What influence do work-life situations and vocational orientation measures exert on individual commitment to continuing training?*

Elisabeth M. Krekel and Günter Walden

Continuing vocational training is considered to play an important role in both social and occupational inclusion. The present paper will analyse influencing factors on participation in continuing vocational training and on private expenditure, the latter being measured in terms of the costs borne by the trainees themselves and the amount of free time invested. Consideration needs to be accorded to the fact that individual social groups enjoy different levels of access to continuing training and to the circumstance that their commitment to continuing training is influenced by varying prevailing general conditions. For this reason, the principle focus of the paper will be on the question of how these general conditions or work-life situations can be described and on whether it is possible to identify various groups. The main features of vocational orientation measures will also be included in the analysis. The basis for the study is the data collected by an expert commission set up to look into the financing of lifelong learning and the participation or non-participation in continuing training and the results of an investigation conducted by the Federal Institute for Vocational Education and Training into the costs and benefits of continuing vocational training for individuals. These two studies are based on the same statistical population and render it possible to observe aspects of both continuing training participation and private expenditure in terms of how these relate to continuing training. It becomes readily apparent that persons may be allocated to groups in accordance with the work-life situation characteristics they display, these groups exhibiting differences in terms of inclusion and investment in continuing vocational training. Although gender is revealed to exert no significant individual influence on commitment to continuing training, women in particular form a group which has its basis in their work-life situation, the fact that the latter tends to present some difficulties meaning that a lower level of commitment to continuing training may be exhibited. In addition to the above, vocational orientation measures exert a clear influence on commitment to continuing training.

* This paper was released for publication in August 2007.

Contents

1 Introduction: "voluntary" compulsion to undertake continuing training?

Both general and vocational education are of particular importance in terms of affording people inclusion opportunities within modern societies. In a society which is ever-changing, individual readiness to seek further development, learn new things, engage in self-improvement and pursue "lifelong learning" is an essential prerequisite, the significance of which is by no means confined to occupational aspects of life. Both lifestyle and social inclusion alongside the occupation exercised are affected. This makes both general and vocational education important criteria for wealth distribution mechanisms as these operate within modern societies. Although they at least have the potential to erase long-standing inequalities arising from such aspects as social origin, they alter the nature and causes of inequality rather than providing any direct route to the abolition of class and levels within society (Beck 1986: in particular Chapter III; Hradil 2005: in particular Chapter 5.1).

Compulsory schooling stipulates participation in general educational processes until the age of 18 in Germany. After this point, continuation of individual educational activities and participation in continuing training in adulthood is largely voluntary. The increasing importance of lifelong learning caused by the constant processes of societal change is, however, causing a growth in "compulsion for the individual person to plan his or her (continuing) education and training within a life context" (Friebel 1993: 471). The "revaluation of educational qualifications" (Hradil 2005: 174), educational qualifications having become an important prerequisite for obtaining an occupational position, is also increasing the pressure individuals are under to supplement the qualifications they have already gained on an ongoing basis via further educational processes, additional qualifications or the acquisition of social competences in the interests of not losing out in the "cut-throat competition" amongst those with a higher level of education, in which "those with a lower level of education draw the short straw" (Hradil 2005: 174). In this respect, continuing training exercises an important career function and is, for example, accorded particular attention within the scope of personnel selection processes whilst also being of relevance for carer advancement within a company.[1]

Although collective wage agreements containing stipulations in respect of such aspects as continuing training activities may offer a vehicle by which employees can access additional training pathways and opportunities,[2] not everyone enjoys equal access to continuing training. Life events such as unemployment or child rearing phases (Schröder/Schiel/Aust 2004) or a lack of integration into company structures (Friebel 1993; Baethge/Baethge-Kinsky 2002) may also impede such access. In such cases, individual participation in continuing training tends to represent more of an expression of "discrimination" (Friebel 1993: 474) than a decision made on a voluntary basis between two alternatives of equal value.

The factors influencing individual commitment to continuing training related to inclusion and the expenditure involved (investment of money and free time) and the role played by the work-life situation and subjective evaluations of an individual's own occupational and life goals will form the object of the present paper. An initial documentation of the current status of continuing training research will be provided together with a presentation of the research approach and theoretical pre-considerations adopted (Chapter 2). This will be followed by an explanation of the present authors' own investigative approach and an introduction to the database forming the basis of the present study (Chapter 3). Presentation of the empirical results (Chapter 4) will be followed by a discussion of these results and the drawing of possible conclusions (Chapter 5).

2 Company and individual continuing training participation

2.1 Status of research

Company and individual continuing training participation have formed the subject of various investigations. Some studies on individual participation in continuing training (such as the Continuing Training Reporting System) differentiate between general and occupational continuing training, company training forming part of occupational continuing training. The present paper focuses on occupational continuing training.[3]

[1] Cf. here the results of the study of 300 heads of human resources in German companies conducted by the Society for Social Research and Statistical Analysis (FORSA) (http://www.ils.de/files/forsa-Studie_des_ILS_02–2006.pdf, German language resource).

[2] Only a small number of collective wage agreement provisions of this nature are currently in place, an exemplary function being provided by the Collective Wage Agreement on Skills for the Federal State of Baden-Württemberg of 19 June 2001, which provides a point of orientation for other social partners. Cf. http://www.igmetall.de/cps/rde/xchg/SID-0A456501–1A0E54D8/internet/style.xsl/view_english.htm.

[3] For detailed information, see Chapter 3.1.

Participation in company continuing training is regularly investigated within the scope of the IAB Establishment Panel, European continuing training surveys and the company study conducted by the Cologne Institute for Economic Research, this being supplemented by studies on a range of research themes. Company costs per employee for 2004 showed a rise compared to 2001 (Werner 2006), and costs incurred by German companies are high in European comparative terms. Notwithstanding this, opportunity for a German employee to take part in company courses is low (Grünewald/Moraal/Schönfeld 2003). Major companies in particular hedge against the risks of unprofitable investment in continuing training caused by employees' leaving the company at a later date by entering into repayment agreements with their staff to cover this eventuality (Leber 2000).[4]

In respect of the factors influencing participation in company continuing training, aspects revealed include the following.

- Participation in company continuing training varies widely depending on the size of the company. 98 % of West German and 94 % of East German companies employing 500 staff or more take part in continuing training. By way of contrast, the West German and East German figures for companies with fewer than 10 employees are 33 % and 37 % respectively (Leber 2006).

- Company investment in continuing training depend on such factors as investment policy and the quality of labour relations (Neubäumer/Kohaut/Seidenspinner 2006) and prove particularly worthwhile if integrated into the overall company structure and strategy (Backes-Gellner 2006).

As far as the participation or integration of various groups within the workforce is concerned, particular emphasis needs to be accorded to the fact that employees with higher qualifications are more likely to participate in company continuing training than those who are qualified at a lower level. The rate of participation amongst qualified salaried staff is, for example, frequently three times higher than that of unskilled/semi-skilled hourly paid workers (Leber 2006; Bellmann/Leber 2003a).

Data on individual participation in continuing training is regularly collected within the scope of the Continuing Training Reporting System and the Socio-Economic Panel, this information also being supplemented by individual studies on various research issues. Recent years have once again seen a decline in the participation of the German population in both occupational continuing training instruction and courses and in informal company continuing training. In terms of instruction and courses, the continuing training rate for 2003 was 26 %, representing a fall compared to previous years (1997: 30 %). Taking all forms of learning into account, the rate for 2003 was 68 % (Federal Ministry of Education and Research 2006).[5] In terms of significance for participation in occupational continuing training and the major motives underlying this, the following aspects in particular readily become apparent.

- Growing requirements in the workplace are also bringing about an increase in individual continuing training needs, meaning that workers in Germany are frequently unable to fulfil these requirements without specific specialist knowledge (Ulrich 2000).

- Private persons are prepared to invest in their own occupational continuing training on a large scale (Beicht/Krekel/Walden 2006), these individual investments particularly taking place in situations where those taking part in continuing training believe that commensurate benefit will accrue for them (Beicht/Krekel/Walden 2006; Timmermann/Ehmann 2004).

- A significant differentiation may be made between the group of non-participants and the group of participants, there being a greater incidence of the unemployed or economically inactive and low skilled persons performing simple occupational activities amongst the non-participating group (Expert Commission on the Financing of Lifelong Learning 2004; Schröder/Schiel/Aust 2004).[6]

- Although not participating in continuing training is the result of unequal access opportunities (Brüning/Kuwan 2002), it is perfectly possible for such non-participation to be "voluntary" in nature

[4] For problems and models related to recording costs, see Weiß (2006).

[5] A discussion of the problems in interpreting rates of continuing training would exceed the remit of the present paper. It should be stressed that the recording of continuing training activities had not thus far taken place in a standardised form, "always being individually defined by the designer of the questionnaire. This seems to render it difficult to compare such statistics as participation in continuing training between different databases" (Büchel/Pannenberg 2004: 77). For further debate on this issue, see: Büchel/Pannenberg 2002, Seidel 2006, Beicht/Krekel/Walden 2006 and others.

[6] For more information on the non-participant group, see also Backes-Gellner/Mure/Tuor (included in the present volume).

and to have its basis in rational calculation (no benefit from continuing training being expected) (Bolder/Hendrich 2000; Hendrich 1996).

In respect of identifying the determining factors for participation in occupational continuing training, research agrees that such participation is largely dependent on both the respective skills level and the work position or nature of the employment status of the person in question. Full-time employees and employees on unlimited contracts are more likely to take part in continuing training (Wilkens/Leber 2003; Pannenberg 1998). As far as the influence exerted by age and gender is concerned, the status of research is unclear. Although younger persons tend to participate in continuing training more frequently than older persons (Federal Ministry of Education and Research 2006), multivariate continuing training analyses have concluded that age is not in itself a decisive factor (Schröder/Schiel/Aust 2004), the main thrust of the results suggesting a descriptive correlation comprising dependency on level of skills (Federal Ministry for Family Affairs, Senior Citizens, Women and Youth 2005: 143). By the same token, older people are mostly less well qualified on average and tend to hold less continuing training intensive jobs (Expert Commission on the Financing of Lifelong Learning 2004: 110). As far as obtainable continuing training benefits are concerned, significant age-based differences appear to be present. By taking part in continuing training, young employees are able to achieve "individual (net) gains" (such as a higher level of income or job security), an effect which could not be demonstrated for older employees (Büchel/Pannenberg 2004).

In terms of the influence exerted by gender, some studies have shown differing rates of participation by men and women, although Wilkens/Leber (2003: 335, 336) are unable to identify any significant effects for gender as a determining factor. Notwithstanding this, gender specific differences in benefits obtainable from participating in continuing training appear to be present. Whereas men tend to achieve continuing training related income returns in the form of inner-company mobility, women are more likely to achieve such benefits by moving to another company (Becker/Schönmann 1999).

In overall terms, existing investigations show that participation in continuing training by both companies and individuals is influenced by a range of factors. Structural factors such as company size and socio-demographic features like skills level both exert an influence on individual continuing training participation. The various studies thus provide confirmation of the so-called "Matthew effect" ("For unto every one that hath shall be given …" from the Book of Matthew; cf. Merton 1985; Düll/Bellmann 1998; Bellmann/Leber 2003b), those who have already achieved a higher level of formal education qualifications and enjoy a wide degree of access to company continuing training by dint of their occupational status being the principal participants in continuing training (Wilkens/Leber 2003; Loeber 1996 et al.). The first point here is that those who have already pursued continuing training constitute the main group of persons engaging in continuing training, thus reinforcing the differences arising from preceding educational processes. Secondly, those who enjoy greater ease of access to continuing training, such as via their company or by dint of the fact that they are involved in a continuing training intensive occupational activity, are the very people who participate in such training.

Existing research findings have been unable to throw full light on the significance to be accorded to gender in respect of the differences in continuing training participation. Another question to be posed within this context would be the possible underlying reasons for the differences in participation rates between men and women.

Although the analyses which have been conducted on continuing training participation have produced important findings on the significance of individual factors, the current status is insufficient to enable the pursuit of continuing training research which aspires to lay the foundations for the development of educational strategies to influence or promote continuing training participation. Both the determination of possible causal factors and the identification of groups differing in respect of the commitment they display towards continuing training and described in terms of combinations of characteristics would be required for this to take place. The question may be posed here whether delimitable groups in terms of low or high continuing training participation, towards which continuing training support could be aligned, actually exist. One example of such a group formation is the differentiation of "social milieus", derived from variables relating to living conditions and attitudes towards life and used to explain continuing training participation. A further aim should be to use this research approach as a vehicle for the refinement of the main preferences of providers of continuing training (Barz/Tippelt 2004; Tippelt 2006; Tippelt/Hippel 2005), although in terms of its suitability as a foundation for general ways of providing support adopting such an approach gives rise to the problem of the identifiability of the relevant constructs within educational policy practice.

2.2 Research approach and theoretical pre-considerations

The results of existing investigations to which reference has hitherto been made make it clear that a series of characteristics has exerted a direct influence on participation in company continuing training. The aim of the present paper is to deepen the state of knowledge of factors affecting individual commitment to continuing training. Information will be included both on the continuing training participation of individuals and on the readiness of these individuals to invest in such training (in the form of costs borne themselves and free time spent).

Existing investigative results on continuing training participation have often produced a lack of clarity in terms of the decisive effect of individual characteristics (Schemmann 2006: 28). Observing combinations of characteristics or groups of persons may lead to a better understanding of the differing levels of individual continuing training commitment. The influence exercised by age could, for example, vary according to the level of educational qualification held by the person in question. The combination of gender and educational status may also be of differing significance to individual continuing training commitment in each respective case. The main hypothesis forming the basis of the present paper is that commitment to continuing training is materially affected by the conditions under which individuals carry out their occupational activities. The following will refer to these conditions collectively as "work-life situation".

Relations to life situation terminology and such concepts as "social condition" or "life condition" are present here (Hadril 2005: 36–46 and 362–376; Barz/Tippelt 2005). Life situation studies (such as that conducted by Voges et al. 2003) take place within the context of addressing forms of social inequality. As well as merely describing the diversity of life conditions, such an approach may also be used as a vehicle for explaining social behaviour. Notwithstanding the frequent use of the term in socio-scientific studies, no clear and generally recognised definition exists (cf. Voges et al. 2003: 37). Otto Neurath (working before the Second World War) and Gerhard Weisser (post-war) played a particular part in drawing up the basic theoretical principles (cf. Voges et al. 2003: 37 ff.). The life condition approach came to especial prominence as a result of the work of Wolfgang Zapf (1984). At a European level, a concept for a system of social indicators has recently been drawn up (Noll 2002). What these differing approaches have in common in the way they characterise life situation or life condition is the emphasis placed on multi-dimensionalism and the linking of individual characteristics to form specific constellations. Complexes which constitute particular focuses of life situation studies are income, gainful employment, education, lifestyle and health, these being investigated in conjunction with such individual characteristics as age and gender (cf. Voges et al. 2003: 31).

The intention is for the work-life situation to comprise the element of the life situation which may be allocated to the occupational sphere. Particularly relevant characteristics in this regard would be the nature of the occupational activity pursued, vocational skills and qualifications, employment status, income, company characteristics, workload and such socio-demographic features as gender and age. It is likely that clear differentiation of work-life situation and general life situation will not always be possible.

Work-life situation characteristics and their relevance to explaining the differing level of commitment to continuing training form the object of investigation of the present paper. The starting point of the analysis undertaken is the assumption that the work-life situation materially affects access to continuing training. Notwithstanding this, the mechanisms determining this correlation in individual terms have not been explicitly stipulated. The work-life situation may influence scopes of action as well as impacting on the deployment of resources for a range of alternative actions and on the perception, or in some cases the distorted perception, of social reality. To this extent, the work-life situation could act as an explanatory variable and be linked with various theoretical approaches relating to providing explanations for human behaviour. The object of the present paper is the empirical question of the correlation between relevant characteristics and commitment to continuing training.

The available data records[7] contain a broad section of individual and company related characteristics relevant to the description of the work-life situation. An initial analytical step will, in line with the approach adopted by preceding investigations, observe the influence of individual characteristics within the work-life situation on individual commitment to continuing training. As well as independent variables in the form of continuing training participation, investments are also available for this purpose, something which has not been the case in studies hitherto conducted. In order to accord due consideration to the multi-dimensional character of the work-life situation, the aim is to conduct a second analysis to investigate whether

[7] The available variables will be described in more detail below.

individual characteristics can be combined to form specific constellations within the work-life situation relevant to continuing training behaviour. The objective is therefore to amalgamate persons displaying similar characteristics into groups and analyse these in respect of the commitment to continuing training they demonstrate.

Alongside the work-life situation, personal attitudes also influence readiness to participate in company continuing training. Evidence for this comes in such forms as the fact that non-participants frequently do not recognise any necessity for continuing training and adopt the assumption that the knowledge they possess is sufficient to enable them to carry out their work duties (Schröder/Schiel/Aust 2004: 63 ff.). To accord due consideration to this aspect, factors relating to *vocational orientation* were observed alongside the work-life situation, although as subjective characteristics these should be separated from the objective features of the work-life situation.

In overall terms, the analysis takes the following hypotheses as its starting point.

- Characteristics of the work-life situation exert an influence on the level of continuing training commitment of individuals.
- Combining various characteristics to form groups offers a route to providing explanations for differing levels of participation and investment in company continuing training which supplement or extend beyond the observation of individual characteristics.
- Vocational orientation provides independent assistance in explaining different continuing training behaviours.

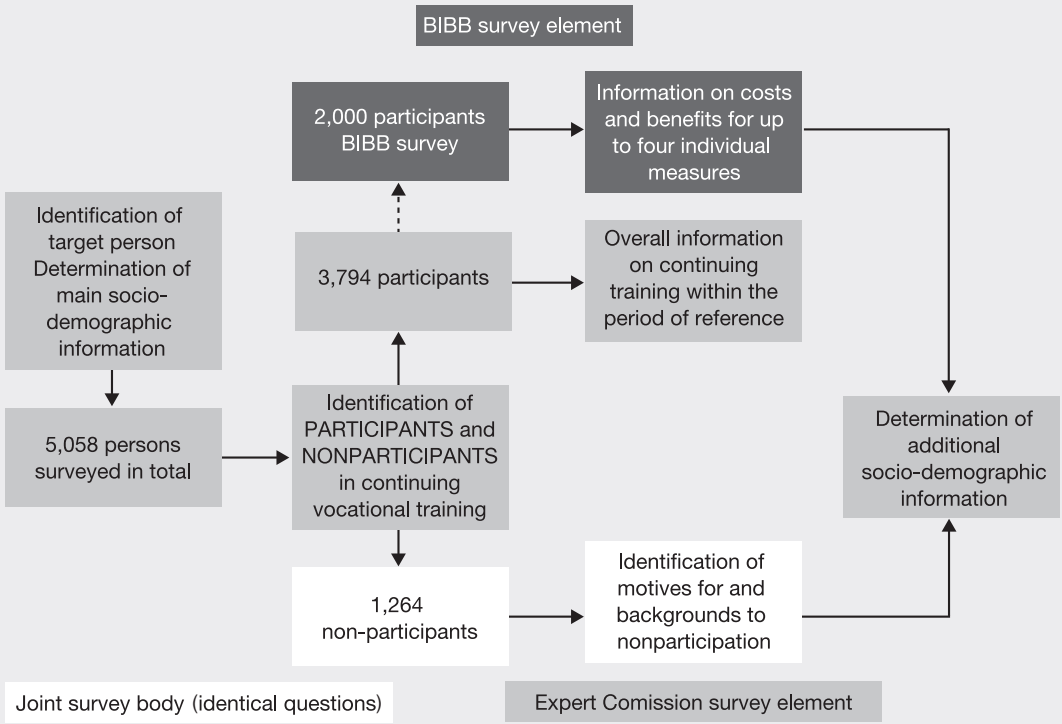
3 Database and analytical procedure

3.1 Database

The basis of the present analyses is the survey data of the Expert Commission on the Financing of Lifelong Learning on the "Reasons and motives of non-participation in company continuing training" (Schröder/Schiel/Aust 2004; Expert Commission on the Financing of Lifelong Learning 2004) and of the Federal Institute for Vocational Education and Training (BIBB) on "Costs and benefits of continuing training for individuals" (Beicht/Krekel/Walden 2006).

Although the Expert Commission and BIBB studies are independent investigations, they are both based on the same statistical population. A screening pro-

Figure 1
Empirical database on participation and non-participation in company continuing training



cess has been used to identify the relevant group of persons and align it to the circle of participants or non-participants.

Although separate designs were used to conduct the survey of the two groups, both were posed a series of questions on social and occupational alignment within the joint screening process. This made it possible to record both participants and non-participants simultaneously within a survey for the first time. The joint screening process involved interviews with more than 5,000 German speaking persons between the ages of 19 and 64 with close connections to employment. As well as those in work, the survey also included unemployed persons, persons undertaking advanced training and retraining and persons not in employment who intended to take up a job within the next two years.[8] Persons who had taken part in at least one of 13 stipulated types of continuing training[9] within the reference period (1 September 2001 to 31 August 2002, the period also covered by the Survey on Continuing Training 2002) were classified as participants, the remainder being deemed non-participants. Alignment to vocational continuing training took place on a self-assessment basis, the assumption being that individual persons were in the best position to judge whether a measure was of occupational relevance or pursued an occupational objective or not.

The Expert Commission conducted interviews with a total of 1,264 non-participants. 2,000 people took part in the BIBB survey, brief interviews with 792 non-participants also being available. The following analyses are based on the BIBB survey of participants and non-participants in continuing vocational training who were in employment at the time they were interviewed. Unemployed persons and the group of those persons who wished to re-enter employment within the following two years are not included in the following analyses, since they represent a special case, not least by dint of the differently structured public funding for the unemployed. The following analyses on the influence of the work-life situation and vocational orientation on continuing training commitment relates to employed persons (2,472 cases).

3.2 Analytical procedure

An initial description will be provided of the essential characteristics indicating the work-life situation with regard to the major indicators for participation in continuing vocational training (participation, costs borne by the participants themselves, amount of free time invested). This will be followed by the presentation of the results of a factor analysis to determine the main dimensions of vocational orientation. For the purpose of analysing the significance of individual characteristics for participation in continuing vocational training, three regression analyses will be conducted on basic participation in continuing training, on costs borne by the trainees themselves and on the amount of free time invested. These will integrate all the variables also included in the descriptive analysis. Consideration will be accorded both to the variables relating to the work-life situation and the factor values in respect of the essential characteristics governing the attitudinal dimensions.

Finally, a cluster analysis will be conducted to form homogeneous groups via the individual characteristics, thus enabling an investigation which work-life situation characteristics may be combined to provide a description of various types. The results will be presented and differences in the continuing training commitment and in the vocational orientation of individual groups will be elaborated.

This will be followed by a discussion on whether and which additional findings could be gathered via the cluster analysis procedure.

4 Empirical results

4.1 Descriptive results: data on the work-life situation and on individual continuing training commitment

The following characteristics, surveyed within the scope of the BIBB study, may be included in the description of the work-life situation: gender, age, employment status, school qualification, vocational qualification, occupational activity, personal income and size of company. These characteristics provide indications of individual determining factors or work-life situations, these in turn exerting a potential influence on continuing training commitment.

[8] The representative surveys were conducted by infas, the Institute for Applied Social Sciences in Bonn.

[9] The following types of continuing training were stipulated: congresses, conferences, specialist trade fairs; courses a participant's own company and at manufacturers; courses in an institute of continuing training; self organised continuing training using text books, specialist literature; company support measures; organised induction training, instruction at the workplace; self organised continuing training using computers; continuing training in the academic research sector; vocational orientation measures; training at a trade and technical school; company exchange schemes; distance learning courses; self organised continuing training using television, radio, video.

Socio-demographic, educational and company related characteristics are all included.

With regard to the definition of *individual continuing training commitment*, three variables are included: participation in continuing vocational training in 2002 and expenditure on continuing vocational training comprising the average costs borne by the trainees themselves and average amount of free time invested.[10]

According to the available results, 68 % of the population with close connections to employment took part in continuing training in 2002,[11] spending an average of € 502 of their own money. Extrapolating this figure across Germany means that a total of around € 13.8 billion was invested by private persons in their own continuing vocational training (cf. Beicht/Krekel/Walden 2006). Table 1 shows that there is a considerable difference in continuing training commitment between persons displaying different socio-demographic characteristics.[12] In 2002, employed men took part in continuing training significantly more frequently than women in employment, the figures being 74 % and 64 % respectively.

Participation according to educational qualifications evinces even greater differences. 87 % of persons with a higher level formal school leaving qualification had attended a continuing training scheme, more than 30 % percentage points more than was the case for those with a lower level school leaving certificate (lower secondary school, completion of class 8 of the Polytechnic Secondary School of the former East Germany: 56 %). Vocational qualifications and occupational activity also displayed greater effects.

The analysis of the expenditure of time and money on continuing vocational training produces a similar picture. Persons in possession of the university entrance qualification or University of Applied Sciences entrance qualification invest more in their continuing vocational training than persons with a lower secondary school leaving certificate, persons with a higher education qualification more than persons who have completed in-company vocational education and training and persons in management positions more than persons performing an operative role.[13] Those with university entrance qualification invested a total of € 595 (including participants and non-participants) and € 705 (taking only participants into account), the corresponding figures for those in possession of a lower secondary school leaving certificate being € 178 and € 333 respectively. Although full-time employees invested more than those in part-time work, the difference is significantly lower if only participants are taken into account and persons employed in small companies (especially those with between 1 and 10 employees) paid considerably more for their continuing vocational training than those working for large companies.

Consideration of expenditure of time reduces these differences slightly. Persons in possession of the university entrance qualification spend an average of 123 hours of their free time pursuing continuing vocational training, 146 hours if only participants are included. Although those with the intermediate secondary school leaving certificate spend a total of only 83 hours of free time, this figure rises to 121 hours if only participants are considered. Those carrying out operative activities (142 hours) and those with a low income (147 hours) also invest a considerable proportion of their free time in continuing vocational training once they have taken the decision to participate.

These results indicate firstly that there is a significant correlation between individual socio-demographic characteristics and participation in continuing vocational training and secondly that people show a high degree of motivation to invest money and free time in their only continuing vocational training.

---

[10] Computer aided telephone interviews (CATI) were used to collect data (for more information on the survey concept see Beicht/Krekel/Walden 2006). In order to survey characteristics relating to the work-life situation, interviewee responses were allocated to relevant categories or categories were pre-stipulated. Both the continuing training participation results and the results for costs and free time invested relate to the period of investigation (1 September 2001 to 31 August 2002). The procedure involved recording total costs and free time invested and subsequently apportioning these across the period of investigation and the contribution made by trainees themselves (funding from employers or the Federal Employment Agency was, for example, taken into consideration).

[11] This figure is significantly above the level stated in such studies as the Continuing Training Reporting System IX (Federal Ministry of Education and Research 2006: 38–42). The reasons for this are firstly the broader definition of continuing training used in the BIBB study (the continuing training quota used by the Continuing Training Reporting System being restricted only to formalised course and instruction based continuing training) and secondly the targeted inclusion only of persons with a close connection to employment. See also Chapter 2.1 and footnote 5.

[12] In the interests of greater legibility, only whole percentages will be stated in the text, although the table will include decimal places.

[13] The reason for the high values for freelance or self-employed workers is the fact that such persons normally need to finance the whole of their continuing vocational training themselves.

Table 1

Participation in and individual expenditure on continuing vocational training

Characteristics	Participation[1] 2002 in percent	Average costs borne by trainees themselves in Euro[2]		Average amount of free time invested[2] in hours	
		Only participants	All	Only participants	All
Age					
Under 25 years	68.4	257	154	86	79
25 to 34 years	72.0	574	400	106	106
35 to 44 years	71.4	461	316	80	89
45 to 54 years	67.6	399	261	63	77
55 to 64 years	65.3	680	415	48	51
Gender					
Male	74.1	560	402	86	94
Female	64.3	384	231	74	77
Employment status[3]					
Full-time employed	73.5	524	370	109	77
Part-time employed	63.0	303	171	163	92
Small proportion of a full-time equivalent position	40.3	503	210	213	89
Highest school qualification					
University or University of Applied Sciences entrance qualification/Extended Secondary School of the former East Germany	87.4	705	595	146	123
Intermediate secondary school leaving certificate, completion of class 10 of the Polytechnic Secondary School of the former East Germany	72.0	408	279	121	83
Lower secondary school, completion of class 8 of the Polytechnic Secondary School of the former East Germany or lower	55.6	333	178	91	48
Special school, other	43.6	331	107	65	21
Highest vocational qualification					
Higher education degree	91.5	705	633	127	114
Advanced vocational education (Meister, Techniker, Fachwirte)	84.1	627	529	147	124
Apprenticeship (dual training)	63.3	360	213	101	60
Vocational school qualification	72.9	514	356	147	102
No vocational qualification	41.1	287	117	155	63
Occupational activity					
Operative activity	45.3	258	106	142	58
Skilled activity	73.7	336	239	93	66
Management activity	87.7	443	374	127	108
Self-employed, freelancer	81.6	1,368	1,090	145	116
Personal income					
Up to € 1,500	41.4	291	133	147	66
€ 1,500 to € 2,499	61.2	527	361	138	96
€ 2,500 to € 4,999	74.0	552	450	97	80
€ 5.000 and above	88.4	1,319	1,169	145	128
Company size					
1 to 10 employees	50.9	868	554	106	67
11 to 50 employees	48.6	487	305	154	96
51 to 500 employees	53.3	352	233	107	71
More than 500 employees	66.3	375	281	116	87
Average (only employed persons)	**69.8**	**491**	**327**	**121**	**81**
Overall average	**68.0**	**502**	**325**	**133**	**86**

[1] Whole dataset. [2] BIBB dataset. [3] At the time the interview took place.

Table 2
Factor analysis of occupational and life goals

Variables	Factor 1	Factor 2	Factor 3
Factor 1: Career and advancement orientation			
Definitely pursue a career	.766		
Make full use of my abilities	.522		
Achieve a high income	.623		
Above-average occupational achievement	.718		
Take on a leadership role	.735		
Factor 2: Family and private orientation			
Take care of family, partnership or children		.700	
Enjoy sufficient time for personal interests and leisure, enjoy life		.676	
Have a secure job		.620	
Factor 3: Personal development/social commitment			
Develop myself further as a person			.594
Become involved socially, in voluntary work or politically			.705

Scale 1 = very strongly ... 4 = not at all.
KMO = .77 / extraction method: main component analysis.
Rotation method: Varimax with Kaiser standardisation.

4.2 Dimensions of vocational orientation

Alongside the characteristics relating to the description of the work-life situation, ten questions were posed on occupational and life goals.[14] A factor analysis was used to compact these to three factors (cf. Table 2). *Career and advancement orientation* is represented by five items, the aims being strong alignment to an occupational career, occupational performance and a high income. The three items under *family and private orientation* represent an alignment towards family and partnership. The factor of *personal development/social commitment* is based on two items.

The three vocational orientation factors are included in the further analyses together with the objective factors relating to the work-life situation and subjective estimations.

4.3 Regression analyses on continuing training commitment

Participation in continuing training

A logistic regression model was estimated. Significant values in relation to participation in continuing training are produced for a series of the variables included, the direction of the respective influences generally following the descriptive differentiations (cf. Table 3).

No significant influences were present for age and gender, although gender influence was at the limit of significance and displayed a positive coefficient for women. The reverse case was true for the descriptive representation, women displaying an overall level of continuing training participation around ten percentage points lower than men. The results of the regression analysis suggest that this is due to other factors.

School qualifications produce the expected influence. Participation in continuing training by lower secondary school leavers is significantly lower. The correlation between continuing training and qualification is also in evidence with regard to vocational qualifications, the higher the level attained in the latter the greater the participation in continuing training tends to be. This also corresponds with the coefficients for the various categories relating to occupational activity. Participation in continuing training increases in line with the level of vocational qualification achieved.

Employment status and the size of the company providing employment also have a significance on the decision to pursue continuing training, those in full-time employment mainly tending to participate in continuing vocational training, the larger a company, the greater the probability that an employee will take part in continuing training.

[14] The question was: "To which extent do you personally pursue life and occupational goals?" (1 = very strongly … 4 = not at all); cf. Table 2.

Table 3

Regression estimates for continuing training participation, costs borne by trainees themselves and investment of free time

	Continuing training participation (1)		**Continuing training costs** (2)		**Investment of free time** (3)	
	e^b	t-value	b	t-value	b	t-value
Constant	6.866*	2.509	1319.983	1.824	148.728	1.732
Age						
Under 25 years	1.123	.433	–446.831	–1.461	–20.714	–.626
35 to 44 years	1.172	1.073	–344.111*	–2.360	–31.679	–1.897
45 to 54 years	1.066	.395	–421.746**	–2.644	–45.966*	–2.520
55 to 64 years	0.780	–1.162	–342.206	–1.625	–77.527**	–3.186
No age stated	1.353	.440	93.287	.150	47.354	.635
Gender						
Female	1.278	1.825	68.604	.528	–12.610	–.850
Employment status						
Full-time	1.674*	1.923	–329.122	–1.051	–38.360	–1.062
Part-time	1.330	1.053	–204.643	–.639	9.279	.253
School qualification						
Special school	0.767	–.518	–309.882	–.498	–25.493	–.383
Lower secondary	0.578**	–3.127	–738.419**	–4.087	–83.037**	–4.115
Intermediate secondary	0.778	–1.581	–427.655**	–2.875	–30.928	–1.822
Highest vocational qualification						
No qualification	0.312**	–3.863	–865.171**	–2.600	–32.041	–.884
Vocational school qualification	0.535**	–2.791	–255.536	–1.304	–13.335	–.591
Apprenticeship	0.380**	–4.979	–501.842**	–3.076	–29.338	–1.568
Advanced vocational education	0.887	–.410	9.528	.042	40.248	1.548
Occupational activity						
Operative activity	0.373**	–4.151	–1776.601**	–6.771	–90.757**	–3.054
Skilled activity	0.889	–.564	–1402.589**	–7.080	–59.569*	–2.524
Management activity	1.115	.517	–1343.512**	–7.135	–20.541	–.908
Personal income						
Up to € 1,500	0.545**	–4.285	–528.637**	–3.547	–56.879**	–3.368
€ 2,500 to € 4,999	1.032	.181	–58.943	–.385	–29.132	–1.670
€ 5,000 and above	1.660	1.294	577.803*	2.300	18.772	.628
No income stated	0.545**	–3.021	–473.852*	–2.224	–44.666	–1.888
Company size						
1 to 10 employees	0.498**	–4.071	241.418	1.364	–48.115*	–2.377
11 to 50 employees	0.601**	–3.241	342.100*	2.195	–2.755	–.156
51 to 500 employees	0.730*	–2.142	101.865	.720	–17.687	–1.125
No company size stated	0.345**	–3.393	–44.862	–.123	–28.214	–.695
Attitudinal dimensions						
Career and advancement orientation	1.296**	4.360	283.428**	4.687	46.807**	6.832
Family, private orientation	0.933	–1.216	–166.196**	–3.009	–20.746**	–3.294
Social commitment, personal development	1.702**	8.716	378.831**	6.459	54.867**	8.204

** $p \leq 0,05$ ** $p \leq 0,01$*

(1) Logit model: Pseudo-R^2 (McFadden) = 0.19 (2) Tobit model: Pseudo-R^2 (McFadden) = 0.05 (3) Tobit model: Pseudo-R^2 (McFadden) = 0.04
Reference groups: age group 25 to 34 years, men, small proportion of a full-time equivalent position, university entrance qualification, higher education degree, self-employed, personal income € 1,500 to € 2,499, company size over 500 employees.

With regard to income, persons with a very low level of personal income display significantly lower continuing training participation, although in contrast to the descriptive observation the middle class and higher classes of income no longer show any significant deviations. The clear descriptive differences in

the continuing training rates between the middle class and higher classes of income may be due to other characteristics remaining constant in the regression analysis.

Alongside the characteristics included for the description of the work-life situation, the attitudinal variables taken are also shown to exert clear influences on continuing training participation. This applies especially in respect of social commitment or with regard to persons who wish to pursue further development. The more marked the relevant attitude the greater the level of continuing training participation. A clear positive effect is also demonstrated for career and advancement orientation, although the available results show that the extent of family and private orientation do not exert any influence on continuing training participation.

Amount of the continuing training costs borne by the trainees themselves

In terms of interpretation of the amount of the continuing training costs borne by the trainees themselves, consideration needs to be accorded to the fact that the amount of costs reflects individual commitment rather than being an indicator of absolute continuing training intensity. Depending on the amount of continuing training which is financed by the company providing employment, this individual commitment may be more or less necessary. To this extent, factors influencing the amount of continuing training costs borne by the trainees themselves may represent a corresponding influence on commitment at an individual level, although they may also indicate compensatory effects from the relevant company providing employment or reflect an individual's ability or readiness to pay.

Given the fact that continuing training costs for non-participants are virtually zero and that a lower limit has been applied to the variable in this regard, a Tobit model was estimated in respect of the amount of continuing training costs. A series of similar directional effects is shown for the variables included compared to the logistical regression for continuing training participation, although some differences are in evidence.

The first thing to be said is that gender, which was at the limit of significance in the observation of continuing training participation, does not exert any influence on the amount of continuing training costs. A series of significant differences in the amount of continuing training costs is shown for the various age groups, demonstrating a negative influence on continuing training costs above the over 35 age groups. The expected correlation is given in respect of school and vocational qualifications and with regard to activity carried out, continuing training costs rising in line with the level of vocational qualification.

In contrast to continuing training participation, the form of employment and the size of the company providing employment do not appear to have any significance for the amount of continuing training costs, although a positive significant value emerges for the employees of SME's (11 to 50 employees) compared to those working in large companies. The main likelihood is that this represents an indication of the fact that larger companies are more likely to bear the costs of continuing training for their employees than is the case with SME's. The reason for the non-significance of values relating to the form of employment is likely to be overlapping effects resulting from individual continuing training commitment and the level of commitment on the part of the company in respect of the various groups of employees. The higher level of continuing training participation by full-time employees thus seems to be more frequently financed by the company, whereas part-time employees and those working a small proportion of a full-time equivalent position have more frequent recourse to their own financial means if they take part in continuing training, although they show a lower level of continuing training participation.

The expected effects are demonstrated in respect of income, persons with a very low level of personal income expending lower levels of costs and those with a very high income spending more.

As is the case in continuing training participation, the attitudinal variables also demonstrate considerable significance for the amount of continuing training costs, higher continuing training costs being associated with a marked social orientation as well as a corresponding career and advancement attitude. High levels of family and private orientation, on the other hand, tend to result in lower continuing training costs.

Expenditure of free time

The interpretation of expenditure of free time produces a similar picture to the amount of costs borne by the trainees themselves, the compensation provided by the company also playing a role alongside individual commitment. A Tobit model was estimated for expenditure of free time in the same way as for continuing training costs. The analytical results demonstrate similarities with the continuing training costs in many areas, although the picture is not fully consistent.

Again, no significant difference for gender is shown in the expenditure of free time. The significance of qualification is less marked than is the case for the

continuing training costs. Significant values in the expected direction are only demonstrated for school qualifications and occupational activity, but not for vocational qualifications. Expenditure of free time tends to fall in the case of older persons (those aged 35 and above).

No significant effects are shown in respect of form of employment and the size of the company providing employment. Employees in small companies, who tend to display a lower level of expenditure of free time, constitute the only exception to this. As far as income is concerned, a significant negative effect on the level of expenditure of level time is only shown for those drawing a very low level of income.

The attitudinal variables produce similar results to those shown in the continuing training costs. Social commitment and a carer and advancement orientation have a positive significance for expenditure of free time. A marked family and private orientation is, on the other hand, associated with lower expenditure of free time.

In overall terms, the results of the regression analyses both confirm the findings of other investigations in respect of the influence exerted by such individual characteristics as vocational qualifications on individual participation in continuing vocational training whilst also showing that financial investments and expenditure of free time are also dependent on the characteristics of vocational qualification, the size of the company providing employment and the level of personal income. Notwithstanding this, differences contained within the descriptive representation (such as in respect of gender) are no longer visible in the regression analysis.

4.4 Formation of work-life situation clusters

The aim now is to supplement the observation of the influence of individual characteristics by combining these to form specific constellations. To this end, the objective is to create groups particularly typical to certain specificities of the characteristics or in which persons display a greater level of similarity with regard to individual characteristics than is the case in other groups. The cluster analysis is a recognised exploratory procedure for the grouping of cases in respect of the similarities they display (Backhaus/Erichson/Plinke/Weiber 2006: 489 ff.). In the following cluster analysis, the eight characteristics relating to the work-life situation (Table 1) will be used to form relevant groups. Compared to procedures previously used, the TwoStep cluster analysis provided by SPSS from Version 11.5 onwards (SPSS 2001) offers a process largely suitable for data records with high levels of case study figures, takes categorial data into account and enables the automatic determination of the number of clusters. The first step ("pre-cluster") involves the initial structuring of cases and the formation of a large number of sub-clusters. In the second stage ("group"), a step-by-step process is undertaken via which the sub-clusters are combined to form cluster solutions. The maximum number of clusters is determined via the BIC values, the optimum number of clusters being produced by the maximum ratio of distance measures. The highest value of the ratio of distance measures was achieved for a three-cluster solution, meaning that this may be viewed as the optimum model. For the evaluation criteria used, please see Table 4.[15]

The clusters identified display the following typical characteristics (Table 5):

[15] Since this procedure reacts sensitively to the order of cases within the data record, cases were subjected to multiple random sorting and several solutions were calculated. All calculations resulted in the identification of a model featuring three clusters as the optimum solution. Cross-validation was also used to check the extent of correlation between the solutions which had been identified and to align the cases equally to the individual clusters. The following analysis is based on a total of around 2,400 cases of participants and non-participants. Due to missing values, the cluster analysis was calculated on the basis of 2,154 cases.

Table 4
Evaluation criteria for determination of the number of clusters

Number of clusters	Schwarz's Bayesian Criterion (BIC)	BIC change	Ratio of BIC changes	Ratio of distance measures
1	38737.053			
2	35356.298	–3380.755	1.000	1.548
3	33234.824	–2121.475	.628	1.776
4	32117.559	–1117.264	.330	1.464
5	31410.074	–707.485	.209	1.150
6	30817.653	–592.421	.175	1.082

Table 5

TwoStep cluster analysis of socio-demographical characteristics of participating and non-participating employed persons

Characteristics	Cluster 1 N = 822		Cluster 2 N = 474		Cluster 3 N = 858		Total N = 2,154	
	Lines %	Columns %	Lines %	Columns %	Lines %	Columns %	N	Columns %
Age								
Under 25 years	42.1	8.8	0.6	0.2	57.3	11.4	**171**	**7.9**
25 to 34 years	35.6	27.1	22.7	30.0	41.7	30.4	**626**	**29.1**
35 to 44 years	37.5	30.7	23.1	32.7	39.4	30.9	**672**	**31.2**
45 to 54 years	39.8	21.9	23.5	22.4	36.7	19.8	**452**	**21.0**
55 to 64 years	40.8	11.6	30.0	14.8	29.2	7.9	**233**	**10.8**
Gender								
Male	1.9	2.9	30.2	79.3	67.9	98.3	**1,243**	**57.7**
Female	87.6	97.1	10.7	20.7	1.6	1.7	**912**	**42.3**
Employment status[1]								
Full-time employed	22.3	45.3	27.3	96.6	50.4	98.3	**1,673**	**77.7**
Part-time employed	95.3	41.4	3.9	3.0	0.8	0.3	**358**	**16.6**
Small proportion of a full-time equivalent position	88.6	13.2	1.6	0.4	9.8	1.4	**123**	**5.7**
Highest school qualification								
University or University of Applied Sciences entrance qualification/Extended Secondary School of the former East Germany	27.5	20.1	64.4	81.8	8.2	5.7	**601**	**27.9**
Intermediate secondary school leaving certificate, completion of class 10 of the Polytechnic Secondary School of the former East Germany	45.9	42.1	7.3	11.6	46.8	41.1	**754**	**35.0**
Lower secondary school, completion of class 8 of the Polytechnic Secondary School of the former East Germany or lower	39.6	36.4	3.7	5.9	56.7	50.0	**756**	**35.1**
Special school, other	28.6	1.5	7.1	0.6	64.3	3.1	**42**	**2.0**
Highest vocational qualification								
Higher education degree	19.0	9.5	75.6	65.4	5.4	2.6	**410**	**19.0**
Advanced vocational education (Meister, Techniker, Fachwirte)	8.4	1.6	34.4	11.2	57.1	10.3	**154**	**7.2**
Apprenticeship (dual training)	40.4	56.4	6.5	15.6	53.1	70.9	**1.145**	**53.2**
Vocational school qualification	62.8	22.2	9.3	5.7	27.9	9.4	**290**	**13.5**
No vocational qualification	55.2	10.4	6.5	2.1	38.3	6.9	**154**	**7.2**
Occupational activity								
Operative activity	60.5	43.2	2.6	3.2	37.0	25.3	**587**	**27.3**
Skilled activity	34.5	35.8	10.2	18.4	55.3	55.0	**853**	**39.6**
Management activity	25.8	15.8	46.5	49.5	27.6	16.2	**503**	**23.4**
Self-employed, freelancer	20.5	5.2	65.2	29.0	14.3	3.5	**210**	**9.8**
Personal income								
Up to € 1,500	69.5	74.5	3.4	6.3	27.1	27.9	**882**	**40.9**
€ 1,500 to € 2,499	24.4	22.7	19.5	31.5	56.1	50.1	**766**	**35.6**
€ 2,500 to € 4,999	4.8	2.3	51.6	43.3	43.6	20.2	**397**	**18.4**
€ 5.000 and above	3.7	0.5	81.7	18.8	14.7	1.9	**109**	**5.1**
Company size								
1 to 10 employees	47.2	25.1	29.8	27.4	22.9	11.7	**436**	**20.2**
11 to 50 employees	42.2	22.1	18.6	16.9	39.2	19.7	**431**	**20.0**
51 to 500 employees	37.7	24.7	16.7	19.0	45.6	28.7	**539**	**25.0**
More than 500 employees	30.9	28.1	23.3	36.7	45.9	40.0	**748**	**34.7**

[1] *At the time the interview took place.*

Cluster 1: Full-time and part-time employed women tending to have a low income

The first cluster contains around 95 % of all those in part-time employment and almost 70 % of those with a personal income of under € 1,500. In addition, 88 % of women are included here. The disproportionately large alignment of female employees (97 %) and of persons with a low income (75 %) is also clear in the internal distribution of the first cluster, which also encompasses 89 % of those working a small proportion of a full-time equivalent position, although the low proportion of the last-named group in overall terms means it constitutes only 13 % of persons within this cluster.[16] Not such a clear profile is discernable as far as age structure and school education are concerned, however, persons in possession of the university entrance qualification, intermediate secondary school leaving certificate and lower secondly school leaving certificate being equally represented. In terms of the highest level of vocational qualification achieved, most have completed in-company vocational education and training.

Cluster 2: Men in full-time employment with a high level of qualification

Nearly all persons within this cluster are in full-time employment, more than half being in possession of university entrance qualification or an higher education degree, and 43 % have a personal income of € 2,500 or more. 50 % are in a management position, and 79 % of persons represented here are men, constituting 30 % of the total number of men.

Cluster 3: Men in full-time employment with a middle level of qualification

A further 68 % of men are included within Cluster 3 and represent 98 % of all persons in the cluster. The proportion of those within Cluster 3 who are in full-time employment is also 98 %. Compared to Cluster 2, however, persons with a middle level of qualification tend to be represented here. Most hold the intermediate secondary school leaving certificate or lower secondary school leaving certificate (including completion of class 8 of the Polytechnic Secondary School of the former East Germany), have completed in-company training, carry out a qualified activity and have a personal monthly income of between € 1,500 and € 2,499.

4.5 Continuing training commitment within the three clusters

An analysis of continuing training participation according to clusters produces considerable differences (cf. Table 6). The highest level of participation is in Cluster 2 at 90 %, the participation rate in Clusters 1 and 3 being significantly lower at 60 % and 65 % respectively. The high rate of participation in Cluster 2 shows that particularly men in full-time employment with a high level of qualification frequently took part in continuing vocational training during the year 2002.

They were the main beneficiaries of company training provision. 66 % of this cluster had participated exclusively in company continuing training, only 7 % taking part in privately organised continuing training and 17 % having pursued both company and privately organised continuing training.[17]

Cluster 1, principally represented by full-time and part-time employed women tending to have a low income, shows a significantly lower level of company continuing training participation (40 %), although this cluster also achieves the highest level, 13 %, for privately organised continuing training. The lower level of participation in overall terms may be due to lack of access to company continuing training, since the level of private commitment is as high if not even higher than that displayed by the other groups.

Persons in Cluster 2 bear the highest levels of costs themselves, paying € 699 on average, although 20 % have very high costs (defined as € 870 and upwards) and 37 % have no costs.[18] Average costs borne by

[16] Both column and line percentages are included in the description of the cluster, the line percentages providing information as to the extent of the proportion of persons within the respective cluster evincing the relevant characteristics. The column percentages, on the other hand, indicate distribution within a cluster. The clusters were formed with unweighted data, weighted data being used for the description.

[17] The differentiation between company continuing training and privately organised continuing training depends on such factors as the financing of the schemes, the venue of the continuing training and the amount of free or working time invested (Beicht/Krekel/Walden 2006: 78 ff.).

[18] The percentages stated refer to both participants and non-participants, meaning that of the persons in Cluster 2 37 % (of participants and non-participants) had no costs and 20 % had very high costs (taking only participants into consideration would result in a figure of around 31 %). For the categorisation of expenditure (costs borne by the trainees themselves and free time invested), the relevant information (in respect of participants only) was divided into quartiles. For costs borne by the trainees themselves, the classification was as follows: very low (up to € 80), low (€ 81 – € 250), high (€ 251 – € 870), very high (over € 870).The classification produced for free time invested was: very low (up to 14 hours), low (15 – 45 hours), high (46 – 135 hours), very high (over 135 hours).

Table 6
Continuing training commitment according to clusters of participating and non-participating employed persons

	Cluster 1	Cluster 2	Cluster 3	Total
Participation	**60 %**	**90 %**	**65 %**	**69 %**
Only in-company	40 %	66 %	50 %	**50 %**
Only privately organised	13 %	7 %	9 %	**10 %**
Both	7 %	17 %	6 %	**9 %**
Non-participation	**40 %**	**10 %**	**35 %**	**31 %**
Costs borne by trainees themselves				
No costs	70 %	37 %	73 %	**64 %**
Very low	9 %	14 %	7 %	**9 %**
Low	9 %	14 %	6 %	**9 %**
High	6 %	16 %	7 %	**9 %**
Very high	6 %	20 %	6 %	**9 %**
Average costs				
Total	€ 178	€ 699	€ 260	**€ 326**
Only participants	€ 297	€ 774	€ 402	**€ 474**
Leisure time invested				
No expenditure of time	47 %	15 %	43 %	**38 %**
Very low	16 %	16 %	18 %	**17 %**
Low	13 %	21 %	13 %	**15 %**
High	11 %	24 %	15 %	**16 %**
Very high	13 %	23 %	11 %	**14 %**
Average amount of leisure time invested				
Total	78 hours	112 hours	68 hours	**82 hours**
Only participants	130 hours	124 hours	104 hours	**119 hours**

trainees themselves in Clusters 2 and 3 are significantly lower, the proportion of those with no costs being in turn significantly greater.

In respect of free time invested, participants from Cluster 1 and Cluster 2 spend virtually the same number of hours, although the overall proportion of those investing no free time (including both participants and non-participants) is 47 % in Cluster 1, around three times higher than in Cluster 2 (15 %).

4.6 Vocational orientation within the three clusters

Career and advancement orientations also show considerable differences between the clusters (cf. Table 7). In line with expectations, persons from Clusters 2 and 3 (men with a medium or high level of qualification), demonstrate a high level of career and advancement orientation.

In comparison to this, the career and advancement orientation in Cluster 1 is significantly less marked, only 40 % showing a high to very high career and advancement orientation (Cluster 2: 61 %).

The level of family and private orientation is particularly low in Cluster 2, meaning amongst men mostly in full-time employment and with a high level of qualification.

5 Discussion and conclusions

In terms of the influence exerted by various personal characteristics on commitment to continuing training, the essential aspects of the two analytical

Table 7
Dimensions of occupational and career orientation according to clusters

	Cluster 1 in %	Cluster 2 in %	Cluster 3 in %	Average costs in Euro		Average amount of free time in hours	
				Only Participants	All	Only Participants	All
Career and advancement orientation							
Very high	19.9	29.7	28.2	626	459	151	111
High	20.9	31.2	25.2	561	418	125	93
Low	24.1	23.5	26.5	314	208	105	69
Very low	35.1	15.6	20.2	422	229	88	48
Family, private orientation							
Very high	28.2	12.7	27.7	289	177	114	70
High	26.1	22.1	25.1	398	266	110	73
Low	25.7	24.5	26.4	408	283	89	62
Very low	19.9	40.7	20.9	829	588	164	116
Social commitment/ personal development							
Very high	25.2	35.1	20.2	657	551	143	120
High	25.4	22.8	25.1	360	254	110	78
Low	25.1	25.0	26.4	496	339	126	86
Very low	24.3	17.1	28.4	372	171	82	38
	100	**100**	**100**	**489**	**329**	**120**	**80**

procedures, regression analysis and cluster analysis, produce similar results. Level of education and occupational status combined with the form of employment thus principally constitute the main factors influencing continuing training events. Irrespective of the objective factors related to the work-life situation, vocational orientation exerts a major influence on continuing training participation. The results of the regression analysis and cluster analysis demonstrate, however, a significant difference. Whereas no influence or only a very small influence could be derived for gender in the regression analysis,[19] women virtually formed their own cluster in the cluster analysis. The cluster analysis particularly combines women also demonstrating the characteristic of part-time employment to form a women's group, this characteristic, like gender, not having been significant in the regression analysis. This group differs considerably from the other groups in terms of the continuing training participation and continuing training commitment indicators. Gender does not play a role if individual characteristics are investigated whilst other characteristics are held constant, as in the regression analysis. Women do not, therefore, evince any different kind of continuing training behaviour as long as similar conditions apply in respect of other characteristics as apply to men. The empirical reality is, however, that women's and men's work-life situations differ. The cluster analysis thus directs attention to a group not previously identified in this form, making clear the particular nature of the work-life situation in respect of the analysis of continuing training behaviour. Women in particular are dependent on their own commitment and benefit to a lesser extent from company continuing training, the high proportion of part-time employment and personal levels of income which tend to be lower not being the least of the factors in providing them with unfavourable general conditions.

One analytical procedure is not, of course, the only way of mapping the aspect of the particular work-

[19] Wilkens/Leber (2003) were also unable to confirm the gender specific differences shown in other studies within the scope of their multi-variant analyses.

life situation of women and the significance of this for continuing vocational training. The relevant aspects could, in principle, also be included in a regression analysis via the formation of interactive variables. Nevertheless, the exploratory approach adopted by the cluster analysis, which features the grouping of persons on the basis of similar characteristics, is particularly helpful in reducing the complexity of social reality and identifying empirical groups. This renders the interplay of different characteristics or bundles of characteristics visible. To this extent, the groups thus formed provide starting points for policy or target oriented action. In specific terms, the issue of how participation in continuing training can be increased can be linked with the level of commitment within the individual groups, thus enabling a particular connection with the situation of women in part-time employment to be established.

In overall terms, the results of the analyses enable the deduction to be made that existing inequalities are reproduced in reference to participation in continuing training. Those with a better level of training have better opportunities compared to those who are less well trained, men have greater chances than women, persons with a high income enjoy more access than those with lower incomes and, not least, full-time jobs and higher occupational positions bring more in the way of continuing training, particularly company continuing training. Respective work-life situations exert a high degree of influence on continuing training commitment. Men in full-time employment with a high level of qualification both take part in continuing training on a more frequent basis and invest more in their own continuing vocational training. This is mostly associated with a certain level of career aspiration and (particular) access to company continuing training. Ongoing participation in continuing training appears to form an integral part of the daily working lives of this group.

Alongside the importance of education already acquired for participation in continuing training, however, it is also apparent that the degree of occupational integration provided by the nature of the employment relationship exerts a considerable influence on continuing training commitment, given the fact that mainly those in part-time employment (women) are less well integrated into company training processes and, irrespective of their level of educational attainment, participate in continuing training on a less frequent basis. Although women in particular consider the overall benefit of continuing training to be high (cf. Beicht 2005), they seem to find the hurdle separating them from continuing training participation to be especially difficult to surmount. The comparatively high degree of private commitment they display is unable to compensate for the disadvantages they encounter in company practice. A combination of financial and time restrictions and the permanent and sometimes excessive burden of coordinating the various areas of their lives (Ehrenberg 2004) means that women in particular (are not able to) show the same degree of continuing training activities. Practice hitherto leaves important potential untapped, simply because women first and foremost still bear the responsibility of combining career and family.

Although many studies have failed to show that gender is a significant individual characteristic, it has been possible to demonstrate that the work-life situation of women hampers their continuing training commitment, a lower level of qualification not constituting a sufficient reason in overall terms for their lower level of commitment to continuing vocational training. Continuing training support concepts, such as the training saving plans forming the focus of current attention, should accord particular consideration to the various occupational as well as social conditions under which people live their lives. This is ultimately the only way of fostering lifelong learning and occupational commitment on the part of different societal groups.

The present analyses have been able to identify groups exhibiting specific continuing training behaviours, for which it is, for example, possible to develop specific guidance or support programmes based on their life situation. One aspect requiring investigation would be the extent to which the group of women identified here would benefit from the proposed training saving model (cf. Rürup/Kohlmeier 2007; Dohmen/de Hesselle/Himpele 2007), another object for study being the degree of change occurring in men's continuing training behaviour if they focus more on childcare as a result of the new Parental Benefits Law. Limitations in the available data have, however, not rendered it possible to explore fully the benefit of an approach which integrates the life situation. Further research activities are required, particularly in connection with the more recent approaches adopted in respect of continuing training support.

Literature

Translations of the titles and publication details of German language literature are provided in *italics* in [square brackets]. These are intended merely as an indication of the contents of these works and the nature of the source.

Backes-Gellner, Uschi (2006): Betriebliche Weiterbildung in kleinen und mittleren Unternehmen. In: Bundesinsti-

tut für Berufsbildung (Hrsg.): Kosten, Nutzen, Finanzierung beruflicher Weiterbildung. Ergebnisse der BIBB-Fachtagung vom 2. und 3. Juni 2005 in Bonn. Bielefeld, S. 132–166.
[*Backes-Gellner, Uschi (2006): Company continuing training in small and medium-sized companies. In: Federal Institute for Vocational Education and Training (Ed.): Costs, benefits and financing of continuing vocational training. Results of the BIBB Conference of 2 and 3 June 2005 in Bonn. Bielefeld, pp. 132–166*]

Backes-Gellner, Uschi/Mure, Johannes/Tuor, Simone (in the present volume): The Puzzle of Non-Participation in Continuing Training – An Empirical Study of Chronic vs. Temporary Non-Participation.

Backhaus, Klaus/Erichson, Bernd/Plinke, Wulff/Weiber, Rolf (2006): Multivariate Analysemethoden. Eine anwendungsorientierte Einführung. Berlin, Heidelberg.
[*Backhaus, Klaus; Erichson, Bernd; Plinke, Wulff; Weiber, Rolf (2006): Multivariate analytical methods. An application oriented introduction. Berlin, Heidelberg*]

Baethge, Martin/Baethge-Kinsky, Volker (2002): Arbeit – die zweite Chance. Zum Verhältnis von Arbeitserfahrungen und lebenslangem Lernen. In: Arbeitsgemeinschaft betriebliche Weiterbildung e. V.: Kompetenzentwicklung 2002. Münster, S. 69–140.
[*Baethge, Martin; Baethge-Kinsky, Volker (2002): Work – the second opportunity. On the relationship between work experiences and lifelong learning. In: Working Group on company continuing training: Competence development 2002. Münster, pp. 69–140*]

Barz, Heiner/Tippelt, Rudolf (2005): Lebenswelt, Lebenslage, Lebensstil und Erwachsenenbildung. In: Tippelt, Rudolf (Hrsg.): Handbuch der Erwachsenenbildung/Weiterbildung. Wiesbaden (2. Auflage), S. 121–144.
[*Barz, Heiner; Tippelt, Rudolf (2005): Life world, life condition, lifestyle and adult education. In: Tippelt, Rudolf (Ed.): Handbook of adult education/continuing training. Wiesbaden (2*nd edition), pp. 121–144]

Barz, Heiner/Tippelt, Rudolf (Hrsg.) (2004): Weiterbildung und soziale Milieus in Deutschland. Band 1: Praxishandbuch Milieumarketing. Bielefeld.
[*Barz, Heiner; Tippelt, Rudolf (Eds.) (2004): Continuing training and social milieus in Germany. Volume 1: Practical handbook of milieu marketing. Bielefeld*]

Barz, Heiner/Tippelt, Rudolf (Hrsg.) (2004): Weiterbildung und soziale Milieus in Deutschland. Band 2: Adressaten- und Milieuforschung zu Weiterbildungsverhalten und -interessen.
[*Barz, Heiner; Tippelt, Rudolf (Eds.) (2004): Continuing training and social milieus in Germany. Volume 2: Target oriented and milieu research on continuing training behaviour and interests*]

Beck, Ulrich (1986): Risikogesellschaft. Auf dem Weg in eine andere Moderne. Frankfurt.
[*Beck, Ulrich (1986): The risk society. On the way to a new modernity. Frankfurt*]

Becker, Rolf/Schönmann, Klaus (1999): Berufliche Weiterbildung und Einkommenschance im Lebensverlauf: Empirische Befunde für Frauen und Männer in West- und Ostdeutschland. In: Beer, Doris; Frick, Bernd; Neubäumer, Renate; Sesselmeier, Werner (Hrsg.): Die wirtschaftlichen Folgen von Aus- und Weiterbildung. München und Mering.
[*Becker, Rolf; Schönmann, Klaus (1999): Continuing vocational training and income opportunity in the course of life: Empirical findings for women and men in West and East Germany. In: Beer, Doris; Frick, Bernd; Neubäumer, Renate; Sesselmeier, Werner (Eds.): The economic consequences of initial and continuing vocational education and training. Munich and Mering*]

Behringer, Friederike (1999): Beteiligung an beruflicher Weiterbildung. Humankapitaltheoretische und handlungstheoretische Erklärung und empirische Evidenz. Opladen.
[*Behringer, Friederike (1999): Participation in continuing vocational training. A human capital theory and action theory explanation and empirical evidence. Opladen*]

Beicht, Ursula (2005): Berufliche Weiterbildung von Frauen und Männern in Ost- und Westdeutschland. Bielefeld.
[*Beicht, Ursula (2005): Continuing vocational training of women and men in East and West Germany. Bielefeld*]

Beicht, Ursula/Krekel, Elisabeth M./Walden, Günter (2006): Berufliche Weiterbildung – Welche Kosten und welchen Nutzen haben die Teilnehmenden. Bielefeld.
[*Beicht, Ursula; Krekel, Elisabeth M.; Walden, Günter (2006): Continuing vocational training – what are the costs and benefits fro participants. Bielefeld*]

Beicht, Ursula/Schiel, Stefan/Timmermann, Dieter (2004): Berufliche Weiterbildung – Wie unterscheiden sich Teilnehmer und Nichtteilnehmer? In: Berufsbildung in Wissenschaft und Praxis, Heft 1, S. 5–10.
[*Beicht, Ursula; Schiel, Stefan; Timmermann, Dieter (2004): Continuing vocational training – How do participants and non-participants differ? In: Vocational Training in Research and Practice, a bi-monthly BIBB publication, Issue 1, pp. 5–10*]

Beicht, Ursula/Walden, Günter (2006): Individuelle Investitionen in berufliche Weiterbildung – Heutiger Stand und künftige Anforderungen. In: WSI Mitteilungen, Heft 6, S. 327–334.
[*Beicht, Ursula; Walden, Günter (2006): Individual investments in continuing vocational training – the current status and future requirements. In: "WSI Mitteilungen", the journal of the Institute of Economic and Social Research (WSI), Issue 6, pp. 327–334*]

Bellmann, Lutz (2003): Datenlage und Interpretation der Weiterbildung in Deutschland. Schriftenreihe der Expertenkommission Finanzierung Lebenslangen Lernens, Band 2. Bielefeld.
[*Bellmann, Lutz (2003): Data status and interpretation of continuing training in Germany. Expert Commission on the Financing of Lifelong Learning Reports, Volume 2. Bielefeld*]

Bellmann, Lutz/Leber, Ute (2005): Berufliche Weiterbildungsforschung: Datenlage, Forschungsfragen und aus-

gewählte Ergebnisse. In: Report: Literatur- und Forschungsreport. 28, Heft 2, S. 29–40.
[*Bellmann, Lutz; Leber, Ute (2005): Continuing vocational training research: Data status, research issues and selected results. In Report: Literature and Research Report Vol. 28, Issue 2, pp. 29–40*]

Bellmann, Lutz/Leber, Ute (2003a): Individuelles und betriebliches Engagement in der beruflichen Weiterbildung: empirische Ergebnisse auf der Basis verschiedener Befragungen. In: Berufsbildung in Wissenschaft und Praxis 32, Heft 3, S. 14–18.
[*Bellmann, Lutz; Leber, Ute (2003a): Individual and company commitment in continuing vocational training: empirical results on the basis of various surveys. In: Vocational Training in Research and Practice, a bi-monthly BIBB publication, Vol. 32, Issue 3, pp. 14–18*]

Bellmann, Lutz/Leber, Ute (2003b): Betriebliche Weiterbildung. Denn wer hat, dem wird gegeben. In: IAB-Materialien Nr. I.
[*Bellmann, Lutz; Leber, Ute (2003b): Company continuing training. For unto every one that hath shall be given. In: "IAB Materialien", a publication of the Institute for Employment Research (IAB), No. 1*]

Bolder, Axel/Hendrich, Wolfgang (2000): Fremde Bildungswelten. Alternative Strategien Lebenslangen Lernens. Opladen.
[*Bolder, Axel; Hendrich, Wolfgang (2000): Foreign educational worlds. Alternative strategies for lifelong learning. Opladen*]

Brüning, Gerhilde/Kuwan, Helmut (Hrsg.) (2002): Benachteiligte und Bildungsferne – Empfehlungen für die Weiterbildung. Bielefeld.
[*Brüning, Gerhilde; Kuwan, Helmut (Eds.) (2002): Disadvantaged persons and persons far removed from education – recommendations for continuing training. Bielefeld*]

Büchel, Felix/Pannenberg, Markus (2004): Berufliche Weiterbildung in West- und Ostdeutschland. Teilnehmer, Struktur und individueller Ertrag. In: Zeitschrift für ArbeitsmarktForschung. Heft 2, S. 73–126.
[*Büchel, Felix; Pannenberg, Markus (2004): Continuing vocational training in West and East Germany. Participants, structure and individual returns. In: Journal of Labour Market Research. Issue 2, pp. 73–126*]

Büchel, Felix/Pannenberg, Markus (2002): Berufliche Weiterbildung und Erwerbsstatus. Kap. 7.1. In: Statistisches Bundesamt: Datenreport 2002. Zahlen und Fakten über die Bundesrepublik Deutschland. In Zusammenarbeit mit WZB und ZUMA. Bonn, S. 483–493.
[*Büchel, Felix; Pannenberg, Markus (2002): Continuing vocational training and employment status. Chapter 7.1. In: Federal Statistical Office: Data Report 2002. Facts and figures on the Federal Republic of Germany. Produced in conjunction with the Social Science Research Centre in Berlin (WZB) and the Centre for Survey Research and Methodology (ZUMA). Bonn, pp. 483–493*]

Bundesministerium für Bildung und Forschung BMBF (Hrsg.) (2006): Berichtssystem Weiterbildung IX. Integrierter Gesamtbericht zur Weiterbildungssituation in Deutschland. Bonn, Berlin.
[*Federal Ministry of Education and Research (Ed.) (2006): Continuing Training Reporting System IX. Integrated overall report on the continuing training situation in Germany. Bonn, Berlin*]

Bundesministerium für Familie, Senioren, Frauen und Jugend (2005): Fünfter Bericht zur Lage der älteren Generation in der Bundesrepublik Deutschland. Potenziale des Alters in Wirtschaft und Gesellschaft. Der Beitrag älterer Menschen zum Zusammenhalt der Generationen. Bericht der Sachverständigenkommission. Berlin.
[*Federal Ministry for Family Affairs, Senior Citizens, Women and Youth (2005): Fifth report on the situation of the older generation in the Federal Republic of Germany. The potential of old age in the economy and society. The contribution of older people to the cohesion of the generations. Report of the Expert Commission. Berlin*]

Dohmen, Dieter/de Hesselle, Vera/Himpele, Klemens (2007): Analyse möglicher Modelle und Entwicklung eines konkreten Konzepts zum Bildungssparen. Hrsg. vom Bundesministerium für Bildung und Forschung. Bonn, Berlin.
[*Dohmen, Dieter; de Hesselle, Vera; Himpele, Klemens (2007): Analysis of possible models and development of a specific concept for training saving. Published by the Federal Ministry of Education and Research. Bonn, Berlin*]

Düll, Herbert/Bellmann, Lutz (1998): Betriebliche Weiterbildungsaktivitäten in West- und Ostdeutschland, in: MittAB 2, S. 205–225.
[*Düll, Herbert; Bellmann, Lutz (1998): Company continuing training activities in West and East Germany, in "MittAB", a labour market and occupational research journal, Issue 2, pp. 205–225*]

Ehrenberg, Alain (2004): Das erschöpfte Selbst. Depressionen und Gesellschaft in der Gegenwart. Frankfurt/New York.
[*Ehrenberg, Alain (2004): The exhausted self. Depressions and society in the present. Frankfurt/New York*]

Ellguth, Peter/Liebold, Renate/Trinczek, Rainer (1998): "Double Squeeze". Manager zwischen veränderten beruflichen und privaten Anforderungen. In: Kölner Zeitschrift für Soziologie und Sozialpsychologie 50, Heft 3, S. 517–535.
[*Ellguth, Peter; Liebold, Renate; Trinczek, Rainer (1998): "Double squeeze". Managers between changed occupational and private requirements. In: Cologne Journal of Sociology and Social Psychology. Vol. 50, Issue 3, pp. 517–535*]

Expertenkommission Finanzierung Lebenslangen Lernens (2002): Auf dem Weg zur Finanzierung Lebenslangen Lernens. Zwischenbericht. Schriftenreihe der Expertenkommission Finanzierung Lebenslangen Lernens, Band 1, Bielefeld.
[*Expert Commission on the Financing of Lifelong Learning (2002): On the way to financing lifelong learning. In-*

terim Report. Expert Commission on the Financing of Lifelong Learning Reports, Volume 1, Bielefeld]

Expertenkommission Finanzierung Lebenslangen Lernens (2004): Schlussbericht der unabhängigen Expertenkommission Finanzierung Lebenslangen Lernens: Der Weg in die Zukunft. 28. Juli 2004 (http://www.bmbf.de/pub/schlussbericht_kommission_lll.pdf).
[*Expert Commission on the Financing of Lifelong Learning (2004: Final Report of the Expert Commission on the Financing of Lifelong Learning: The Way into the future. 28 July 2004 (German language text available for download at* http://www.bmbf.de/pub/schlussbericht_kommission_lll.pdf]

Friebel, Harry (1996): Hemmende und fördernde Bedingungen der Weiterbildungsteilnahmeentscheidung – über "gatekeeping" und "support". In: Bardeleben, Richard von; Bolder, Axel; Heid, Helmut (Hrsg.): Kosten und Nutzen beruflicher Bildung. Zeitschrift für Berufs- und Wirtschaftspädagogik/Beihefte, Heft 12, Stuttgart, S. 14–21.
[*Friebel, Harry (1996): Inhibiting and supporting conditions for continuing training participation decisions – via "gate keeping" and "support". In: Bardeleben, Richard von; Bolder, Axel; Heid, Helmut (Eds.): Costs and benefits of vocational training. Journal of Vocational and Economic Education/Supplements, Issue 12, Stuttgart, pp. 14–21*]

Friebel, Harry (1993): Individuelle und institutionelle Akteure der Weiterbildung. In: Zeitschrift für Berufs- und Wirtschaftspädagogik 89. Band, Heft 5, S. 471–484.
[*Friebel, Harry (1993): Individual and institutional stakeholders in continuing training. In: Journal of Vocational and Economic Education Vol. 89, Issue 5, pp. 471–484*]

Grünwald, Uwe/Moraal, Dick (2002): Betriebliche Weiterbildung in Deutschland – fit für Europa? Ergebnisse der zweiten europäischen Weiterbildungserhebung. In: Berufsbildung in Wissenschaft und Praxis. 31, Heft 3, S. 18–23.
[*Grünwald, Uwe; Moraal, Dick (2002): Company continuing training in Germany – fit for Europe? Results of the Second European Continuing Training Survey. In: Vocational Training in Research and Practice, a bi-monthly BIBB publication, Vol. 31, Issue 3, pp. 18–23*]

Grünwald, Uwe/Moraal, Dick/Schönfeld, Gudrun (2003): Betriebliche Weiterbildung in Deutschland und Europa? Bielefeld.
[*Grünwald, Uwe; Moraal, Dick; Schönfeld, Gudrun (2003): Company continuing training in Germany and Europe? Bielefeld*]

Hendrich, Wolfgang (1996): Die Weiterbildungsentscheidung als subjektive Bilanzierung von Kosten und Nutzen. In: Zeitschrift für Wirtschafts- und Berufserziehung. Beiheft 12, S. 131–147.
[*Hendrich, Wolfgang (1996): The continuing training decision as a subjective balancing of costs and benefits. In: Journal of Economic and Vocational Education. Supplement 12, pp. 131–147*]

Hradil, Stefan (2005): Soziale Ungleichheit in Deutschland. Wiesbaden.
[*Hradil, Stefan (2005): Social inequality in Germany. Wiesbaden*]

Leber, Ute (2006): Das IAB-Betriebspanel als Datengrundlage für Weiterbildungsfragen. In: Feller, Gisela (Hrsg.): Weiterbildungsmonitoring ganz öffentlich. Entwicklungen, Ergebnisse und Instrumente zur Darstellung lebenslangen Lernens. Bielefeld, S. 89–102.
[*Leber, Ute (2006): The IAB (Institute for Employment Research) Establishment Panel Survey as a data basis for continuing training issues. In: Feller, Gisela (Ed.): Public continuing training monitoring. Developments, results and instruments for the representation of lifelong learning. Bielefeld, pp. 89–102*]

Leber, Ute (2000): Finanzierung der betrieblichen Weiterbildung und die Absicherung ihrer Erträge. Eine theoretische und empirische Analyse mit den Daten des IAB-Betriebspanels 1999. In: Mitteilungen aus der Arbeitsmarkt- und Berufsforschung 33(2), S. 229–241.
[*Leber, Ute (2000): Financing company continuing training and securing its returns. A theoretical and empirical analysis of the IAB (Institute for Employment Research) Establishment Panel Survey data for 1999. In: Labour Market and Vocational Research Reports 33(2), pp. 229–241*]

Loeber, Heinz Dieter (1996): Industrialisierung, Demokratisierung und die Institutionalisierung von Weiterbildung – Zur Frühgeschichte und Kontinuität der Weiterbildungsforschung in der Bundesrepublik. In: Bardeleben, Richard von; Bolder, Axel; Heid, Helmut (Hrsg.): Kosten und Nutzen beruflicher Bildung. Zeitschrift für Berufs- und Wirtschaftspädagogik/Beihefte, Heft 12, Stuttgart, S. 14–21.
[*Loeber, Heinz Dieter (1996): Industrialisation, democratisation and the institutionalisation of continuing training – on the early history and continuity of continuing training research in the Federal Republic of Germany. In: Bardeleben, Richard von; Bolder, Axel; Heid, Helmut (Eds.): Costs and benefits of vocational training. Journal of Vocational and Economic Education/Supplements, Issue 12, Stuttgart, pp. 14–21*]

Merton, Robert K. (1985): Der Matthäus-Effekt in der Wissenschaft. In: Merton, Robert K.: Entwicklung und Wandel von Forschungsinteressen. Frankfurt, S. 100–116.
[*Merton, Robert K. (1985): The Matthew effect in academic research. In: Merton, Robert K.: Development and change of research interests. Frankfurt, pp. 100–116*]

Neubäumer, Renate/Kohaut, Susanne/Seidenspinner, Margarete (2006): Determinanten betrieblicher Weiterbildung – ein ganzheitlicher Ansatz zur Erklärung des betrieblichen Weiterbildungsverhaltens und eine empirische Analyse für Westdeutschland. In: Schmollers Jahrbuch 126, S. 437–471.
[*Neubäumer, Renate; Kohaut, Susanne; Seidenspinner, Margarete (2006): Determinants of company continuing training – a holistic approach to explaining company continuing training behaviour and an empirical analysis*

for West Germany. In Schmoller's Yearbook 126, pp. 437–471]

Noll, Heinz-Herbert (2002): Towards a European System of Social Indicators: Theoretical Framework and System Architecture. In: Hagerty, M.; Vogel, J. (Hrsg.): State of the Art in Measuring Living Conditions and Quality of Life. Social Indicators Research, Special Issue.

Pannenberg, Markus (1998): Weiterbildung, Betriebszugehörigkeit und Löhne: Ökonomische Effekte des "timings" von Investitionen in die berufliche Weiterbildung. In: Pfeifer, Friedhelm; Pohlmeier, Winfried (Hrsg.): Qualifikation, Weiterbildung und Arbeitsmarkterfolg. Baden-Baden, S. 257–278.
[*Pannenberg, Markus (1998): Continuing training, seniority and wages: Economic effects of the "timing" of investments in continuing vocational training. In: Pfeifer, Friedhelm; Pohlmeier, Winfried (Eds.): Qualification, continuing training and success on the labour market. Baden-Baden, pp. 257–258*]

Rürup, Bert/Kohlmeier, Anabell (2007): Wissenschaftliche und sozialpolitische Bedeutung des Weiterbildungssparens. Hrsg. vom Bundesministerium für Bildung und Forschung. Bonn, Berlin. [*Rürup, Bert; Kohlmeier, Anabell (2007): Academic research and social policy significance of continuing training saving. Published by the Federal Ministry of Education and Research. Bonn, Berlin*]

Schemmann, Michael (2006): Die Nähe zum Bildungsort zählt. Weiterbildungsbeteiligung zwischen sozialer Lage und Raum. In: Weiterbildung. Zeitschrift für Grundlagen, Praxis und Trends, Heft 5, S. 28–31.
[*Schemmann, Michael (2006): The significance of proximity to the educational venue. Continuing training participation between social condition and space. In: Continuing Training. Journal for Basic Principles, Practice and Trends, Issue 5, pp. 28–31*]

Schömann, Klaus/Leschke, Janine (2005): Lebenslanges Lernen und soziale Inklusion – der Markt allein wird es nicht richten. In: Becker, Rolf; Lauterbach, Wolfgang (Hrsg.): Bildung als Privileg? Wiesbaden, S. 353–391.
[*Schömann, Klaus; Leschke, Janine (2005): Lifelong learning and social inclusion – the market alone is not sufficient to straighten things out. In: Becker, Rolf; Lauterbach, Wolfgang (Eds.): Education as a privilege? Wiesbaden, pp. 353–391*]

Schröder, Helmut/Schiel, Stefan/Aust, Folkert (2004): Nichtteilnahme an beruflicher Weiterbildung. Motive, Beweggründe, Hindernisse. Expertenkommission Finanzierung Lebenslangen Lernens (Hrsg.), Schriftenreihe der Expertenkommission Finanzierung Lebenslangen Lernens, Band 5, Bielefeld.
[*Schröder, Helmut; Schiel, Stefan; Aust, Folkert (2004): Non-participation in continuing vocational training. Motives, reasons, hindrances. Expert Commission on the Financing of Lifelong Learning (Ed.) Expert Commission on the Financing of Lifelong Learning Reports, Volume 5, Bielefeld*]

Seidel, Sabine (2006): Erhebungen zur Weiterbildung in Deutschland – Pfade durch den Statistikdschungel. In: Feller, Gisela (Hrsg.): Weiterbildungsmonitoring ganz öffentlich. Entwicklungen, Ergebnisse und Instrumente zur Darstellung lebenslangen Lernens. Bielefeld, S. 35–63.
[*Seidel, Sabine (2006): Surveys on continuing training in Germany – pathways through the statistical jungle. In: Feller, Gisela (Ed.): Public continuing training monitoring. Developments, results and instruments for the representation of lifelong learning. Bielefeld, pp. 35–63*]

SPSS (2001): The SPSS TwoStep Cluster Component. A scalable component enabling more efficient customer segmentation. White paper – technical report.

Timmermann, Dieter/Ehmann, Christof (2004): Lebenslanges Lernen als lohnende Investition. In: DIE Zeitschrift für Erwachsenenbildung, Supplement zu II/2004, S. 10–13.
[*Timmermann, Dieter; Ehmann, Christof (2004): Lifelong learning as a worthwhile investment. In: German Institute for Adult Education (DIE) Journal, Supplement to II/2004. Pp. 10–13*]

Tippelt, Rudolf (2006): Adressatenorientierte Weiterbildungsplanung: Wie kann das Interesse an Weiterbildung geweckt werden? In: Bundesinstitut für Berufsbildung (Hrsg.): Kosten, Nutzen, Finanzierung beruflicher Weiterbildung. Ergebnisse der BIBB-Fachtagung vom 2. und 3. Juni 2005 in Bonn. Bielefeld, S. 218–231.
[*Tippelt, Rudolf (2006): Target oriented continuing training planning: How can interest in continuing training be awakened? In: Federal Institute for Vocational Education and Training (Ed.): Costs, benefits and financing of continuing vocational training. Results of the BIBB Conference of 2 and 3 June 2005 in Bonn. Bielefeld, pp. 218–231*]

Tippelt, Rudolf/Hippel, Aiga von (2005): Lebenslagen – Lebensphasen – Lebensstile. In: DIE, 12. Jahrgang, Heft I, S. 33–35.
[*Tippelt, Rudolf; Hippel, Aiga von (2005): Life conditions – life phases – lifestyles. In DIE, Vol. 12, Issue 1, pp. 33–35*]

Ulrich, Joachim Gerd (2000): Weiterbildungsbedarf und Weiterbildungsaktivitäten der Erwerbstätigen in Deutschland. Ergebnisse aus BIBB/IAB-Erhebung 1998/1999. In: Berufsbildung in Wissenschaft und Praxis, Heft 3, S. 23–29.
[*Ulrich, Joachim Gerd (2000): Continuing training requirements and continuing training activities of those in employment in Germany. Results of a survey conducted by the Federal Institute for Vocational Education and Training (BIBB)/ Institute for Employment Research (IAB) in 1998/1999. In: Vocational Training in Research and Practice, a bi-monthly BIBB publication, Issue 3, pp. 23–29*]

Voges, Wolfgang u. a. (2003): Methoden und Grundlagen des Lebenslagenansatzes, Zentrum für Sozialpolitik, Universität Bremen.
[*Voges, Wolfgang et al. (2003): Methods and basic principles of the life condition approach, Social Policy Centre at the University of Bremen*]

Weiß, Reinhold (2006): Von den Schwierigkeiten der Kostenermittlung. In: Bundesinstitut für Berufsbildung (Hrsg.): Kosten, Nutzen, Finanzierung beruflicher Weiterbildung. Ergebnisse der BIBB-Fachtagung vom 2. und 3. Juni 2005 in Bonn. Bielefeld, S. 93–112.
[*Weiß, Reinhold (2006): On the difficulties in determining costs. In: Federal Institute for Vocational Education and Training (Ed.): Costs, benefits and financing of continuing vocational training. Results of the BIBB Conference of 2 and 3 June 2005 in Bonn. Bielefeld, pp. 93–112*]

Werner, Dirk (2006): Trends und Kosten der betrieblichen Weiterbildung – Ergebnisse der IW-Weiterbildungserhebung 2005. In: IW-Trends – Vierteljahresschrift zur empirischen Wirtschaftsforschung. 33(1).
[*Werner, Dirk (2006): Trends and costs of company continuing training – results of the German Institute for Business Research (IW) continuing training survey 2005. In: IW Trends – a quarterly journal on empirical economic research. 33(1)*]

Wiedenbeck, Michael/Züll, Cornelia (2001): Klassifikation mit Clusteranalyse: Grundlegende Techniken hierarchischer und K-means-Verfahren. ZUMA How-to-Reihe, Nr. 10 2001.
[*Wiedenbeck, Michael; Züll, Cornelia: Classification using cluster analyses: basic techniques for hierarchical and K-means procedures. Centre for Survey Research and Methodology (ZUMA) How-to-Series, No. 10 2001*]

Wilkens, Ingrid/Leber, Ute (2003): Partizipation an beruflicher Weiterbildung – Empirische Ergebnisse aus Basis des Sozio-Ökonomischen Panels. In: Mitteilungen aus der Arbeitsmarkt- und Berufsforschung 36(3), S. 329–337.
[*Wilkens, Ingrid; Leber, Ute (2003): Participation in continuing vocational training – Empirical results on the basis of the Socio-Economic Panel. In: In: Labour Market and Vocational Research Reports 36(3), pp. 329–337*]

Zapf, Wolfgang (1984): Individuelle Wohlfahrt: Lebensbedingungen und wahrgenommene Lebensqualität. In: Glatzer, W.; Zapf, W. (Hrsg.): Lebensqualität in der Bundesrepublik, Frankfurt/M.
[*Zapf, Wolfgang (1984): Individual welfare: Living conditions and perceived quality of life. In: Glatzer, W.; Zapf, W. (Eds.): Quality of life in the Federal Republic of Germany*]