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The teaching-research gestalt in accounting: A cluster analytic approach

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The teaching-research gestalt in accounting: A cluster analytic approach**Abstract**

This paper considers accounting academics' views of the mutuality of accounting research and education. These views are captured by administering a survey instrument that measures eleven dimensions of the relationship between teaching and research in the accounting discipline. This model was developed from the extant education literature considering those factors that encourage or militate against the integration of accounting research and education (the teaching-research gestalt). These factors relate to issues relating to students, researchers, the curriculum and extrinsic rewards available. Cluster analysis was performed to identify distinct subgroups of academics with similar teaching-research relations profiles. Three distinct clusters were identified. One cluster labelled 'teaching-research incongruity' sees teaching and research as mutually exclusive activities. In contrast 'teaching-research connexion' sees teaching and research as mutually reinforcing and compatible. A third cluster, allied to the world of teaching-research incongruity, emphasises the lack of extrinsic rewards for integrating teaching and research. This third cluster we label 'Extrinsic-reward focus'. The clusters are described in terms of their demographics. There are significant barriers to integrating accounting research into education; these include the role of professional education and resistance from many accounting academics in universities.

Keywords: teaching-research nexus, teaching-research gestalt, accounting faculty

1. Introduction

The relationship in higher education of academic research to teaching has been a vigorous area of activity for researchers in the field of education. This connexion is often termed the 'teaching-research nexus' implying a normative belief that there should be a symbiotic relationship between the two entities (e.g. Burke and Rau, 2010; Colbeck, 1998; Jenkins, 2004; Jenkins and Healy, 2005; Zamorski, 2002; Zimbardi and Myatt, 2014). However, this view is contested by some scholars who see these academic activities as competing and without complement (e.g. Brown and McCarthy, 2006; Coate, Barnett and Williams 2001; Hattie and Marsh, 1996). Whilst the relationship of academic research to professional practice in accounting has been widely researched and debated (e.g. Baxter, 1988; Moehrle, Anderson, Ayres, Bolt-Lee, Debreceeny et al., 2009; Scapens, 2008; Singleton-Green, 2010; Unerman and O'Dwyer, 2010), educational considerations have taken a back seat. Parker, Guthrie and Linacre (2010, p.7) propose:

Any discussion about the impact of research on professional practice must include education in the equation. A research/practice/teaching triangle has induced a range of research around these connections.

To attempt to address the teaching-research nexus lacuna in accounting, this paper reports the findings of a bespoke survey, measuring eleven factors that describe relations between accounting research and accounting education; the survey was administered to accounting academics in the United Kingdom (UK) in 2010. Using a cluster analytic method, we identify three clusters of accounting academics with discrete profiles based on their views of the relationship between teaching and research, along with the demographic characteristics of these clusters.

The aim of this study is to consider accounting academics' views of the relationship between teaching and research. This is achieved by an inventory constructed for the purposes of this study. The development and composition of the questionnaire is described in detail in

section 2.3. Briefly, the survey measures eleven subscales derived from the prior literature considering the interaction of teaching and research within accounting. These eleven subscales measure two higher-order factors relating to positive and negative aspects of the relationship accordingly. The survey has been extensively evaluated as a measurement instrument, with its development and psychometric performance considered elsewhere (Authors, 2012, 2015, 2016). The investigation also examines the association between these measures and a number of key demographic variables including: gender; age group; country; seniority; entry into a research selectivity exercise; experience; and proportion of time spent on research and teaching.

The presumed link or connection between teaching and research in accounting that may, or may not, be symbiotic and desirable has not been evidenced by any substantial quantitative study. The aim of this paper is report the findings of a survey addressing what we term the 'teaching-research gestalt' in accounting. The survey articulates a model that measures eleven factors; these factors either positively contribute to teaching-research relations, or they have a detrimental effect on each other. As much research that refers to the 'teaching-research nexus' has the implication that the two are mutually self-reinforcing (Horta, Duatel and Veloso, 2012) we adopt the term 'teaching-research gestalt' (Authors, 2016) that recognises there are two opposing sets of factors that either encourage or deter the integration of these two fundamental academic activities.

The identification of a gestalt recognises that once both positive and negative interpretations are seen, the correspondence of instruction to enquiry cannot be seen as a universal good or bad. Rather, it becomes a dichotomy where the positive aspects of integrating teaching and research require judicious management. Some of the data considered within this paper have been published in a research monograph aimed at

accounting practitioners (Authors, 2012). Nevertheless, our paper by design provides a more detailed and empirically rigorous analytic method and interpretation than was suited to a research report aimed at practising accountantsⁱ.

The contribution of this paper lies in four areas. First, by the application of a novel research instrument to assess and report accounting academics' views on the relationship between teaching and research. Second, by the use of a cluster analytic statistical method to consider whether there are distinct subgroups of accounting academics with similar teaching and research relations views. These subgroups also highlight the interrelationships between the eleven teaching-research gestalt factors. Cluster analysis examines variation within the sample to consider differing attitudes to the integration or separation of teaching and research. It is an essentially interpretative technique to reveal similarity and diversity within a sample by establishing some common groupings. Third, to identify whether significant differences exist between the clusters in terms of their demographic characteristics and entry into a research selectivity exercise. Fourth, to provide empirical evidence to support or counter arguments made in the critical accounting literature that voices concern with the overly technical nature of accounting education and the consequences for the profession.

Section 2 (S2) of the paper describes the literature considering teaching-research connectivity in general and more specifically in the accounting discipline, which is the contextual setting for the investigation. The research questions are outlined in S3. The methods of data collection and analysis are described in S4 which also includes a description of the research instrumentation. The results are presented in S5. S6 presents a discussion of the findings and concludes the paper.

2. Context and literature review

2.1 Teachers and researchers of university accounting in the UK

The accounting academy in the UK is significant, with accounting taught at most universities. Prior research demonstrates the consistent growth of the teaching of accounting in UK higher education, with a concomitant rise in the numbers of accounting academics (Brown, Jones and Steele, 2007). This trend is mirrored by the consistent growth in the numbers of professionally-qualified accountants in the UK (Financial Reporting Council (FRC), 2015). The accounting discipline has also grown to become a mature and mainstream area of research in universities (Parker and Guthrie, 2014). The nature of university accounting education in the UK is determined in part by the institution in which staff work, or correspondingly, a student studies and the requirements of accounting professional bodies that grant varying degrees of exemptions from their professional examinations. For example, a Bachelor of Accountancy honours degree in Scotland requires four years of study, whilst in England, Wales and Northern Ireland it takes just three years. In practice this means the first three years of study in Scotland are similar to that of the other three nations, while the final year is typically more conceptual in nature and less dependent on fulfilling the requirements of professional accreditation^{ii iii}.

Prior to 1992, higher education in the UK was delivered by universities with degree-granting powers and by polytechnics, who relied on a national council to grant academic awards. This binary divide between universities and the then polytechnics was abolished in 1992 but tacitly still persists. In particular, former polytechnics still have a strong links with the Association of Chartered Certified Accountants (ACCA), the Chartered Institute of Management Accountants (CIMA) and the Chartered Institute of Public Finance and accountancy (CIPFA), in some instances teaching and internally assessing their programmes^{iv}. For example, Oxford Brookes University, the former Oxford Polytechnic, runs

an undergraduate degree conversion programme for students who have successfully completed ACCA's examinations. Furthermore, the past 25 years have seen UK universities, and particularly business schools, developing a fascination for accreditation from various business education legitimacy agents such as the Association of MBAs (AMBA), European Foundation for Management Development (EQUIS) and the Association for the Advancement of Collegiate Schools of Business (AACSB). These have developed alongside of university-wide status groups such as the Russell Group and Million+. There are also reputational devices such as university and business school league tables, created by highly-regarded publishers such as the Financial Times, Guardian and Times Higher Educational Supplement (THES) where research productivity and quality is a key variable. In business education, the quest for legitimacy, status and reputation has never been stronger and research is a key strategy in seeking, maintaining and repairing these institutional constructs.

Similarly, the past three decades have seen critical accountants question the role of accounting educators, particularly in their development of technical skills in an acontextual manner (Chabrak and Craig, 2013, p.102). For example, Amernic and Craig (2004 p.368) urge accounting educators 'not to operate as unquestioning cheerleaders of any imposed ideology', such as market-based capitalism. In a similar fashion, critical educators stress placing student enquiry over the passive acquisition of theory (Grey, 2002). The essence of critical accounting's rebellion against traditional accounting pedagogy has been to focus on the pivotal role of student experience and questioning, over narrow technical approaches to the discipline.

Concurrent to the critical accounting project, accounting scholars have identified the new stresses on accounting departments, and business schools more generally, created by new

public management keen to make public services more efficient, seek commercial solutions and valorise the private sector provision. Parker (2010 p.19) argues that “business schools are, by and large, a low-cost, (heavily) casually staffed, revenue-generating cash cow” asking the pointed question “can accounting education survive a high-volume low-cost, lean, casualised higher education delivery model?”. Hopper (2013 p.134) goes further in suggesting:

First, the differentiation between teaching only and research academics needs to be redressed. Research funded critical researchers must help colleagues elsewhere to develop research skills and knowledge if they want their work diffused beyond small research circles. Second, such researchers must ensure that their courses are exemplars of critical pedagogy and research, rather than remaining in the comfort zone of accepted practice: teaching and research should be inextricably connected and it is hypocritical not to do so. Third, an unfortunate by-product of research evaluation has been the elevation of publications in so-called leading journals at the expense over innovative and research informed teaching material such as books, case studies, and public dissemination.

The paucity of the production of accounting PhDs in the United States (US) and the consequence for the survival of the US accounting academy is well-documented (e.g. Plumlee, Kalchelmeier, Madeo, Pratt, and Krull, 2006; Ruff, Thibodeau and Bedard, 2009). The dearth of PhD holders in subjects like accounting creates a recruitment problem for university departments of accounting in the UK forcing them to hire non-doctorally qualified staff (Hopper, 2013) and taking UK university accounting departments back to the 1960s, when accounting was taught in technical colleges or small, private sector providers. Business schools worldwide are said to be deficient in graduating higher research degree students (Ryan, 2010; Neumann and Guthrie, 2002, 2004). Consequently, accounting academics who can both teach and research are becoming something of a *rara avis* internationally. At the same time, there is growing private sector provision in accounting, for example, undertaking training for the students of professional accounting bodies in the UK and providing undergraduate education, awarded by a UK university that validates and oversees their programme.

For the past 130 years, the history of accounting education highlights a legitimacy struggle where accountancy has vied to be recognised as a profession alongside other occupational groups such as law or medicine with arguably loftier claims. In particular, van Whye (2007a p.176) documents that by the 1950s ‘a truly serious rift between practitioners and academicians had emerged’ with the development of new management accounting sciences. At the same time tensions between research, teaching and professional practice became evident. Furthermore, research interests diverged widely from that of the profession and by the 1960s, doctoral qualification and the publication of empirical research became the route for promotion (Fess, 1968). Mautz (1963 p,319 cited in van Wyhe, 2007a p.176) in an address to the AAA in 1962 referred to ‘a compatibility of research and education just as there is an incompatibility of professional practice and research’. However, the development of management sciences and accounting, promoted in part leading accountants such as Bedford (1961) came at the expense of accounting education, with publication in leading journals now seen as more significant than the writing of textbooks. To summarise, much as the relationship between professional practice and research has been long-debated, the (in)compatibility of accounting research and education has a similarly long, although less profiled, history.

The tension between professional qualification and academic accounting research continues to resonate in the profession’s recent Pathways Commission (2015) in the United States (US) led by the AICPA pushing for more professionally-qualified individuals in the accounting classroom. Although Pathways Commission (2015) lays out a blueprint for accounting education in the future, identifying some ‘signature pedagogies’ alongside ‘consensus body of knowledge; and ‘technologies’, it avoids the issue of relating research to teaching and vice-versa.

Internationally, accreditation from bodies such as the Association to Advance Collegiate Schools of Business (AACSB) is a source of pressure to hire academics with a PhD. In the US, a PhD has long been a prerequisite to being hired as an accounting academic. In the UK, research has gradually taken centre stage over the past few decades, more recently as a consequence of the introduction of periodic research selectivity exercises (Duff and Monk, 2006; Paisey and Paisey, 2017). These effectively rank departments; individual academics are either included or excluded from the exercise by their institution. Inclusion for an individual academic frequently becomes an important career objective in achieving promotion, whereas exclusion can lead to transfer to a teaching-only contract or redundancy or early retirement. New Zealand has established comparable selectivity exercises and has been followed by Australia. Presumably these have similar risks and rewards for academics.

Much as relations between research and professional practice have hitherto been the subject of significant commentary, we argue that the connection, or lack of it, between teaching and research are now critical in accounting. If research is unnecessary or provides no comparative advantage in the delivery of high-quality accounting education, then arguably accounting might as well be taught in low-cost, high-volume private sector environments, with professionally, rather than doctoral-qualified staff. As teaching revenue, rather than research funding, fuels academic accounting departments, the lack of an axiomatic connexion between education and research may lead to the decline of accounting research itself, with departments focusing on teaching and low-cost delivery. The linkages between accounting research and professional practice may then become redundant because of the decline of the former.

2.2 The teaching-research nexus

Significantly, in the broader education literature the word research used in relation to the teaching-research nexus has been taken to mean of 'student enquiry' as much as of 'staff research'. The position is summarised in Figure 1, adapted from Healey (2005). Research can be interpreted as lying along two axes. The vertical axis describes a continuum, where at one pole students are an audience, or mere passive recipients of research knowledge, and at the other end are active participants, or creators of knowledge. The horizontal axis addresses a continuum from an emphasis on research content to a focus on research processes and problems. In turn, these two axes create four quadrants labelled: research-led; research-tutored; research-oriented; and research-based learning.

Figure 1 here

In the research-led quadrant students are an audience and the emphasis is on banking knowledge or being a receptacle for research content (Freire, 1970; Postman and Weingartner, 1969; Fuhrmann and Grasha, 1998). The curriculum is then largely determined by extant practice, informed by past research and methods, techniques and regulation. Textbooks, rather than more modern writings or nascent thinking, frequently support instruction.

The research-tutored quadrant differs from research-led in that students work with contemporary research papers and findings, rather than the more established orthodox thinking found within popular accounting texts. Examples might include the undertaking of literature review, the development of hypotheses, or writing a press release to communicate some new research findings. The emphasis remains on content rather than the process of undertaking research, but entails working with the content in order to know

it. The research-oriented quadrant focuses on the techniques of doing research. Exemplars would include research methods courses, understanding and applying statistical methods and discussing the philosophy of research or how to undertake a consulting project.

Finally, the research-based learning quadrant involves students addressing, and possibly solving, problems or attempting to find answers to research questions. At one level it might involve students replicating their tutor's research findings, or proposing solutions to a contemporary problem based on their researching. More involved representations would involve the business of applying contemporary theories, or undertaking a work-based consulting project as an internship, or even a dissertation.

It is worth considering that research active faculty and doctoral students undertake research within all four quadrants as a matter of course. That is, academic enquiry necessarily involves varying elements of research content and processes and the business of being both a consumer and creator of knowledge. Many also teach and in doing so invoke at least one quadrant and may use all four, depending on course level, course size, student characteristics and academics' conceptions of teaching and learning.

2.3 The teaching-research gestalt model

The teaching-research gestalt empirical model is designed to encapsulate the nature of the relationship between teaching and research as experienced in the field of accounting. It is a development of the theoretical model described in Authors (2012). Specifically, the model comprises eleven lower-order factors, which are in turn expressed as two higher order factors. The first higher order factor, *Positive aspects of the gestalt*, is measured by lower-order factors labelled: *Research Promoting Critical Analysis*; *Research-led Teaching*; *Students Value Contact with Researchers*; *Currency of Research to the Curriculum*; and *Student*

Learning. The second higher order factor, *Negative aspects of the gestalt*, is calibrated by: *Extrinsic Rewards of Research; Research Dissonance from the Curriculum; Tension Between Research and the Professional Curriculum; Research and Teaching: Different Attributes; and Development of Professional Skills*. Figure 2 describes the model in a hierarchical diagram. The model is summarised in Table 1, along with a brief description of each subscale and an example item shown.

Figure 2 here

Table 1 here

As foreshadowed in S1, the model was developed from a detailed review of the wider higher education literature including the, more limited, education literature pertaining to accounting (Authors, 2012). From that review, some 19 propositions were identified relating to relations between faculty teaching and faculty research. Each of the 19 propositions relate to issues concerning one of: the curriculum, extrinsic rewards, researcher issues and student learning. Two matters are significant. First, many of the propositions were developed from the wider higher education literature do not pertain to accounting. For example, the idea that undergraduate students seek a career in research (i.e., as an academic following doctoral study), would be commonplace in many science disciplines, but unlikely in accounting. Second each proposition either relates to factors that positively influence the symbiosis of research and teaching, or to forces that negate their mutual articulation. Empirical testing of the model was undertaken using exploratory factor analysis reducing the 19 propositions to 11 factors (Authors, 2016). Accordingly, we outline the 11 factors below, describing first those aligned to positive aspects of the gestalt (see s2.3), followed by those aligned to the negative aspects of the gestalt (see s2.4).

2.3 Positive aspects of the gestalt

The first factor, *Research Promoting Critical Analysis* is formed on the basis that research-active lecturers assist the development of students' critical thinking skills by taking student through the process of arriving at conclusions from the objectives of a research study and its findings. The research study itself becomes an intermediary in the process of the development of students' critical thinking skills (Kane, Sandretto and Heath, 2004; Kelly, Davey and Haigh, 1999).

The second factor, *Research-led Teaching*, relates to the idea that researchers are more able to teach and promote 'high quality' student learning (Cullen, Richardson and O'Brien., 2004; Leslie, Harvey and Leslie, 1998; Lindsay, Breen and Jenkins 2002; Rowland, 1996; Vidal and Quintanilla, 2000)^v. Specifically, Vidal and Quintanilla (2000) identify the idea that research-active staff are better-placed to determine what is required of a professional. Jenkins, Blackman, Lindsay and Paton-Saltzberg (1998) and Lindsay et al. (2002) contend that students view researchers as better dissertation and project supervisors.

Students Value Contact with Researchers is the third component of positive aspects of the gestalt. Earlier work considering teaching and research relations tended to focus on correlational studies (uz Zaman, 2004) with Neumann (1994) being the first to break this mould by considering student perspectives. Notably students perceive there to be significant benefits from teaching staff being research-active (Cullen et al., 2004; Lindsay et al. 2002; Neumann, 1994; Zamorski, 2002). Furthermore, there is evidence that high performing research departments tend to produce better scores on student surveys of satisfaction (Grant and Piatt, 2008; Innovation, Universities, Science and Skills (IUSS) Committee, 2009).

The fifth element of positive aspects of the gestalt relates *Currency of Research to the Curriculum*. Notably, research-active faculty increase the stock of knowledge to the curriculum (Coaldrake and Stedman, 1999; Durning and Jenkins, 2002; Jenkins et al., 1998; Lindsay et al., 2002). That is, researchers may include their own research, providing valuable details of how the research was conducted, their motivations for undertaking the work and the process of making sense of the findings within a theoretical framework.

The final subscale describing positive aspects of the gestalt is labelled *Student Learning*. In particular, staff research is said to provide students with a sense of staff as being learners themselves and as enthusiastic individuals committed to learning (Jenkins et al., 1998 p.133). In particular, student learning is enhanced by their inclusion in the sometimes messy-world of research (Cullen et al., 2004; Hunter, Laursen and Seymour, 2007; Jenkins, 2004).

2.4 Negative aspects of the gestalt

The first subscale of the negative aspects of the gestalt is labelled *Extrinsic Rewards of Research*. This measure has seven items. These items refer to the idea of research being the academic activity in a university that carries the greatest financial rewards via promotion and performance-related pay and esteem. Consequently, faculty are steered towards producing research outputs of the highest quality rather than undertaking other traditional academic activities, such as teaching, administration, governance and service duties, that are simply seen as 'part of the job'. Such views are supported by a significant international literature that considers staff perceptions (Brew, 1999; Fairweather, 1993a, 1993b, 1994; Ramsden and Martin, 1996; Robertson and Bond, 2001; Serow, 2000; Tien, 2000; Vidal and Quintanilla, 2000) and the views of chief academic officers (Leslie et al. 1998).

The second element of the negative aspects of the gestalt is *Research Dissonance from the Curriculum*. This subscale is measured by five items. These questions address the issue that including research may distort a well-calibrated curriculum, by including content that may be at a higher level than intended and that place undue emphasis on some components. Some studies focus on the adverse effects of a lecturer's research interests being to the fore (Jenkins et al., 1998; Neumann, 1994). Other studies emphasise the idea that for success students need to become stakeholders in the lecturer's research, that is, where the research being communicated is relevant to the curriculum and student's future professional interests (Brew, 2002; Jenkins et al., 1998; Lindsay et al, 2002; Zamorski, 2002).

Tension between Research and the Professional Curriculum is the term given to the third subscale of the negative aspects of the gestalt. This subscale consists of two items, which describe the difficulties of including research in a curriculum dominated by professional accounting interests. Examples include a possible conflict between academic research and a technically-oriented curriculum. This subscale has its origin in studies of professional disciplines such as accounting (Zeff, 1989), the built environment (Griffiths, 2004; Webster, 2002) and healthcare (McKee, 2002). In essence, research reflects creative enquiry and interpretation whereby a constantly developing corpus of literature defines what we understand about a topic, whereas professional curricula tends to emphasise extant practice, techniques, rules and regulation. Thus accounting is often taught as a static body of knowledge with the exception of regulation, professional standards and company and taxation law; rather than something conceptual with historical roots and capable of critical interpretation (e.g. James, 2008; Lehman, 2013).

The fourth subscale relating to negative aspects of the gestalt is labelled *Research and Teaching: Different Attributes*. This two-item subscale expresses the idea that research and

teaching require different personal qualities and skills (Barnett, 1992; Romainville, 1996; Webster, 1985). According to Goode's theory of role strain, the time and energy associated with undertaking one role will necessarily impact on another; or in this context, time spent on research will affect teaching quality and vice-versa. A range of studies identify teaching load as being negatively associated with research output (Austin, 1996; Bellas and Toutkoshian, 1999; Fairweather, 2002; Fox, 1992; Gonzalez-Brambila and Velso, 2007; Horta et al., 2012; Noser, Manakyan and Turner, 1996; Porter and Umbach, 2001).

The final subscale of the questionnaire relating to negative aspects of the gestalt is labelled *Development of Professional Skills*. This is calibrated by two items that focus on the idea that the development of professional skills is more relevant and has greater utility for students of accounting than research skills. This subscale owes its provenance to those studies of professional education which identify the ascendant position held by the business of 'how to do the job' (Griffiths, 2004) rather than the acquisition of intellectual skills. Such views are echoed in a body of critical accounting literature that describes the pernicious role of professional accreditation. That is, professional accreditation places undue emphasis on techniques, regulations, rote-learning and rote-assessment, at the expense of understanding the place of accounting in society and the economy (e.g., Sikka, Haslam, Kyriacou and Agrizzi, 2007; Sikka and Willmott, 2002). It fails to appreciate the distinction between 'accounting degrees' and 'accounting qualifications'. Similar critiques have been conducted of accounting textbooks (Ferguson, Collinson, Power and Stevenson, 2005; Sikka, 1987; Ward and Salter, 1990) and professional accounting colleges (Power, 1991).

2.5 Research questions

The foregoing literature review suggests that relations between research and teaching are not a universal good but contested. Some academics are highly supportive of the notion that quality teaching and quality research go hand-in-hand. Other writers dismiss the necessity for teaching and research to be linked. The contested nature of research and teaching linkages in relation to the discipline of accounting prompts three research questions:

1. What are the defining characteristics of the accounting academy in the UK in terms of their experience, research interests, proportion of time spent on teaching and research, their seniority, their location in a pre- or post-1992 institution and the nations in which they work?
2. Are there clusters of accounting academics with distinct profiles based on their views of the relationship between teaching and research?
3. What are the demographic characteristics of these clusters?

These three questions are addressed by the use of a questionnaire survey specifically developed for the purposes of this investigation, with questions (items) derived from the extant literature reviewed above. The questionnaire design, the administration of the survey, the validation of the research instrument and description of the demographic composition of survey respondents is described in section 3.

3. Method

3.1 Questionnaire design

The questionnaire used in the study consisted of three sections. Section 1 consisted of 61 statements to elicit perceptions of the teaching-research gestalt, requiring respondents to

indicate their acceptance using a five-point Likert scale anchored with 'strongly agree' and 'strongly disagree'. Statements related to either normative statements made by other researchers about the nexus or were phrased in such a way to relate to a respondent's own experiences. The 61 statements were derived from the extant education literature reviewed as related in S2 and from which the 19 underlying propositions mentioned there were derived. Section 2 contained questions gathering demographic information from the respondents including their gender, age group, seniority and research interests^{vi}. Section 3 elicited respondents' views on eight statements made about the teaching-research nexus and, by implication, the education research gestalt. For content validation purposes, the instrument was piloted by six accounting academics who reviewed the items for content representativeness.

3.2 Data collection

Questionnaires were distributed by email in 2010 to 1,491 accounting academics in the UK using Helliar, Gray and Monk's (2008) *British Accounting Association's Research Register*. The aim of the study was clarified in the email sent with the questionnaire. Respondents were assured that responses were confidential, that their anonymity would be observed and that the results of the study would be used for research purposes only.

3.3 Instrument validation

A comprehensive validation exercise of the measurement properties of the scores yielded by the survey was undertaken (Authors, 2016). Exploratory factor analysis identified a model consisting of two higher-order factors, each measured by five and six lower-order factors respectively.

The survey sample is comprised a number of demographic groups. To evaluate differences between groups multivariate analysis of variance (MANOVA) is used. MANOVA is possible as the factor analytic variables are more likely to demonstrate the equality of variance and normality assumptions necessary for multivariate analysis. As a multivariate method, the analysis provides useful diagnostic information about possible interaction between grouping variables that may influence analysis.

3.4 Characteristics of the survey sample

Of the 1,491 academics invited to participate, 257 returned useable responses, representing a response rate of 17.2%. The response rate is comparable with similar surveys of faculty. Locke and Lowe's (2005) report a 16% response rate to their online survey that sampled a similar population. Brinn, Jones and Pendlebury (2001) achieved 23.6% but they limited their survey to a narrow population of publishing accounting academics ($N=569$). It is possible that our survey may reflect a lack of interest as research publication remains a somewhat minority interest for accounting faculty in the UK (see Beattie and Goodacre, 2004, 2012; Brown et al. 2007). It is plausible also that the method of the e-mail contact introducing the web-based survey may have fallen foul of spam catching software commonplace in many academic institutions and so many of the emails may not have reached their intended destination.

To evaluate response rate bias on the sample, a comparison was applied to early (first 33%) and late (last 33%) of respondents using the Wilcoxon-Mann-Whitney non-parametric test. This assumes late respondents are similar to non-respondents (Dillman, 1978). Only one statistically significant difference ($\alpha=.05$) was found across the 65 survey items to which this test was applied. It is unlikely that response bias affects the validity of the results of the present investigation.

The structure of the respondents was examined to indicate its robustness. The survey completers are broadly representative of the population of universities sampled. Table 2 indicates the make-up of our survey sample in terms of seniority. The distribution across designations is representative of the seniority structure over the universities sampled. Senior staff (i.e., senior lecturer and above), represent 45% of the sample.^{vii} Of the survey population, only 67% worked in England, this is out of proportion to its population.^{viii}

Table 2 here

Forty three per cent of respondents were entered into the 2008 Research Assessment Exercise (RAE). Men comprised 64% of the respondents and women 36%. Both the gender profile and distribution of inclusion in the recent research selectivity exercise of respondents are illustrative of the population surveyed.

The distribution of research areas of respondents is provided in Table 3. The representation across the research areas is broadly what might be expected.

Table 3 here

Table 4 provides some details of how the survey population spends its time at work. Teaching represents the largest proportion at 44%. Own research is the second most significant activity, in terms of time, at 24%. Teaching-related administration (e.g., participation in committees and admissions) consumed 22% of the sample population's time, with research-related administration (e.g., doctoral student supervision, editorial and reviewing activities) accounting for 10% of the sample's workload. However, as might be expected, the standard deviations reported for each of these activities are relatively large,

which suggests that how the sample population spends its time is not evenly distributed. An analysis of individual responses identifies some academics may undertake no teaching, while others will undertake little personal research or research-related activity.

Table 4 here

4. Results

Table 5 reports the means and standard deviations for the subscales used in the study and that were represented in section 1 of the questionnaire. In general, respondents ascribed the highest values to factor V *Research-led Teaching* ($\mu=3.22$, on a scale of 1 to 5); factor IV *Tension between Research and the Professional Curriculum* ($\mu=2.96$); and factor III *Research Dissonance from the Professional Curriculum* ($\mu=2.96$). Similarly, respondents rated factor XI *Student Learning* ($\mu=1.86$) the least significant factor.

Table 5 here

To explore distinct views of the relationship of research to teaching within the academics sampled, the 11 subscales were subjected to a *k*-means cluster analysis, using the log-likelihood distance measure and Schwarz's Bayesian clustering criterion. As not all 11 subscales are measured using the same scale, standardization of the scores was undertaken. The number of clusters was determined by examining: first, the within cluster variation plots, to determine the distance between the potential clusters across each measure case; and second a Bonferroni-adjusted comparison of means between cluster scores on each measure. Using these decision-rules, it was decided that a three-cluster solution was most appropriate for the data.

A one-way MANOVA was conducted using the 11 subscales as dependent variables and the clusters as the fixed factor. Statistical significance testing was undertaken ($\alpha = .05$) and effect sizes are reported.^{ix} The results show significant differences between the three clusters on the dependent measures [Wilks' $\lambda = .167$, $F(22, 248) = 31.29$, $p < .001$, $\eta^2 = .59$].^x Table 6 contains the standardised means and standard deviations on the eleven subscales for the three clusters, in addition to the F tests and partial effect sizes. The large F -ratio small observed statistical significance level, and large effect sizes associated with each of the eleven subscales, suggests there is high variability between the three clusters for each of these variables. From this we can conclude that the clusters are satisfactory descriptors of different types of academics.

Table 6 here

Pairwise comparisons of the three clusters were undertaken applying post-hoc tests, Tukey's HSD, see Table 6. Considering the positive side of the gestalt dichotomy, cluster 2 produces statistically significantly higher scores ($p < .001$) than cluster 1 and 3 for each of its six constituent factors. When the negative aspects of the gestalt are considered, cluster 3 had statistically significantly higher scores ($p < .001$) on positive gestalt factors than clusters 1 and 2 for *Extrinsic Rewards of Research*, *Research Dissonance from Curriculum*, *Research and Teaching: Different Attributes* and *Development of Professional Skills*. In the case of *Research Dissonance from Curriculum* ($p = .036$), *Research and Teaching: Different Attributes* ($p = .018$) and *Development of Professional Skills* ($p < .001$) cluster 1 produced higher scores than cluster 3.

Three teaching-research gestalt profiles were established from the cluster analysis. Examination of the partial effect sizes for the F tests undertaken provide an indication of

those subscales which provide the greatest degree of differentiation amongst participants. Specifically the negative aspects of the gestalt measures *Extrinsic Rewards of Research* ($\eta^2=.67$) and *Research Dissonance from the Curriculum* ($\eta^2=.31$) and positive side of the gestalt measures *Research-led Teaching* ($\eta^2=.28$) and *Students Value Contact with Researchers* ($\eta^2=.25$). Therefore, these four subscales identify the most contested ideas of the teaching-research gestalt in accounting. There is widespread variation in academics' beliefs about the extrinsic rewards of research, with many seeing research as the way to advance in career terms but with less relevance for teaching and the curriculum. In contrast, others see research as something integral to the collective identity of the teaching of accounting in higher education. The notions of teaching being led by research and the idea that students actively value being taught by research-active staff are also contested.

By contrast, the two measures that produce the least variation are *Student Learning* ($\eta^2=.07$) and *Tension between Research and the Professional Curriculum* ($\eta^2=.04$) suggesting that accounting academics in the UK have a relatively uniform view on these aspects of teaching and research relations. Specifically, respondents see little traction in the idea that student learning is significantly supported by research and are equivocal about the idea that research and the professional accounting curriculum can hinder each other.

The demographic membership of each cluster is also reported in Table 7. Cluster 1 is low on positive gestalt factors and moderate to high on negative gestalt factors. This cluster is accordingly labelled 'a world of teaching-research incongruity' implying a lack of fit between an academic's research activity and their teaching. Or, alternatively, a situation where an academic is engaged wholly on teaching-related duties or, conversely, wholly on research work. With 88 academics, it is the second largest cluster, consisting of the highest proportion located in post-1992 universities (75%), the smallest proportion located in

Scotland (16%) and the youngest (81% aged 55 years of age or younger). Figure 3 displays the three distinct profiles for the positive teaching-research gestalt identified using the cluster analysis. The negative teaching-research gestalt profiles are shown in Figure 4.

Table 7 here

Figure 3 here

Figure 4 here

Cluster 2 is characterised by positive teaching-research gestalt factor scores and correspondingly the lowest scores on the negative teaching-research gestalt factors. It consistently has the highest scores on the positive factors and lowest on the negative factors. This cluster then could be described as populating a 'world of teaching-research connexion'. It is the smallest cluster with 56 academics, has the highest proportion of respondents located in Scotland (27%), the lowest proportion entered in the research selectivity exercise (25%) and, marginally, the highest proportion on a promoted post (61%).

Cluster 3 is characterised by low scores on positive gestalt factors and the consistently highest scores on the negative gestalt factors. This cluster then is allied to the 'world of teaching-research incongruity' (cluster 1). However the cluster is characterised by the highest scores on Extrinsic Rewards of Research, clearly differentiating it from Cluster 1. Thus, the lack of extrinsic rewards becomes a defining feature of why this cluster holds relatively negative views of the supposedly symbiotic relationship between education and research. Accordingly, this cluster is labelled 'extrinsic rewards focus'. It is the largest cluster with 107 respondents, has the highest proportion located in pre-1992 universities (59%) and the highest proportion entered in the research selectivity exercise (50%).

Overall then we are presented with a picture whereby Clusters 1 and 3 emphasise the mutual exclusivity of accounting research and accounting teaching; the differentiating factor being the two clusters being the *Extrinsic Rewards of Research* factor. An interpretation of this might be that many Cluster 1 inhabitants would not expect to see a significant increase in their salary without moving to an institution that explicitly rewards research. Cluster 2 labelled 'teaching-research connexion' positively supports the idea that. What emerges is a picture of a sample of accounting academics in the UK, three-quarters of whom largely see staff research and teaching as relatively unconnected and dissimilar. Just under a quarter see a significant nexus between the two academic activities.

5. Discussion

The main aim of this study was to examine the views of accounting academics in the UK towards the mutuality of accounting research and education. This has been achieved using cluster analysis of scores on 11 measures of what we term the teaching-research gestalt. In terms of the sample, we learn that respondents were evenly divided roughly between those on a promoted post (e.g., senior lecturer or above) (45%) and those on the lecturer scale (55%). Two-thirds of the sample worked in England, with 23% working in Scotland, a country differentiated from the other three UK nations by its tradition of four-year degrees and government policy of free education. The rest of the UK has retained the Oxbridge tradition of three-year degrees and charges fees up to £9,000 per annum. Nearly two-thirds of the sample were men.

Teaching (42%) and research (33%) were reported as the most common work activities undertaken, as might be expected. In terms of research interests, accounting education

(13%), (private sector) financial reporting (13%), finance (15%) and (private sector) management accounting (9%) were the most common research specialisms for respondents.

The main contribution of this paper lies in the identification of three defining clusters of accounting academics. Essentially, these describe two typologies. The first, describing a 'world of teaching-research incongruity' whereby research and teaching are both legitimate academic activities but are mutually exclusive. That is, in this world, there is little symbiosis between the two and the shibboleth that teaching and research go hand-in-hand has little currency in accounting education. The second world, a 'world of teaching-research connexion' conversely sees research and teaching as entwined and reciprocal; their inter-relationship an axiom of higher education: a passion for research feeds an interest in teaching and vice-versa. These findings suggest that although some academics can be recruited to the idea that teaching and research can and should be linked, there will be many that are resistant or hostile to the notion.

The demographics of these two worlds are unexpected. The world of 'teaching-research connexion' is more likely to be inhabited by a male academic on a promoted post in an institution in Scotland and paradoxically less likely to be included in a research selectivity exercise. It is unsurprising that cluster 2 has greater representation in Scotland, where significant amounts of accounting teaching are not guided by a desire to attain exemptions from professional examinations and where an individually supervised dissertation at the final level of the degree award is commonplace. However, the relatively low proportion of staff included in the research selectivity exercise is unexpected. In determining attitudes to teaching-research relations, it seems likely that a curriculum that is more geared towards

student enquiry and selective inclusion of contemporary research described in Figure 1 has a greater effect than an academic's personal status and his/her identity as a researcher. .

Although Clusters 1 and 3 inhabit a largely similar world, rejecting the influence of contemporary research and student enquiry on accounting teaching, their demographics differ significantly. Cluster 3, heavily focused on the *Extrinsic Rewards of Research*, was more likely to be found in a pre-1992 institution (59%), while just 25% of Cluster 1 was located in a traditional pre-1992 university. In aggregate then, whether one was located in a pre- or post-1992 institution seems to make little difference. What does matter was that *Extrinsic Rewards of Research* becomes a significant factor in institutions which are heavily research-focused. In these institutions, research output, in terms of quality and quantity, is rewarded, conversely, a paucity of research production results in redundancy or moving to teaching-only contracts.

Our findings add to the body of accounting education history that documents the development of accounting education and research and their sometime relationship. In particular, the study reports that distinct sub-groups where accounting education and research are strongly linked or alternatively are mutually incompatible. These findings are entirely compatible with the debate in the US about the role of emerging research capabilities, new academic accounting journals, increasing numbers of doctorally-qualified faculty and increasingly distant professional practice. The final third cluster identifying the lack of extrinsic rewards, articulate van Wyhe's (2007a p.176-7) observations that sixty years ago that 'research that involved statistics and computers... (rather than writing textbooks or teaching) ...was the doorway into the kingdom of academic heaven for accountants'.

This study has three limitations that are suggestive of further research. First, although the gestalt model is predicated on extant education literature, the unusual, highly technical focus of accounting as a discipline warrants further exploration of academics and other educational stakeholders, such as professional bodies and employers to consider how research may contribute to educational provision, even in diffuse ways. Second, the work is situated in the UK: extensions to the work in other jurisdictions would be welcome. A lasting effect of research selectivity exercises in the UK has been to make academic work more specialised, that is, there is a focus on research with some teaching, or teaching-only. In other settings, academic labour might be more egalitarian with all academics undertaking similar job roles. Third, the research highlights a frequent disconnect between teaching and research. Prior work in other disciplines (see Authors, 2012) identifies the many productive ways to achieve a teaching-research nexus. Despite the significant resistance noted to integrating research into teaching, four-year degree programmes in Scotland may provide exemplars of what can be achieved. Fourth, accounting education history demonstrates that the debate, although often incidental to the relationship between professional practice, is not new, particularly as the academy developed to accommodate alternative forms of accounting, new journals and more diverse academicians. The nature of survey research demonstrates the generalisability of findings. Qualitative approaches could unpack some of the underlying beliefs and philosophies of those favouring teaching-research connexion and teaching-research incongruity.

6. Conclusion

The creation and dissemination of knowledge is the *raison d'être* of universities. The model on which our survey is predicated is drawn from a multidisciplinary context and identifies the wide range of means academics use to integrate research into their teaching and how teaching inspires their research. Outside accounting, many of our peers consider student

enquiry as a primary educational objective. In non-accounting subjects, students are more likely to be involved in the creation of knowledge. Yet despite decades of debate about the travails of accounting education and the need for educators to be doctorally-qualified and engaged in the production of accounting research (see van Wyhe, 2007a), research itself takes a backseat in the accounting curriculum.

There appear to be three factors that create this pedagogic difference. First, professional accreditation creates a relatively uniform accounting curriculum, requiring the passive acquisition of significant amounts of technical material from long-established textbooks, tailored to this uniform curriculum in content, format and culture. Departments of accounting within business schools operate in highly competitive 'international' markets, meaning that they have to offer accredited programmes to attract, often 'full-fees' overseas, students. This leaves less time or space for the development of research skills or to engage with contemporary accounting thought. An exception seems to be Scotland where a four-year degree allows greater scope for the inclusion of higher-level contemporary material and the development of higher-level skills among academics and students.

Second, historically there have been few attempts at integrating research into the academic accounting curriculum. Accounting in universities has developed from strong professional roots, especially in post-1992 universities, where 30 years ago doctorates in accounting were usually only acquired after professional training, if at all^{xi}. Unlike other academic disciplines, where student research is an important component of student learning, accounting education is often seen as a separate activity from the process of academic faculty research.

Third, our survey finds that resistance is encountered from accounting faculty. A major problematic is the lack of extrinsic rewards available to attempt to integrate research into

education, or vice-versa. Furthermore, this kind of educational development eats into the time available to conduct and publish research, which is viewed as a significant source of deferred remuneration in the form of promotions and eventual pension payments.

In an era when the foundations of accounting as a university discipline are under an even greater threat than the one existing hitherto, particularly from institutions keen to milk accounting student income as a cash cow, we would suggest integrating research and education is a potential survival strategy for hard-pressed departments of accounting. Private sector suppliers of accounting education cannot compete in research terms and by integrating modern accounting thought and enquiry at all levels of the curriculum would create a situation where universities have a 'unique selling proposition'. That is, an ability to create and conserve knowledge, rather than selectively communicate extant knowledge and practice. The process of research and scholarship is necessarily labour-intensive, meaning that departments of accounting should not labour under enormous staff to student ratios, or operate in a climate where research is only valued for research selectivity exercise results.

The history of accounting education in higher education points to a longstanding neurosis that perhaps accounting doesn't belong in the university curriculum (Zeff, 1989), is imperilled (Albrecht and Sack, 2000) and lacks the ethical backbone society expects (van Wyhe, 2007b). We argue that integrating accounting research within education allows the academy to normalise critical approaches to the discipline and develop critical students, who will become the finance directors, audit partners and business leaders of the future. But accounting education must go further. Not only should students of accounting absorb contemporary accounting research but should become active producers of accounting knowledge.

Finally, our recommendations to maximise research and teaching linkages in accounting can be considered novel in an accounting education landscape that has spent many decades lamenting related problems of declining professionally-qualified faculty, accounting research ignored by practitioners, a stable accounting curriculum and static pedagogies. Despite many normative prescriptions from both the academy and the profession, and sometimes together, few have championed the idea that immersing students in accounting research will create the critical thinking accountants and faculty of the future. We argue it is high time for change.

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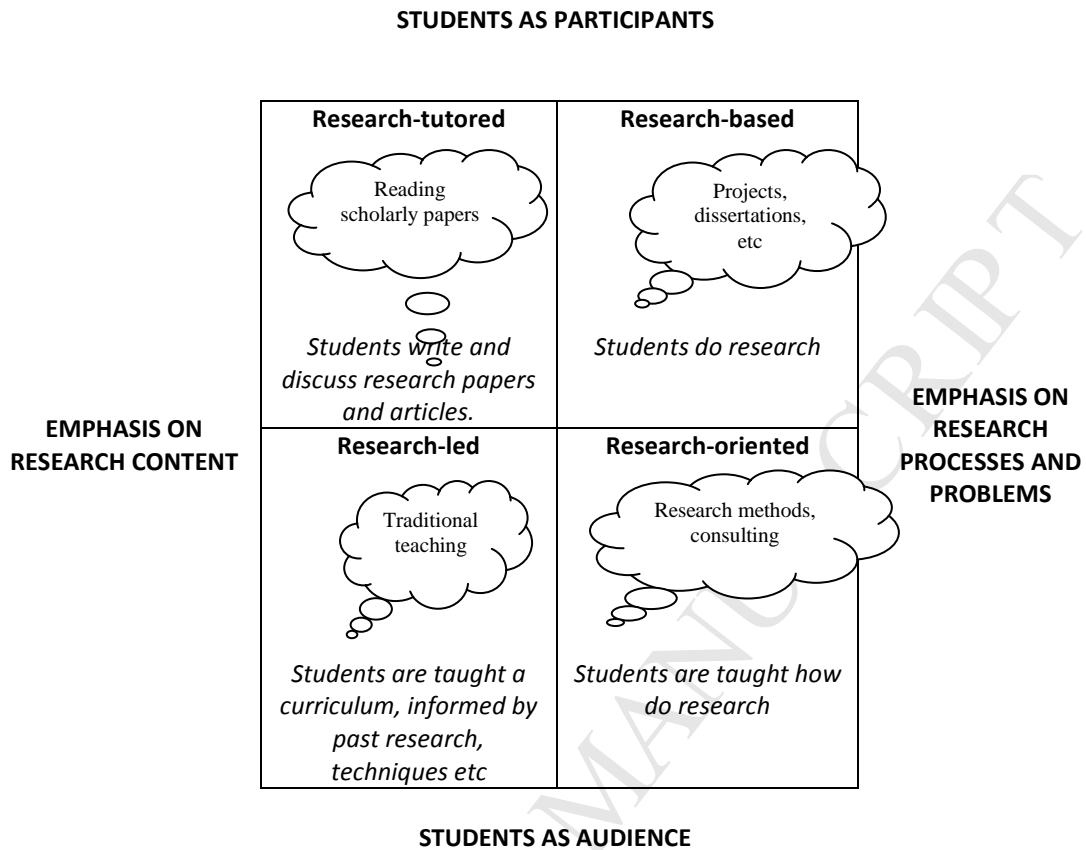
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ACCEPTED MANUSCRIPT

Figure 1: Implementing the teaching-research nexus



(Adapted from Healey (2005, p.70))

Figure 2: Empirical Teaching-Research Gestalt Model

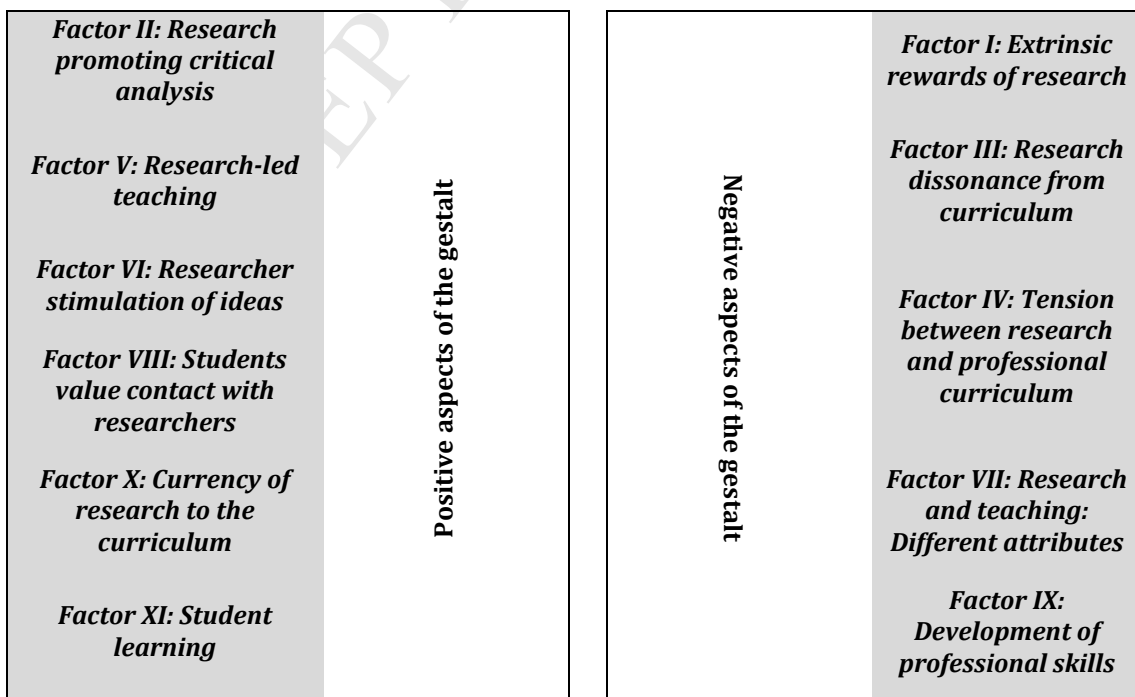
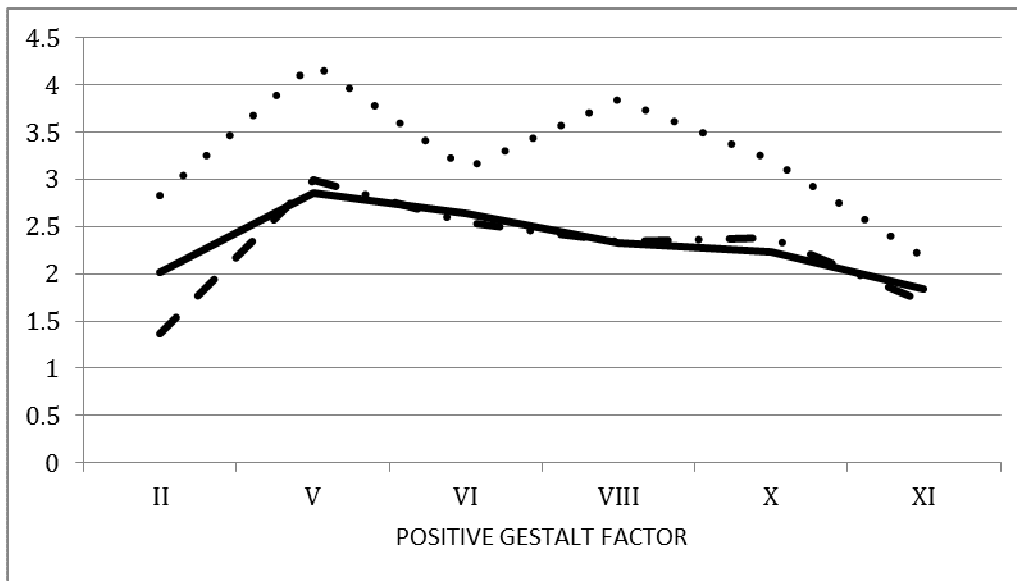
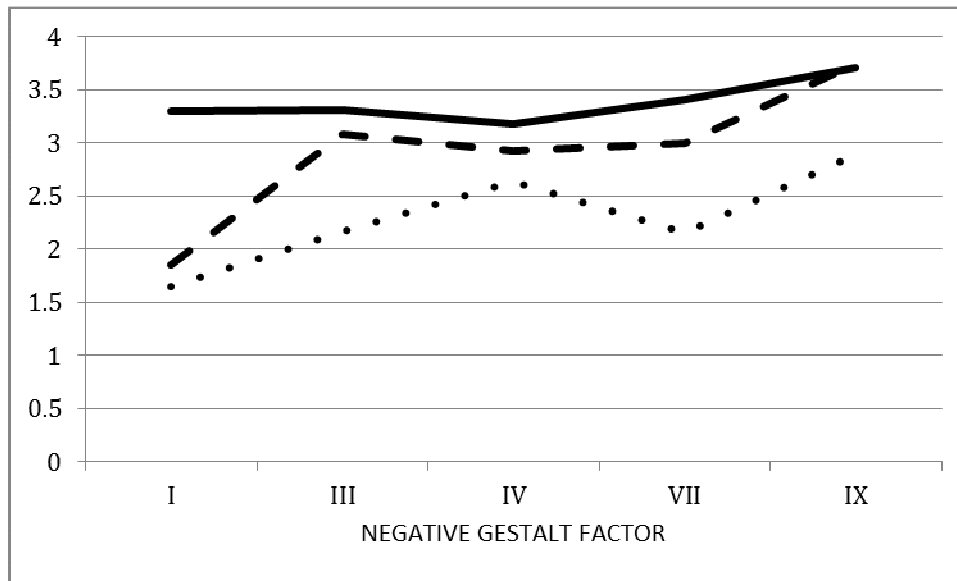


Figure 3: Cluster scores for Positive aspects of the gestalt factors

Key:

- Cluster 1 'teaching-research incongruity';
- Cluster 2; 'teaching-research connexion'
- ___ Cluster 3; 'extrinsic-rewards focus'

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Figure 4: Cluster scores for Negative aspects of the gestalt factors

Key:

- Cluster 1 'teaching-research incongruity';
- Cluster 2; 'teaching-research connexion'
- ___ Cluster 3; 'extrinsic-rewards focus'

Table 1: Description of teaching-research gestalt instrument subscales

<i>Subscale</i>	<i>No of Items</i>	<i>Description</i>	<i>Example item</i>
Panel A: Positive gestalt			
<i>Factor II: Research promoting critical analysis</i>	4	Research, and researchers, develop(s) critical thinking in learners	'Integrating research into teaching promotes students' critical thinking'
<i>Factor V: Research-led teaching</i>	3	Research-active teachers are more effective in a range of ways than non-researchers	'Teaching staff involved in research are more committed to student learning'
<i>Factor VI: Researcher stimulation of ideas</i>	5	Teaching stimulates the researcher's thinking	'Some of my best research ideas have come out in the course of teaching'
<i>Factor VIII: Students value contact with researchers</i>	2	Researchers are enthusiastic about their work allowing a course to be up-to-date	'My students consider my course is up-to-date because of my research activity'
<i>Factor X: Currency of research to the curriculum</i>	2	Research allows a programme to be cutting edge in an ever-changing world	'You need research to be at the cutting edge, an out-dated course has no point in the real world'
<i>Factor XI: Student learning</i>	3	Research facilitates the creation of authentic learning materials	'Empirically-based case studies provide a means of demonstrating real accounting practice'
Panel B: Negative gestalt			
<i>Factor I: Extrinsic rewards of research</i>	7	Successful researchers have better career prospects than non-researchers	'Research, rather than teaching, is rewarded by promotion at my institution '
<i>Factor III: Research dissonance from curriculum</i>	5	Research is frequently remote from the technical accounting curriculum	'Students rarely see staff research as valuable to their own learning'
<i>Factor IV: Tension between research and professional curriculum</i>	2	Including contemporary research within the curriculum is at odds with the professionally-led syllabus	'The accounting profession's influence on the curriculum creates a tension if linking research to teaching'
<i>Factor VII: Research and teaching: Different attributes</i>	2	Research and teaching require different attributes and an individual may not possess all the qualities required for success in both	'It is unreasonable to expect good teachers to be good researchers and vice-versa'
<i>Factor IX: Development of professional skills</i>	2	Accounting is a professionally-oriented programme requiring the development of professional, not research, skills	'Students need professional skills, not research skills'

Table 2:
Seniority of position of respondents and country worked in

<i>Job Title/Country worked in</i>	<i>No in sample</i>	<i>% of respondents</i>
Professor	60	25.3
Reader	5	2.1
Senior/Principal Lecturer	41	17.3
Lecturer	131	55.3
<i>Job title not reported</i>	<i>20</i>	
England	164	67.2
Scotland	56	23.0
Wales	12	4.9
Northern Ireland	12	4.9
<i>Country not reported</i>	<i>13</i>	

Table 3:
Research area of respondents

<i>Research area</i>	<i>In sample</i>	<i>% of respondents</i>
Accounting History	7	3%
Accounting Profession	9	4%
Accounting Theory	2	1%
Auditing	7	3%
Computing	3	1%
Critical, Social and Environmental	21	8%
Education	33	13%
Financial Accounting and Reporting	32	13%
Financial Institutions	13	5%
Financial Management	17	7%
Financial Markets	22	9%
Government, Public Sector and Not-for-Profit Organisations	16	6%
International Aspects	5	2%
Management Accounting	26	10%
Market Based Accounting Research	3	1%
Methodology and Methods	1	0%
Other Aspects	12	5%
Other Finance	6	2%
Taxation	6	2%
Unknown	10	4%

Table 4:
Percentage time spent on work activities

<i>Work activity</i>	<i>Mean %</i>
Administration	20
Research and related	33
Consulting	5
Teaching	42

Table 5: Descriptive statistics and correlation matrix for eleven factors

<i>Factor, coefficient alpha</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>	<i>VIII</i>	<i>IX</i>	<i>X</i>
<i>I: Extrinsic rewards of research, $\alpha = .85$</i>	2.31	.89										
<i>II: Research promoting critical analysis, $\alpha = .85$</i>	2.82	.74	-.01									
<i>III: Research dissonance from curriculum, $\alpha = .75$</i>	2.96	.78	.30	-.02								
<i>IV: Tension between research and professional curriculum, $\alpha = .63$</i>	2.96	1.08	.10	.13	.38							
<i>V: Research-led teaching, $\alpha = .73$</i>	3.22	1.02	-.24	.30	-.42	-.09						
<i>VI: Researcher stimulation of ideas, $\alpha = .72$</i>	2.70	.71	-.11	.27	-.23	-.05	.27					
<i>VII: Research and teaching: Different attributes, $\alpha = .74$</i>	2.95	1.14	.28	-.10	.43	.22	-.35	-.32				
<i>VIII: Students value contact with researchers, $\alpha = .87$</i>	2.67	1.27	-.13	.35	-.30	-.03	.41	.29	-.25			
<i>IX: Development of professional skills, $\alpha = .76$</i>	3.54	1.08	.07	-.23	.36	.22	-.21	-.14	.29	-.24		
<i>X: Currency of research to the curriculum, $\alpha = .60$</i>	2.52	.93	-.19	.31	-.32	-.06	.45	.25	-.24	.29	-.25	
<i>XI: Student learning, $\alpha = .62$</i>	1.86	.67	-.03	.38	-.11	.02	.21	.23	-.02	.33	-.05	.28

Note: $p < .05$; $r > .14$; $p < .01$; $r > .18$

Table 6: Comparisons among the three-cluster profiles, ELAcc

Clustering variable	Cluster 1 (N = 88)		Cluster 2 (N = 56)		Cluster 3 (N = 107)		F, (2, 249). p	Partial η^2	Inequality
	Teaching-Research incongruity		Teaching-Research connexion		Extrinsic-reward focus				
	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev			
Panel A: Positive gestalt									
II Research promoting critical analysis	1.36	0.37	2.83	0.76	2.01	0.82	36.022, <.001	0.13	2 > 1, 3
V Research-led teaching	3.00	0.81	4.23	0.75	2.86	1.00	46.194, <.001	0.28	2 > 1, 3; 3 > 1
VI Researcher stimulation of ideas	2.54	0.70	3.12	0.59	2.64	0.68	14.664, <.001	0.11	2 > 1, 3
VIII Students value contact with researchers	2.34	0.90	3.85	1.25	2.33	1.24	40.255, <.001	0.25	2 > 1,3
X Currency of research to the curriculum	2.38	0.84	3.21	0.94	2.24	0.83	25.004, <.001	0.16	2 > 1,3
XI Student learning	1.71	0.59	2.18	0.80	1.84	0.61	11.577, <.001	0.07	2 > 1, 3
Panel B: Negative gestalt									
I Extrinsic rewards of research	1.85	0.45	1.65	0.51	3.30	0.57	276.216, <.001	0.67	1, 3 > 2; 1 > 3
III Research dissonance from the curriculum	3.08	0.62	2.17	0.56	3.31	0.73	55.221, <.001	0.31	1, 3 > 2; 1 > 3
IV Tension: research and professional curriculum	2.93	1.04	2.64	1.22	3.18	0.98	5.349, .013	0.04	3 > 2
VII Research and teaching: Different attributes	3.00	1.02	2.15	0.85	3.41	1.16	24.501, <.001	0.17	1, 3 > 2; 1 > 3
IX Development of professional skills	3.74	1.01	2.89	1.03	3.71	1.04	13.261, <.001	0.10	1, 3 > 2

Table 7: Demographic membership of clusters

<i>Cluster, variable</i>	<i>1</i>	<i>2</i>	<i>3</i>
	<i>(N=88)</i>	<i>(N=56)</i>	<i>(N=107)</i>
Gender, % male	63	70	64
Scotland, % located	16	27	23
Post-1992, % located	75	59	41
Senior, % on promoted post	56	61	45
Experience, % 11 years or more	73	75	73
56+, % aged 56 years or older	19	29	27
Research selectivity, % entered in exercise	48	25	50

ⁱ For example, Authors (2012) restricts analysis to individual items and scores on hypothesized factors derived from extant literature.

ⁱⁱ School-leavers in Scotland join universities typically at age 17 as opposed to the other three nations of the UK where the entrance age is 18. That is, proportionately more education takes place in universities than schools in Scotland relative to the rest of the UK.

ⁱⁱⁱ For many years, the final honours year in Scotland was the preserve of the most academically talented with the majority graduating with an ordinary degree after the third year. A similar system persists in New Zealand today. However, in Scotland today it has become the norm for the majority to complete the four-year honours programme as a consequence of employer demand and universities desire to maximise student fee income.

^{iv} Interestingly, the historic chartered institutes Institute of Chartered Accountants in England and Wales (ICAEW) and Institute of Chartered Accountants of Scotland (ICAS) have offered fewer exemptions to accountancy graduates and teach their programmes either via private sector training companies or in-house. However in the last decade ICAEW and ICAS have developed programmes in collaboration with specific firms at certain universities, largely prestigious universities and business schools, for example, PwC/ICAEW's degree at Newcastle University of E&Y/ICAS' programme at Lancaster University.

^v Within the higher education literature, approaches to learning that encourage active learning and reflection and personal growth are seen as 'high quality learning' as opposed to so-called surface approaches that use rote learning and assessment, emphasise techniques over concepts and rules over principles.

^{vi} The questionnaire used a summary of the list of research interests in Helliar et al.'s (2008) BAA Research Register

^{vii} In England and Wales, in post-1992 universities, senior lecturers are employed on a similar grade to lecturers in pre-1992 institutions. Similarly, principal lecturers in England and Wales in post-1992 institutions are equivalent to senior lecturers in pre-1992 universities.

^{viii} The composition of the sample was compared to the composition of the surveyed population. Non-parametric binomial testing was undertaken comparing the proportions of academics located in old or new universities; academics entered or not entered in the research selectivity exercise; seniority (promoted/not promoted); gender (where gender could be determined); and country. The only variable to record a statistically significant difference was country where respondents in Scotland (23% of sample) exceeded the 17% of academics located in Scotland in the population.

^{ix} Effect sizes are reported by the partial eta-squared (η^2) statistic.

^x Effect size measures are interpreted as .1, small; .3 moderate; .5 high (Cohen, 1977)

^{xi} In pre-1992 universities, academics with doctorates in other social science disciplines were recruited and typically taught small classes.