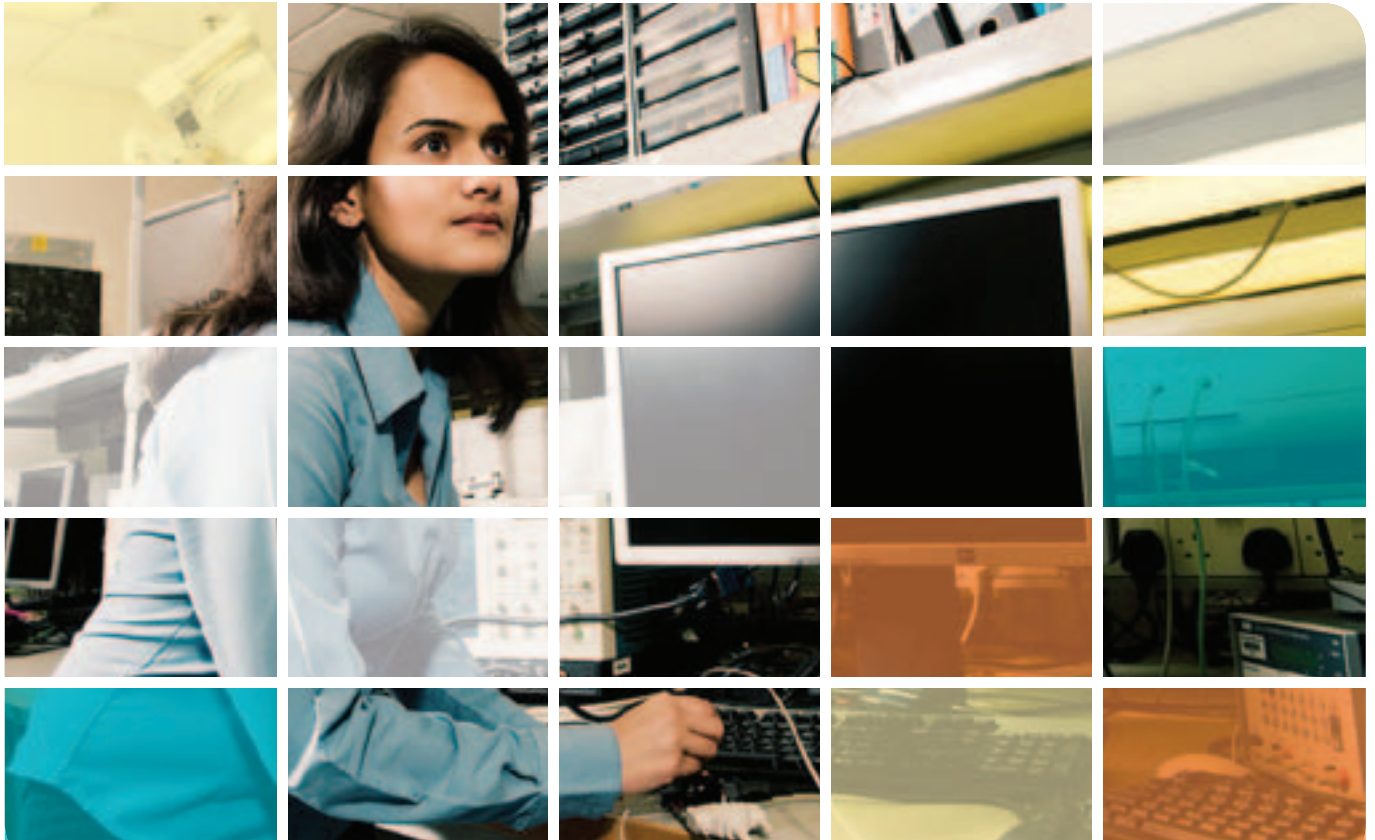




Skills and training: the union advantage

Training, union recognition and collective bargaining

Mark Stuart, Danat Valizade and Ioulia Bessa
Centre for Employment Relations Innovation and Change
Leeds University Business School

Research paper 21
May 2015

unionlearn

This research paper was commissioned by the TUC and published by unionlearn to inform its policy development. As such it is not a statement of TUC policy. Unionlearn is the TUC organisation that supports union-led strategies for learning and skills opportunities. It helps unions open up learning and skills opportunities for their members and develops and delivers trade union education for their representatives and professional officers.

About the authors

Mark Stuart is Montague Burton Professor of Human Resource Management and Employment Relations at the University of Leeds, where he is also Director of the Centre for Employment Relations Innovation and Change (CERIC)

Danat Valizade is a Research Fellow in CERIC, investigating employer engagement in welfare to work in the UK and Denmark. He is also a doctoral student.

Dr Ioulia Bessa is a University of Leeds Academic Fellow, based in CERIC. Her research interests include flexible working, youth employment and women and work.

Contents

Foreword	5
Abstract	6
Executive summary	7
1. Introduction	9
2. Background literature	10
3. Findings from the Labour Force Survey	12
4. Findings from the 2011 Workplace Employment Relations Survey	17
5. The effect of trade unions and training on wages	27
6. Training and union recognition and the moderating effect of the recession	29
7. Conclusion	31
References	32
Appendices	33

Foreword

This new analysis of trade unions and workforce training by Professor Mark Stuart and colleagues from Leeds University Business School provides a fascinating picture of trends over time. By and large the story is a positive one that makes a very strong case for the union learning agenda.

The analysis shows that during the period 2001–2013 union members were a third more likely to have received training than non-unionised employees. Another key finding is that in unionised workplaces where there are active union learning reps and negotiation on training takes place with management, the positive union effect on training levels is supplemented by other significant impacts, including higher wages and more job security.

The research also demonstrates the business case for workplace arrangements that support collaboration between employers and unions on workforce training, including evidence of a positive impact on overall organisational performance.

In line with other research findings, this new analysis shows that training levels in our workplaces went into decline well before the recent recession and were dragged down further by the economic downturn. These trends are evident in both unionised and non-unionised workplaces, albeit with continuing higher levels of training among the unionised workforce.

But what has happened since the low point of 2008 shows a major divergence between the experience of union members and the non-unionised employee workforce. In the five years following 2008 the proportion of union members accessing regular training increased from 36.8 to 38.9 per cent while the reverse trend occurred for non-unionised employees (access to regular training declined from 23.4 to 22.9 per cent).

As a result the union ‘mark-up’ on training in 2013 hit a peak of 16 per cent compared with any other year since the turn of the millenium. This bounce-back in training in unionised workplaces in recent years may be further evidence of the positive role that unions have played in negotiating with employers to minimise lay-offs and to safeguard skills during these difficult years.

The research also highlights some major opportunities and challenges for building the union role further in support of learning and skills. It is evident that unions can play to their strengths in workplaces with active union learning representatives and where the union negotiates directly with the employer about learning and skills.

But there remain too many unionised workplaces where a dual strategy of this kind is not in place. This research clearly demonstrates the significant benefits for workers and employers when there is a widespread commitment to a workplace learning culture and where unions are leading the way on this agenda.



Tom Wilson
Director, unionlearn

Abstract

This report explores the potential effect of trade unions on training provision in the British workplace. It does this through an analysis of the Labour Force Survey, covering the period 2001–2013, and in terms of post-recession practice the 2011 Workplace Employment Relations Survey. The results show that union members received more training than non-members for the period 2001–2013 and in the period post-recession this potential benefit of union membership may have increased. This occurred within a context where general levels of training provision across the workforce have remained fairly constant. While the number of union learning reps (ULRs) and levels of negotiation over training appeared to have remained fairly static between 2004 and 2011, a union voice and ULRs were associated with higher levels (more than five days per year) of training than in non-unionised workplaces. Those members receiving higher levels of training provision at unionised workplaces were also more likely to have received higher pay rates in 2011. Finally, in unionised workplaces training was more likely to have mitigated, through higher levels of job security, some of the consequences for workers in terms of how organisations responded to the recession.

Executive summary

This report presents a statistical analysis of the relationship between trade union activity and training in the British workplace. The analysis draws from two large, nationally representative datasets: the Labour Force Survey (LFS) for the period 2001 to 2013 and the 2011 Workplace Employment Relations Survey (WERS). Following an examination of the background literature, the report then presents a quantitative analysis of these two surveys, structured as follows:

- The union-training link is assessed in a longitudinal sense, by exploring whether union members have received more training than non-union members over the period 2001–2013.
- The impact that trade unions may have on training incidence at the workplace is explored, paying attention to whether union learning reps (ULRs) or active union involvement makes any difference.
- The association between unionisation, training provision and wages is explored. Do union members who experience training gain in terms of wages received?
- Finally, the study takes advantage of the focus of WERS 2011 on employers' responses to the recession to explore the association between unionised workplaces, training provision and employee job satisfaction and job security and organisational performance.

The research shows that over the period 2001–2013 union members were a third more likely to have received training than non-unionised employees. The analysis isolates the union impact using regression analysis which controls for a variety of other factors (e.g. age, gender, occupation, sector etc.) and concludes that union members were 1.34 times more likely to have accessed job-related training in the previous three months than non-unionised employees.

The longitudinal data also show that the union 'mark-up' for training was at its strongest in 2013, peaking at 16 per cent. This is explained by 38.9 per cent of union members saying that they accessed job-related training in that particular year compared to 22.9 per cent of non-unionised employees saying likewise.

The union 'mark-up' has also grown strongly since the recession, increasing from 13.4 per cent in 2008 to 16.0 per cent in 2013 and this trend is explained by two factors. First, access to job-related training among union members has bounced back in recent years with 38.9 per cent of union members answering positively in 2013 compared to 36.8 per cent in 2008. However, the opposite trend is evident among non-unionised employees, with 22.9 per cent of union members answering positively in 2013 compared to 23.4 per cent in 2008.

Even if an individual is not a union member they benefit from the union training 'mark-up' simply by working in an organisation where there is a union presence. For example, the analysis also looked at the circumstances of individuals who said that unions had collective bargaining rights in their workplace and in 2013, 38 per cent of them reported a recent training period compared to a quarter of employees in workplaces where unions did not have negotiating rights.

In-depth analysis of the 2011 Workplace Employment Relations Survey provides a more detailed picture. This shows that three specific aspects of union presence – union recognition, union negotiation and consultation over training, and the existence of ULRs – are all associated with higher levels of training received by employees. By higher levels we mean more than five days of training per year.

For example, based on employer responses, higher training levels (five days+) were 16 per cent more likely where the union negotiated with management over training and was 4.2 per cent more likely in unionised workplaces with active ULRs. The authors conclude that “these findings are highly suggestive of a positive association between union involvement in training decisions at the workplace and training outcomes.”

Interestingly, when the same analysis is undertaken using employee responses (linked with employers’ responses) regarding the incidence of training, the positive union effect is much smaller – higher training levels (five days+) were 3.4 per cent more likely where the union negotiated with management over training and was 1.4 per cent more likely in unionised workplaces with active ULRs.

Further analysis of WERS 2011 was undertaken to explore the association between training and wages and specifically to look at any relationship between a positive union effect on training and wage levels. Drawing on a sophisticated multilevel model of the effect of training and union membership, the analysis shows that those employees that benefit from the union derived training effect are also more likely to have higher wages than non-unionised employees who are in receipt of an equivalent incidence of training. In other words the higher wage levels are associated with a positive union effect on training.

The final section of the report looks at how organisations had responded to the recession and in this context the association between unions and training also seemed to have led to positive gains for employees (most notably in terms of higher reported levels of job security) and for employers (most notably in terms of improvements to overall organisational performance).

In conclusion, the research reveals a number of positive results for the union effect on training and how this effect may impact wider organisational outcomes. The research evidences that where employees are represented by unions, and where those unions are involved in workplace training decisions, individuals are likely to receive higher levels of training, higher wages and more job security. The business case for close collaboration between employers and unions on workforce training is also supported by the research, in particular in the period following the economic recession.

1. Introduction

This short report presents a statistical analysis of the relationship between trade union activity and training in the British workplace. The analysis draws from two large, nationally representative datasets. The first data set that we draw on is the Labour Force Survey (LFS). The LFS is the UK's most authoritative statistical series on the state of the labour market. It is a survey of some 40,000 households, with 100,000 individuals, and is conducted quarterly. It allows for the presentation of longitudinal trends. The second source of data is derived from the 2011 Workplace Employment Relations Survey. The sixth in the WERS series, it represents an authoritative dataset of the changing context and practice of employment relations in Britain. The WERS datasets includes responses from a management questionnaire (from 2,680 workplaces in 2011), an employee representative questionnaire (1,002) and a questionnaire of employees (21,981) (see van Wanrooy, 2013). Analysis of WERS 2011 is benchmarked against the previous report published by unionlearn on 2004 WERS (see Stuart and Robinson, 2007). More detail on the methodology of both data sources is given in Annex 1. The next section briefly situates the report against previous analysis of unions and training. Following this the empirical results are presented and some conclusions drawn.

2. Background literature

Numerous studies have sought to explore the possible associations between trade unions and training provision. This includes studies based on primary and novel surveys of the potential ‘union effect’ and those that interrogate large, secondary datasets. By novel surveys we include research that focuses within or across unions and that are designed with the specific aim of trying to understand the role that unions may play in relation to training and learning matters, whether in terms of work or non-work related experiences, and the impact that they may have. An early example was the study by Heyes and Stuart (1998) of the Manufacturing, Science and Finance (MSF) union, based on linked responses from union members and representatives, which found a positive association between union involvement in training decisions and both the quantity and quality of training received by members.

While no subsequent study has sought to link membership and activist data, numerous recent studies have sought to evaluate the union effect, specifically with reference to the activities of union learning representatives (see, for example, Bacon and Hoque, 2009; Saundry *et al*, 2011; Wallis *et al*, 2005). Following Heyes and Stuart (1998), these studies have sought to evaluate training and learning outcomes not just in terms of training presence but the extent to which unions actively engage with employers around training and/or learning, notably in terms of structures of involvement in training decisions. Bacon and Hoque’s (2009) analysis of a 2007 survey of ULRs found, for example, that ULRs were more likely to have a positive influence on training outcomes, notably employer-funded training, where they negotiated or were consulted over training matters. Their study also found that union-led workplace learning centres had a positive association with training levels.

Saundry *et al*’s (2011) 2009 survey of ULRs found similar findings. They concluded that “The most powerful predictor of ULR activity and impact was the occurrence of negotiations between ULRs and the employer over learning and training” (p7). A potential limitation of such surveys is the fact that they only investigate practice at unionised workplaces, so comparisons of the impact of unions cannot be made in terms of unionised versus non-unionised environments. To do this, researchers typically look to harness the potential of larger, nationally representative datasets, either of workplaces or of individuals.

A number of nationally representative datasets have been utilised to explore the union effect on training provision. In a relatively early study, Green *et al* (1995, 1999) analysed the Employers’ Manpower and Skills Practices Survey (EMSPS) and the Labour Force Survey (LFS) in order to tease out both establishment and individual level findings. They found strong evidence that unionised workers were more likely to receive training than their non-union counterparts and that the quantity of any training received was also more likely to be higher. They did not, however, examine whether there was any direct role played by unions in training decisions: rather they looked at union presence.

Expanding the analysis further, Booth *et al* (2003) investigated the relationships between union coverage, training and wages, specifically for British men, using longitudinal data from the years 1991–1996 using the British Household Panel Survey (BPHS – subsequently called Understanding Society). They found that “union-covered workers were more likely to receive training, and received more days of training, than their non-covered counterparts, and also received greater returns to training and higher wage growth” (p87). While the focus, again, was on union presence rather than their direct role as such, this remains the only study thus far that has sought to draw out the relationship between unions, training and wages.

The most frequently utilised dataset has been the Workplace Employment Relations Survey (WERS). One of the innovations of WERS (since 1998) is that it allows researchers to link questionnaire returns from managers at British workplaces with employees within those workplaces. It is for some the authoritative data source for analysing the union-training relationship (McIlroy, 2008). Boheim and Booth's (2004) analysis of WERS 1998 found that employer-provided training was higher in private sector workplaces, for non-manual men and women employees that recognised unions than those that did not. The main mechanism for this appeared to be union recognition per se rather than specific collective bargaining institutions. Analysis of WERS 2004 produced a mixed set of findings. Hoque and Bacon (2008) concluded that the association between union recognition and training incidence had largely disappeared and was weak. More significantly they found no ULR impact on training incidence, either in terms of recognition of ULRs or where ULRs were based in workplaces where training decisions were subject to negotiation. Echoing previous research by Heyes and Stuart (1998) they did find that those workplaces with ULRs did have greater equality of access in terms of the distribution of training. An alternative analysis by Stuart and Robinson (2007) of WERS 2004 found a potentially strong association in terms of the union effect, with those workplaces with union recognition and negotiations over training having higher general receipt of training as well as higher levels of union incidence.

This short review acts as background to the current analysis. It suggests that over the past 20 years a number of studies, using a range of datasets, have suggested a positive association between the role of trade unions and various training 'outcomes'. However, the studies raise a number of points for consideration. First, there is a question of the means by which unions may influence training outcomes. Is union recognition a sufficient factor in itself, or do unions need to be actively involved in workplace

training decisions? Given the introduction of the ULR role, has this made any further difference in terms of the leverage that unions may have in terms of training quantity and quality for their members? Finally, if trade unions can raise training levels for their members, does this have any wider implications, in terms of for example wage rates, for their members?

With these questions in mind, the remainder of the report presents a quantitative analysis of the Labour Force Survey and the 2011 WERS. The analysis is structured as follows:

1. The union-training link is assessed in a longitudinal sense, by exploring whether union members have received more training than non-union members over the period 2001–2013.
2. The impact that trade unions may have on training incidence at the workplace is explored, paying attention to whether ULRs or active union involvement makes any difference.
3. The association between unionisation, training provision and wages is explored. Do union members that experience training gain in terms of wages received?
4. Finally, the study takes advantage of the focus of WERS 2011 on employers' responses to the recession to explore the association between unionised workplaces, training provision and employee job satisfaction and job security and organisational performance.

3. Findings from the Labour Force Survey

The empirical analysis begins with findings from the Labour Force Survey (LFS). The aim here was to show the potential difference in training provision between union and non-union members over time. Most significantly, is it possible to discern a union ‘mark up’: in other words, are members more likely to receive training than their non-union counterparts? To do this, data from the Autumn quarter of LFS were merged for all years between 2001 and 2013. It is important to note that different individuals are surveyed each year, it is not panel data, but the number of observations are large and it is possible to present observable trends.

Three variables relating to training and education were considered. First, whether an individual had undertaken any job-related education or training in the previous 13 weeks. Second, whether an individual had enrolled on a full-time or part-time education course. Third, whether an individual had received employer provided education or training. The way this third variable was measured changed in 2011 and explains the marked decline in the percentage reported between 2010 and 2011. Table 1 reports the findings across all three indicators of training/education during the period 2001 to 2013.

The findings show a general decline in an individual’s receipt of training/education over this historical period. Thus, in 2001, nearly three in ten (28 per cent) individuals had received some form of job-related education and/ or training in the previous 13 weeks compared to just 26.5 per cent in 2013. A logical explanation for this could be the impact of the economic crisis. The recession had an evident impact. In 2007, the percentage reporting receipt of job-related education and/ or training in the previous 13 weeks was 27 per cent, which declined markedly to 25.8 per cent in 2010; since then levels have increased as the economy has moved sluggishly out of recession, with the 2013 levels broadly the same as the level in 2008. Yet, this is not the full story. It is evident that levels of job-related education and/ or training had been on a trend decline prior to the recession, with peak levels reported in 2004. The trends for the other two variables

were broadly consistent with this longer-term trend, although arguably there has been no ‘bounce’ since the depths of the recession, with enrolment on full-time and part-time education courses lower than the 2008–2010 levels, while education and training provided by an individual’s employer declined from 2011 to 2013.

While we don’t report here the longitudinal data on union presence, there was also evidence of a trend decline, in terms of union membership and whether an individual worked for an employer that recognised a trade union or whose terms and conditions were covered by collective bargaining. Nonetheless, there was a clear union effect. The analysis focuses on receipt of education and/ or training in the previous 13 weeks; as this is a common variable for analysis. Where individuals were union members, or had a union at their workplace or were covered by collective bargaining, they were more likely to have received job-related education/ training in the previous 13 weeks. The trends are detailed in Table 2 and Figures 1 and 2. While the long-term trend decline in receipt of job-related education and/ or training was evident, this appeared to be more evident and volatile for those in non-union environments. Across all three union variables there had been more of a ‘bounce’ in terms of the receipt of job-related education and/ or training, with reported levels in 2013 exceeding those pre-recession. This was not the case for those individuals in non-union environments, where job-related education and/ or training levels were lagging pre-recession levels. The union ‘mark-up’ for job-related education and/ training was higher in 2013 than in any year in the series back to 2001. Thus in 2013, 38.9 per cent of union members had received job-related education and/ or training in the previous three weeks compared to just 22.9 per cent of non-union members: a mark up of 16 per cent. The magnitude was slightly less for those covered or not covered by collective bargaining, but the union effect was still clear and exhibited a marked increase between 2010 and 2011. These trends are depicted graphically in Figures 1 and 2.

The union ‘mark up’ may, of course, be the product of a variety of other factors, such as sector or the occupation of an individual. In order to examine further how robust the union effect was a simple regression analysis was conducted to control for a variety of other factors. The dependent variable was binary, in terms of whether or not an individual had received (or not) job-related education and/or training in the previous thirteen weeks. The appropriate analysis is logistic regression and the findings in Table 3 present the basic coefficients, odds ratios and level of statistical

significance. This gives an idea of the extent to which union members were associated with higher incidence of training provision compared to non-union members, when various other variables were considered – i.e. *ceteris paribus*, the union effect. The findings show that union members were 1.34 times more likely to have received job-related education and/or training than their non-union counterparts, and those covered by collective bargaining were 1.29 times more likely to have received job-related education and/or training than those not-covered by collective bargaining.

Table 1: Levels of education/training 2001–2013 (figures are percentages)

Year	Job-related education/ training in last 13 weeks	Enrolled on full-time/ part-time education course	Education/training from employer
2001	28.2	14.3	55.3
2002	28.7	14.7	57.1
2003	27.7	14.3	57.8
2004	28.7	14.6	56.8
2005	28.3	14.2	57.9
2006	27.2	13.8	57.2
2007	27.0	13.8	56.2
2008	26.6	13.0	56.4
2009	26.0	13.0	57.3
2010	25.8	12.4	59.0
2011	26.4	11.7	22.4*
2012	26.2	11.4	18.6*
2013	26.5	12.0	17.4*

*Between 2011 and 2013 the question changed from “Have you ever received education/training” to “In the last three months, have you received education/training”.

Table 2: Rates of job-related education/training in last 13 weeks across different population groups related to unions (figures are percentages)

Year	Union members		Mark-up	Unions at work		Collective bargaining	
	Yes	No		Yes	No	Yes	No
2001	38.1	24.7	13.4	34.0	23.3	38.0	26.4
2002	39.1	24.8	14.3	33.6	23.5	38.3	26.5
2003	38.7	23.7	15	32.3	22.5	38.2	25.2
2004	39.2	25.3	13.9	35.4	23.9	38.8	27.0
2005	40.2	24.8	15.4	34.4	23.4	39.8	26.2
2006	38.1	23.6	14.5	33.3	22.2	37.7	25.2
2007	38.2	23.6	14.6	32.0	22.2	37.3	25.1
2008	36.8	23.4	13.4	33.9	21.6	36.8	24.6
2009	37.4	22.4	15	32.0	20.8	36.5	24.3
2010	37.3	22.1	15.2	31.5	20.7	35.5	24.2
2011	37.9	23.0	14.9	32.9	21.4	36.7	25.0
2012	37.8	22.7	15.1	34.2	20.5	36.5	24.5
2013	38.9	22.9	16	34.6	21.3	38.3	24.8

Figure 1: Contrast in training between union members and non-members 2001–2013

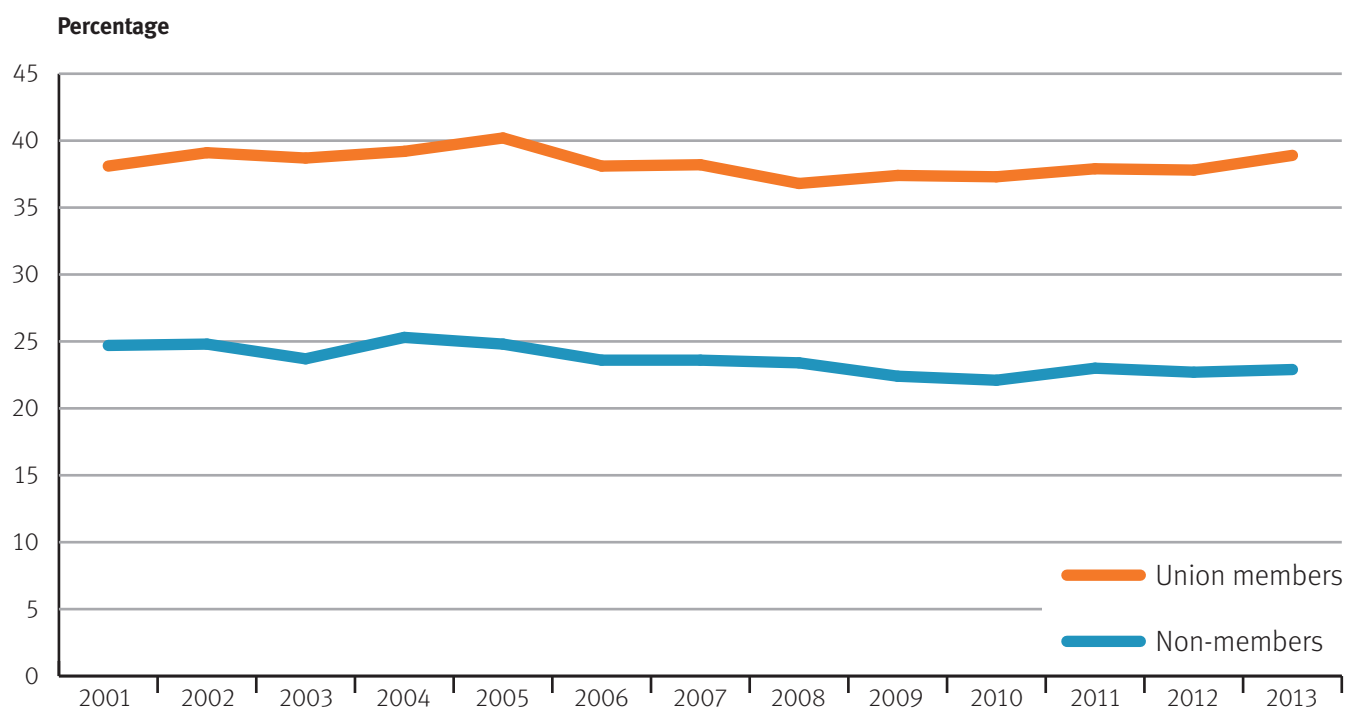


Figure 2: Contrast in training between employees with and without union collective bargaining 2001–2013

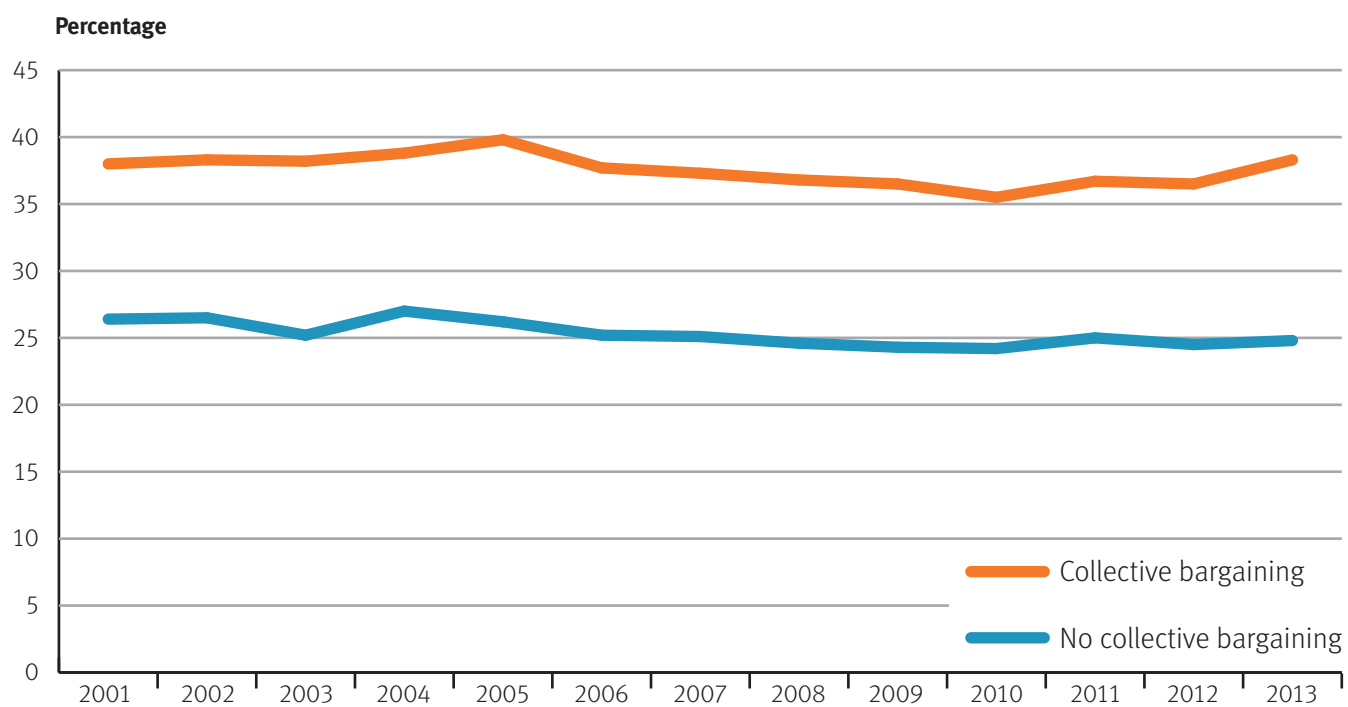


Table 3: Logistic regression of unions and job-related education/training in last 13 weeks

	B	Sig.	Odds ratio
Union member	.294	.000	1.342
Collective bargaining	.251	.000	1.286
Age	-.104	.000	.902
Females	.078	.000	1.082
Private Sector	-.207	.000	.813
Supervisor	.358	.000	1.430
Not permanent in some way	-.065	.000	.937
Part time	-.025	.013	.975
Working hours	.007	.000	1.007
Time of continuous employment (including self-employment)	.001	.000	1.001
Time in current job	-.136	.000	.873
Year	-.011	.000	.990
Agriculture and fishing versus other	-.470	.000	.625
Energy and water versus other	.365	.000	1.441
Manufacturing versus other	-.107	.000	.899
Construction versus other	.059	.010	1.061
Distribution, hotels and restaurants versus other	-.066	.001	.936
Transport and communication versus other	-.007	.753	.993
Banking, finance and insurance versus other	.172	.000	1.188
Public admin, education and health versus other	.490	.000	1.633
Managers and senior officials versus elementary	.624	.000	1.866
Professional occupations versus elementary	.977	.000	2.655
Associate professional / technical versus elementary	.914	.000	2.493
Administrative and secretarial versus elementary	.362	.000	1.436
Skilled trades occupations versus elementary	.430	.000	1.537
Personal service occupations versus elementary	.892	.000	2.440
Sales and customer service versus elementary	.508	.000	1.662
Process, plant and machine operatives versus elementary	.150	.000	1.162

Pooled data 2001–2013

4. Findings from the 2011 Workplace Employment Relations Survey

Broad findings from WERS 2011

The analysis thus far has reported findings from individuals and gives no direct insight into the practice of employment relations at the workplace level. They do not take into account employer perspectives or employer practices. To explore this we turn to the findings from the recent Workplace Employment Relations Survey (2011). We begin the analysis with findings from the management questionnaire, which focuses on workplace level responses. Table 4 reports

levels of training incidence and coverage from WERS 2011 and compares those findings to previous WERS conducted in 2004 and 1998. The main concern of the survey was with specific events of ‘off-the-job’ training. To find out the degree of training coverage, management respondents were asked to indicate the proportion of the largest occupational group (LOG) of experienced workers that had been given ‘time off from normal daily work duties to undertake training over the last 12 months’. This gives an insight into whether the employer had provided any training or

Table 4: Training incidence, coverage and type – management questionnaire (figures are percentages)

Variable	Measurement	WERS 1998	WERS 2004	WERS 2011
Coverage What proportion of experienced LOG have been given time off from normal daily work duties to undertake training over the last 12 months?	100	16.5	30.5	37.4
	80–99	7.2	14.4	15.3
	60–79	6.9	10.8	10.8
	40–59	8.5	10.0	9.7
	20–39	13.0	12.3	10.0
	1–19	21.1	13.8	11.2
	None	26.8	7.8	5.6
Incidence On average how many days of training did experienced LOG undertake over the last 12 months?	No time	28.4	9.1	6.4
	Less than one day	6.1	4.8	4.9
	One to less than two days	18.0	21.0	23.7
	Two to less than five days	28.2	37.6	37.1
	Five to less than 10 days	11.3	16.5	19.6
	10 days or more	8.1	11.0	8.3

not. Management were also asked about training incidence, in terms of 'how many days experienced members of the LOG had undertaken over the last 12 months'. This gives more of an impression of the depth of training by number of days.

As Stuart and Robison (2007) report, there was a large increase in reported levels of training provision in WERS 2004 compared to WERS 1998. While there was some evidence in WERS 2011 that levels had increased further, the degree of magnitude was small. Thus, while 30.5 per cent of management respondents reported that all experienced members of the LOG had received some off-the-job training in 2004, this had increased to 37.4 per cent in 2011. This seven per cent increase was a lot less than the near doubling of reported training provision between 1998 and 2004. However, it is worth reflecting on recent historical trends from the LFS, which suggest that 2004 may well have been a high point in terms of levels of training provision in the recent past. Given this backdrop and the subsequent impact of the economic crisis, the fact that training levels had increased at all may be somewhat surprising. The proportion of the LOG that had received no training at all declined still further, from 7.8 per cent in 2004 to 5.6 per cent.

In terms of the incidence of training, the 2011 findings showed little change to those reported in 2004. The majority of respondents to the WERS 2011 reported that training tended to last less than five days' duration. In total, 65.7 per cent reported that training lasted less than five days, compared to 63.4 per cent in 2004. The 2004 WERS found a large increase in the number of employers reporting that training duration was over five days. This increase has not continued, with the

2011 findings virtually identical. In 2011 27.9 per cent of respondents reported that training lasted more than five days compared to 26.5 per cent in 2004. However, there was a notable decline in the highest level of reported training, lasting more than 10 days. Training incidence lasting more than ten days was reported by just 8.3 per cent of respondents in 2011 – similar to the 1998 levels – compared to 11 per cent in 2004. The trend decline of no reported time spent on training continued, with just 6.4 per cent of employers reporting that no time was spent on training by the LOG.

WERS 2004 was the first in the series to report on levels of union learning representatives (ULRs) across British workplaces. The 2011 WERS allows us to ascertain the extent to which ULR penetration has increased. The findings suggest a small increase in the extent of ULRs. As Table 5 shows, ULRs were found in 12.5 per cent of all union recognised workplaces. This was a small increase from the 9.5 per cent found in 2004 – although there were some methodological issues when comparing and reanalysing the 2004 dataset, as previous analysis had suggested the 2004 level to be 12 per cent (Stuart and Robison, 2007). The key point is that ULR growth has been modest, despite the large number of ULRs trained during this period. Perhaps more notable was the proportion of all union representatives that had any specific responsibility for promoting learning at the workplace, as reported by management respondents. This increased from around a quarter of all union representatives in 2004 (24.7 per cent) to just under a third (31.3 per cent) in 2011.

Table 5: Training, representation and voice – management questionnaire (figures are percentages)

Variable	Measurement	WERS 1998	WERS 2004	WERS 2011
Union learning representatives Among all of the union representatives at this establishment, are there any who have specific responsibility for promoting learning at this workplace?	Yes/No	-	9.5 (24.7 of all reps)	12.5 (31.3 of all reps)
Voice How does management deal with union representatives about the training of employees?	Negotiates	3.3	9.2	9.9
	Consults	36.9	30.5	40.3
	Informs	23.9	24.3	25.3
	Not informs	35.8	36.0	25.4
In workplaces with a union learning representative, how does management deal with union representatives about the training of employees?	Negotiates	-	13.1	12.8
	Consults	-	61.4	55.7
	Informs	-	17.9	26.0
	Not informs	-	7.6	5.4
How does management deal with non-union representatives about the training of employees?	Negotiates	3.2	1.7	5.5
	Consults	38.0	50.9	38.3
	Informs	21.6	32.9	36.3
	Not informs	37.3	14.5	19.9

A key finding of the 2004 analysis was that those unionised workplaces with ULRs had higher levels of employee representation with regard to training. The aggregate finding was that this remains the case, but there were two apparent trends. First, levels of negotiation and consultation over training, as reported by management respondents, increased in general between 2004 and 2011. Levels of negotiation over training increased slightly from 9.2 per cent to 9.9 per cent, between 2004 and 2011 respectively. Levels of consultation increased more markedly, from 30.5 per cent in 2004 to 40.3 per cent in 2011. The proportion of workplaces where there was no employee information over training issues also decreased. Levels of negotiation (12.8 per cent) and consultation (55.7 per cent) were higher in those workplaces that recognised ULRs. However, these levels had declined from those reported in ULR recognised workplaces in 2004; most noticeably in terms of reported levels of consultation. Cases where there was no information at all, however, declined between 2004 (7.6 per cent) and 2011 (5.4 per cent). Thus employees in ULR recognised workplaces were much less likely to have no information about training (5.4 per cent) than union recognised workplaces in general (25.4 per cent). The key point here seems to be a trend towards less consultation with ULRs and more information sharing.

Management and employee representatives' perceptions of voice

Despite the focus of analysis on unions and training provision, analysis of WERS typically relies on the management questionnaire. That is management respondents' views on levels of union presence and activity. However, one of the benefits of the WERS series is that it also includes a survey instrument

for completion by employee representatives (this includes union and non-union representatives). It is relatively well established that management and union respondents may have different perceptions of what constitutes 'negotiation' and 'consultation'. Accordingly, we sought to compare, where appropriate, the different views of management and different types of employee representatives. These findings are reported in Tables 6 and 7, and again report data from 2004 and 2011.

Table 6 shows a marked difference in the reported levels of negotiation and consultation over training reported by management and union respondents. The findings on negotiation were particularly noteworthy, not just in terms of the higher reported levels by union representatives, but in the extent to which negotiation was seen to have increased by union representatives from 2004 (12.6 per cent) to 2011 (18 per cent). The 2011 WERS results show that nearly twice as many (18 per cent) union representatives reported that training was an issue for negotiation compared to (9.9 per cent) management respondents. Intriguingly, one in ten (10.4 per cent) non-union representatives also reported that they negotiated over training in 2011, compared to none in 2004. While there was a difference in reported levels of consultation over training in 2004 between union and management respondents, similar levels were reported in 2011. Union respondents were, however, less likely (14.7 per cent) to report no involvement at all over training in 2011 compared to management (25.4 per cent). As Table 7 shows, where the union representative responding had responsibility as a ULR reported levels of negotiating were even higher still, up from 17.2 per cent in 2004 to 22.2 per cent in 2011. The key point to take from these findings is that how levels of negotiation and consultation are perceived may be largely dependent on who precisely is asked the question.

Table 6: Voice – management and worker representative questionnaire (figures are percentages)

	Measurement	Management	Union representatives	Representatives of joint committees	Non-union representatives
Voice (2004) How does management deal with trade unions about the training of employees?	Negotiates	9.2	12.6	12.7	0.0
	Consults	30.5	39.0	32.7	37.5
	Informs	24.3	23.9	30.9	31.3
	Not informs	36.0	24.6	23.6	31.3
Voice (2011) How does management deal with trade unions about the training of employees?	Negotiates	9.9	18.0	5.2	10.4
	Consults	40.3	39.8	45.9	49.3
	Informs	25.3	27.4	31.1	28.4
	Not informs	25.4	14.7	17.8	11.9

Table 7: Voice – union learning representatives versus other representatives (management/worker questionnaire) (figures are percentages)

	Measurement	Management	Union learning representatives
Voice (2004) How does management deal with trade unions about the training of employees?	Negotiates	9.2	17.2
	Consults	30.5	38.7
	Informs	24.3	19.4
	Not informs	36.0	24.7
Voice (2011) How does management deal with trade unions about the training of employees?	Negotiates	9.9	22.2
	Consults	40.3	37.0
	Informs	25.3	26.9
	Not informs	25.4	13.9

Unions and training incidence

A key concern of this report is to ascertain the difference that unions may make to actual levels of training provision. We start to explore this in Table 8. In what follows we focus on the training incidence variable, as this gives a good impression of the amount of training received – i.e. in training days – rather than just the coverage of training. The initial training incidence scale was recalibrated to give an impression of lower levels of training (one to two days), medium levels (two to five days) and higher levels (more than five days). Again, we compare the findings of WERS 2011 to those of WERS 2004. The presentation of findings is in the form of a cross tabulation, with all findings statistically significant in terms of chi square tests.

Across a number of different indicators it is evident that unions make a difference. Union recognition, union membership and the presence of ULRs at the workplace were all associated with higher levels of training incidence in both 2004 and 2011. Focusing specifically on WERS 2011, where there was a recognised union around one third of management respondents reported that training incidence for the LOG lasted longer than five days, compared to a quarter (24.9 per cent) of non-unionised workplaces. In workplaces where there were union members present, higher levels of training were reported by 30.8 per cent of management respondents compared to 23.3 per cent in workplaces where there were no union members at all. It also seems that ULRs may make a difference to higher levels of training. This finding was rather slight in 2004 but was far more evident in the analysis of WERS 2011. In workplaces with ULRs around one third (32.5 per cent) of management respondents reported that the LOG had received more than five days training compared to 27.3 per cent in those workplaces where there were no ULRs. This finding appears positive, but it needs the caveat that

the findings are little different to workplaces with union recognition in general. Also, the analysis thus far has been limited to exploring specific variables in isolation. To fully understand the union role and how different union dynamics may impact on training provision, it is necessary to construct more developed models that include the possible effects of different aspects of unionisation, controlling for various contextual factors. To do this we need to conduct multivariate analysis and it is to this that the report now turns.

Multivariate analysis of employee representation and training

The analysis of WERS thus far has not sought to situate the association between the role of trade unions and training outcomes in any wider context. In other words, the findings have not controlled for the influence of wider factors, such as sector or the composition of the workforce. To do this, multivariate analyses, using probit and ordered probit regressions were undertaken (explained in Annex 1). The findings are presented in Tables 9 and 10. Table 9 presents an analysis specifically from the 2011 WERS management questionnaire, while Table 10 integrates variables from both the management and employee instruments. Each table analyses training through two specific indicators based on simplifying the training incidence variable. First, we recalibrated training incidence in terms of a simple Yes/No response to indicate whether the LOG had received training or not; so there are two groups, those who have received training and those who have received none. Second, we grouped the incidence variables into a three variable scale to give an impression of high or low levels of training: below median (fewer than two days); median (two to five days); above median (more than five days). Only statistically significant findings (marginal effects) are reported.

Table 8: Unions and training incidence for largest occupation group – management questionnaire (figures are percentages)

	Measurement	No time	One to two days	Two to five days (median)	More than five days	Total
WERS 2004						
Do you have a recognised union with members at this workplace?	Yes	3.3	24.7	41.6	30.4	47.9
	No	14.5	26.8	34.0	24.7	52.1
Is there a trade union learning representative at this workplace?	Yes	2.9	22.3	46.9	28.0	9.0
	No	9.8	26.1	36.6	27.5	91.0
Are there union members at this workplace?	Yes	4.1	24.8	40.7	30.5	60.5
	No	16.8	27.3	32.9	23.0	39.5
WERS 2011						
Do you have a recognised union with members at this workplace?	Yes	1.7	26.8	39.1	32.5	37.2
	No	9.3	29.8	36.1	24.9	62.8
Is there a trade union learning representative at this workplace?	Yes	0.7	26.6	40.1	32.5	12.3
	No	7.3	28.8	36.6	27.3	87.7
Are there union members at this workplace?	Yes	2.3	27.9	38.9	30.8	59.9
	No	12.6	29.7	34.4	23.3	40.1

Table 9: Employee representation and training of the largest occupational group (management questionnaire)* (Figures are percentages)

	Any training provided	Training incidence		
	Yes/No	Below median (fewer than two days)	Median (two to five days)	Above median (more than five days)
Union voice – not inform (reference category)	-	-	-	-
Union voice – inform	0.5	-	-	-
Union voice – consult	0.8	-	-	2.2
Union voice – negotiate	0.4	-13.5	-2.5	16.0
Union learning representatives (no learning representatives – reference category)	-	-4.1	-	4.2

*Control variables: the skills composition of the workforce; the age profile of the workforce; the presence of an equal opportunities policy covering equality of treatment or discrimination; the extent of which individuals in the largest occupational group (LOG) have variety in their work; the extent of which individuals in the LOG have discretion over how they do their work; the proportion of the LOG who are trained to do jobs other than their own; the proportion of the LOG who work in formally designated teams; the proportion of the workforce who are female; the proportion of the workforce who work on a part-time basis; size; sector.

Table 9 suggests that the union ‘effect’ on training provision in WERS 2011 was rather small. The analysis of ‘any training received’ explored the extent to which workplaces with union recognition and different degrees of employee representation and voice compared to those with no information on training at all. This found that where there was information sharing, consultation or negotiation over training there was higher reported levels of training, but the ‘marginal effect’ was small; for example, just 0.4 per cent in the case of negotiation. There was no significant association between those unionised workplaces with ULRs compared to those with none.

This, however, only gives a basic impression of whether the LOG received training or not. It gives no insight into the duration of such training, which may be taken as a very crude proxy of quality. The comparison of training received around the mean duration of training incidence revealed some more prominent findings. Two key findings are worth highlighting. First, those workplaces with union recognition and negotiation over training were more likely to have higher levels of training. Specifically, reported levels of above median (more than five days) training provision for the LOG were 16 per cent more likely where there was negotiation over

Table 10: Employee representation and individual employee training incidence (management/employee questionnaire) (figures are percentages)**

	Any training provided	Training incidence			
	Yes/No	Below median (fewer than two days)		Median (two to five days)	Above median (more than five days)
Union voice – not inform (reference category)	-	-	-	-	-
Union voice – inform	7.3	-4.7	-1.3	2.1	4.0
Union voice – consult	8.3	-5.3	-1.3	2.4	4.2
Union voice – negotiate	5.1	-3.9	-1.2	1.7	3.4
Union membership (non-members – reference category)	1.9	-2.2	-0.5	1.0	1.7
Union learning representatives (no learning representatives – reference category)	2.4	-1.9	-0.4	0.8	1.4

**Control variables: age; gender; occupation; tenure; education; ethnicity; health and disability; family situation; occupational characteristics; the skills composition of the workforce; the age profile of the workforce; the presence of an equal opportunities policy covering equality of treatment or discrimination; the extent of which individuals in the largest occupational group (LOG) have variety in their work; the extent of which individuals in the LOG have discretion over how they do their work; the proportion of the LOG who are trained to do jobs other than their own; the proportion of the LOG who work in formally designated teams; size; sector.

training than where there was not. There was also a significant association where there was consultation over training, but the marginal effect was much lower (2.2 per cent). Second, there was a small ULR association at higher levels of training incidence. In unionised workplaces with ULRs the LOG were 4.2 per cent more likely to have received training of more than five days than in workplaces with no ULRs. Where there were no ULRs, the LOG was more likely to have received training below the median level (-4.1 per cent).

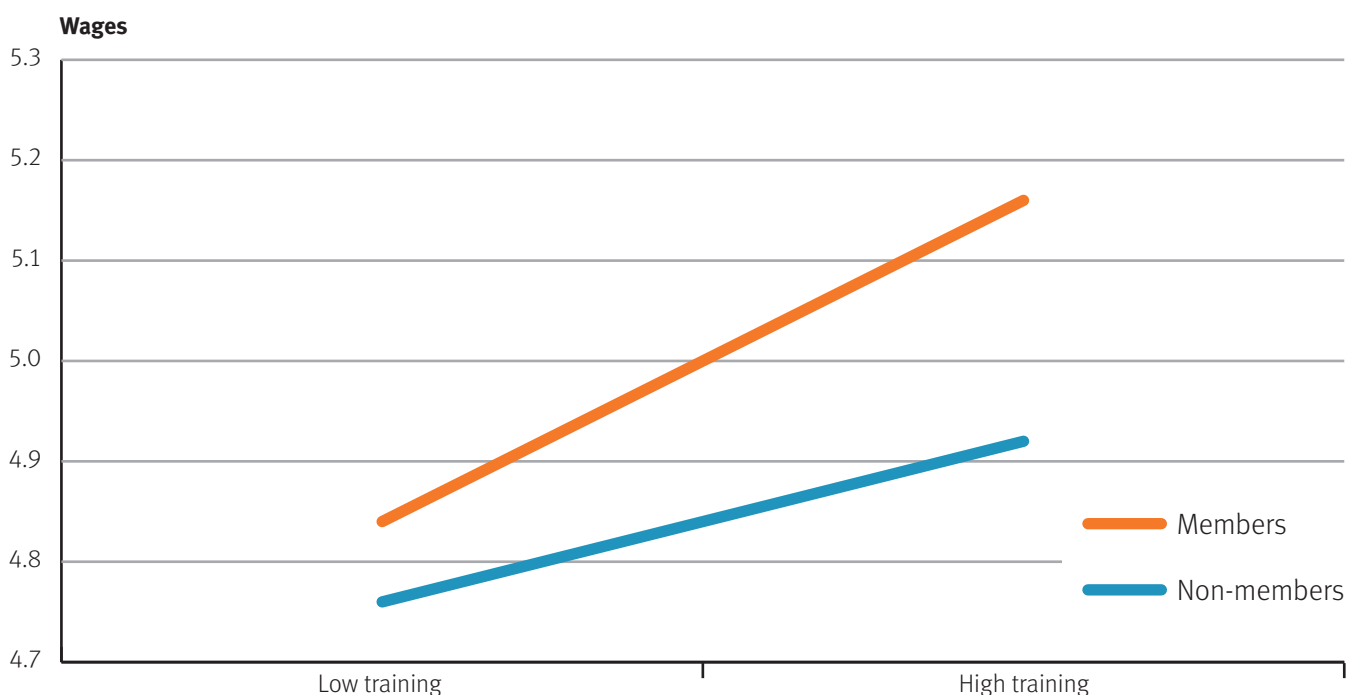
These findings are highly suggestive of a positive association between union involvement in training decisions at the workplace and training outcomes. One possible point of critique, however, is that these findings are just reliant on findings from management respondents and so may be subject to possible bias. Are management respondents, for example, best placed to report just how many days training an employee receives? To develop the analysis still further we therefore integrate the findings from the employee questionnaire, so that reported levels of training received are provided by the employees themselves. The findings are reported in Table 10.

The findings presented in Table 10 show a uniformly positive association between the role of trade unions and training outcomes. First, union membership itself makes a difference. Those employees that were members of a trade union were 1.9 per cent more likely to have received any training than their non union counterparts. They were also more likely to have experienced higher levels of training, in terms of training that lasted more than five days (1.7 per cent). Second, and similarly, ULRs made a difference. Those employees in workplaces where there were ULRs were 2.4 per cent more likely to have received any training than those working in workplaces without ULRs. Again, there was an association with higher levels of training received in terms of the duration of training above the median (1.4 per cent). Third, the extent of union engagement and involvement over training decisions matters. Indeed, the reported associations were highest in terms of the extent to which employees and their representatives had some degree of voice of training compared to those workplaces where employees were not informed at all about training. Employees in workplaces where there was information sharing over training were 7.3 per cent more likely to have received training, were 8.3 per cent more likely to have received training where there was consultation and 5.1 per cent more likely to have received training where there was negotiation over training. The trend was similar in terms of training incidence above the mean duration of training days received. Those employees in workplaces with information sharing (4 per cent), consultation (4.2 per cent) and negotiation (3.4 per cent) over training were more likely to have received more than five days' training than those employees in workplaces where no information was provided by management about training. In such workplaces employees were either more likely to have received no training at all or training was more likely to be less than the mean.

5. The effect of trade unions and training on wages

Stuart and Robinson's (2007) analysis of WERS 2004 did not explore the association between training and wages. Research by Booth *et al* (2003) suggests that union covered workers that receive training may enjoy greater 'returns' to training received than workers that receive training but are not covered by unions. Their analysis, which utilises the British Household Panel Survey 1991–1996, focused specifically on men. The current analysis seeks to explore the relationship with wages. It is well established that unionised workers experience a wage 'mark up', though there has been some debate over the extent of this 'mark up' in the context of declining union membership. The analysis presented here suggests that unions have some effect on training received. But little is known about the possible association between such training received and wage returns.

Figure 3: The interaction effect of training and union membership derived from the random intercept and random slopes model (dependent variable – wages)



To explore the relationship between unions, training and wages a series of multi-level models were constructed and tested. Multilevel analysis allows for a sensitive appreciation of the nested nature of the data – in this case, employee responses at each workplace and across different workplaces. The model included wage rates as the dependent variable, with wages split into three categories: low wages; median wages (£371–430 per week); high wages. Our independent variables tested against wages, included: union membership (Yes/No); union voice (not inform, inform, consultation, negotiation); training incidence (full scale). An interaction effect was then tested that explored the relationship between union membership, training incidence and wages. The analysis controls for the fact that union members are more likely to have received higher wages to explore the specific interaction with training. The table of findings of the multi-level model is presented in Annex 2. This found in simple terms that wages were higher for union members and higher levels of training incidence. There was no statistically significant relationship with levels of voice and involvement over training decisions.

The interaction term was also positive. Union members were more likely to have received higher levels of training and this training was associated with higher wage levels. This is best illustrated in Figure 3. The figure clearly shows that union members received higher levels of training, whether this was low or high levels of training incidence and that where they received this training they also received higher wages than those workers that were not union members.

6. Training and union recognition and the moderating effect of the recession

The final section of the report explores unions and training within the context of recession. A distinctive feature of WERS 2011 was a series of questions that asked managers how their companies had responded to the recent economic recession. For the current analysis, this opens up the question of how employees at unionised workplaces fared compared to their non-union counterparts. We explore this in terms of three outcome variables: job satisfaction; job security; organisational performance. One possible hypothesis is that during the recession unions may have sought to work with (or accommodate to) employers' demands for restructuring through partnership arrangements that may have included a focus on employee training and some level of employee job security.

For the purpose of analysis we utilised structural equation modelling to test the effect of training incidence and recession response on employee and organisational outcomes. We then performed an interaction of training and recession response and, finally, moderated this by union recognition. The variables used in the model are specified in Annex 3. The dependent variables of job satisfaction, job security and organisational performance were all based on grouping together a number of variables to comprise single latent variables. How organisations had responded to recession was examined through grouping the responses of two variables from the Management questionnaire: the extent to which the workplace had been adversely affected by the recent recession; the degree to which the workplace was now weaker because of its experience in the recent recession. The training incidence scale reported earlier in the report was used to cover training provision.

The headline findings reported in Annex 4 are as follows. Firstly, assessed on its own terms higher levels of training incidence were positively associated with higher reported levels of job satisfaction,

job security and organisational performance. In contrast, the negative experiences of recession were associated with lower levels of job satisfaction, job security and organisational performance. When the training and recession variables were interacted, the only statistically significant relationship was with job security. In other words, training incidence moderated the relationships between the most recent recession and job security, such that across those organisations where employees were given more time for training the effect of the recession was less negative. There was no association between job satisfaction and organisational performance.

However, when the samples were split into those workplaces that recognised unions and those that did not these associations changed. The recession had a negative effect on job satisfaction, job security and organisational performance in both unionised and non-unionised workplaces. However, when training practices and responses to recession were examined together, there was a positive association with job security and organisational performance in unionised workplaces, but not in non-unionised workplaces. In other words, at those workplaces where trade unions were recognised by management, training incidence mitigated the negative effect of the most recent recession on perceived job security and organisational performance. Again, these findings are best illustrated in diagrammatic form and are presented in Figures 4 and 5. The figures show that where management reported their workplaces had been more adversely affected by the recession levels of both job security and organisation performance started to fall, but the extent to which job security and performance fell was lower where levels of training were higher. This effect only held in unionised workplaces, suggesting it was the ability of unions to secure higher levels of training incidence that may be important.

Figure 4: The interaction effect of training and the most recent recession in the workplaces with recognised trade unions (dependent variable – job security)

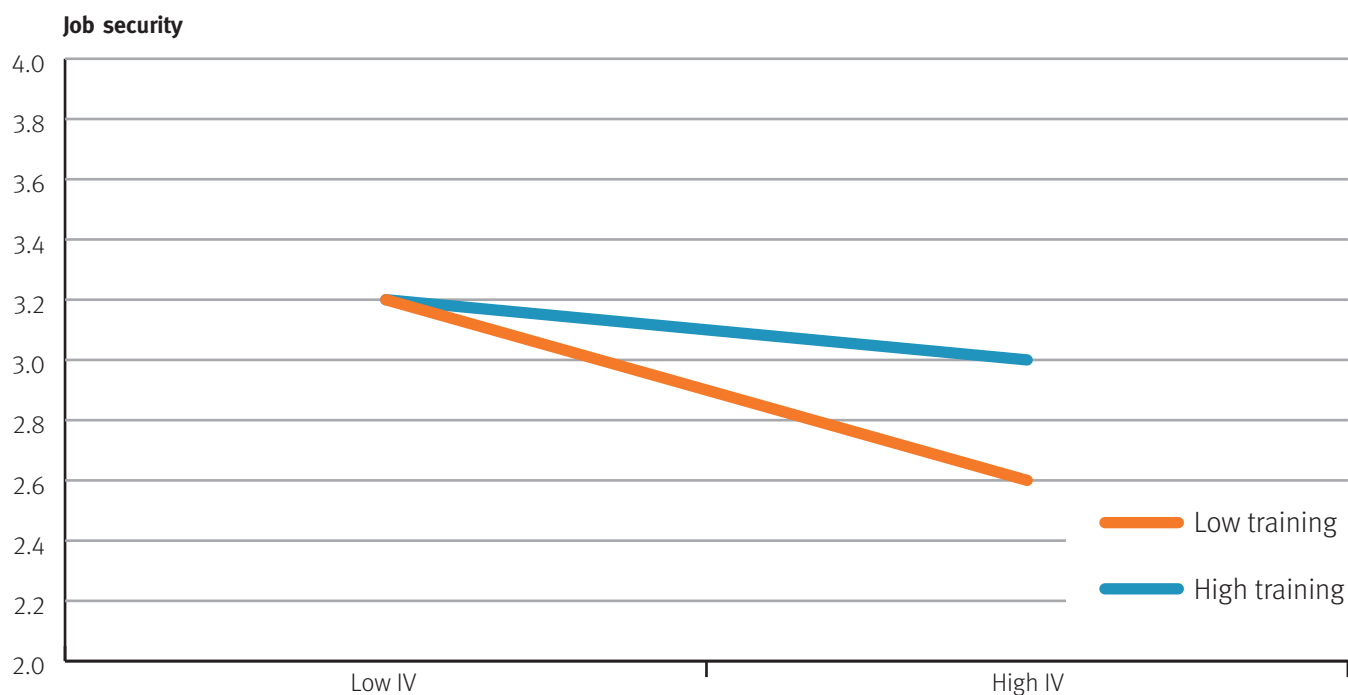
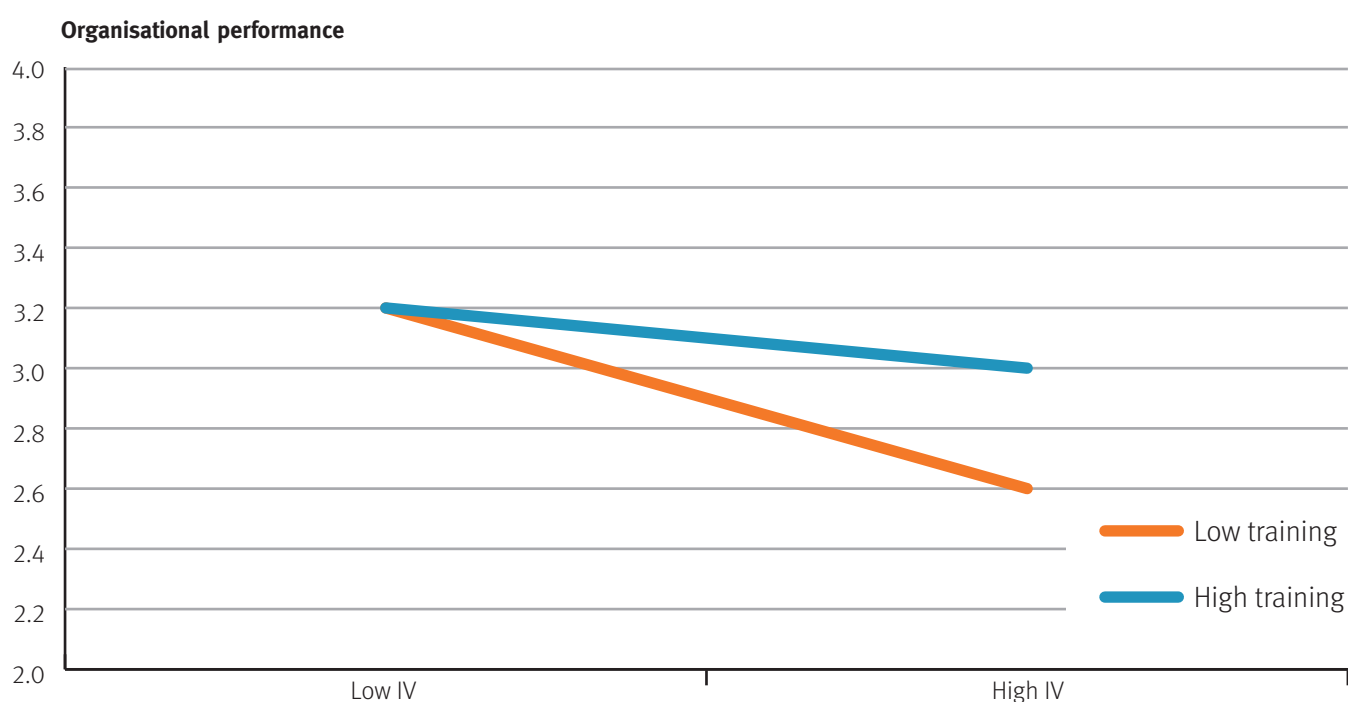


Figure 5: The interaction effect of training and the most recent recession in the workplaces with recognised trade unions (dependent variable – Organisational performance)



7. Conclusion

Drawing on the Labour Force Survey and the 2011 Workplace Employment Relations Survey, this report has presented a statistical analysis of the relationship between trade unions in Britain, levels of training provision and a number of wider workplace outcomes. The fact that unions may have a positive ‘effect’ on employees’ training levels has been reported by a number of previous studies, though it has been speculated that this effect may have diminished in more recent times (Hoque and Bacon, 2008). Given the effects of the economic crisis on the British economy since 2008, whether unions have been able to maintain any positive association with levels of training provision is an important question.

The report has presented historical data and more recent analysis of how workplaces have been affected in the period following the economic crisis. Taken together, the findings revealed that unions can deliver positive gains for members in terms of the training agenda. Looking at the period 2001–2013 the aggregate data suggest that levels of job-related education and/or training started to drop off since 2004 with a further decline post 2008. Levels have not increased significantly since then. However, over the entire period there was a union training ‘mark-up’. Those employees in workplaces that recognised unions or that had collective bargaining experienced higher levels of training provision during the entire period and this ‘mark-up’ appeared to have increased as the economy has moved, albeit slowly, out of recession. In crude terms, union members were a third more likely to have received training than non-members during the period 2001–2013.

The analysis of WERS 2011 also found that there were some positive associations between unions and workplace training. At a general level, there seemed to have been little increase in employees’ receipt of training between 2004 and 2011. Likewise, reported levels of ULRs at the workplace and levels of negotiation seemed to have remained broadly constant. There was, however, around a ten per cent increase in consultation over training during this period. When

the data were mined more intensively it was found that union recognition, membership presence and ULRs were all associated with higher levels of training provision, that is training that lasted more than five days’ duration. Perhaps the most notable finding was reported by management respondents. Where management reported that there was negotiation over training decisions, they were also 16 per cent more likely to report that the largest occupational group at their workplace received more than five days training. Employees’ responses also revealed a positive union association with both receipt of training and training incidence, although the effect was at a lower level.

But the positive role played by unions was not just related to levels of training incidence. The fact that unions were able to lever higher levels of training provision was also found to be associated with higher wage rates for members and higher levels of job security in workplaces negatively affected by the recession. There also appeared to be a positive association between unions, training and organisational performance in workplaces affected by recession.

In summary, then, the report has revealed some positive results for the union effect on training and how this effect may impact wider organisational outcomes. In basic terms this means that where employees are represented by unions, and where those unions are involved in workplace training decisions, they are likely to receive higher levels of training, higher wages and more job security.

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Appendices

Annex 1

Methodological note on the Labour Force Survey and the Workplace Employment Relations Survey (2011)

The Labour Force Survey (LFS) has run since 1973 (1973 to 1983 biennially and 1984 to 1991 annually), on a quarterly basis since 1992, covering a range of aspects of people's work, including the education and training needed to equip them for work, the jobs themselves, job-search for those out of work and income from work and benefits. The sample is made up of approximately 40,000 responding UK households and 100,000 individuals per quarter. Respondents are interviewed for five successive waves at three-monthly intervals and 20 per cent of the sample is replaced every quarter. The LFS is intended to be representative of the entire population of the UK. In that sense, the LFS survey year is divided into quarters of 13 weeks. Prior to January 2006, these were seasonal quarters: winter (December–February), spring (March–May), summer (June–August) and autumn (September–November). From January 2006, the LFS has been conducted on the basis of calendar quarters: January–March (quarter 1), April–June (quarter 2), July–September (quarter 3) and October–December (quarter 4).

According to the ONS Information Paper (2015), the survey's strength is that it has the largest sample size of any UK household survey and can thus generate robust statistics at regional level. In addition, sampling errors are small, because the LFS has a single-stage, random sample of addresses. Furthermore, LFS covers a large range of employment-related and non-employment-related variables, allowing cross-linking analyses (such as earnings against educational attainment). One of the survey's limitations is that the sample design cannot guarantee adequate coverage of any industry, as the survey is not stratified by type of industry. The LFS coverage also omits communal establishments, excepting NHS housing and students in boarding schools and halls of residence, members of the armed forces, as well as workers under 16 years of age.

The 2011 Workplace Employment Relations Survey (WERS) is the sixth survey in a series of British workplace surveys that commenced in the early 1980s. The survey provides extensive information regarding various aspects of employment relations and employees' work-life quality across the UK. The survey is representative of all British workplaces and provides linked employer-employee elements for analysing employment relations on a multilevel basis. Data for the management survey of the 2011 WERS were collected through a face-to-face interview with the most senior manager at the sampled workplace whose responsibility pertains to employee relations, human resources or personnel affairs. The interviews were secured in a total of 2,680 workplaces, representing a fieldwork response rate of 46.3 per cent. Employee-level data were collected through a thirteen-page, self-completion questionnaire distributed to all employees in sampled workplaces with 25 or fewer employees, and a random sample of 25 employees in larger workplaces with 25 or more workers. A total of 21,981 employees from 1,923 workplaces completed the survey, representing a response rate of 54.3 per cent. The analysis presented in the current report is based on both the survey of managers and a matched employer-employee dataset; organisations with fewer than five employees were excluded from the sample.

- Figures reported in Tables 4, 5 and 8 were derived from the sample of 2,383 workplaces with five or more employees taken from the Management Questionnaire of the 2011 WERS.
- Figures reported in Table 9 derived from the sample of 20,911 individuals taken from merged employer-employee datasets from the 2011 WERS.

- Table 9 contains the output of the probit model based on a weighted sample of 2,383 workplaces with five or more employees taken from the Management Questionnaire of the 2011 WERS. Only statistically significant marginal effects at the 95 per cent level are reported (marginal effects measure the change in the dependent variable as one independent variable changes – holding all the other variables constant). No missing variable imputation technique was applied as all missing values seem to be system missing. Control variables in the model are specified.
- Table 10 contains the output of the ordered probit model based on a weighted sample of 20,911 individuals taken from merged employer-employee samples from the 2011 WERS (no missing variable imputation technique was applied). Only statistically significant marginal effects at the 95 per cent level are reported. Control variables in the model are specified.
- Table 11 presents the results of multilevel regression analysis. The model was specified as full mixed effects model (random slopes and random intercept are assumed). The analysis is based on a sample of 20,911 employees nested on 2,383 workplaces. Control variables specified.
- The findings presented in Tables 13 and 14 were derived from structural equation modeling and robust maximum likelihood estimator. The model draws on the sample of sample of 20,911 individuals taken from merged employer-employee samples from the 2,011 WERS.
- The interaction (moderation) effects reported in Figures 3–5 were derived from the simple slopes test that examines the effect of an independent variable on a dependent variables at one standard deviation above and below the mean value of a moderator.

Annex 2

Findings from multi-level model of the effect of training and union membership on wages

Table 11: Multi-level model of the effect of training and union membership on wages (management/employee questionnaire)

Variable	Wages (residuals) Three categories: 1. Low – lower than one standard deviation below the median 2. Median (£371–430 per week) – an interval comprises one standard deviation below and above the median 3. High – more than one standard deviation above the median
Union membership (non-members reference category)	-0.169*** (0.014)
Union voice (negotiations over training is a reference category)	-0.017' (0.010)
Individual training incidence (individual effect)	0.060** (0.004)
Individual training incidence (group effect)	0.091** (0.028)
Individual training incidence (group effect) x union membership	-0.074** (0.018)

Significance: *** = $p < .001$, ** = $p < .01$, * = $p < .05$.

Control variables in the model: age; gender; occupation; tenure; education; ethnicity; health and disability; family situation; occupational characteristics; the skills composition of the workforce; the age profile of the workforce; the presence of an equal opportunities policy covering equality of treatment or discrimination; the extent of which individuals in the largest occupational group (LOG) have variety in their work; the extent of which individuals in the LOG have discretion over how they do their work; the proportion of the LOG who are trained to do jobs other than their own; the proportion of the LOG who work in formally designated teams; size; sector.

Annex 3

Variables included in structural equation model of training and recession on individual and organisational outcomes

Table 12: Variables included in the SEM, reliability analysis and factor loadings

Variables (α – Cronbach's Alpha)	Observed items	Mean	SD	Factor loadings
Job satisfaction (0.862)	How satisfied are you with the sense of achievement you get from your work?	3.83	0.944	0.747
	How satisfied are you with the scope for using your own initiative?	3.84	0.952	0.694
	How satisfied are you with the amount of influence you have over your job?	3.53	0.996	0.721
	How satisfied are you with the training you receive?	3.37	1.07	0.613
	How satisfied are you with the opportunity to develop your skills in your job?	3.34	1.092	0.738
	How satisfied are you with the amount of pay?	3.01	1.129	0.514
	How satisfied are you with the job itself?	3.82	0.906	0.744
Perceived job security (0.901)	I feel my job is secure in this workplace	3.46	1.108	0.840
	How satisfied are you with your job security?	3.41	1.073	0.978
Organisational performance (0.656)	How would you assess your workplace's financial performance?	3.59	0.824	0.709
	How would you assess your workplace's labour productivity?	3.56	0.736	0.589
	How would you assess your workplace's quality of product or service?	4.01	0.750	0.490
Recession (0.568)	Extent workplace has been adversely affected by the recent recession	3.34	1.15	0.543
	This workplace is now weaker because of its experience in the recent recession	2.41	1.05	0.734
Interaction term (N/A)	Interaction term 1	N/A	N/A	0.625
	Interaction term 2	N/A	N/A	0.647
Training frequency (N/A)	Number of training days experienced staff in largest occupational group had in past year?	4.03	1.027	1.000

Sample size = 22,645; Number of employees = 22,645. Note: α = Cronbach's alpha; SD = Standard Deviation; N/A = Not applicable. Model fit indices: Chi-square (X^2) = 1,357.579; degrees of freedom (df) = 158; p-value < 0.001; RMSEA = 0.026; CFI = 0.990; TLI = 0.983 and SRMR = 0.016.

Annex 4:

Structural equation models of training incidence and recession and the impact on job satisfaction, job security and organisation performance, moderated by union recognition

Table 13:

	Job satisfaction (residuals)	Job security (residuals)	Organisational performance (residuals)
Training incidence	0.027** (0.005)	0.021** (0.007)	0.062*** (0.005)
Recession	-0.069*** (0.010)	-0.187*** (0.014)	-0.401*** (0.014)
Training x recession	0.010 (0.009)	0.023* (0.014)	-0.017 (0.010)

Sample size (N) = 22645; all coefficients are complete standardised solutions.

Chi-square (χ^2) = 3292.593; degrees of freedom (df) = 169; p-value < 0.001.

RMSEA = 0.029, CFI = 0.975, TLI = 0.965, and SRMR = 0.021.

Significance: *** = p < .001, ** = p < .01, * = p < .05.

Control variables in the model: firm size, tenure, contract type, gender, age, sector.

Table 14:

	Job satisfaction (residuals)	Job security (residuals)	Organisational performance (residuals)
Workplaces with recognised trade unions			
Training incidence	0.031** (0.007)	0.004 (0.011)	0.108*** (0.009)
Recession	-0.074*** (0.016)	-0.209*** (0.026)	-0.283*** (0.027)
Training x recession	0.015 (0.014)	0.037* (0.022)	0.062*** (0.017)
Workplaces where trade unions are not recognised for negotiations			
Training incidence	0.014 (0.022)	0.009 (0.033)	-0.016 (0.024)
Recession	-0.075* (0.022)	-0.246*** (0.043)	-0.218*** (0.046)
Training x recession	-0.004 (0.003)	0.004 (0.005)	0.006 (0.008)

Sample size (N) = 10,612; all coefficients are complete standardised solutions.

Chi-square (χ^2) = 2,083.800; degrees of freedom (df) = 310; p-value < 0.001.

RMSEA = 0.033, CFI = 0.969, TLI = 0.956, and SRMR = 0.024.

Significance: *** = p < .001, ** = p < .01, * = p < .05.

Control variables in the model: firm size, tenure, contract type, gender, age, sector.

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Published by
unionlearn

Congress House
London WC1B 3LS

Tel 020 7079 6920

Fax 020 7079 6921

www.unionlearn.org.uk

May 2015

Design: www.design-mill.co.uk

Cover photograph: Leonora Saunders