of current self, and finding solutions to them by making affirmations - stating the desirable state as if it were true. General goals, educational aspirations, and future employment plans are discussed. Students are also told that how they make others people feel about themselves can have a huge impact on their performance.
8	Students are encouraged to become comfortable with thinking about their desired solutions by making them as concrete as possible. This unit offers a number of exercises that give students strategies for setting goals that go beyond their current aspirations. These involve visualisation and mental rehearsal of what it is like to be in the goal state.
9	Goals need to be as explicit and concrete as possible. The more visualisable and concrete goals are, the greater the influence they will have compared to the student's current state. Students are encouraged to reinforce the feelings and beliefs that they have when they are in a positive mental state (when they are experiencing high self-esteem) and to dispute the feelings and beliefs that they have when they are in a negative state.
10	Goal-setting needs to be explicit and deliberate. Students are encouraged to write down goals and, particularly, self-affirming statements (affirmations). A formal set of 11 rules are given for constructing affirmations, and a series of practical exercises are carried out. Students are encouraged to write affirmations on a regular basis.
11	Affirmations need to be internalised by repeating them twice daily. Students are taught the formula I (Imagination) x V (Vividness) = R (Reality): Growth requires visualisation of goals that are stronger than visualisation of current reality. Students complete an exercise in which they imagine their life-situation ten years in the future.
12	Students are told that it is their responsibility to take control of their own lives, and that they should not rely on other people. They are encouraged to act for intrinsic (positive motivation) reasons, not to please others (extrinsic, negative motivation). Students complete team exercises designed to demonstrate self-motivation.

	Sample	% Female	ACORN	Free school meals	Special educational needs	Key Stage 3 SAT scores		
						English	Mathematics	Science
Intervention								
School A	123	57.2%	34.4 (9.9)	13.8%	20.3%	5.7 (1.0)	5.5 (1.3)	5.3 (1.0)
School B	103	59.0%	34.7 (5.5)	35.9%	12.6%	4.9 (1.0)	5.2 (1.1)	5.2 (.9)
School C	76	47.8%	41.6 (6.1)	43.4%	46.1%	4.8 (1.1)	5.0 (1.5)	4.7 (1.2)
School D	87	48.1%	35.0 (7.4)	24.1%	12.6%	5.2 (.8)	5.1 (1.2)	5.0 (1.0)
School E	118	43.0%	19.2 (11.9)	5.9%	6.8%	5.5 (.9)	6.0 (1.1)	5.8 (.9)
Overall	*507*	*51.8%*	*32.1 (11.6)*	*22.7%*	*18.1%*	*5.3 (1.0)*	*5.4 (1.3)*	*5.3 (1.1)*
Control								
School F	138	59.3%	35.6 (7.2)	26.1%	7.2%	5.6 (.9)	5.9 (1.0)	5.6 (1.0)
School G	156	54.4%	31.5 (8.6)	21.8%	3.2%	4.8 (.8)	5.7 (1.0)	5.2 (.9)
School H	178	53.9%	32.1 (7.6)	15.2%	6.2%	5.9 (.9)	5.7 (1.1)	5.7 (.8)
School I	108	44.8%	32.5 (11.6)	16.7%	4.6%	4.8 (1.0)	5.1 (1.2)	5.0 (1.1)
School J	86	49.2%	27.5 (14.0)	10.5%	19.8%	5.2 (1.1)	5.7 (1.2)	5.6 (1.0)
Overall	*666*	*52.7%*	*32.2 (9.8)*	*18.6%*	*7.2%*	*5.3 (1.0)*	*5.7 (1.1)*	*5.4 (1.0)*

	Effect	Mathematics	Science	English
KS3 (pre intervention)				
Age	positive	$F = 17.5$, $p < .001$, $\eta^2 = .01$	$F = 16.5$, $p < .001$, $\eta^2 = .01$	$F = 9.8$, $p = .002$, $\eta^2 = .01$
Cultural Capital	positive	$F = 21.7$, $p < .001$, $\eta^2 = .02$	$F = 60.1$, $p < .001$, $\eta^2 = .05$	$F = 55.3$, $p < .001$, $\eta^2 = .05$
Gender	*see note*	$F = 5.0$, $p = .03$, $\eta^2 = .004$	$F = 5.8$, $p = .02$, $\eta^2 = .005$	$F = 36.4$, $p < .001$, $\eta^2 = .03$
Free school meals	negative	$F = 16.5$, $p < .001$, $\eta^2 = .01$	$F = 21.3$, $p < .001$, $\eta^2 = .02$	$F = 21.6$, $p < .001$, $\eta^2 = .02$
ACORN scores	negative	$F = 15.8$, $p < .001$, $\eta^2 = .01$	$F = 35.5$, $p < .001$, $\eta^2 = .03$	$F = 7.0$, $p = .008$, $\eta^2 = .006$
SEN	negative	$F = 71.7$, $p < .001$, $\eta^2 = .06$	$F = 65.8$, $p < .001$, $\eta^2 = .05$	$F = 103.5$, $p < .001$, $\eta^2 = .08$
KS4 (post intervention)				
GFI Intervention	none	n.s.	n.s.	n.s.
KS3 scores	positive	$F = 1505.6$, $p < .001$, $\eta^2 = .56$	$F = 1015.8$, $p < .001$, $\eta^2 = .47$	$F = 1060.5$, $p < .001$, $\eta^2 = .48$
Age	none	n.s.	n.s.	n.s.
Cultural Capital	positive	$F = 9.3$, $p = .002$, $\eta^2 = .01$	$F = 6.8$, $p = .009$, $\eta^2 = .01$	n.s.
Gender	*see note*	n.s.	n.s.	$F = 5.0$, $p = .026$, $\eta^2 = .004$
Free school meals	negative	n.s.	n.s.	$F = 14.6$, $p < .001$, $\eta^2 = .01$
ACORN	negative	n.s.	$F = 19.8$, $p < .001$, $\eta^2 = .02$	$F = 31.9$, $p < .001$, $\eta^2 = .03$
SEN	negative	n.s.	n.s.	$F = 8.2$, $p = .004$, $\eta^2 = .007$

Note: Analyses are described in the text. Effects on KS4 performance are controlled for performance at KS3. F ratios are associated with 1 and 1161 degrees for freedom for KS3 and 1 and 1160 degrees of freedom for KS4. At KS3 being male was positively associated with mathematics and science performance. At KS3 and KS4, being female was positively associated with English performance.

	Post-test		Follow-up	
	No	Yes	No	Yes
Did you enjoy the Go For It sessions?	25 (9%)	212 (80%)	38 (14%)	192 (73%)
Do you think that you learnt anything useful in the Go For It sessions?	30 (11%)	201 (76%)	57 (22%)	171 (65%)
Do you think that Go For It will help you / has helped you to make any positive changes in your school and home life?	54 (20%)	159 (60%)	87 (33%)	117 (44%)
Reported use of strategies - intended (post-test) and actual (follow-up)				
Set goals for yourself	37 (14%)	158 (60%)	52 (20%)	139 (52%)
Listen to your own self-talk	41 (15%)	161 (61%)	103 (39%)	80 (30%)
Talk positively to yourself	32 (12%)	170 (64%)	82 (31%)	99 (37%)
Write affirmations regularly	115 (43%)	85 (32%)	201 (76%)	22 (8%)
Read affirmations regularly	108 (41%)	86 (32%)	195 (74%)	24 (9%)
Visualise your goals	41 (15%)	153 (58%)	90 (34%)	80 (30%)
Avoid putting yourself down	52 (20%)	145 (55%)	88 (33%)	89 (34%)
Avoid putting others down	47 (18%)	152 (57%)	95 (36%)	90 (34%)
Focus on solutions	33 (12%)	177 (67%)	37 (14%)	155 (58%)

Note. For the first four items, “Yes” represents student responses spanning “yes, very much” to “yes, a bit”. “No” spans responses “No, not much” to “No, not at all”. N=189. For the reported use items, “Yes” spans responses “very often” or “often” and “no” represents students responding “hardly ever” or “not at all”.

	Mathematics	Science	English
Self-efficacy			
KS3 SAT	.76**	.71**	.68**
self-efficacy in enlisting social resources	-.03	-.02	-.02
self-efficacy for academic achievement	.00	-.03	.08*
self-efficacy for self-regulated learning	.10*	.09*	.03
self-efficacy for leisure time skills and extracurricular activities	-.02	.01	-.03
self-regulatory efficacy	.05*	.03	.08*
self-efficacy to meet others' expectations	.02	.12**	.03
social self-efficacy	.02	-.05	.06*
self-assertive self-efficacy	-.02	-.03	-.02
self-efficacy for parental and community support	.00	.00	-.03
For model (R^2_{adj})	*.62***	*.55***	*.56***
Self-esteem			
KS3 SAT	.74**	.68**	.67**
athletic competence	-.01	.02	.02
behavioural conduct	.05*	.09**	.06*
close friendship	-.01	.02	-.02
global self-worth	.06*	.04	.05
job competence	.01	-.06*	-.03
physical appearance	-.03	.05	-.08*
romantic appeal	-.04	-.06*	-.03
scholastic competence	.06*	.08*	.14**
social acceptance	.02	-.02	.03
For model (R^2_{adj})	*.61***	*.54***	*.56***
Academic motivation			
KS3 SAT	.77**	.72**	.72**
curiosity/interest vs pleasing the teacher/getting grades	-.03	-.01	-.04
independent judgement vs reliance on the teacher's judgement	-.03	-.06*	-.03
independent mastery vs dependence on the teacher	.03	.02	.02
internal criteria for success vs external criteria	.01	-.07*	.00
preference for challenge vs preference for easy work assigned	.04	.10**	.11**
For model (R^2_{adj})	*.61***	*.53***	*.52***

Note. * p<. 05, ** p < .001. Values are from separate multiple linear regression analyses for self-efficacy measures, self-esteem measures, and academic motivation measures predicting each of mathematics, science and English GCSE scores.