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Employer engagement in British secondary education: wage earning outcomes experienced by young adults

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Since 2004, the devolved education systems of England, Scotland and Wales have introduced initiatives to increase contact between employers and young people, particularly aged 14–19, as a supplementary, co-curricular activity within mainstream education. The initiatives are motivated partly to increase wage-earning potential but studies to date have not explicitly tested this hypothesis. Robust evaluations from the USA suggest a potential wage uplift of 6.5–25% but these evaluations do not directly comment on the UK approach, as they focus on highly specialised forms of education with closely integrated employer involvement. A new 2011 survey associates wage returns and school-mediated employer contacts for 169 full-time 19–24-year-old workers on annual salaries within the UK environment – and suggests a link of 4.5% between each additional school-mediated employer contact, such that four employer contacts would produce results in line with the US studies. Contrasting the US and UK studies suggests that any causal link from school-mediated employer contact to wage outcomes is likely to be driven more by increased social capital as witnessed in improved access to non-redundant, trustworthy information and social network development than by the development of either technical or 'employability' skills.

Keywords: employer engagement; wage premiums; labour market; school-to-work transition

1. Employer engagement in British secondary education: history and context

Over the last decade, employer engagement has become commonplace in the educational experiences of British secondary school pupils. Since 2004, in each of the devolved education systems of England, Scotland and Wales, governments have legislated and devoted public funding to ensure that young people have access to a wide range of opportunities to interact with

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employers within their educational experience. Interactions have taken a range of forms, including short-work experience placements (typically undertaken at age 15), workplace visits, careers advice, business mentoring and enterprise education (Qualifications and Curriculum Authority [QCA] 2003; Scottish Executive 2004, 2007; Welsh Assembly Government 2004, 2008).

Each national programme, while distinct in elements, shared a number of common characteristics:

- A policy assumption and desire that *all* secondary pupils learners regardless of attainment levels and vocational aspirations should be involved in some employer engagement activity, with strongest focus on learners aged 14–19;
- A delivery approach whereby provision would be typically experienced as co-curricular activity i.e. that employer interactions would be primarily delivered within mainstream educational experiences (as a typically compulsory activity taking place during the school day), but rarely integrated into defined programmes of study with curriculum-related learning outcomes;
- Schools would enjoy discretion over the specific types and volume of employer engagement undertaken – in England, for example, fulfilment of the 2004 statutory requirement to work-related learning was interpreted as delivering two or more of nine different, if overlapping, elements of provision to enable pupils to learn through work, about work and for work (QCA 2003, 2008);
- New requirements for systematic workplace involvement built on preceding policy and practice, in each national jurisdiction, encouraging and enabling at least some pupils to have previously experienced employer engagement within their education experiences. Consequently, schools responded to new requirements from different starting points.

Each national programme was further defined by a shared assumption that increasing the involvement of employers within the educational experiences of young people would serve to improve the labour market prospects of pupils. Introduced in 2004, the Scottish Executive's programme, *Determined to Succeed*, called for a 'major commitment' from Scotland's employers to help young people get ready for work and go on 'to be successful employees, employers and entrepreneurs' (Scottish Executive 2007, 10). In Wales, the introduction, in the same year, of a statutory requirement to work-related education was designed to provide 'opportunities for learners to improve their knowledge and understanding of, and skills for, the world of work, enterprise and entrepreneurship' (Welsh Assembly Government 2004, Section 1.4). In England, the Department for Children, Schools and Families

(DCSF) saw a primary benefit of work-related learning at Key Stage four, also introduced by statutory requirement in 2004, as helping young people aged 14 to 16 'to develop their "employability skills" that make them attractive to their future employers' (DCSF 2008, 6).

Studies have shown that implementation of these policies has varied across British schools with young people being exposed to a varying range of employer engagement activities. The English QCA, for example, surveyed 368 Year 11 pupils in 2009 and found that 83% had undertaken a work experience placement of a week or more, 58% had taken part in a workplace visit, 34% an enterprise activity and 46% listened to, or spoken with, a 'visitor from business' (Ipsos MORI 2009). Surveying secondary school teachers, YouGov found that over the previous two years, 88% of state schools had provided work experience, 52% enterprise projects and 50% workplace visits (YouGov 2010, 66) Moreover, while survey data suggest that young people who engaged in such activities with employers largely found them to be of interest and value, this was not universally the case (YouGov 2008). Such partiality in implementation across different schools and regions and variation in experience, while a frustration to policy-makers, has the advantage of allowing analysis of the differential impacts of varying intensities of pupil-experienced employer engagement. As Prue Huddleston, Emeritus Professor at the University of Warwick, states: 'In the British tradition of employer engagement in education, there is relatively little scope for pupil agency in determining whether or not they engage in many activities. Typically, over the last decade, schools have either required all young people in a year group or class to take part in activities such as work experience, one-day enterprise competitions and career fairs or chosen not to engage in them at all. Some pupils might show agency in choosing to take part in longer duration enterprise competitions or be selected themselves for business mentoring, but these commonly involve fewer than 10% of pupils in any year group'.[1]

To date, however, there has been no systematic consideration of whether these policy interventions have served to meet their objective in improving the actual labour market prospects of participants as they come to the end of their school-to-work transitions. While British, as European, literature has failed to explore such outcomes, US literature does suggest that employer engagement in high school learning experiences can be positively associated with the higher earnings of young adults. Four studies in particular have tracked young people, who previously participated in learning programmes involving employer engagement, into the labour market and compared earnings to control groups.

Evaluations undertaken by Boston-based social enterprise Jobs for the Future (1998), the Applied Research Unit of Montgomery County Public Schools (2001) and MacAullum et al. (2002) followed high school graduates one to six years into the labour market. In each case, participants were

brought into contact with employers, undertaking work experience and significant classroom involvement, within largely academic learning programmes focused on relevance to discrete vocational areas, such as IT, healthcare or automotive industries, undertaken through the final years of high school. Each review shows alumni of the programmes to be enjoying higher levels of earning – across a range of 6.5–25% more than control groups.[2] While such results are striking, lack of transparency over methodologies used in creating control groups and low sample sizes suggest that findings should be treated with some caution.

Much more persuasive is the 2008 evaluation, undertaken by research agency MDRC, of the labour market outcomes of the alumni of the US Career Academies, a learning programme combining academic and technical curricula around a career theme delivered in partnership with local employers providing work-based learning opportunities (Kemple and Willner 2008). As Orr et al. (2007) demonstrate, student participants in Career Academy programmes are considerably more likely to have taken part in employer engagement activities such as work experience and related work-based learning experiences than high school peers.[3] The Kemple study followed 1764 young people randomly assigned into either a group which undertook the Career Academies programme between ages of 15 and 18 or a control which did not. Eight years after leaving high school, researchers explored the labour market outcomes of 1428 of the original respondents (82% of intervention and 80% of control groups) and found that while the two groups attained and progressed to higher education in similar proportions, alumni of the Career Academies programme enjoyed earnings 11% higher than their peers. The earnings of the quartile of young people whose characteristics suggested the highest risk of dropping out on enrolment in the programme were 17% higher than the comparable control group (Kemple and Willner 2008, 11, 25).

While such studies demonstrate, with varying degrees of confidence, evidence of wage premiums following educational programmes involving significant employer engagement, integration within distinctive learning programmes makes it challenging to assign a particular impact to the involvement of employers themselves. The current study tests whether such wage premiums can be observed in the British educational and economic environment wherein participants would overwhelmingly experience employer engagement not as an element within a distinctive learning programme with interventions linked to desired learning outcomes, but as a supplemental or co-curricular educational activity within a mainstream learning experience. Moreover, in considering potential impacts stemming from contacts which are characteristically of very short duration, it considers insights from an emerging literature which has drawn on aspects of social capital theory to understand the value of weak relationships within social interactions.

The remainder of this paper is structured as follows. Section 2 describes the construction of a survey and relevant questions that afforded insight into this topic. Section 3 describes the selection of analytical methodology and the transformations of data required. Section 4 presents the results, both of the main regression analysis to identify a wage-return correlation and a subsidiary analysis of the number of school/college-mediated employer contacts against an individual's confidence in their current career progression. Sections 5 and 6 contrast the results from this paper against the findings of UK and international studies in an attempt to understand the phenomenon observed, and discuss policy and research implications. The appendices provide summary-level information on the underlying data, including descriptive tables of the survey respondents used in this analysis by education level, type of school attended, gender, age and location.

2. Data

The study in question was undertaken by YouGov on behalf of the Education and Employers Taskforce, a UK charity created in 2009.[4] In February 2011, YouGov surveyed 985 young British adults, aged 19 to 24 and resident in England, Scotland or Wales to explore their current circumstances and their experiences of school-mediated employer contacts.[5]

The purpose of this paper is to consider the possible wage premium associated with different levels of employer contact, which requires the data-set to be narrowed to a comparable group of respondents. For this reason, only salaried individuals working full-time were subjected to detailed analysis. This approach excludes those working part-time or on an hourly wage at the time of the survey. As discussed later, a primary channel through which employer contact is hypothesised to benefit individuals is through access to information to support career choice and enhancing their networks relevant to chosen careers. For individuals aged 19–24 who are working hourly or part-time, there is an increased likelihood that they are not yet working in their career of choice and are still in the midst of the transition from education to sustained employment. Finally, individuals who did not recall how many employer contacts their school(s) had mediated or did not provide details to questions required for the analysis (e.g. ethnicity and qualifications obtained) were also excluded from the study.

The remaining data-set consists of 169 respondents to be analysed. This sample size is sufficient to allow for aggregate statistical analysis, but does not enable comparisons across subgroups. Matching the reduced sample scope, the conclusions of this paper are similarly restricted to young people aged 19–24 who are in full-time, salaried employment. Nonetheless, it may be relevant to future work to consider to what extent these 169 respondents are representative of wider cohorts. For this reason, descriptive statistics are presented for the 169 respondents under analysis and the full cohort of 985

(see Appendix 1 for full details). Within the constraints of the sample size, the analysed cohort is comparable to the full cohort with respect to location, gender, type of school attended and number of employer contacts. The two main differences between the cohorts result from the requirement that the analysed cohort be wage earning, in that the analysed cohort is more likely to be aged 22–24 than 19–21 and, related to this age difference, is also more likely to have a level 4 + qualification.

The survey asked respondents about the employer engagement activities they had undertaken while at school or college between the ages of 14 and 19. Although differences in categories rule out exact comparisons, participation levels were found to be generally in line with existing survey data reported above suggesting considerable variation in experiences of employer contact: 85% of respondents recalled undertaking a work experience placement, 45% receiving careers advice from employers, 30% taking part in enterprise activities involving employers and 19% experiencing business mentoring in some form.

> *Q1*: Some schools and colleges arrange for their students (aged between 14 and 19) to take part in activities which involve employers of local business people providing things like work experience, mentoring, enterprise competitions, careers advice, CV or interview workshops, workplace visits, taking part in classroom discussions. Did you take part in such activities between those ages? If so, on how many different occasions (more or less) did it happen?

Respondents were given a limited number of options which are set out with response rates below (Table 1).

The survey also asked respondents to give details of their current earnings. *Q2* sought data on gross income currently earned:

> *Q2*: What is your annual salary before income tax or any other deductions you have to pay?

Respondents' answers result in interval data, with respondents offered twenty options in £1000 intervals between the sums of £10,000 and £30,000

Table 1. School/college-mediated employer contacts (respondent count).

No. of activities	#	%
Never	44	26%
Yes, just once	64	38%
Yes, twice	32	19%
Yes, three times	13	8%
Yes, four times or more	16	9%
Total	169	100%

bookended between options for 'less than £10,000 a year' and 'more than £30,000 a year.'

These two questions enable statistical analysis of the correlation between wage and employer contacts that this paper addresses, and background questions on geographic location, gender, educational experiences, highest attainment levels and ethnicity enable appropriate controls to be additionally included in the analysis.

A third question (*Q3*) gathered data on the perceptions of young adults about the utility of the current activity, whether employment, study or other, in securing ultimate occupational goals.

> *Q3*: Thinking about the sort of job which you'd like to be doing in five to ten years time, how useful do you think what you are doing now is as a way of achieving this?
>
> - Very useful
> - Useful
> - Not that useful
> - Not at all useful

3. Analytical methodology

A primary question in assessing the relationship between employer contacts and earnings is the possibility of hidden variable bias. For instance, if children at independent schools are encouraged to have more contact with employers and also go onto earn more later, this may have more to do with a wealthier background and network of parental contacts, than it does school-mediated employer engagement. Alternatively, academic high performers may be more motivated, proactive individuals at school who take full advantage of employer contact opportunities and, quite separately, go on to earn more. Additionally, a range of other background variables available in the survey influence earning power, such as age, gender, ethnicity and location.

Regression analysis is chosen due to its ability to control for such background and potentially confounding variables. Since the dependent variable is interval data, interval regression solved via maximum likelihood is the preferred method of analysis. A linear regression was also conducted on the same data-set, since linear regression does not rely on the distributional assumptions of maximum likelihood analysis.[6]

A second question is the anticipated relationship between earnings and the independent variables being analysed. The majority of categorical, background variables are analysed as dummy variables (gender, region, school type, etc.). The reported age of respondents is treated as a continuous variable, assuming that each extra year is expected to bring (*ceteris paribus*) linearly higher earning power. The linearity assumption is imperfect over a

wide age range, but holds with reasonable precision in the narrow age range in this study, as indicated by the low standard errors for the age variable in the analyses presented below.

The relationship between highest levels of qualification (defined on levels 0 to 5[7]) is less straightforward. Typically, and in the absence of detail on which courses were studied, lower levels of qualification are completed at a younger age, meaning individuals may have had more years in which to build earning power by the time of the survey, an observation which contrasts with the longer term observation that those more highly qualified tend to earn more on average, up to a certain level of qualification. To account for this uncertainty, level of qualification is modelled as a dummy variable, with levels 0, 1 and 2 combined together due to sample size restrictions and the expectation that most respondents with these levels of achievement are likely to have left school at around the same time after the completion of their final year of compulsory schooling. The conclusions with respect to employer contacts are robust to the method chosen for modelling highest qualification.

Number of employer contacts is reported as discrete data by respondents and analysed as a continuous variable for the regression. Logic suggests that if employer contact is beneficial then more contact should convey further benefits. Diminishing marginal returns might also be expected, although this effect might not be expected with four contacts being the upper limit in the reported data. With this data-set, the inclusion of a squared term for employer contacts did not achieve significance at normal standards (p-value > 0.25) and the squared term was excluded for final analyses. The analysis was tested using number of employer contacts both as a dummy variable and as a continuous variable. Due to small sample sizes, the dummy variable analysis was ineffective, although the point estimates of coefficients supported the approach of linear modelling as a proxy for interpreting the underlying relationship and motivate the choice of using four as the value for the category 'four or more' employer contacts.[8]

Finally, there is a choice between seeking to predict absolute earnings or logged earnings. Over the full earnings spectrum, logged earnings are generally preferred, since earnings typically have a highly skewed distribution, with a few people earning very large sums of money. This approach is less applicable in this instance, since the survey did not allow for the reporting of salaries over £30,000 per year and because young people under the age of 24 have had less scope to develop such divergent incomes as those across the full earnings spectrum. The statistical motivation for logged earnings is to improve statistical inference and model performance. In this instance, the residuals from the linear regression for absolute earnings pass a Shapiro-Wilk normality test and do not increase in size with the fitted dependent variable; the performance of the two regressions, using logged and absolute earnings, are similarly undifferentiated (by R-squared and overall F-statistic). The final motivation to use logged earnings is where

there is an a priori reason to believe that the target of study is related to the dependent variable via a multiplicative relationship instead of an additive one, such that additional employer contact drives a percentage rather than a step change in earnings. Since no such reason is available in the literature, this paper chooses the model which produces the more tightly defined estimate with respect to standard error, indicating the functional form that holds most consistently over the 169 respondents. The full results are thus presented for the absolute earnings specification, with the coefficient of interest also presented for the logged earnings specification.

Given the complexity of wage outcome drivers and the decision-making processes of young people, the statistical output from this analysis should not be considered mechanistic. Instead, it provides a sense of the average empirical relationship over a large number of individuals' employer contacts and wage outcomes, controlling the sample to generate a comparison between individuals of similar education level, location, ethnicity and social background. As with all statistical methods of this type, it is not possible to derive causation from correlation. It is possible for instance that underlying personality types influence both wage outcomes and participation in or recall of employer contacts. However, as described in the conclusion, the combination of this analysis with evidence from the USA and qualitative data and theoretical frameworks affords some confidence that a direct causal element accounts for a significant proportion of the observed wage premium. Further insight into this question is gained from analysis of correlations between numbers of school-mediated employer contacts and respondents' medium-term confidence in successful career progression.

4. Results

4.1. Salary premiums

To allow for a maximum range of control over background circumstances, all background variables are included in the analysis[9] (Table 2).

The relationship between the number of recalled employer contacts aged 14–19 and reported annual wage is analysed above with controls for gender, ethnicity, age at time of survey, location in the country, type of school attended and highest level of qualification achieved. The output for the variable of interest indicates that each extra employer contact is linked on average with an extra £900, an analysis which is significant at the 5% level or better.[10] The *p*-value of 0.027 indicates only a 2.7% chance that we would observe the data that we have, and yet there be no relationship between earnings and school-age employer contacts.

Given that all such relationships are estimated with error, especially with such imprecise phenomena as wage return drivers that vary widely by individual, this analysis is better interpreted as being 70%[11] confident that the average correlation between each additional employer contact and

Table 2. Results of interval regression.

Dependent variable: reported salary in intervals [annual wage in GBP, before deductions]				
$N = 169$				
	Estimate	Std error	*T*-statistic	*P*-value
(Intercept)	−5603	10,047	−0.56	0.58
Age	914	398	2.30	0.02
White ethnicity dummy	−964	2149	−0.45	0.65
Gender dummy	475	1004	0.47	0.64
Highest qualification (level 3 dummy)	4687	2641	1.77	0.08
Highest qualification (level 4 dummy)	7316	2761	2.65	0.01
Highest qualification (level 5 dummy)	7827	2958	2.65	0.01
Employer contacts	909	410	2.22	0.03
East of England dummy	−1576	1375	−1.15	0.25
North East dummy	−2898	1820	−1.59	0.11
North West dummy	−117	2633	−0.04	0.96
East Midlands dummy	−2880	2677	−1.08	0.28
West Midlands dummy	−3695	1518	−2.43	0.02
Wales dummy	−4012	2575	−1.56	0.12
Yorkshire & Humber dummy	−4252	1769	−2.40	0.02
South East dummy	−1288	1560	−0.83	0.41
South West dummy	−1912	1469	−1.30	0.19
Scotland dummy	−4302	2793	−1.54	0.12
Independent school (14–16)	−2656	1465	−1.81	0.07
Other school (14–16)	−1749	2811	−0.62	0.53
Selective state school (14–16)	208	1731	0.12	0.90
Left education at 16 dummy	6326	2913	2.17	0.03
Other school (16–19)	1940	3255	0.60	0.55
Independent school (16–19)	4287	2108	2.03	0.04
Selective state school (16–19)	749	2129	0.35	0.73
Further education college dummy	971	1563	0.62	0.54
Sixth form college dummy[a]	−277	1294	−0.21	0.83

Note: [a]{0, 1} dummy variables are used. The reference category is a female, non-white student living in London who attended a non-selective state school from 14–16 and 16–19, attaining a highest level of qualification below level 3.

earnings is between £500 and £1300.[12] With median earnings of £19,500, this reflects a typical 4.5% increase. Analysing causality cannot be done directly on the statistical data-set, but is considered in Section 5 below by contrasting these results against the wider literature. Remaining uncertainties and possible confounding factors are discussed in the 'Further Research' section at the end.

The ordinary least squares linear regression supports the results of the interval regression, with a *p*-value of 0.03 on a point estimate of £883 for the employer contacts co-efficient, and performs well on standard diagnostic tests. Specifically, a Breusch-Pagan fitted-variables heteroskedasticity test passes at the 5% level. The RESET test passes at the 5% level (using

regressors as fitted terms). The analysis is reasonably robust to outliers, in that no studentized residuals have a Bonferonni *p*-value below 0.05. The residuals are also normally distributed by the Shapiro Wilk test at the 5% level. The *F*-statistic *p*-value that the overall regression has no predictive value is 0.01, with a residual standard error of 5701 and an *R*-squared of 0.26. The interval regression specification also performs well, with overall statistical significance demonstrated via a Wald statistic of 98.8 (*p*-value 0.00). The overall performance diagnostics confirm the multitude of other, unaddressed factors that contribute to earnings, but remain sufficient to support the analysis on correlation between employer contacts and earnings.

There are several ways in which this statistical analysis might be extended. For instance, a Heckman selection analysis would enable conclusions to be extended with greater confidence beyond the subsample concerned, i.e. an analysis to account for what kinds of individuals are selected into the wage-earning cohort. Preferred extensions would require a larger sample size for comparison amongst sub-groups of interest or additional data points. For instance, questions that permit better traction on issues such as underlying ability, social background, job motivations and interests, and employment satisfaction would allow the analysis to explore further questions lying behind wage outcomes. Nonetheless, for the purposes of this study, the two regressions presented provide sufficient detail to interpret the data against the US research and surrounding literature.

4.2. Confidence in successful career progression

Question 3 gathered perceptions on the utility of current activity – 'what you are doing now' – to medium-term future career aspirations and correlated results against *Q1* which asked respondents to recall the volume of employer engagement activities experienced as an adolescent. In so doing, it addresses the long duration of youth transitions into the labour market and provides an insight into potential relationships between teenage workplace exposure and confidence in later decision-making concerning study, training and work undertaken.

This section draws on responses from the 985 British respondents aged 19 to 24 who selected their current activity – 'what you are doing now' – from six options (Table 3).

As presented in Figure 1 – the analysis identifies statistically significant relationships between the volume of employer engagement undertaken in the past and confidence that activities currently undertaken represented a positive step towards ultimate career objectives. Whereas around one-third of respondents recalling zero activities (34%) felt their current activity to be 'very useful', the proportion agreeing with the statement rises with the number of activities recalled, to more than half (52%) for those recalling four or more activities. The trend is also seen, if less starkly, in responses of

Table 3. Current status (respondent count).

	Unweighted		Weighted[a]	
Current occupation	#	%	#[b]	%
Full-time employment	285	29%	285	29%
Part-time employment	77	8%	79	8%
Full-time study	537	55%	394	40%
Apprenticeship/work-based training	8	1%	9	1%
NEET	59	6%	200	20%
Other	19	2%	20	2%
Total	985	100%	987	100%

Notes: [a]Since this analysis is not restricted just to those in full-time employment, weighted data are preferred to generate more representative results. YouGov provided weights such that each respondent better reflected the overall demographic of the UK against their answers to this question concerning current occupation. [b]Rounded to nearest integer.

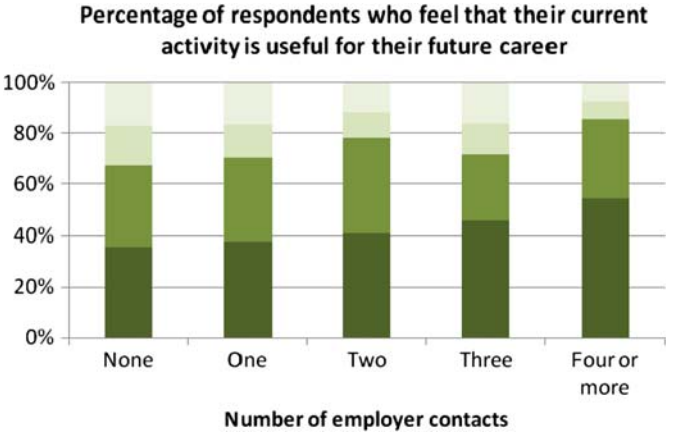

Figure 1. Relationship between teenage school-mediated employer engagement and confidence in career progression as young adults ($n = 883$[a]).
Notes: Very dark: 'Very useful', Dark: 'Useful', Light: 'Not that useful', Very light: 'Not at all useful'. [a]Individuals who did not have a view on how beneficial their current activity was are not included; neither are those who did not know how many employer contacts they had experienced. Detailed results are displayed in Appendix 2.

respondents who felt their current activity 'not at all useful' with proportions agreeing falling from 16% of those who recalled no activities to 7% of those who recalled four or more.

5. Discussion

Over the last decade, employer engagement has become a familiar element within the British educational experience. The majority of pupils, whether state or independently educated, undertake work experience placements,

typically of two weeks duration at age 15, and significant proportions engage with the economic community across a range of other school-mediated activities such as workplace visits, careers advice, enterprise activities and business mentoring.

While the policy rationale for such workplace exposure assumes improved employment outcomes for participating young people, systematic analysis of the labour market impact of such engagement in both academic and public literature has been slight. Where undertaken, British studies have focused largely on the process of employer engagement and explored impact through the lens of changing pupil attitudes towards schooling and confidence about future prospects. Despite some links to academic attainment, these studies touch on labour market outcomes only in terms of perceived improved preparation for the workplace, rather than tracking and assessing actual progression (AIR UK 2008; Miller 1998; Green and Rogers 1997).

The findings from this study of young adults, aged 19–24, provide an opportunity to supplement the current research base. Comparing the reported salary levels of survey participants to recalled incidents of school-mediated employer engagement between the ages of 14 and 19, a significant positive relationship is identified regardless of highest level of qualification held, whether an individual attended a non-selective state school, grammar or independent school and age at time of survey. Moreover, as noted above, the historic delivery of employer engagement in British educational settings has left relatively little scope for results masking teenage personality traits. The analysis indicates that each extra employer contact is linked on average with an extra £900 per year or 4.5% of median annual earnings reported across all respondents. Those young adults earning a full-time annual salary who experienced four or more employer contacts whilst in education could expect to earn, on average in their early 20s, 18% or £3600 more per year than their peers, qualified to similar levels, who undertook no activities during their schooling. The observed relationship is statistically significant by usual measures within the social sciences. The *p*-value of 0.027 indicates only a 2.7% chance that we would observe the data that we have, and yet there be no relationship between earnings and school-age employer contacts. In other words, it is highly likely that some positive relationship does exist. It is also possible to interpret this *p*-value as indicating a confidence interval around the best estimate average correlation of £900 referred to above. Such an approach implies a 70% confidence that the size of the average correlation between each additional employer contact and earnings lies somewhere between £500 and £1300 per year, most likely to be around £900. Considering the variation and complexity of mediating factors and mechanisms in determining wage returns at the individual level, this level of statistical significance at an average level is striking. The findings are consistent, both in significance and in range, with US longitudinal studies which have identified adult wage premiums accruing to alumni of high school learning

programmes involving extensive employer engagement against control groups.

US studies do offer some potential, if slender, explanations for the effects observed. James Kemple, in his landmark analysis of the US Career Academies programme, argues that the higher adult earnings of the programme's alumni stemmed from greater levels of school-age 'career awareness and development activities' (Kemple and Willner 2008, 40). To MacAllum and colleagues, the heightened earnings of alumni of the Michigan employer engagement programme reviewed came from 'enhanced career preparation' which allowed graduates to 'make immediate tangible steps towards careers goals' as they exited high school (MacAullum et al. 2002, 11, 13). Analysts identifying wage premiums experienced by participants within the Boston-based Jobs for the Future programme focused more narrowly on skills development enabled by the learning programme related to competency development around technology use, ability to understand and work within complex systems and heightened communication skills (Jobs for the Future 1998, 2).

While critical consideration of causal factors in these studies is limited, discussions do collectively speak to a fundamental question: can wage premiums be best explained by the comparative skills development of programme participants (and so heightened human capital accumulation prior to labour market entry) or by enhanced ability to understand and navigate the transition from education into work through greater relative social and cultural capital accumulation?

Differences between the US and British experiences of employer engagement provide a means to disentangle the two overlapping potential causal factors. In contrast to US programmes where employer engagement is experienced within coherent learning programmes which are both intense (absorbing a day or more of weekly curriculum time) and extensive (operating over a whole academic year or longer), the typical British experience over the last decade has been of short duration, episodic and unintegrated into any programme of study with defined learning outcomes. Consequently, opportunity for British pupils to develop, and credentialise, technical skills relevant to the workplace through employer engagement activities has been comparatively, and typically, very low.

Skills acquisition may, however, speak to more than technical skill development. Over recent years, important actors within the British public discourse have suggested that a primary value of employer engagement in education has been to enable pupils to develop 'employability skills' (Confederation of British Industry [CBI] 2007; UK Commission for Employment and Skills [UKCES] 2009). Defined by the UKCES as 'the skills that must be present to enable an individual to use the more specific knowledge and technical skills that their particular workplaces requires'[13] (UKCES 2009, 10), employer engagement in general, and work experience

in particular, have been seen as effective means to prepare young people for the world of work whilst still in the education system (CBI 2007, 11–20; UKCES 2009, 35–56).

There is reason to doubt, however, whether wage premiums observed from greater incidence of school-mediated employer contacts can be primarily attributed to heightened employability skills. Firstly, many of the most common employer engagement activities (workplace visits, careers talks and classroom presentations) are of both very short duration and provide very limited opportunity for pupils to actively develop and practice such skills. Secondly, the activity considered to be most effective means of developing such skills, work experience, is the most universally experienced engagement activity, undertaken by the great majority of pupils. Consequently, while some consideration should be made to variation in the quality of placements experienced, participation in and of itself is a poor means of differentiating pupils.

For only a small minority of young adults, moreover, does school-mediated work experience represents their sole workplace exposure prior to full entry into the labour market. Historically, most young Britons have entered the adult labour market with some prior experience of paid employment, thereby learning at first hand, and having the opportunity to practice, the personal and cultural attributes valued by employers. Two studies which compared the perceived comparative value of school-mediated short-duration work experience placements to part-time teenage employment found, moreover, that young people see the two types of labour as providing broadly similar opportunities to develop employability skills (Fullarton 1999; Howieson, McKechnie, and Semple 2010). As approximately half of teenagers aged 14–16, and three-quarters of those aged 16–19 (Dustmann, Rajah, and Smith 1997; Dustmann and van Soest 2007; Hobbs and McKechnie 1998; Hodgson and Spours 2001; McVicar and McKee 2002), have historically combined education with some part-time employment, the commonplace character of such direct workplace experience makes it a poor candidate for explaining the range of outcomes identified in the current study.

What does differ about work experience, however, is where it is undertaken.[14] Whereas upwards of half of teenage Britons who combine study with part-time working have been typically employed in the retail or hospitality sectors, analysis shows that only one in five of work experience placements to be in these sectors (Francis et al. 2005, 28; Howieson, McKechnie, and Semple 2010, 6). Surveys of young people show that the majority find work experience placements in sectors of occupational interest (Mann 2012, 32). Consequently, while young people are unlikely to gain significant additional technical or employability skills through school-mediated employer engagement, there is evidence to suggest that such activities provide meaningful opportunity for pupils to gain insights of value into careers of interest. Through school-mediated activities, young people have the chance to come

into contact with professionals working in vocational areas of interest and so potentially access useful information about whether and how they might pursue a career in that sector. In this way, it becomes easier to understand how long-term benefits might flow from short duration interventions such as attendance at careers' fairs or workplace visits.

The above observation suggests that it is social capital theory which provides a more persuasive interpretative framework for understanding the phenomena observed. Although retaining a coherent emphasis on the influence of the quantity and quality of human contacts on the behaviour and attitudes of individuals, social capital theory has developed to encompass a broad range of phenomena (Field 2003; Halpern 2005). With specific regard to young people, early social capital theorists such as James Coleman and Pierre Bourdieu tended to view children and teenagers as relatively passive absorbers of the social norms and attitudes surrounding them, whether these be the culturally distinguishing attitudes and norms of American Catholic communities or the distinctive familiarity with high culture characteristic of French elites. Developments in social capital theory, moving from analysis of 'bonded social capital' observed in such close knit, mutually supportive communities towards 'bridging social capital' as a means by which individual attitudes and ultimately life chances are shaped by the character of personal contacts of limited depth (as in Robert Putnam's memorable description of American bowling leagues), comes closer to describing the type of typically shallow relationship which is observed in young people's participation within short duration employer engagement activities common in British educational provision (Field 2003, 13–29; Leonard 2005).

Sociologist Mark Granovetter's empirical research into the dynamic character of social capital provides a more nuanced and helpful conception of the power of social networks to provide tangible value to an individual. Conceptualised as 'the power of weak ties', Granovetter has evidenced the way in which adult workers with broader, shallow networks – people who know a lot of people a little – are able to use contacts to gain access to reliable and relevant information about job vacancies, increasing their likelihood of securing preferred positions (Granovetter 1995). A number of researchers have taken Granovetter's insight and applied it effectively to the experiences of young people. Analysing longitudinal data, Lance Erickson and Steve McDonald, for example, have found significant links between volume and character of non-parental adult social ties (including, but not exclusively employers) enjoyed by US teenagers and ultimate employment success as young adults (McDonald et al. 2007).

A series of studies have described, moreover, teenage social capital accumulation to be a process which is dynamic and susceptible to change through such interventions as school-mediated employer engagement. Leonard (2005) has illustrated the means by which young people in Ireland in search of part-time employment demonstrate resourceful and active

approaches to developing networks with adults outside of the family, accumulating and using social capital to access paid work. Leonard argues that the young people in her studies show agency in their use of social capital, working networks strategically to secure objectives. The ethnographic work of Raffo and colleagues (2003, 2006) on pupils at risk of disengagement from education offers a first-hand observation of the processes by which young people gain information and insights of value to their own navigations through the school-to-work transition. Drawing on a close study of Manchester pupils aged 14–16 in extended school-mediated work experience placements, Raffo and Reeves (2000) argue:

> What we have evidenced is that, based on the process of developing social capital through trustworthy reciprocal social relations within individualized networks, young people are provided with an opportunity to gain information, observe, ape and then confirm decisions and actions with significant others and peers. Thus, everyday implicit, informal and individual practical knowledge and understanding is created through interaction, dialogue, action and reflection on action within individualized and situated social contexts.
>
> … there is also evidence in our research of individual young people having their social relations enriched by outside, yet authentic and culturally appropriate, significant others. In these situations, individual strategic decisions about life choices are being affected by external agencies and actors – external in that they are potentially beyond the structuring influence of locality and class. This results in these individualized systems of social capital for individuals becoming more open and fluid, with outside, symbolically rich, resources impacting more freely on their lives. (151, 153)

In such a way, school-mediated employer engagement provides an important opportunity for individual young people to access sources of trusted information beyond the socially constructed constraints of family networks. Research has shown consistently that young people are particularly attentive to working professionals with whom they come into contact within educational settings and value their interactions with them (Lord and Jones 2006, 3–4). This study suggests that they take away from those interactions insights of value to their future career progression.

Perhaps the greatest value, US and UK longitudinal analyses suggest, lies essentially in shaping the articulation of achievable career goals. Analysis of the British Cohort Study by Yates et al. has shown statistically significant correlations between career uncertainty (affecting 7% of cohort) or unrealism (defined as holding career aspirations that exceeded expectations of highest qualification attainment – affecting 40% of the cohort) at 16 and later outcomes. Yates et al. (2011) argue that, with statistical controls in place, those young people lacking realistic career aspirations are two to three times more likely to become NEET after the age of 16 than their peers. Staff et al. (2010), using US data-sets, track the 10% of US 16-year olds uncertain

about occupational aspirations and find them, with controls in place, to be earning significantly lower wages at age 26.

The high levels of unrealism identified by Yates and colleagues within historic longitudinal data are identified too by recent large scale qualitative studies demonstrating widespread ignorance of local labour market opportunities and effective career progression strategies amongst British teenagers (Norris 2011; St. Clair, Kintrea, and Houston 2011). Such findings cast light on data-set out in Figure 1 which shows a significant correlation between volume of employer contacts undertaken while in school and perceptions of confidence in the early labour market progression articulated by young adults. Combined with evidence of wage premiums linked to greater numbers of school-age employer contacts, Figure 1 provides further evidence to suggest that the great value that young people gain from school-age employer engagement is in their heightened ability to gain access to reliable, relevant information which enhances their own ability to identify achievable, desirable career aspirations and navigate well towards them.

The research presented in this paper suggests that the impacts observed by Raffo and Reeves are neither limited to young people at risk of disengagement from education, nor exclusively to the specific activity of a work experience placement. Rather, this paper is able to identify a significant, beneficial correlation from employer contacts even when averaged over a wide range of individuals' different geographies, educational backgrounds, qualification levels, age and gender. Through episodic school-age workplace exposure, young people are arguably gaining a cumulative growth in knowledge relevant to effective career planning that allows them to identify better matches between their own interests, abilities and likely qualifications and available labour market opportunities. Such insight might, for example, be observed in greater familiarity with occupational cultures and languages, improved choices in study or part-time employment options and development of social networks allowing more extensive practical experience, whether through later volunteering, internships or part-time employment.

As with most analyses of wage effects, the question remains whether the observed empirical effect is the result of a positional advantage or a genuine increase in economic productivity. Although hard to address, the question is essential for considering the policy value (in financial terms) of scaling-up interventions to address larger populations. In this instance, since the primary impact of employer engagement within the recent UK context appears to be founded in provision of better information, career decision-making and skills fit, accelerating individuals into occupations that better fit their skill-sets and preferences, the authors contend that there is value in pursuing an hypothesis that it is very likely a significant portion of the wage gain reflects effects that drive through to benefit the economy as a whole, rather than merely reflecting positional advantage or the reallocation of resources within an economy of notionally fixed size.[15]

6. Conclusions and further research

In 2004, the devolved education systems of England, Scotland and Wales introduced policy initiatives aimed at increasing the contact between employers and young people within educational settings as supplementary, co-curricular activities. While a clear policy rationale for such initiatives was to improve the employment outcomes of pupils as they entered the world of work, to date no studies have explicitly tested whether the ambition was achieved.

High-quality US reviews have demonstrated positive correlations between mainstream educational experiences rich in employer contacts and the subsequent earnings of young people as they entered the labour market, suggesting potential wage uplifts of 6.5–25%. These American evaluations, however, do not directly comment on the UK approach, focusing as they do on US learning programmes with discrete learning outcomes delivered over extended periods of time (a minimum of a day a week over a school year).

This paper has drawn on the first UK assessment testing for positive links between school-mediated employer contacts and adult earnings. Drawing on a new 2011 survey, it associates wage returns and school-mediated employer contacts for 169 full-time 19–24 year-old workers on annual salaries within the UK environment – and suggests, having controlled for highest level of attainment, school type attended and other available personal characteristics, a link of 4.5% (or £900) between salaried earnings and each additional school-mediated employer contact, such that four employer contacts would produce results in line with the US studies.

Contrasting the US and UK studies suggests that any causal link from school-mediated employer contact to wage outcomes is likely to be driven more by increased social capital as witnessed in improved access to non-redundant, trustworthy information and social network development than by the development of either technical or 'employability' skills.

The data presented in this paper present a strong case for larger scale research to further test results with a larger sample size in order to understand more precisely which types of young people most benefit from employer engagement in their labour market outcomes, how qualitative experiences of employer engagement influence outcomes and the full extent of potential benefits. Analysis presented suggests that while wage premiums are not driven by qualification levels, it is amongst the more highly qualified members of the sample that they are more typically found (see Appendix 1). A larger study might profitably seek to follow young people leaving education with differing qualification levels and tracking the relationship between school-mediated workplace exposure and smoothness of school to work transitions.

In considering labour market entrants at age 18–19, a primary question for consideration is the extent to which wider educational experiences influence outcomes. At ages 16–19, within the English education system

while many young people undertake academic programmes of study ('A' levels), many also undertake more vocational related programmes of study, notably BTECs. The analysis presented here suggests that wage premiums prevail on average regardless highest qualification level achieved, but this does not preclude that they may vary by the direct workplace relevance of classroom study and if so whether study choices are influenced by prior workplace exposure. Such analysis should extend to consideration of individual agency in determining outcomes. Whereas young British pupils will commonly have little choice over whether they will undertake work experience, class visits to workplaces or one-day enterprise competitions, agency is found in participation in optional related extracurricular activity, commonly involving employee volunteers, such as long duration enterprise competitions (e.g. Young Enterprise company programme) or STEM clubs. Moreover, if agency is rarely a factor in the requirement to undertaken work experience, agency is often found in where placements are undertaken as some 50% of English placements are self-sourced by pupils with support of their families (Francis et al. 2005, 28) and the quality and limitations of such choices too may shape outcomes. Consequently, further analysis by subgroup as defined by socially influential characteristics such as socio-economic status and ethnicity, would test hypotheses that young people from disadvantaged backgrounds with limited access to relevant social networks would have most to gain from school-mediated employer engagements.

Finally, a longer, more granulated study would allow deeper consideration of the economic and life-course influence of school-mediated workplace exposure. Do wage returns continue beyond age 24 and beyond four activities? What role can be identified in the interplay between attitudinal factors, such as views of work and school, and the relationship between volume of employer contacts and labour market outcomes? To what extent does the differing availability and industry-focus of school-mediated employer activities and local employment patterns influence this relationship at the sub-regional level? The current study would suggest that young people with high levels of school-mediated employer contacts could be expected to make more informed decisions, than peers without access to such resource, about choices in continuing study and gaining workplace experience more profitably accumulating human capital relevant to ultimate employment. Consequently, can such educational approaches serve to address the systematic disadvantages felt by many young adults experienced in competing for available jobs in the labour market?

The International Labour Organisation (ILO) has argued: 'Young people have long been disadvantaged when it comes to finding work …: they have less work experience; they have less knowledge about how and where to look for work; and, they have fewer contacts upon which to call' (ILO 2010, 2). The analysis presented here suggests that employer engagement within educational experiences represents an effective means of addressing

the comparative weaknesses young people face as they enter the labour market and so further study should be of interest to policy makers as well as to labour market economists and sociologists of education.

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Notes

1. Interview by authors with Professor Huddleston, former Director of the Centre for Education and Industry, University of Warwick, December 2012.
2. The different studies introduce a range of control variables in testing for wage premiums: Montgomery Schools – Background characteristics, post secondary college and work activities, months worked; MacAullum et al. – Duration of employment, hourly wages; and Kemple – student demographic and family characteristics, educational attainment, including gender, ethnicity, socio-economic status, middle school attendance rates, geographic location of academy, graduation cohort, duration of employment, hours worked per week, weeks worked per month and hourly wage. The methodology applied by Jobs for the Future is not sufficiently transparent to determine variables applied.
3. Orr et al. (190–191) surveyed comparable groups of senior year high school students enrolled on Career Academies programmes and those not enrolled. Investigating participation levels across 37 potential high school college and career planning activities, the study found statistically significant variation ($p < 0.01$) across eight areas primarily within the field of career-related work-based learning experiences, including three activities wherein employer contacts would be confidently expected (Job shadowing which was undertaken by 43% of the Career Academies group against 15% of control), work-site visits (43% v. 16%), employer talks at school (68% v. 38%); four which might include employer contacts, school-based business or enterprise (59% v. 31%), work-readiness classes (55% v. 19%), practice interviews (35% v. 14%); and one which would not be expected to include any such contact, talked with teachers about careers (78% v. 56%).
4. See: http://www.educationandemployers.org.
5. The survey was conducted using an online interview administered to the members of the YouGov panel of 280,000 + individuals. An email was sent to panel lists selected at random from the base sample according to the sample definition, inviting them to take part in the survey and providing a link to the questionnaire.
6. The linear regression uses point estimates of earning power from the middle of each range, and takes a 10% deviation either side of the end points.
7. See the Appendix 1 for summary information on which qualifications equate to which levels or http://www.direct.gov.uk/en/educationandlearning/qualificationsexplained/dg_10039017 (link confirmed 30 May 2012) for full details.
8. Maintaining the structure of the standard linear model presented later, coefficient estimates for the annual wage increase associated with one employer con-

tact relative to zero were (to the nearest £100) £900 vs £2,200 for two and £3,900 for four. Small sample size (13) caused a problem with three employer contacts, where the *p*-value was 0.52, along with the outlier coefficient size of £1,300.

9. An alternative more parsimonious model was explored by removing all variables for which the t-statistic was below 1.75. This approach, however, reduced model performance, increased the severity of outliers and produced poor performance on diagnostic tests. Although small samples in some dummies (such as certain school types) inflate standard errors for those variables, the variance inflation factors are below 6.5 for all included variables and below 3.5 for variables other than the qualification-level dummies. The analysis seeks to test a single relationship of interest and so there is no value in this paper in refining the model by excluding variables to the detriment of its overall performance.
10. The results from the equivalent log earnings specification for the standard linear model indicate a 3.5% increase in earnings for each additional employer contact with a standard error of 0.02. As described earlier, this is a less statistically significant result than under absolute earnings, but remains supportive of the overall hypothesis of the paper, being significant at the 10% level, with a *p*-value of 6.4%. For the interval regression model, the result is 3.4% with a standard error of 0.02.
11. This detail reflects one standard error either side of a point estimate of c. £900, equating to around 68.2% given the normal distribution of the residuals in the analysis. Given a level of accuracy appropriate to the analysis, figures are rounded.
12. This is a reasonably wide range and reflects the standard errors in the regression analysis. Where we hypothesised a direct, causal relationship, this wide range would be explained either by random sample variation or by uncertainty about whether the hypothesis is true. In this instance, where the link between employer engagement and wage outcome is not expected to be consistent across individuals or exactly linear, the breadth of uncertainty also reflects variation in the quality of employer contacts and how they affected individual respondents. It is possible therefore that a high impact employer contact at the right time might be associated with a wage increase of £1,300 or considerably higher.
13. The Commission considered employability skills to consist of three functional skills (effective use of numbers, language and IT) and four personal skills (self-management, thinking and solving problems, working together and communicating, and understanding the business) based upon the foundation of 'a positive approach' (UKCES 2009, 10).
14. Fullarton's rare Australian longitudinal survey (Fullarton 1999, 10) involving some 13,000 young people sought, in part, to understand the perceived comparative benefits ascribed to short UK-style work experience placements and part-time paid employment. Rating the value of the experiences on a scale of 1 (nothing) to 4 (quite a bit), respondents rated work experience considerably more valuable than part-time paid work (+0.79) in terms of 'the career you would like after school' and recorded little variation (range: 0.04–0.12) in perceptions across a range of employability outcomes ('what work is really like'; 'getting along with other people'; 'following instructions'; 'thinking for yourself'; 'being confident'; 'particular skills needed in that job'; 'work conditions').
15. Since Spence's influential work on the potential value of education to private individuals and to employers as a pure-signalling mechanism rather than a

mechanism for enhanced productivity through skills development (Spence 1973), public policy academics have debated the extent to which public policy relevant wage premiums reflect signalling effects, or perhaps even positional advantages among equally skilled and productive candidates, and which would not significantly enhance the overall size of the economy and thus whose apparent economic benefits should not be expected to scale directly up to the overall economy if rolled out (see e.g. Chevalier et al. 2004).

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Appendix 1: Description of the survey respondents for selected variables

Frequency tables are available from the authors on request for the other variables used in this paper.

Age	# [out of full 985]	# [out of 169 analysed]
19	164	5
20	164	3
21	163	12
22	163	36
23	165	53
24	166	60

Gender	# [out of full 985]	# [out of 169 analysed]
Female	498	92
Male	487	77

Employer contacts	# [out of full 985]	# [out of 169 analysed]
Don't know	76	
None	265	44
One	341	64
Two	152	32
Three	68	13
Four or more	83	16

Highest reported qualification at the time of survey	# [out of full 985]	# [out of 169 analysed]
Level 1	20	2
Level 2	68	12
Level 3	531	39
Level 4	260	89
Level 5	72	27
No qualifications	3	
Other/prefer not to say	31	

Definitions used from the survey answers:

Level 1 corresponds to NVQ at Level 1, BTEC introductory Diploma or GCSEs at grades D–G.

Level 2 corresponds to 5 or more GCSEs A*–C, BTEC First Diploma, Standards (Scotland) or OCR National/NVQ at Level 2.

Level 3 corresponds to 2 or more 'A' levels/International Baccalaureat/BTEC Diploma, NVQ at Level 3/OCR National/BTEC national or Highers (Scotland).

Level 4 corresponds to an undergraduate degree or a foundation degree.

Level 5 corresponds to any post-graduate qualification.

	# [out of full 985]	# [out of 169 analysed]
Type of school attended at 14–16	14	2
A combination of different school types		
A non-selective state comprehensive or academy	598	102
An independent school	129	20
Grammar/state selective school	210	41
Home educated	3	1
Other	27	3
Type of school attended at 16–19		
A further education college	178	32
A non-selective state comprehensive or academy including sixth form	242	36
A sixth form college	258	41
An independent school including sixth form	98	15
Did not go to a school or college between 16 and 19	31	11
Grammar/state selective school including sixth form	157	29
Other	20	5
Special school	1	

Location of respondent	# [out of full 985]	# [out of 169 analysed]
East Midlands	64	9
East of England	118	26
London	142	30
North East	34	4
North West	98	12
Scotland	76	5
South East	141	26
South West	78	16
Wales	46	5
West Midlands	88	18
Yorkshire and the Humber	100	18

Appendix 2

Correlation between number of employer engagement activities undertaken whilst in education (aged 14–19) and perceptions as a young adult (aged 19–24) of usefulness of current activity to future career aspirations.

Taskforce/YouGov survey Fieldwork: February 2011 (Great Britain)		Some schools and colleges arrange for their students (aged between 14 and 19) to take part in activities which involve employers or local business people providing things like work experience, mentoring, enterprise competitions, careers advice, CV or interview practice. On how many different occasions do you remember such employer involvement in your education?				
Weighted data		0	1	2	3	4 or more
Thinking about the sort of job you would like to be doing in 5 to 10 years time, how useful do you think what you are doing now is as a way of achieving this?[a]	Very Useful	34%	37%	41%	42%	52%
	Useful	30%	31%	37%	24%	30%
	Not that Useful	15%	13%	10%	11%	7%
	Not at all Useful	16%	16%	12%	15%	7%
Respondent count (excluding respondents recording 'Don't Know')		266	345	145	59	68

Notes: Measure of correlation: Kendall's Tau C indicates significance at the 1% level or better.
[a]Percentages do not sum to 100 because the respondents who chose 'Don't know' when asked about their current activity are not included.