

## **Changing Mindsets in the Modern Foreign Languages Classroom: An intervention combining intelligence theories and reading strategies**

Recent research has established that it is academically advantageous for students to adopt an incremental view of their intelligence and that this is a key marker of a student's level of self-efficacy. The self-efficacy of students following Modern Foreign Languages (MFL) courses in UK secondary schools is known to be low. Interventions have been successful in modifying students' intelligence theories in the short term, but less research has been conducted into the longer-term impact of such interventions. This paper investigates the impact of intervention training focussed on the benefits of adopting both an incremental theory of intelligence and a strategic approach to learning. We report the results of a year-long intervention study with a quasi-experimental design based in a large comprehensive secondary school in England. The participants were five Year 9 German as a foreign language classes (N= 127). The impact of two interventions is assessed through in-depth questionnaires, analysis of student outcomes, and students' intentions to continue with post-compulsory language study. The findings of this study yield significant implications for teachers' classroom practice. Targeted intervention is shown to have a lasting impact on students' theories of intelligence. The combination of interventions appears to have had an effect on the frequency with which students report adaptive attributions for failure. Most strikingly, for students of lower initial attainment, such interventions may have the power to transform attainment and motivation to continue with language study.

**Keywords:** MFL; self-efficacy; motivation; learner strategies; mindset; attributions;

## **Introduction**

Issues surrounding low levels of self-efficacy, attainment and motivation in relation to foreign language (FL) learning in England have long been the subject of research and debate (For a summary see Coleman, Galczi and Astruc, 2007). It has been hypothesised that students' unrealistic expectations of the level of fluency that can be achieved early on in their FL learning journey may lead to a sense of failure (Lou and Noels, 2016; Graham, 2004). Self-efficacy beliefs (Bandura, 1986, 1997) developed over time in response to experiences of success and failure are known to have an impact on goal-setting and persistence in working towards those goals, thus creating a virtuous or vicious circle of attainment and motivation (Galloway et al., 1998).

A key concept interwoven with academic self-efficacy is that of students' implicit theories (or 'mindsets'). Dweck (1999) argues that most peoples' implicit theories about themselves, their intelligence, and how they learn can be plotted on a continuum from a 'growth' to a 'fixed' mindset. A fixed mindset about intelligence, held by people who believe intelligence is something predetermined and unchangeable, is counterproductive in an educational setting where students may conclude that their lack of success is down to an innate, low ability level and that it is therefore senseless to continue any attempt to overcome their difficulties. Conversely a growth mindset is held by people who believe that they can develop their basic abilities through dedication and hard work. For obvious reasons this mindset is advantageous in the classroom.

In response to a growing body of evidence pointing to the advantages of adopting a 'growth mindset' (for a meta-analysis of this work see Burnette et al., 2013), researchers have tested the feasibility of instilling this mindset in the classroom. Blackwell et al.'s (2007) study confirmed that in the short term it is possible for

teachers to influence the intelligence theories of secondary school-aged students via targeted intervention. Hsieh (2012) has suggested that informing students of the advantages of a growth mindset will be most effective when those students are also given the tools with which to develop their competencies in a given subject area, thus enabling them to witness their own ‘growth’.

This paper reports on the impact of concurrent interventions to promote incremental theories of intelligence and strategic learning behaviours with young adolescent learners of German in England. Existing studies investigating mindset interventions within the domain of language learning are rare. We therefore aim to respond to calls for empirical studies of mindsets within the domain of FL learning (Mercer, 2012), contextualising and exemplifying mindset training within a subject domain (Hsieh, 2012).

## **Research Background**

Studies concerned with students’ underlying ideas about their intelligence have established a causal relationship between theories of intelligence and learning goals, and subsequently student attainment (Burnette et al., 2013). A seminal, longitudinal study in this area was conducted in the USA by Blackwell *et al.* (2007), who found that a belief that intelligence is malleable predicted a significant improvement in mathematics grades over two years compared to a belief that intelligence is fixed. The difference between the two mindset categories was significant across all 4 secondary school cohorts involved in the study (n=373). In the domain of language learning, Lou and Noels (2016) demonstrate that FL-related mindsets of university students can be changed in the short term by presenting information that elicits either incremental or entity beliefs.

However, we can find no studies that have examined a similar intervention with FL students at secondary school level.

A key element of self-efficacy in learning has been identified as the student's conscious use of effective learning strategies to maintain motivation in times of challenge (Derry and Murphy, 1986). With a focus on FL learning, Cohen and Macaro (2007) claim that 'intervening in learners' strategic behaviour can improve learning processes and ultimate attainment' (p.4). The correlation between a strategic approach to learning and higher attainment has been established by several studies, although the direction of causality between the two is subject to debate (see Graham, 2007). One such study is that of Zimmerman *et al.* (1992) who found that high school students' "efficacy for academic achievement" could be predicted to a significant degree by the strength of their belief in their ability to self-regulate their learning via the employment of self-directed learning strategies (p.671).

Further support for the importance of learner-strategies in self-regulation comes from Macaro and Mutton (2009), Cohen and Macaro (2007) and Graham (2004). These all make a case for explicit instruction in the use of learner-strategies together with an emphasis on attributing success in academic tasks to the selection and use of effective strategies. Grenfell and Harris (2013) conducted a large-scale intervention study involving a programme of listening and reading strategy instruction with Year 8 French students in two London secondary schools. They report that strategy instruction was a significant factor in determining progress. This finding is of particular relevance due to the similarities in context between Grenfell and Harris' (2013) study and the study reported in this paper.

Students' interpretation of the outcome of their efforts to learn a language can be

analysed and used as a measure of their strategic behaviour and self-efficacy (Hsieh and Schallert, 2008). Weiner (1979) predicts that students who attribute their task performance to internal factors within their control (such as effort or a well-chosen strategy for approaching the task) will be more likely to persevere with their study. Conversely, those who attribute their performance to factors beyond their control such as an inflexible notion of their ability may be reluctant to attempt tasks of increasing difficulty that may pose a danger of exposing the limits of their perceived fixed ability (see Galloway et al., 1998). Peacock's (2009) study of university level FL learners supports the theory that when failure is attributed to uncontrollable factors, this has a negative impact on future achievement.

Hsieh (2012) suggests that age may be a significant variable influencing the extent to which attributions for failure predict future perseverance on academic tasks. She argues that young children tend to hold an incremental view of ability, believing that skills develop over time. This means that attributing failure to low ability need not necessarily weaken their future expectancies of success. More studies are needed to establish the age at which interactions between intelligence theories and attributions may begin to have long-term impacts on learning behaviours. It has been suggested that students' attributions and theories may not produce a noticeable effect until they are tested in a challenging situation where success is difficult to obtain (Dweck, 1999; Grant and Dweck, 2003). This theory is supported by studies that have placed participants in challenging and stressful situations, and which have consistently demonstrated that students who make adaptive attributions for their accomplishments out-perform their peers (Tuominen-Soini, Salmela-Aro and Niemivirta, 2012).

This paper investigates the impact of two interventions targeting students' motivation and learning outcomes. The association between students' implicit theories, their strategic behaviours and their perceived and actual success in learning is examined. The study is longitudinal in design: students are tracked over the course of a year to establish whether any change post intervention is lasting or whether students' regress to their initial implicit theories of intelligence. In this way the current study responds to calls by various researchers to investigate the longer term effects of implicit theory (mindset) interventions (Ryan and Mercer, 2012; Graham, 2004; Dörnyei, 2003, 2005; Craske, 1988).

### **Research questions**

Our review of the available literature engendered the following research questions:

- Prior to the intervention, what beliefs do students hold about the nature of intelligence and how stable are those beliefs?
- How malleable are the intelligence theories of students in this study? Can they be altered via targeted intervention in both the short and longer term?
- Does intervention training encourage more adaptive, strategic classroom behaviours and attributions for success and failure?
- Does intervention training result in improved attainment?
- Does intervention training increase the likelihood of students opting to continue language study at GCSE level?

### **Methodology**

#### *Sample and Participants:*

This small-scale practitioner research study reports on data collected over one academic year within one comprehensive secondary school in a medium-sized city in the South-

East of England. The school is large, with a pupil population of 1800. It is judged by Ofsted to be an 'outstanding' school. Pupils are allocated to either Spanish or German from year 7 and continue this through to the end of year 9. All students then begin to study French from year 8 onwards.

The study participants were a purposive sample of 127 Year 9 students across five intact classes of German taught by three different teachers. This represented the whole cohort of students in this year group. Year 9 was chosen because this was the year in which subject choices for public examination at GCSE were made.

#### *Study design:*

[insert Table 1: Overview of Study Design]

The overall structure of the study can be seen in Table 1. The merits of an approach combining quantitative and qualitative data collection provided a comprehensive picture of the complexity of the issues under investigation (Cresswell and Clark, 2007). Where possible the 'norms' of the teacher-student relationship were preserved during data collection (Ushioda and Chen, 2011): students' class teachers delivered classroom-based interventions, assessments and collected student views within their usual classroom contexts, providing minimal disruption to students' routine.

#### ***Phase 1 – Student Questionnaires to gauge implicit theories of intelligence***

Prior to any intervention, two identical questionnaires were distributed to all participants at an interval of seven weeks apart (see appendix for questionnaire).

Students indicated the strength of their agreement with statements espousing an inflexible, entity view of intelligence via a 6-point Likert scale. These statements were adapted from Dweck's statements relating to 'fixed IQ theorists' or 'Untapped Potential theorists' (1999, pp.176-177). The later sections of the questionnaire were designed to

elicit student's attitudes towards language learning and their beliefs and behaviours in the MFL classroom. Gardner's (2004) Attitude/Motivation Test Battery was used as the basis for several questions.

### ***Phase 2 – Theories of Intelligence Intervention***

The two 'Theories of Intelligence & Reading Strategies' (TI&RS) classes received two initial hour-long intervention lessons in quick succession (adapted from Blackwell, Trzesniewski and Dweck (2007)). These were followed by a further intervention lesson after an interval of one month. Lessons were designed to encourage students to adopt an incremental theory of intelligence regarding their academic potential in German. During intervention lessons students were introduced to research on mindset and given the opportunity to read and discuss extracts of a research article by Blackwell, Trzesniewski and Dweck (2007). This approach is endorsed by Lou and Noels (2016), whose study (although conducted with older students) suggests that explicit teaching of the scientific evidence surrounding incremental theories can be effective.

All study participants completed a third questionnaire (timed to immediately follow their completion of a standard-practice school writing assessment). An additional item on this questionnaire invited students to evaluate and give reasons for their performance on the end of term assessment.

### ***Phase 3 – Reading Strategies Intervention, Assessment and Questionnaire 3***

As Blackwell, Trzesniewski, and Dweck (2007) argue, without some knowledge of techniques and strategies to employ in order to 'grow' their current abilities in German, students might become stuck at the outset. For this reason, two hour-long Reading Strategy (RS) Intervention lessons were delivered to participants in the two TI&RS and



the two RS classes. These lessons involved eliciting reading strategies currently used by students and an introduction to a list of possible strategies drawn from work published by the Professional Development Consortium in MFL ([www.pdcinmfl.com](http://www.pdcinmfl.com)) followed by a series of active tasks using code-switched texts of increasing complexity, which required students to focus on one strategy at a time.

Following the interventions, all study participants completed a researcher-designed reading assessment followed by a final questionnaire. The assessment incorporated a high degree of challenge in two of the questions in order to test the hypothesis that theories of intelligence may not have a visible effect until challenge is present and success is difficult (Dweck, 1999; Grant and Dweck, 2003).

## **Results and Discussion**

Although 127 students participated in the study, the results relate only to the 119 students who completed all data points unless otherwise specified.

### ***Stability of Theories of Intelligence***

The first two data collection points were engineered to provide data for a detailed investigation of the stability of students' attitudes and beliefs over time: Questionnaires 1 and 2 were both administered prior to any intervention and at an interval of seven weeks apart.

In order to calculate the student responses to the Theories of Intelligence questions adapted from Dweck's work (1999), a mean score out of 6 was calculated for each student. The omission of a "neither agree nor disagree" category in the Likert scale was designed to force decisiveness in the students' responses. However, a score of between

3 and 4 represents a set of contradictory responses and is therefore classified as “undecided”. The results can be seen in Table 2 below:

[Insert Table 2: Table showing students' theories of intelligence at Data Points 1 & 2. n=119. Percentages have been rounded to the nearest whole number.]

Dweck (1999) states that over several studies, the results of these mindset questions were found to be similar with about 15% of students being ‘Undecided’ and the rest evenly split between the Fixed IQ Theory and the Incremental Theory. However, there is a clear preference in the cohort of the current study for the Incremental Theory.

Whilst one might contend that this finding undermines the need for an intervention study such as this one, it is worth bearing in mind that a quarter of the students surveyed continued to hold a fixed idea of intelligence that may be detrimental to their studies. These students stood to benefit the most from the Theories of Intelligence Intervention.

As Table 2 shows, the numbers of students falling into each theory of intelligence category remained broadly stable across the first two data collection points. However, the whole cohort figures mask individual change and closer analysis reveals some fluctuation in student theories over the seven-week interval. Of the 119 students, roughly a fifth (n=24) moved between the Undecided, Fixed and Incremental categories. Eight of these students moved directly from the Fixed to the Incremental theory or vice versa, indicating that quite significant fluctuations in mindset can occur in students of this age-group over a short space of time without any directed intervention. This movement may be a symptom of the 6-point scale respondents were asked to use (which introduces a high probability of small fluctuations in results gathered over multiple data points) (see Cresswell and Clark, 2007). However, this natural flux should be considered when examining the following results and

conclusions.

It is also possible to gather information about students' conception of intelligence indirectly from their responses about what is required for academic success. The factor "be naturally clever" was rated amongst the top 5 factors for success by 37 students (31%). Although this factor betrays a fixed idea of intelligence, 13 of those 37 students (10% of the entire cohort) were also categorised as Incremental theorists. This suggests that (perhaps unconscious) notions of innate talent are more pervasive than the initial analysis of Dweck's (1999) Theories of Intelligence questions indicates.

### ***Theories of Intelligence Intervention***

The results suggest that it is possible to modify students' theories of intelligence via targeted intervention both in the short term and in the longer term (see Figure 1 and Figure 2).

[Insert Figure 1: Graph showing the changes in students' theories of intelligence over time in intervention group TI&RS (n=46)]

[Insert Figure 2: Graph showing the changes in students' theories of intelligence over time in control groups RS and C (n=73)]

As discussed, there was no significant change in the distribution of students demonstrating a 'fixed', 'incremental' or 'undecided' theory of intelligence between Data Point 1 and 2 (prior to any intervention). At Data Point 1, 50% of the students in the TI&RS intervention classes were categorised as having an "incremental" theory of intelligence. At Data Point 3, after the first Theories of Intelligence intervention this figure rose to 69% and at Data Point 4, after the TI&RS intervention 80% of students in these classes demonstrated an incremental theory of intelligence, a key indicator of a growth mindset. This amounts to an overall increase of 30% in numbers of students

demonstrating a growth mindset between the first and final Data Points. This growth was in contrast to the groups who did not receive the Theories of Intelligence Intervention (groups RS and C), where no significant fluctuations between the four data points were observed (see Figure 2).

Despite the significant shift in students' intelligence theories in the TI&RS group towards the Incremental theory, there are many complicating and conflicting aspects within the rest of the data set. When considering the whole cohort together, it is notable that of the 83 students exhibiting an overall Incremental Theory at the final data point, 53 (or 64%) of them continued to agree with the statement 'Some people are naturally good at languages'. It thus appears to be entirely possible to hold a growth mindset about one's ability to improve language skills via practice at the same time as espousing the view that some people are naturally good at languages. This result may perhaps also be indicative of the dangers of an over-simplistic categorisation of mindsets (see Murphy and Dweck's warning (2010)).

Having established the presence of a shift in students' theories in the IT&RS Intervention groups, a closer look was taken at the course that these modifications took, resulting in the noticeable increase in the "Incremental" category (see Figure 3).

[Insert Figure 3: Diagram showing the changes in students' theories of intelligence in group TI&RS after Intervention at Data Point 3 and Data Point 4. The green arrows indicate movement towards the incremental theory.]

Ryan and Mercer (2012) argue that mindsets can be conceptualised as a continuum, along which students have the capacity to gradually progress, rather than executing a "radical mindset shift". For this reason, it was hypothesised that the increase in the Incremental category at Data Points 3 and 4 would be due to students moving gradually

along the mindset continuum from Fixed to Undecided and finally to Incremental. At Data Point 3 after the first Theories of Intelligence Intervention, we found that contrary to our initial hypothesis, the swelling of numbers in the incremental category came from the 6 students who appear to have abandoned fixed ideas directly for the incremental model (see Figure 3). This is heartening as it suggests that for this age group, “radical” mindset shifts are achievable within a short space of time. At Data Point 4, after the second intervention, the majority of the movement (5 students) is from the Undecided to the Incremental categories, as originally predicted. At this stage just 2 students move away from the Fixed category, which leads us to speculate about the existence of a small minority of students with a deep-rooted Fixed Mindset, for whom this level of intervention has little impact.

### ***Changes in Strategic Classroom Behaviours***

It was hoped that the Theories of Intelligence and Reading Strategy interventions would give students a sense of empowerment and the tools required enact a positive change in their self-reported classroom behaviours.

[Insert Figure 4: Bar Chart showing differences in Student Responses in Times of Challenge from Data Point 1 to Data Point 4. The top bar in each category relates to Data Point 1. Statements that are mal-adaptive are highlighted in red. Adaptive work patterns are highlighted in green. TI&RS n=37; RS n=35; C n=11.]

A comparison between Data Point 1 and Data Point 4 (see Figure 4) shows positive shifts in reported responses to classroom challenges from students in the Intervention Groups: Compared to the Control group, an increase was noted for the Theories of Intelligence and Reading Strategy Intervention groups in all four adaptive classroom

behaviours. This increase was accompanied by a sharp decrease in the tendency to feel depressed or to give up when encountering difficulties (highlighted in red in Figure 4).

Within the control group, it had been expected that student's reported behaviours would remain broadly stable. However, for this group, student's classroom behaviours became increasingly maladaptive. This raises the possibility that, without intervention, there is a natural loss of confidence and resilience over time with language learners of this cohort. Perhaps over the school year, as classroom challenges accumulate, some students feel less confident to voice issues and seek help. It could be argued that a twin focus on the skills of learning and the syllabus content, together with a motivational boost in terms of growth mindset thinking, goes some way towards counteracting this decline of confidence.

### ***Changes in Attributions for Success and Failure***

All questionnaires included open-ended questions about students' reasons for their perceived success and failure.

*Student Generated Attributions for Success:* For the entire cohort, over half of the attributions given for success at each Data Point were adaptive. This is encouraging but unsurprising as it is logical that most students would be more inclined to accept a personal and agentic responsibility for their successes than for their failures (Galloway *et al.*, 1998). Somewhat surprisingly, there were no significant differences between the number of adaptive attributions for success given at any Data Point by each group.

[Insert Figure 5: Bar Chart showing student-generated strategy attributions for success and failure at Data Point 4.]

In order to explore possible impacts from the Reading Strategy intervention, the adaptive attributions for success generated by students were further analysed to see whether a post-intervention increase in intelligent effort or strategy attributions was identifiable. As predicted, the groups that had received strategy training were more likely to attribute their success to the successful use of specific strategies (see Figure 5).

*Student Generated Attributions for Failure:* 36% of the attributions for failure given by group TI&RS were strategy-related compared to 12% of group RS and 0% of the Control (see Figure 5). This supports the theory that the provision of strategies alone is not as powerful in changing students' attributional patterns as the combination of mindset and strategy training (see Hsieh, 2012).

## *Academic Outcomes*

### *Overall Progress in Curriculum Levels*

Students' reported theories of intelligence were correlated against their overall attainment in German as reported by their teachers in 3 whole-school reporting sessions over the school year in December, March and June. Teachers reported student attainment using National Curriculum attainment levels<sup>1</sup> (on a scale from 1 (lowest) to 8 (highest)). For ease of comparison, the version of National Curriculum levels used by the school (including the use of sublevels) were converted into numerical format (for example 5a, 5b and 5c were converted into 5.75, 5.5 and 5.25 respectively).

[Insert Figure 6: Scatter Plot showing the Correlation between students Theories of Intelligence (on a scale from 1 (=fixed mindset) to 6 (=growth mindset) and their progress (as measured in National Curriculum sub-levels)]

When the whole cohort is analysed together a weak correlation ( $r=0.37$ ,  $p<0.1$ ) is observed between actual attainment in National Curriculum levels and students' adoption of an Incremental theory of intelligence at the final data point (see Figure 6).

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<sup>1</sup> At the time of data collection, the teachers in this study measured student progress at Key Stage Three via the now-archived assessment framework for the National Curriculum in England (which can be found at <http://www.nationalarchives.gov.uk/webarchive>). This assessment framework was removed with the introduction of the current National Curriculum in 2013 and has not been replaced, although many secondary school MFL departments have continued to make use of it (see Macaro et al., 2016).



There was an observable yet non-significant trend showing students in the Intervention groups (TI&RS and RS) made more progress overall than their counterparts in the control group.

[Insert Figure 7: Bar Chart showing average Progress in German National Curriculum Levels over Year 9.]

The performance of lower-attaining students may however be boosted by Theories of Intelligence intervention: If we consider just those students who began the academic year with the lowest prior attainment (NC Level 3a – 4a), we find that those in group TI&RS made accelerated progress over the year when compared to their counterparts in the control groups (see Figure 7).

Differences in students' overall progress could be explained by other factors such as the structure of the assessments themselves, and the well-documented fact that the National Curriculum Scale is open to interpretation and may not represent a fair measurement of progression (see for example Macaro, Graham and Woore, 2016). However, it appears worth pursuing the possibility that the breaking down of an inflexible, negative belief about ability in German may be particularly helpful for lower-attaining students. This result is similar to the findings of Grenfell and Harris (2013), who found that post-intervention the lower attaining students across both schools involved in the study made the most progress.

### *Reading Assessment Results*

The overall reading assessment performance of the intervention group TI&RS was not found to be significantly different to that of the control groups. However, as Table 3

indicates, students who received intervention training in Reading Strategies (Groups TI&RS and RS) were considerably more likely than their peers to attempt the most challenging questions on the Reading Assessment (statistically significant at the  $p \leq 0.05$  level). This result lends support to Graham's (2004) argument that teaching students to adopt a strategic approach to learning and to attribute their performance to the use of effective strategies may encourage them to tackle classroom tasks as problem-solving opportunities.

[Insert Table 3: Table showing percentages of students in each experimental group who attempted challenging questions on the final Reading Assessment. TI&RS n=46; RS n=55; C n=18]

A very strong correlation was found between students' Intelligence Theories at Data Point 4 and their willingness to attempt the questions posing a moderate and high challenge in the final Reading Assessment ( $r=0.76$  and  $0.82$  respectively,  $p<0.01$ ) This data supports the theory that mindset beliefs are most critical in situations of challenge and stress and that those students with incremental theories of intelligence and positive attributional tendencies may be more likely to take academic risks than their peers (Tuominen-Soini, Salmela-Aro and Niemivirta, 2012).

In the long term, this willingness to take risks is considered likely to translate into accelerated over-all progress, especially in a subject that has a spoken "performance" element built into it as is the case with languages.

### ***GCSE Uptake***

It is difficult to distinguish between the many possible factors at play during students' decision making over their GCSE options. However, students were asked at Data Point

2 whether or not they intended to choose German GCSE. Their actual choices were then collated in April (following the first Theories of Intelligence intervention) and compared (see Figure 8).

[Insert Figure 8: Bar Chart showing the initial and final take-up for German GCSE by Intervention Group]

It is instantly noticeable that the RS group had the highest total frequency of students prior to any intervention who indicated an interest in GCSE German. The reasons for this are unknown and this result was not predicted (In selecting the groups at the beginning of the study, as many controls as possible were taken account of: as with group TI&RS, group RS constitutes a ‘top’ and a ‘mixed’ attainment set respectively with 2 different German teachers. Roughly the same number of students from each RS class opted to continue with the GCSE (19 and 17), eliminating the possibility of a significant teacher-related factor. A retrospective look at the data does show that group RS began the year with a slightly higher average National Curriculum level (5B) than group TI&RS (5C) and the Control group (4A). The confidence derived from these slightly higher levels may go some way towards explaining the greater numbers opting for the GCSE at an early stage.

Another striking feature of this data is that in April following the first Theories of Intelligence Intervention lessons, the number of students in the TI&RS intervention classes opting for GCSE German more than doubles (in contrast to groups RS & C, where numbers remained broadly stable). A closer analysis was made of the 10 students who opted for GCSE German at Data Point 4, having initially indicated that they would not consider it an option at Data Point 2: It was found that 9 of them had moved towards

an Incremental Theory of Intelligence between January and April. 8 of these students had begun Year 9 in the lowest band of attainment for German and all 10 of these students had made a large amount of progress in German at this stage in the year (more than 2 National Curriculum levels). It seems likely that a combination of making good progress in the subject and moving towards a growth mindset in relation to language learning may have influenced these students' decisions, but further investigation would be necessary to corroborate this.

Overall, record numbers of students opted for German GCSE in this particular year, resulting in a 10% increase in the proportion of the student population taking up German GCSE (22%) compared to those who began the qualification one year earlier (12%).

## **Conclusions**

Although this study cannot seek to provide widely-generalisable conclusions due to its size and its rootedness within one school context (see Aubusson, Schuck and Burden, 2009), some tentative conclusions about the particular tendencies of this group of students can be drawn and there are some implications to be considered from their response to the interventions.

Firstly, it was found that 20% of this study's cohort's implicit theories of intelligence fluctuated to some degree prior to intervention. This natural flux suggests that the implicit theories of children of this age group in relation to single subjects are not stable. This supports the idea that students' implicit theories may therefore be open to influence by educators.

The results indicate that targeted intervention can influence FL students' intelligence theories in both the short term and the longer term. Whilst some students do move gradually along the continuum from fixed to incremental, it was shown that others can be persuaded to make more radical shifts. The fact that the second "top-up" Theories of Intelligence Intervention appeared to result in a second wave of students reporting increases in incremental theory ideas suggests that, as one might predict, a scheme of work spanning multiple lessons and reinforcing an incremental theory may be more effective than a single session.

Strategic classroom behaviours increased post intervention for the TI&RS group but the most significant result in this section was the sharp decrease in maladaptive, non-strategic classroom behaviours for the TI&RS group. The combination of Theories of Intelligence and Reading Strategy Interventions appears to have had a notable effect on the frequency with which students report adaptive attributions for failure. This supports the data presented by Tavakolizadeh and Qavam (2011) and bolsters the case put forward by Hsieh (2012) for teaching self-regulated learning strategies in the languages classroom. A further study with a larger cohort might introduce a discreet Attribution Training Intervention in addition to the Theories of Intelligence and Strategies work. This would then incorporate all of Hsieh's (2012) recommendations.

A correlation was found between the strength of students' incremental theories and the level of progress made over the year. Students in the Theories of Intelligence Intervention groups made the most progress over the course of the study, emulating the results of Blackwell *et al.* (2007). The group of students most positively affected by intervention appears to include those with the lowest initial attainment levels. These

students represent a group for which teachers are in constant search of effective strategies to help them progress. This study concludes that the promotion of a growth mindset may be helpfully considered as one such strategy.

Taken together, this study's findings support Grenfell and Harris's (2013) assertion of the importance of learner strategies and Blackwell *et al's* (2007) argument that strategic learning behaviours in combination with a growth mindset have the power to transform attainment. Future studies aiming to influence students' academic mindsets should consider the possibility that the success of such a programme may be improved when mindset training is integrated within a programme of subject-specific pedagogy, enabling students to contextualise their learning.

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