A higher degree of resilience: Using psychometric testing to reveal the benefits of university internship placements

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Abstract

Resilience is a multi-faceted concept but, in the context of learning, it can best be thought of as an individual's capacity to create and maximise opportunities as well as responding positively to setbacks and challenges. Developing students' resilience is becoming increasingly important. Research has shown resilience links to attainment, retention, engagement and employability. However, very little work has examined what aspects of curricula enhance resilience and the particular role of active learning frameworks in achieving this. Here, we analyse the effects of optional real-world internship placements on eight measures of resilience. Psychometric testing was conducted twice per student – at the start of their second academic year and again at the end. Students choosing an internship had significantly higher challenge orientation and adaptability scores than other students in the same cohort. Adaptability of both interns and non-interns improved over the academic year, but improvement was significantly higher for interns. Scores for optimism, purposeful direction, and ingenuity significantly increased between start-of-year and end-of-year tests for interns versus a decline for non-interns. We conclude that facilitating student engagement with real-world issues and challenges through supported internships within an active learning framework is an important mechanism for increasing students' resilience.

Keywords: Authentic learning, internships, real-world projects, student resilience, link organisations

The importance of student resilience

A key function of higher education is to prepare graduates by developing the skills they need in the workplace. Consequently, student employability is a prominent theme within most Higher Education Institutions and within most discipline areas. However, the ability of the sector to close the gap between graduate skills and employer expectations is questionable (Hills et al., 2003), especially in applied subjects where graduates often require substantial extra training to make them effective employees (Brown et al., 2005; SEMTA, 2006) or where students are often not trained in vocational skills (Rooney et al., 2006; Kneale, 2011). Equipping students to become effective employees following graduation is not without challenge. The modularisation of curricula can make it difficult to embed practical experiences and employability in a meaningful way, and there can be limitations on the extent to which students engage with employability initiatives (Wilson et al., 2008; QAA, 2013). Moreover, students not only need subject-specific expertise and transferable skills (such as team working and effective communication), they also need to be adaptable, emotionally intelligent, respond well to challenges and be able to rebound quickly and effectively from any problems encountered (Spronken-Smith, 2013; Hogan et al., 2015). This suite of personal characteristics and skills can be grouped together under the term 'resilience'.

Resilience is a complex and multi-faceted concept. In the context of learning, it can best be thought of as an individual's capacity to adapt to pressure, setbacks, challenges and change, in order to achieve and sustain personal and institutional effectiveness without significant cost to personal wellbeing (Grant and Kinman, 2013a; Grant and Kinman, 2013b). There are many types of resilience – including psychological, educational, emotional, and social – that combine to determine whether an individual can respond constructively to challenges (Yeager et al., 2012). Although resilience can be viewed primarily as a coping mechanism during adverse conditions it is more generally regarded, at least in educational contexts, as a measure of how people deal with day-to-day challenges and maximise potential opportunities. This notion is encapsulated in the concepts of everyday resilience (Martin and Marsh, 2009; Skinner and Pitzer, 2012; Furrer et al., 2014).

Everyday resilience encompasses the notions of challenge orientation and purposeful direction. Challenge orientation encompasses the extent to which somebody views potentially-stressful situations as an opportunity rather than a threat and the extent to which they seek out opportunities to learn and develop (Maddi and Kobasa, 2005). It is related to the need-to-achieve parameter described by McClelland (1958), which has been shown to affect the likelihood of selecting tasks that give rise to unfamiliar situations (Hollenbeck et al., 1989). Purposeful direction links strongly to long-term motivation, goal-setting, striving to attain something new or complete a task, and self-efficacy (Zimmerman et al., 1992). To some extent, both challenge orientation and purposeful direction go hand-in-hand with another key resilience parameter – adaptability – as people with high resilience scores but who are less comfortable with change will often seek out opportunities to improve adaptability (Surujlal and Singh, 2010). Ingenuity and support seeking are also involved. Although ingenuity deals with finding creative or innovative solutions to problems whereas support seeking might be thought of as a tendency to ask others for help, very often innovative approaches are either team-derived or are facilitated by a supportive environment (Livingstone and Lynch, 2000; Leisey et al., 2014).

Everyday resilience is an important aspect of education, both during and after study. During degree programmes, it is linked to engagement with studying, higher retention, improved attainment, and ultimate fulfilment of academic potential (Vallerand et al., 1997; Furrer et al., 2014; Martin et al., 2015) and thus overall educational buoyancy (Martin and Marsh, 2009). Post degree, resilient graduates are not only more likely to gain graduate-level jobs relatively quickly, they are also more likely to remain in challenging careers when the on-the-job learning curve is at its steepest (Hogan et al., 2015). For example, a recent study of newly-graduated nurse practitioners by Kidd (2015) showed that around one third of graduates switch careers during their first year of practice. Such changes were often motivated by feelings of isolation, guilt for not knowing relevant information, and difficulties in overcoming challenges. When a support network was put in place to increase resilience, career retention improved dramatically. Everyday resilience is also important for the increasing number of graduates who pursue a career outside of their subject specialism (Rooney et al., 2006) and those that have a 'portfolio career' involving different jobs over their working life, often including periods of

self-employment (Spronken-Smith, 2013). More generally, resilience is a predictor of job satisfaction and workplace happiness (Maddi and Kobasa, 2005; Youssef and Luthans, 2007).

University departments are increasingly seeking to build and improve student resilience in the hope that it will ultimately carry-over into post-university employment, as well as life more generally (Spronken-Smith, 2013). Increasingly, universities are moving from a primarily lecture-based and campus-delivered curriculum to a more varied delivery that allows students to engage with, and be challenged by, real world issues and experiences. One of the most common methods of bringing real-world learning into the classroom is through internships (Jackson and Jackson, 2009). When linked to formal educational programmes, internships are usually unpaid but often provide the student academic credit towards their award (Narayanan et al., 2010). In such cases, an internship usually involves an arrangement between a student, their university, and an external organisation where the individual carries out work – often a specific project – on an organisation's behalf without a formal contract of employment. This creates a form of learning experience triangle with benefits to all parties. In the case of the student, working on a specific project for a 'real world' organisation – thereby gaining authentic work experience and networking with potential employers – is particularly valuable (Barnett, 2012; Simons et al., 2012). Research has shown that internships are not only useful in their own right but can have beneficial effects on future learning in relation to students' knowledge, skills and grades (Farazmand and Green, 2011), sense of worth (Liu et al., 2011), self-perceived employability (Qenani et al., 2014), and career goals (Schambach and Dirks, 2002; Burns and Chopra, 2017).

No research appears to have been conducted on whether internships (or other university teaching initiatives such as partner-linked dissertations and field trips) specifically improve students' resilience. There thus is a need to answer the following research questions. Firstly, is there a change in students' resilience during their studies? Secondly, does that change differ according to whether an internship has been completed?

Methods

Focal internship module and curriculum framework
The internship module at the university where this study was carried out, that is, the University of Gloucestershire in the UK, runs between September and Easter and can be taken by any student studying within the School of Natural and Social Sciences. Students generally devise their own project and are supported throughout this process by teaching staff in a 'semi-directed' way by a subject-specific supervisor. This semi-directed approach typically either involves a student suggesting possible areas of interest and then working with their academic supervisor to hone these into a project that fits with the needs of a host organisation or, alternatively, the student identifying the host and then working with the academic supervisor to devise an appropriate project that maximises the opportunities the host organisation can provide. In addition, there are several generic sessions covering preparation, securing an internship and working with a host organisation. The module comprises 15 of the 120 credits needed to complete the second year and involves approximately 150 hours' work.

The University's model involves each student working on a project that has a tangible output. Such outputs vary but possibilities include consultancy reports such as environmental impact assessments or sustainability audits, biodiversity action plans, management plans, public engagement strategies, educational packs, method protocols, websites or marketing materials. Tangible outputs are agreed on a case-by-case basis (4,000 words or equivalent) and comprise the module's assessment.

Study design
In the 2014/15 academic year, around half of the second year students taking BSc Biology, BA Geography or BSc Geography opted for the internship module. Students not taking the internship module (the non-intern control group) chose an alternative campus-taught module, typically Animal Behaviour (Biology), Geographical Information Systems (Geography), or Biogeography (either course); the programme of study of interns and non-interns did not otherwise differ. Participants were given the same resilience test at the start of the second year of their degree course (before completing their internship or any other second year modules), and again at the end of the second year. In total, 26 students split equally between interns and non-interns. A paired approach was used to improve the power of the analytical framework and allow for (and test) any underlying differences between interns and non-interns. Students volunteered as participants and were informed that the focus of

the research was to assess possible changes in learning styles, transferable skills, and personal traits during their second year. They were not specifically told of the internship/non-internship split to avoid any influence on the way that questions were answered. In the overall cohort was an approximately even split between courses (12 Biology students; 14 Geography students) of which 10 were male and 16 female; there was no course or gender bias within the intern and non-intern subgroups. All students were 19-21 years of age, studying full time, and had completed the first year of study the previous year at the same institution (no students had transferred in from another university).

Psychometric testing
We used The Resilience Questionnaire™, run by Assessment and Development Consultants (A&DC). This is a commercially available online questionnaire that contains a series of questions to measure eight different components of resilience (see Table 1). It is based on the resilience scale of Wagnild and Young (1993) and the Personal Wellbeing Scale of the International Wellbeing Group (2013).

<<Insert Table 1 here>>

There were six questions per resilience component, plus an additional six questions – essentially very similar questions on the respondent's relationships with others but phrased slightly differently – to allow the reliability of each participant's responses to be asserted, thus giving a total of 54 questions. Each question took the form of a statement with which participants signified their agreement or disagreement using a five-point Likert scale (Table 2). Statements varied as to whether they were positively or negatively worded to minimise socially desirable responding (whereby participants consciously alter their responses to appear to be 'better' in some way), and straight-line responding (whereby participants give the same answer to all questions). Question order was randomised.

<<Insert Table 2 here>>

Each test was administered by an occupational psychologist specifically trained in the resilience measure. Participants were under no time pressure to complete the questionnaire; most took 10-15 minutes to do so. The questions can be seen in Table 2. Feedback reports were generated for each participant for each test. To avoid influencing end-of-year responses, participants received their individual start-of-year and end-of-year reports after they had completed both tests. Each report contained a diagram showing the individual's score for each component on a scale of 1-10 and how to interpret their score (Figure 1).

Statistical analysis of psychometric tests
Because there were six questions per component on each test, and a 5-point Likert scale was used for each, the minimum score for each component was 6 and the maximum was 30. However, in order to align these data with the intuitive feedback reports (ten-point scale; Figure 1); each component was re-scaled using a 1-10 scale. This provided consistency and improved interpretation as the feedback report norms were directly comparable.

<<Insert Figure 1 here>>

Before analysis, the psychometric testing data were assessed for reliability. All resilience components had Cronbach's alpha coefficients in excess of 0.7, which is the benchmark level for adequate internal consistency for psychometric tests (Evers, 2013).

To establish whether there were differences between students who opted for an internship and those that did not, we compared start-of-year scores for each resilience component between intern and non-intern groups using independent samples t-tests. Then, to obtain a measure of temporal change in resilience over the course of the academic year, we calculated the difference between the end-of-year and start-of-year scores for each of the eight resilience components for each student. In this way, the direction of change during the academic year was indicated by whether the change figure was positive (increasing resilience over time) or negative (decreasing resilience over time). The magnitude of the deviation from 0 showed the magnitude of change. Again we used independent samples t-tests to test for differences between interns and non-interns. Although each individual question was

answered on a Likert scale, use of parametric statistics was valid as multiple Likert scale responses had been combined to form a near-continuous variable. Despite the relatively small sample size, all data were normally distributed (Shapiro-Wilk P > 0.05 in all cases) and fulfilled Levene's equality of variance tests.

Focus groups

We ran four voluntary-attendance focus groups to extend and deepen understanding of the psychometric testing results. To avoid any of the reflection on experiences within the focus group influencing answers to psychometric test questions, focus groups were held after both tests had been completed. Three of the four focus groups involved both interns and non-interns; in these students were asked about their decision-making process in terms of selecting the internship (or not). Further questions then explored internship experience in relation to the benefits, difficulties and opportunities it provided, and whether it affected students' self-confidence and their perceived ability to pursue their career goals. Students who had not undertaken an internship were asked what factors were important in their choice of other modules as well as their overall programme of study and how it was changing their knowledge and skills. All students were asked about plans for post-university life and career ambitions, and the role of their degree in achieving these goals. The fourth focus group comprised students at the end of their final year that had completed an internship the previous year and could thus reflect on this experience in the context of their whole degree. None of these students sat the psychometric tests. Focus group sizes were 8-10 people and involved 35 students overall. Most discussions lasted 45 minutes and were facilitated by a postgraduate research assistant and a co-author.

The focus groups were audio-recorded, transcribed and anonymised. The transcripts were analysed using a grounded theory approach (Strauss and Corbin, 1990) whereby themes were identified and developed from each transcript by the focus group data analysis team (comprising two postgraduate research assistants and a co-author). This team discussed the themes identified for each transcript. This process that allowed qualitative analysis to move beyond basic topic coding (simply assigning topics to pieces of data such as 'barriers to taking up an internship' or 'benefits for career') to analytical coding (coding that comes from interpretation and reflection on meaning). The final set of themes was supplemented by quotes identified as being particularly illustrative to be used alongside, and underpin interpretation of, the psychometric testing results.

Ethical considerations

Our research was conducted in accordance with the British Education Research Association ethical guidelines. Formal ethical approval was not required under the University of Gloucestershire's Ethical Guidelines. For psychometric data, participants' results were compiled into a CSV file and immediately anonymised by a co-author. Each record was allocated a unique case number so that start-of-year and end-of-year tests could be paired but this did not identify the student. Each participant was also assigned to the intern or non-intern group. The co-author was otherwise unknown to the participants and not involved with their teaching, marking, giving academic or career advice or providing references. The main research team, which included academic staff who were involved in teaching and assessing participants, only ever had access to the anonymised dataset. With regard to the focus groups, the original audio recordings and any non-anonymised transcripts were not made available to any staff member responsible for marking or moderating any work of the participating students.

All participants completed an informed consent form, which detailed the background to the study and highlighted that students were free to withdraw at any time, prior to participating in psychometric testing or attending a focus group. Students were given named contacts with project personnel or people unconnected with the project (including the University Student Services team) if they had any concerns; information on compliance with the Data Protection Act was also provided. Students were advised that any comments that they made would only appear in publications after they had been anonymised.

Results

Comparison of intern and non-intern groups

There was a significant difference in scores for both challenge orientation and adaptability between the intern and non-intern groups at the start of the year, before work on any modules (including the internship) had started (Figure 2).

<<Insert Figure 2 here>>

In terms of challenge orientation, participants opting for the internship module had significantly higher scores relative to participants not registered for that module (mean = 7.083 ± 0.291 SEM and 6.071 ± 0.448 SEM respectively; t = 1.724, df = 24, P = 0.049). In the case of adaptability, participants registered for the internship module had significantly lower scores relative to participants not registered for an internship (mean = 5.111 ± 0.276 SEM and 6.119 ± 0.396 SEM respectively; t = -2.019, df = 24, P = 0.028). None of the other six resilience components differed between intern and non-intern groups. There were no significant differences for any of the eight components relative to course or gender.

For challenge orientation, results from the focus groups were insightful. For example, one intern stated '*At the end of the day you've got nothing particularly to lose, you're at university, it's the only time when you're probably gonna get a load of new opportunities and the time to do it, so just go for it*' while another said simply '*I like the fact that it [the internship] is what you make it*'. Other interns specifically said they wanted to take on the challenge of an internship because it would help with career planning: '*I like mine in the fact that I wasn't sure what career path I wanted to go into, so I wanted [to challenge myself]*'. This contrasts with comments from students who did not do an internship, such as '*To me it sounded like something else that was going to take extra organising and I didn't really want to bother with that*' and '*…with the internship you are thrown in the deep end and if you mess up it's on you and that's quite daunting*'.

It is harder to interpret the adaptability results, as the direction of this difference was opposite to what was expected, with interns having lower adaptability scores. This might suggest that people who are less adaptable or less comfortable with change seek out, deliberately or subconsciously, opportunities to improve adaptability especially as those individuals also had high challenge orientation scores, as discussed above. A quote from an intern at one of the focus groups potentially supports this speculation: "*I know I can be quite set in my ways and that isn't always a good thing as employers want flexibility too so I wanted to learn how to, like, do that*".

Change over time: intern and non-intern groups
Three of the eight measures – self-belief, challenge orientation, and emotional regulation – increased over time for both groups and there was no significant difference between the magnitude of increase between interns and non-interns (Figure 3).

<<Insert Figure 3 here>>

In the case of challenge orientation in particular, this lack of significance was despite a substantial difference in mean scores and was due to the high variability around the mean for both groups. Adaptability also increased for both groups but intern students' adaptability increased significantly more than did that of non-intern students (mean change = 0.390 ± 0.184 SEM and 0.100 ± 0.334 SEM respectively; t = 1.725, df = 24, P = 0.048; Figure 3).

In the case of the four other resilience measures, there was an increase in scores over time among interns and a decrease in scores among non-interns (Figure 3). Students that did an internship ended the year substantially more optimistic than at the start, whereas students who did not take an internship became less optimistic (mean change = 0.760 ± 0.343 SEM and -0.260 ± 0.555 SEM, respectively). This group-level difference was statistically significant (t = 1.870, df = 24, P = 0.037). The contrasting nature of optimism temporal change possibly links to the sense of satisfaction interns got from their projects and the carry-over effects of being able to deal with challenges and setbacks more effectively, as well as making the most of opportunities. As one of the intern students commented in a focus group '*You feel more sense of achievement finishing [the internship] than others and that helps you stay positive about your course and your subject*'. Several students also mentioned the boost to personal self confidence that they received by positive host feedback.

Similarly, students in the intern group increased their levels of purposeful direction over the course of the second year of their undergraduate studies, whereas those in the non-intern group had a relative decrease over the same time period (mean change = 0.730 ± 0.311 SEM and -0.180 ± 0.286 SEM respectively). Again, this difference between the groups was statistically significant (t = 2.145, df = 24, P = 0.021). Intern participants in the focus groups frequently commented about the effect of their

experiences on module choices for the following year and career plans, as summarised by one student: '*I really enjoying it [working with the community] now so I've tailored my modules for next year to that career path*'. Such experiences might also link back to improved optimism about the future.

Finally, intern students significantly improved both their ingenuity and support-seeking tendencies over the course of their second year relative to others in their cohort. These differences were again statistically significant: ingenuity mean change = 0.550 ± 0.350 SEM for interns and -0.920 ± 0.435 SEM for non-interns (t = 2.633, df = 24, P = 0.007); support seeking mean change = 0.640 ± 0.275 SEM for interns and -0.100 ± 0.215 SEM for non-interns (t = 2.147, df = 24, P = 0.021). Interns commented in focus groups that they valued the transferable skills they learnt and saw these as being valuable in equipping them to deal with new challenges: *'The point is that it is different, you are getting a broader skillset by doing that … it stands alone in giving skills that would be absent if you hadn't done the module that you can apply elsewhere'.* Some students spoke specifically about the role of the internship in improving their team working: '*You have to learn to work with others, and have good relationships with people and get in favours rather than just bumbling along on your own'.*

Discussion

Comparison of intern and non-intern groups
Students in the intern group had significantly higher challenge orientation scores at the start of the year than students in the non-intern group. This suggests that the intern cohort viewed potentially stressful situations as an opportunity rather than a threat and sought out opportunities to learn and develop (Maddi and Kobasa, 2005). What was surprising, at least initially, was the lower adaptability scores of interns versus non-interns. The likely explanation here is that less comfortable with change will often seek out opportunities to improve adaptability (Surujlal and Singh, 2010), especially if those individuals also have high challenge orientation scores.

Change over time: intern and non-intern groups
The majority of resilience parameters showed differential change over time between the intern and non-intern groups. Adaptability scores improved for both cohorts but the magnitude of this improvement was higher for interns. The is interesting since it suggests that regardless of whether students that were less comfortable with change deliberately sought out an internship, completing this process improved their adaptability, probably because they had to negotiate a new organisational culture and experienced greater autonomy and less structure than a university setting (Barnett, 2012).

Four other resilience parameters showed even more substantial differences: optimism, purposeful direction, ingenuity and support seeking scores all increased between the start-of-year and end-of-year tests for interns relative to a decrease for non-interns. This confirms that student enjoyment of the experience of internship makes for positive attitudes generally (Jackson and Jackson, 2009; Liu et al., 2011) and that students can be enthused by the benefits of their internship project to the wider community or environment (Simons et al., 2012; Burns and Chopra, 2017).

It is somewhat concerning that students who did not take an internship ended the year less optimistic than they started it. One possible explanation is that the end-of-year focus groups necessarily clashed with end-of-year assessment deadlines, which might have acted to reduce optimism of all students but with such a reduction being buffered amongst interns by the positive nature of that experience. It might be interesting, in future research, to compare resilience metrics of students at different times of the academic year in relation to assessment deadlines and other potential stressors.

Pleasingly, several students who had completed internships stated that the experience had helped with career planning and third year module choices and their perception of their own employability; this agrees with the literature (Schambach and Dirks, 2002; Jackson and Jackson, 2009; Qenani et al., 2014) and likely explains the link between internships and purposeful direction. The increases in ingenuity and support seeking scores for interns might initially seem paradoxical but these parameters are mutually-reinforcing as very often innovative approaches are either team-derived or are facilitated by a supportive environment (Livingstone and Lynch, 2000; Leisey et al., 2014).

This study is seemingly the first time that a before-and-after quantitative assessment of resilience has been undertaken to test the effectiveness of an initiative to enhance authentic learning in higher education. The results provide evidence that, in this specific group of UK students, those taking an

internship become more resilient over time compared to their peers taking an otherwise similar degree, especially in terms of purposeful direction, adaptability, ingenuity, optimism and support seeking. Students generally found undertaking their internships to be enjoyable, stimulating and challenging, which heightened their sense of achievement and personal growth upon completion. However, there are some limitations to this study. Firstly, the differences between the intern and non-intern groups might not be completely causal and there remains the possibility that students in the intern group are pre-disposed to improve aspects of their resilience. This could occur, for example, if students who opt for an internship are more committed to their second year studies and approach the year with a view to honing their ambitions and career plans. That might make little difference at the start of the year (and so not be particularly evident in the between-cohort comparison of start-of-year psychometric tests) but become evident as the year progresses. Secondly, all statistical analysis is subject to type 1 error, especially when multiple parameters are studied with a relatively small sample size and where it is not possible to use randomised methods. Thirdly, the end-of-year tests coincided with the main assessment period, which might have influenced scores (especially those around optimism). It should also be noted that these data came from undergraduate students in just two subject areas (Biosciences and Geography), within one particular university and from one country/context. Future work needs to explore resilience in different disciplines, at different levels/years and from different countries/contexts given that resilience might vary according to context. Exploring gender differences and differences relative to the amount of work students do alongside their studies might also be helpful.

We conclude that in addition to internships benefiting students' knowledge, skills and grades they also have a positive effect on students' resilience and that this might be the causal (or partly causal) reason why internships also affect self-perceived employability and career goals. In terms of recommendations for practice, we suggest that incorporating internships into curricula is valuable and that resilience should be explicitly investigated further within active learning contexts, both as a benefit in its own right and to elucidate its potential role as the mechanism by which active learning affects long-term measures of student success such as employability and career progression.

Acknowledgements

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Table 1: The eight components of resilience measured during psychometric testing through The Resilience Questionnaire run by Assessment and Development Consultants (A&DC) .

Resilience component	Definition
	The extent to which an individual has:
Self-Belief	Confidence in their ability to address problems and obstacles
Optimism	Belief that they will experience good outcomes in life and the way in which they explain setbacks
Purposeful Direction	Clear goals that they are committed to achieving
Adaptability	Willingness to adapt their behaviour and approach in response to changing circumstances
Ingenuity	Belief that they are capable of finding solutions to problems
Challenge Orientation	Enjoyment of experiences which challenge them, and perceives stretching situations as opportunities to learn and develop
Emotional Regulation	Ability to remain calm and in control of their emotions in stressful situations
Support Seeking	Willingness to ask others for help and support

Table 2: Questions on the Resilience Questionnaire with in the different categories of: SB = Self-Belief; O = Optimism; PD = Purposeful Direction; A = Adaptability; I = Ingenuity; CO = Challenge Orientation; ER = Emotional Regulation; and SS = Support Seeking (definitions of each in Table 1). The options for response to each question were SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; and SA = Strongly Agree. Question order was randomised for delivery.

Cat	Question	Response				
		SD	D	N	A	SA
SB	I can achieve anything I set my mind to	o	o	o	o	o
O	I find it easy to see the positives even in the most difficult situations	o	o	o	o	o
PD	I stay focused on working towards my goals no matter what	o	o	o	o	o
A	I find it frustrating if I have to change my plans	o	o	o	o	o
I	I do not see myself as a creative problem solver	o	o	o	o	o
CO	The harder a challenge is, the more I like it	o	o	o	o	o
ER	When faced with a difficult obstacle, I do not get anxious or annoyed	o	o	o	o	o
SS	I strongly believe that a problem shared is a problem halved	o	o	o	o	o

Figure 1: Example report showing scores for each of the eight resilience components measured, the hypothetical participant's score for each on a 1-10 scale, and guidance on how to interpret scores (A&DC, 2010).
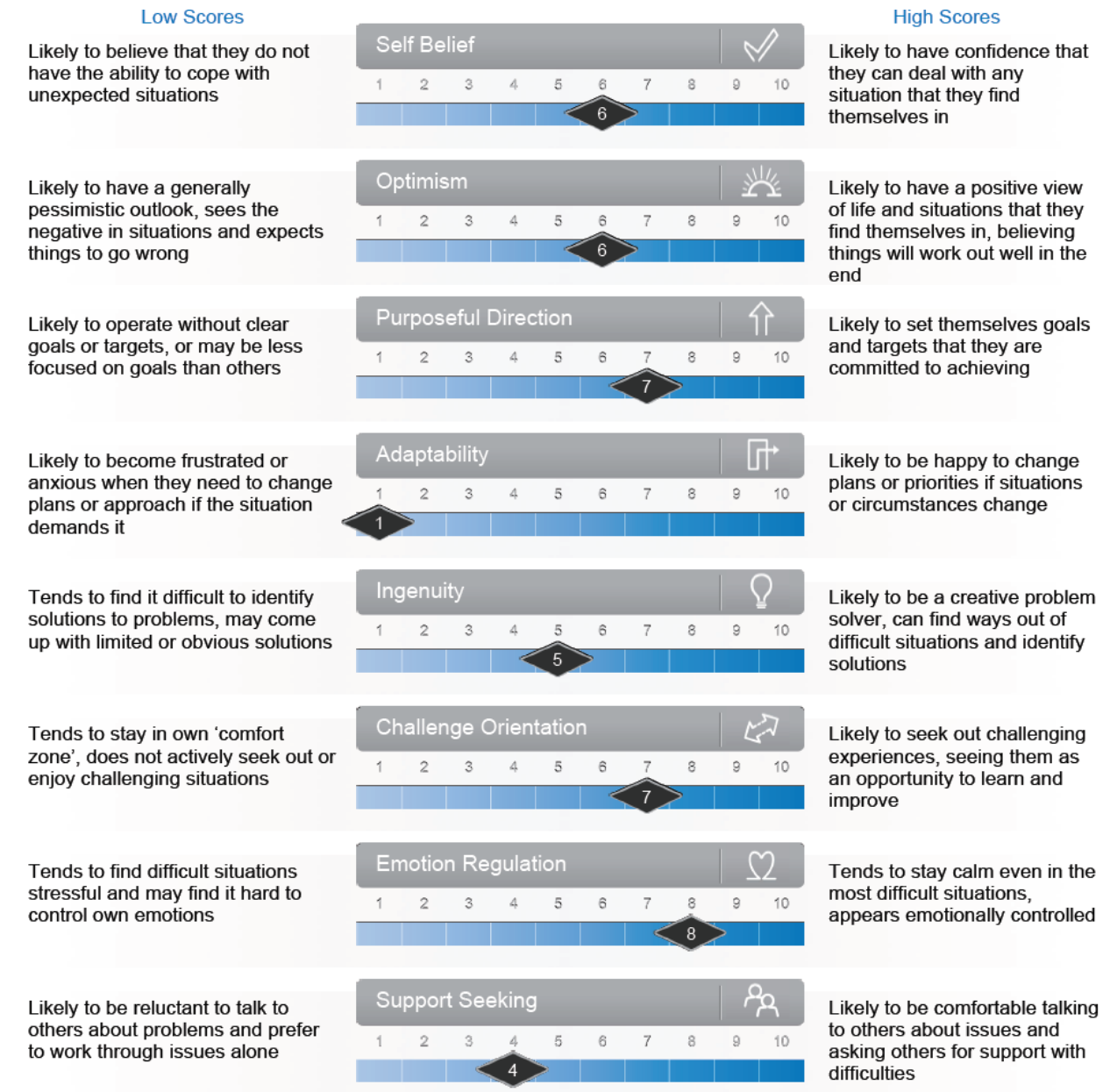
Figure 2: Differences in scores for the eight different resilience components in the start-of-year psychometric test (before any second year modules were taken) for students who had opted for the internship module (n = 13) and students who had not (n = 13). Error bars show 95% confidence intervals. Significant differences between the intern and non-intern groups are shown using asterisks (* = P < 0.05).
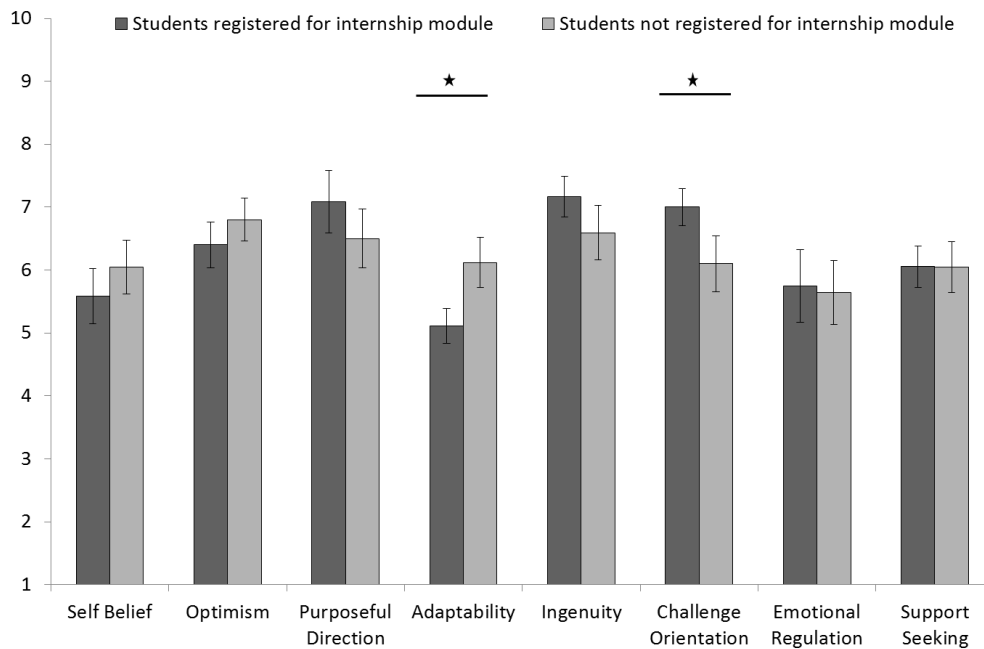

Figure 3: Change in scores for the eight different resilience components between start-of-year and end-of-year psychometric testing for students who took an internship (n = 13) and those did not (n = 13). Positive values show a temporal increase in participants' score for a given parameter, whereas negative values show a temporal decrease. Error bars show 95% confidence intervals. Significant differences between the intern and non-intern groups are shown using asterisks (* = P < 0.05; ** = P < 0.01).