This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online:
http://dx.doi.org/10.1080/03075079.2016.1152465

The teaching-research gestalt:
The development of a discipline-based scale

Abstract

This paper reports the development and empirical testing of a conceptual model of the factors that influence the relationship between teaching and research in the discipline of accounting using the extant literature. This we term the teaching and research gestalt. The conceptual model is derived from 13 propositions grouped into four sets of factors relating to rewards, researchers, curriculum, and students. This is then used to construct a measurement instrument to capture the research and learning nexus in accounting. In this paper, the research and learning nexus is defined by 13 propositions, operationalised by 61 scale-items, and empirically recomposed by factor analysis on data obtained from 247 UK accounting and finance academics. The final model consists of two second-order factors calibrating the positive and negative aspects of the gestalt respectively. In turn the two second–order factors are measured by 11 first-order factors.

Introduction

The relationship between teaching and research in higher education (HE) has been the subject of recent and vigorous debate. The debate is far from conclusive (Simons and Elen, 2007). Some literature identifies the mutuality of research and teaching, where active engagement in one will benefit the other (e.g., Colbeck, 1998; Zamorski, 2002; Zimbardi and Myatt, 2012). Other thinking suggests research and teaching have few synergies and vie for academic time and institutional resources (Coate *et al.*, 2001; Hattie and Marsh, 1996). This debate has often been labelled 'the teaching-research nexus' (e.g., Neumann, 1992,

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online:
http://dx.doi.org/10.1080/03075079.2016.1152465

1994, 1996; Ramsden and Moses, 1992; uz Zaman, 2004) which implies there should be a favourable relationship between the two academic activities.

The current topicality of relations between teaching and research comes in an era reflecting unprecedented interest in measuring academic performance. On an international scale research is measured via selectivity exercises (e.g. the UK's Research Excellence Framework and Australia's ERA). Similarly, national surveys of student satisfaction increasingly influence university league tables which affect an institution's ability to compete for students and resources. With academic labour being increasingly commoditised, subject to managerialism and the forces of so-called New Public Management, the shibboleth that quality teaching and student learning goes hand in hand with quality research is under increasing strain (Robertson, 2007). The situation is hardly new, as Elton (1986 p.299) suggests:

> The problem of whether research and teaching in universities support each other has become a matter of urgent public importance, now that the University Grants Committee (1985) as decided to be selective in its research funding to universities.

UK higher education policy makers are somewhat divided in their opinion about the relationship of research to teaching, with the balance of evidence ebbing and flowing over time. At one end of the spectrum, the Hattie and Marsh (1996, p533) suggest:

> Universities need to set as a mission goal the improvement of the nexus between research and teaching. ....The aim is to increase the circumstances in which teaching and research have occasion to meet.

An alternative view is provided by a review of UK higher education, The House of Commons Innovation, Universities, Science and Skills (IUSS) Committee (2009 p.77) reports that:

> In our view, the evidence is at best mixed and there may be different relationships between research and teaching not just across disciplines within institutions and even within departments and that across the sector these

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online:
http://dx.doi.org/10.1080/03075079.2016.1152465

> relationships may range from mutually supportive to antagonistic... We recommend that the Government commission and publish independent research in this area to inform future policy decisions.

The teaching-research nexus literature is diverse with a plethora of issues identified that either positively or negatively influence the relationship between the two. Some research is quantitative in its nature (e.g. Volkwein and Carbone, 1994; uz Zaman, 2004) whilst others have adopted a more qualitative approach (Neumann, 1994; Durning and Jenkins, 2005). Given the differing nature of academic experience across disciplines, empirical work is frequently context-specific (e.g., Brew, 1999; Griffiths, 2004; Robertson and Bond, 2001; Shin 2011). This study is no different, focusing on a professional discipline of accounting, a popular course of study in universities in many western countries.

This investigation makes a contribution in three ways. First, by bringing together a relatively disparate literature to create a model of the forces that shape, or work against, the synthesis of student learning and faculty research. Second, by operationalising this model by the development of a survey in the context of a professional academic discipline, accounting. Third, by empirically testing the model by administering the survey to accounting academics in higher education in the United Kingdom (UK).

The paper proceeds as follows. The next section reviews the literature relating to the relationship between faculty research and student learning, develops 13 propositions, and provides some contextual information about higher education in the UK. The research design is then described. The results of the survey and findings are reported. Finally, some concluding comments are made.

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

Literature Review

The literature review identifies four broad issues that frame the interaction of faculty research and student learning. These four factors are loosely labelled as: (i) extrinsic rewards issues; (ii) curriculum issues; (iii) researcher issues; and (iv) student perspectives.

Rewards issues

A researcher's productivity may be limited by undertaking teaching duties. Considering perceptions of faculty in Spain, Vidal and Quintanilla (2000) report that excessive teaching workload and the establishment of new educational programmes hinders research. Similarly, Serow (2000).find that many research-active faculty see teaching and research as competing activities as a consequence of the academic reward structure.

In a study of academic rewards, Fairweather (1993a) identifies that teaching is not a significant factor in faculty rewards and publishing research was the most valued activity; a finding supported by studies that identify that faculty staff who publish research are paid more than peers who spend most of their time on teaching (Marsh and Dillon, 1980; Fairweather, 1993b, 1994).

Chief academic officers, along with other colleagues, use research publications to measure the effectiveness of teaching (Leslie *et al*. 1998). This approach they term 'regressive determination', which is a result of needing to evaluate others in the presence of conflicting norms for scholarly assessment. Considering the motivations of academic staff in Taiwan, Tien (2000) reports that faculty who seek promotion publish in journals, at the expense of performing other academic duties.

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

In survey of1489 Australian academics, Ramsden and Martin (1996) reported that 95% of respondents believed that teaching should be highly valued, yet only 37% agreed that it was. Furthermore senior staff, i.e., Professors and Associate Professors considered research to be their main academic interest. More junior staff, i.e., lecturers and senior lecturers were inclined equally to teaching and research. These findings suggest that research rather than teaching is rewarded in the promotions system, at least in Australia.

Other authors suggest that the increased specialisation of knowledge means research is remote from what students need to know, leading researchers to separate their research from their teaching (Smeby, 1998; Brew, 1999). Robertson and Bond (2001) comment that academic staff development tends to emphasise teaching, rather than research, encouraging further separation rather than integration. Collectively these observations lead to the following proposition:

P1: There are few rewards for creating a teaching-research nexus

Curriculum issues

Kane *et al*. (2004) studying 'excellent' university teachers in New Zealand quote one interviewee:

> The facts, a lot of times, are irrelevant, and they're going to be out of time by the time they graduate. The thing that won't be out of date is how scientists solve problems… I try to make the points by walking students very carefully through the research that was conducted to come up with those particular conclusions. And they're starting to think critically about the whole process of science…

Kelly *et al*. (1999) argue for the use of research as part of a holistic approach to learning in developing accounting students' critical thinking skills. Collectively, these findings lead to the following proposition:

P2: Researchers provide students with the tools they need to conduct critical analysis

Some research has identified the potential danger that researchers could the curriculum with their own research, at the expense of providing a more holistic view of the subject area (e.g., Jenkins *et al*.

1998; Neumann, 1994). This is particularly so when "a teacher's individual research and research interests were seen to dominate, particularly at the expense of the aims of the course" (Neumann, 1994 p.335). This view surfaces in sometimes subtle ways. For example, Jenkins *et al*. (1998, p.134) report the experience of an anthropology student when considering a research topic was being steered towards a something the lecturer was interested in "trying to put her angle of research on it, and didn't like mine at all".

However, the literature in this respect isn't universal. For example, Lindsay *et al*. (2002) suggest graduate students tend to believe that staff research should be seen as useful, interesting and relevant. Such a belief requires a judgement on the relationship and suitability of lecturer research to student learning. Or in other words, to benefit from research, students need to be stakeholders in academics' research, rather than detached from student's studies (Brew, 2006; Jenkins *et al*., 1998; Lindsay *et al*., 2002; Zamorski, 2002)). This leads to the following proposition:

P3: Researchers may distort the content of the curriculum with a desire to include their own research

A popular academic view of integrating research into teaching is that it promotes critical enquiry (Neumann, 1994; Leslie *et al.,* 1998; Smeby, 1998; Cullen *et al*., 2004). Or a belief that research-active academics exemplar a questioning and research approach to learning that 'rubs off' onto students (Robertson and Bond, 2001).

Some professionally-oriented disciplines such as accounting (Zeff, 1989a), the built environment (Webster, 2002; Griffiths, 2004), and healthcare (McKee, 2002) are largely determined by professional bodies. Therefore the inclusion of research at the expense of syllabus coverage demanded by professional bodies, could conceivably lead to content gaps in the professional curriculum.

However, the prescriptive nature of the professional curriculum in accounting has drawn criticisms from accounting educators for its emphasis on techniques rather than concepts (e.g., Zeff, 1989b). Therefore the inclusion of contemporary research alongside a professionally-oriented accounting curriculum with its significant focus on rules and techniques creates a tension. We speculate that such a tension could be creative, leading to the identification of the limitations of existing techniques and methods, favouring principles over rules (ICAS, 2007). Alternatively, the inclusion of research could overload an already cramped accounting curriculum. Accordingly:

P4: Using contemporary research creates a tension with the professional curriculum

Researchers are said to enhance the knowledge currency of the curriculum (Coaldrake and Stedman, 1999; Durning and Jenkins, 2002; Jenkins *et al*., 1998; Lindsay *et al*. 2002). For example:

> You also need the research to be at the cutting edge, because there's no point in doing a course to find it's outdated when you go out into the real world (Master's student, Hospitality and Tourism reported in Lindsay *et al*. 2002, p.320)

Students' view the "benefit of research was the enthusiasm for their discipline/research that some lecturers convey when they refer to their own work and the positive impacts on their motivation to learn". However, a clearer connection between lecturer research and the curriculum in those subjects where knowledge is seen as constantly changing (e.g., biology), rather than other sciences and mathematics where knowledge is seen as relatively static (Neumann, 1994).

Interviewing 12 heads of department at one institution in the UK Rowland (1996) identified that active involvement in research benefited teaching, especially at graduate level). Researchers were believed to adopt a more holistic, and interpretative approach. Leslie *et al*. (1998) surveying chief academic officers in the United States (*N*=160) identify that 93% of respondents believed staff research positively affects teaching.

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

Vidal and Quintanilla (2000) identify that researchers can provide a better perspective of what is going to be demanded of a specific professional, which suggests their inclusion in curriculum development groups, as they are closer to the cutting-edge of knowledge. Furthermore, research activities contribute to updating the curriculum, positively affecting the most specialising courses.

Jenkins *et al.* (1998) and Lindsay *et al*. (2002) identify how students perceive researchers to be more competent dissertation or project supervisors. For example:

> She talked about using a Q-sort in research that she did earlier, and that's encouraged me to actually use the same methodology. (Masters student in education, Lindsay *et al*. 2002 p.321)

In accounting, Cullen *et al*. (2004 p. 251) report that empirically-based case studies provide a "powerful means of further effecting real accounting practice", rather than "lying dormant in the pages of academic journals". This leads to the following proposition:

P5: Researchers provide students with a 'cutting edge' to their learning

Researcher issues

Issues relating to academic staff have not been ignored in the literature. Braxtion (1996), Brew and Boud (1995).and Robertson and Bond (2001).have commented of the limitations of correlational studies identifying the need to consider academics' experience of the research-teaching nexus. Kane *et al.* (2004) undertaking multi-method based research using 17 lecturers in New Zealand as participants, reports that interviewees believed teaching can stimulate research. For example, one academic states (p.297):

> Some of my best research ideas have come out in the course of teaching in an area that is not necessarily something I do a lot in, but I'm reading it up for my teaching and think 'oh that would be really interesting, why don't we do that?'

Considering how academic staff experience the understanding of their subject matter and the relationship of this understanding to their experience of teaching, Prosser *et al*. (2005) identify that

academics who experience their subject in atomistic ways without integration, tend to be more information transmission and teacher-focused in their teaching. By contrast staff with a more integrated and holistic experience of understanding their subject experience their teaching in more conceptual change and student-focused ways. Notably (p.154):

> We believe that one way in which academic teachers can further develop their experience of understanding is through their research – the scholarship of discovery. Other ways may be through the scholarship of integration and application. In all cases the academic teacher would need to intentionally engage in scholarship to problematise their understanding of their subject matter.

Mitchell and Rebne (1995) tested the hypothesis that some time devoted to teaching and consulting are conducive to research output by fitting continuous piecewise linear regression models to data obtained from US academics and find that a combination of the complimentary role between teaching and research and the economy of time variables could give rise to a curvilinear relationship between the two variables. What is important about this finding is that it indicates that it is inappropriate to view teaching and research as a "zero sum game". Their findings support the view that that up to eight hours of teaching per week and four hours per week of consulting serves to increase research activity.

In accounting, Coppage and Baxendale (2001) describe the synergistic benefits of integrating teaching and research. Examples in which the two activities are synergistic include: students' bibliographies keep the educator up-to-date relevant to their research interests, and assistance in the construction of literature reviews in new research interests. Similarly Hermanson and Hermanson (1996) suggest integrating teaching and research in accounting as one strategy to increase research productivity. Collectively these findings propose the following proposition:

P6: Teaching stimulates the researcher's thoughts

One interpretation of those correlational and meta-analytic studies that find a null relationship between teaching and research is that they require different characteristics. Drawing on a critical

analysis of the academic role, Barnett (1992), Romainville (1996) and Webster (1985) propose teaching and research are different roles requiring different personal qualities. Similarly Durning and Jenkins (2005 p.418) identify the effect of not effectively managing teaching and research leads to the creation of 'clear tensions ('blocks').

Goode's (1960) theory of role strain suggests that committing time and energy to one job role comes at the expense of another. So, committing time to teaching necessarily comes at the sacrifice of research, a notion supported by empirical investigations reporting that teaching load is negatively associated with research output (Austin, 1996; Fox, 1992; Noser *et al*., 1996; Bellas and Toutkoshian, 1999; Porter and Umbach, 2001; Fairweather, 2002; Gonzalez-Brambila and Veloso, 2007; Horta *et al*., 2012). This leads to the following proposition:

P7: Research and teaching activities require different personal qualities and compete for a scarce time resource

Student Perspectives

Student perspectives on the teaching-research nexus were first highlighted by Neumann (1994), who identified the limitations of correlational studies in this domain. In particular, as the benefits of the research-teaching nexus relate largely to teaching, "students are a most important group to consider in examinations of the teaching-research nexus" (Neumann, 1994, p. 324).

Some studies report tangible benefits to students of staff research, as students perceive their courses to be up to date and that their lecturer was enthusiastic about the course material (e.g. Neumann,1994). Furthermore, staff research is said to lend credibility to the department and university in which they are studying (Jenkins *et al*., 1998). The UK National Student Survey finds

that students in departments with the highest research (research selectivity exercise) scores were more positive than students in lower rated subject areas (Grant and Piatt, 2008). The American Council for Education's National Survey of Student Engagement reports that showed that student satisfaction was correlated with research. The House of Commons IUSS Committee (2009) states that "students who responded to our inquiry saw the connection between teaching and research as positive, finding the proximity to research stimulating and the quality of teachers' scholarship enhanced". Within the discipline of accounting, Cullen *et al.* (2004) describe how students value contact with researchers when using case studies in a class developed by the teaching staff. This leads to the following proposition:

P8: Students value contact with researchers

Jenkins *et al*. (1998 p.133) identify the benefit of staff research to students is "the sense it gave them of staff as people and as learners". Elton (2001) proposes that "a positive research and teaching link depends on the nature of students' learning experiences" (p.43) and that staff involvement in research is said to demonstrate their enthusiasm and their commitment to learning. Student support for learning in an environment where research is conducted is also identified by Jenkins (2004) and Hunter *et al*. (2007). In accounting, Cullen *et al*. (2004 p.251) describe the development of empirically-based case studies concluding "when real 'messy stories' of accounting in context are used within a problem-based learning context, they can play a significant role in meeting the challenges facing accounting education".

P9: Student learning is enhanced through contact with researchers

Students undertaking professionally-oriented courses focus their learning on 'how to do the job' at the expense of acquiring intellectual skills such as recognising and managing complexity, uncertainty, addressed as a matter-of-course by researchers (Griffiths, 2004). This requirement to impart

professional skills creates a potential tension with those components developing research skills at the expense of the latter.

In the field of accounting, the burden of professional accreditation promotes a "technical and instrumental view of accounting" (Sikka *et al*., 2007 p.3). The pursuit of maximum professional accreditation is said to have led to university degrees emphasising the rote-learning of techniques, rules and regulations at the expense of considering the consequence to society of extant accounting practice and organisation (Sikka and Willmott, 2002). Furthermore, texts used in university accounting education emphasise professional syllabus (e.g., Sikka, 1987; Ward and Salter, 1990; Ferguson *et al*., 2005). Professional accountancy colleges that prepare trainee accountants for professional examinations typically lack IT facilities, libraries, academic pastoral care, and instructors trained in research. Such colleges use rote-learning and cramming techniques (Power, 1991) that secure good results in professional examinations, but are ill-equipped to deliver research training. Thus:

P10: Research skills are not valued by students pursuing professional studies

Lindsay *et al*. (2002), interviewing undergraduate and postgraduate students from eight different disciplines, identify the positive effect research-active staff may have on future research career considerations. For example a student quoted in the House of Commons IUSS Committee (2009):

> I am amazed by the number of students that are considering further education, PhDs and masters. I think the reason for that is because we have got the world-class researchers in our department.

Within accounting, and especially in the United States (US), there is recognition that there is a shortage of accounting PhDs, particularly in the areas of auditing and information systems (Plumlee *et al*., 2006). The shortage is said to reflect the scarcity of supply of newly minted PhDs[i], along with the relative attractiveness of careers in public accounting. Growing demand for accounting PhDs reflect the numbers of faculty destined to soon retire (Felix Committee, 2006), along with increased

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

demand for accounting majors reflecting changes in corporate governance requiring greater regulation. Collectively, this leads to the following proposition:

P11: Students exposed to research are more likely to consider a career in research

Surveying faculty in Spain, Vidal and Quintanilla (2000) identify that the most specialised research may affect the most general and basic courses negatively. Goldstein and Neugebauer (1995) provide an account of distinguished physicist Richard Feynman who attempted to integrated research and teaching through deep scholarship: a technique that resulted in declining class attendance. Elton's (2001 p.52) critique of Feynman's disappointing experience was that:

> academic teachers think of students in terms of their own student experience and rarely if ever verify how typical it is from the viewpoint of their own students. Since only a few students become academics, it is of course, the very opposite of typical.

Surveying recent accounting PhD graduates in the US (*N*=109), Swain and Stout (2001), find that for new faculty, teaching development is a personal development, rather than a component of their doctoral programme or academic employers. This suggests newly-qualified PhD holders, rather like Feynman, are reliant on an awareness of their own learning, rather than that of their students. These findings lead to the following proposition:

P12: Researchers may pitch the level of their classes too high.

Jenkins *et al*. (1998), Lindsay *et al*. (2002), and the House of Commons IUSS Committee (2009) identify that students perceive research-active lecturers to be less available than teachers not engaged in research. For example, Lindsay *et al*. (2002, p.309) report the following quote form a Master's student of Environmental Management:

> You've got this, in the back of your mind, if you go and see somebody, you know that you can't go and talk to them for too long, because they're always really busy, you know

This issue is said to be more acute for postgraduate students who often pay fees and living costs themselves (Lindsay *et al*., 2002). Astin (1993) and Astin and Chang (1995) undertook an analysis at

institutional level. Sampling 200 four-year undergraduate colleges in the US, both studies reported that colleges with a research-led mission increases student dissatisfaction. These findings lead to the following proposition:

P13: Researchers have less time to be available to students, and hence provide them with less support

Method

Questionnaire design

The questionnaire used in the study consisted of three sections. Section one consisted of 61 statements to elicit perceptions of the teaching-research nexus, requiring respondents to indicate their acceptance using a five-point Likert scale anchored with 'strongly agree' and 'strongly disagree'. Given the novelty of the research and the paucity of applied studies considering the research-teaching relations that have applied questionnaire methods there are no other scales available to draw items from for the purposes of this research. Each hypothesised factor is measured by a number of scale-items, derived from the extant literature in education and accounting and adapted to the context of this study. The statements were developed after conducting 16 interviews with accounting academics that allowed the researchers to better contextualise some of the statements[ii]. 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. Both positive and negative statements were made. Sample statements include: 'Students enjoy learning activities based on real world examples from accounting and finance practice' (normative statement, positive statement); and 'My research interest in accounting and finance has meant I have become bored and disinterested in teaching the subject' (own experience, negative statement). Section two contained questions on demographic information including gender and seniority. A third section, not used for the purposes of this paper, elicited respondents' views on eight statements made about

the teaching-research nexus.

Data collection

Questionnaires were distributed by email to 1491 accounting academics in the UK using Helliar *et al*.'s (2008) British Accounting Association's Research Register[iii]. The aim of the study was identified within the email sent within 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. Usable questionnaires were obtained for 257 respondents, representing a response rate of 17.2%. This is similar to other surveys of accounting academics, e.g., Lowe and Locke (2005) and Brinn *et al*. (2001) achieved response rates of 16% and 23.6% when surveying perceptions of journal quality.

Analysis and results

The teaching–research gestalt (i.e. the two second-order factors) are theoretically described by 13 propositions which are defined by 13 first-order factors; in turn the 13 first-order factors describe two second-order factors calibrating positive and negative effects of the gestalt – see Figure 1. Each first-order factor constitutes a measure which is operationalized by a number of survey items. Specifically, a number of items describe each factor. This allows an assessment of the construct validity, via factor analysis, and internal constancy reliability to be performed on the responses to the items that make-up the micro-attribute.

Confirmatory factor analysis was used to assess the ability of survey items to describe the first-order factors and the overall teaching-research gestalt second-order factors. There were three stages to the procedure as shown in Figure 1. The first stage consisted of an analysis of the relationship

between the items (observed variables) and the first-order factors (unobserved variables). The analysis is reported in table 1. All the items included in the model are listed, albeit in an abbreviated form, in column 1 and the standardised regression weights (SRW) (factor loadings) shown in column 2. The squared multiple correlations (SMC), i.e., the percentage of the variance of each item accounted for by the micro-attribute (common factor), are shown in column 3. Specifically, 11 first-order factors were identified from the 13 propositions.

The second stage consists of an examination of the SRWs for each of the first-order factors. SRWs less than 0.4 are removed as they have limited ability to represent the factor. After careful qualitative consideration of their relationship to other factors, rejected items are offered to other first-order factors to see how well they load. The retained items are then used to create a composite measure for each micro-attribute – see table 1. Cronbach alpha coefficients are reported as a measure of internal consistency reliability. Although guidelines for acceptable thresholds vary, Nunnally and Bernstein (1982) suggest a cut-off of around 0.6 for coefficient alpha is adequate for measures not intended to be widely used in applied research in different contexts and cultural settings.

Stage three consists of an assessment of the relationship between the two teaching-research gestalt second-order factors and the first-order factors and their constituent items. The analysis is shown in table 2. It empirically identifies how the two second order factors that describe the teaching-research gestalt are represented by the first-order factors that were derived from the extant literature.

Stage four considers the goodness-of-fit of the model to the data. To evaluate the fit of the measurement models, the standardised root mean square residual (SRMR) is used in tandem with

the root mean square error of approximation (RMSEA) as recommended by Hu and Bentler) and MacCallum and Austin (2000)[iv,v, vi].

Analysis and Findings

Using the factor analysis procedure described above, 11 first-order factors were identified relating to ten propositions. Three propositions, specifically P11-13, could not be supported. Proposition P5 was not distinct and was empirically identified as relating to two separate factors. Each of these 11 factors are described in the following section.

Factor I is labelled 'extrinsic rewards of research and consists of seven items directly derived from proposition P1: all related to extrinsic rewards issues. Analysis of the SRWs identifies the factor is largely accounted for by issues relating to institutional values: specifically the valorisation of research over teaching. This factor – and underlying proposition - can be considered as having a negative impact on the nexus.

Factors II to IV each address curriculum issues. Factor II is labelled 'research promotes critical analysis' and consists of four items derived from proposition P2, conceptualised as having a positive effect on relations between faculty research and student learning. This factor can be interpreted as academic beliefs that research plays an active role in ensuring the curriculum includes contemporary material and that student learning is at the level of critical enquiry.

The third factor is labelled 'research dissonance from the curriculum' and consists of five items relating to proposition P3. Factor III is viewed as having a negative relationship on the research and learning connection. Here research is seen as something potentially detrimental in an already

cramped curriculum, driven by the needs of professional bodies and employers. Reasons for this conflict include student apathy to faculty research and distorting effects of the inclusion of research.

Factor IV, consists of two items derived accordingly from proposition P4. This factor refers to the challenge of including contemporary research into a professionally-driven curriculum and is seen as having a negative effect on the gestalt.

Factor V is labelled student learning and is labelled 'research-led teaching'. The factor consists of three items relating to proposition P5 expresses a belief that researchers are more competent to teach and promote student learning.

The sixth factor is described as 'researcher stimulation of ideas' using items from proposition P6 and has theoretically a positive effect on the gestalt. The underlying theme is that teaching and research are mutually beneficial, as for example, teaching can stimulate ideas, and integrating the two increases research productivity.

Factor VII, 'research and teaching: different attributes' is in direct opposition to factor VI and uses items created from proposition P7. Factor VII describes the conflict created by the forces of massification of higher education, whereby scholars are expected to excel in a number of different spheres. It should have a negative impact on the gestalt.

The eighth factor created is labelled 'students value contact with researchers' which directly relates to two items derived for proposition P8. This factor, theoretically positive impact on the gestalt, describes a situation where student learning is enhanced by contact with productive and well-known

scholars in the field: something of the 'unique-selling proposition' marketed by elite research-intensive institutions.

Factor IX, the 'development of professional skills' is seen a negative factor on the connection between student learning and faculty research. This factor, relating to proposition P10, espouses a belief that accounting is a professional and vocational course, which is more a question of 'how to', rather than 'why'. Thus, the ability and desirability of including academic research into the curriculum is at odds with creating, industry-ready young professionals.

'Currency of research to the curriculum' is the label given to factor X, which in turn uses items created for proposition P5. This factor views research as essential to the curriculum to provide it with a 'cutting edge' and allow teachers to set students on the road to research, which suggest a positive impact on the gestalt.

Finally, factor XI consists of two items derived from proposition P13 and is seen as having a positive impact of the gestalt. Specifically, factor XI relates to the desirability of applying learning to professional practice.

Table 2 reports the correlation matrix between the eleven factors along with the standardised means and standard deviations for the eleven scales. Standardised means represent the weighted sum of the standardised item scores of the retained items for each factor[vii].

Table 2 here

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

To evaluate the expectation that these 11 factors can be considered a two-sided gestalt of positive and negative effects, a second-order factor analytic model is constructed. Specifically two second order factors are created as unobserved variables. The first higher order factor, positive effects are measured by factors II, V, VI, VIII, X, and XI. The second higher order factor is measured by factors I, III, IV, VII, and IX. The results are shown in table 3. Each of the first-order factors load onto the hypothesised second-order factor with strong SRWs > 0.4.

Table 3 here

This suggests that positive aspects that encompass the teaching-research gestalt are in order of importance: 'Currency of research to the curriculum' (0.77); 'Research-led teaching'; 'Students value contact with researchers' (0.65); 'Research promoting critical analysis' (0.64); 'Researcher stimulation of ideas' (0.57); 'Student learning' (0.54). Similarly the negative side of the gestalt is measured by in order of importance: 'Research dissonance from the curriculum' (0.89); 'Research and teaching: different attributes' (0.75); 'Development of professional skills' (0.57); 'Tension between research and the professional curriculum' (0.54); and 'Extrinsic rewards of research'.

To evaluate the fit to the data, three models are considered. Model A is a one-factor model tested purely for comparison purposes only. This model hypothesises that no factors exist and all the items load onto one-factor measuring the relationship of research and teaching. Model B is an eleven-factor model based on the eleven first-order factors identified in the factors. Model C is a second-order CFA model, with two higher order factors: the first measured by factors II, V, VI, VIII, X, and XI; the second by factors I, III, IV, VII, and IX. Predictably, the data demonstrates an inadequate fit to the one-factor model (Model A), with an RMSEA value of .111 and SRMR value of .125 indicating rejection (see Table 4). Model B is at the threshold of acceptable fit. However, model C produces fit indices clearly indicative of satisfactory fit (RMSEA = 0.057; SRMR = 0.087). Furthermore Model C is

also preferable to Model B on the grounds of parsimony (see Lance *et al*., 1992). In conclusion, the nested two second-order factor, eleven first-order factor model is chosen.

Table 4 here

Discussion, extensions and limitations

In this paper we have attempted to calibrate the concept of the teaching-research gestalt, which has been widely discussed in the literature, often under the guise of the term the 'teaching-research nexus'. Notably we demonstrate that, in the discipline of accounting, there are six factors that describe the positive effects of relations between academic research and teaching. We also identify five factors that militate against productive relations between the two. This double-edged sword we term the teaching-research gestalt. The clear implication of these findings is that although faculty research can indeed be beneficial to teaching and vice versa, in other ways there can be negative effects. Or, in other words, the relationship between, and utility of, academic research and teaching requires judicious management.

The teaching research gestalt constructs developed in this paper largely correspond to their description in the literature. The factor model replicates the 'extrinsic rewards' proposition as a unitary factor. Researcher issues are described by just two factors (VI and VII). Curriculum issues are described by four factors (II, III, IV, and X). Issues relating to student learning are measured by four factors (V, VIII, IX, XI). Thus, the faculty research and student learning nexus empirical model can described as consisting of four broad types of factors: (i) where there are few material rewards for the academic to promote a nexus; (ii) where teaching and research can be mutually beneficial, but require different personal attributes; (iii) a view that research promotes critical enquiry, which stifles and is stifled by a professional and vocational curriculum; and (iv) a residue of issues where, by and large, research is deemed to have a positive effect on student learning. These eleven factors are

described by two second-order factors that describe a gestalt. That is, two opposing sets of forces that shape the relationship between teaching and research. The value of research to teaching is characterised by the value of research to the curriculum, the notion that research-active staff are highly committed to learning, the value students place on contact with researchers, the ability of research to promote critical analysis; how teaching can stimulate researcher thinking, and the direct relevance of research and practice for student learning. The problems of linking research and teaching are considered the lack of relevance of contemporary research to the curriculum, the different personal qualities required to succeed as a teacher or researcher, the necessity of developing professional skills rather than research skills in students, the technical content gaps that can be created by making a curriculum too research-focused, and institutional focus on research at the expense of teaching.

What is also of interest are the three propositions that could not be adequately measured by this questionnaire, specifically P11 'Students exposed to research are more likely to consider a career in research'; P12, 'Researchers may pitch the level of their classes too high'; and P13, 'Researchers have less time to be available to students, and hence provide them with less support'. P11 was derived from the general education literature where it has been identified that universities act as a fertile recruiting ground for junior researchers via PhD programmes and academic staff acting as role models. However, the failure of this proposition to be empirically replicated probably reflects the paucity of UK accounting students continuing to doctoral study, given the availability of lucrative careers in professional accountancy firms, the City of London and other major industrial and public sector employers. The exclusion of P12 ('Researchers may pitch the level of their classes too high') may be an expression of the limited inclusion of academic research in the accounting curriculum given its prescription by professional accountancy bodies with their heavy emphasis on the acquisition of technical skills. Finally, the failure of P13 'Researchers have less time to be available to

students, and hence provide them with less support' is perhaps encouraging, suggesting there was little support for the idea that being an active researcher made one a less supportive teacher.

There is a necessary limit on the length of published papers which means that only a small proportion of the measurement effort can be reported. We cannot therefore consider in any detail those items that were excluded from the analysis or scales with inadequate measurement properties. However, this paper provides sufficient detail for replication purposes and all items used in this study, both those included and excluded from the analysis are reported.

The paper considers UK accounting academics' views on the teaching-research gestalt. Consequently, the paper suffers from three limitations that are suggestive of future research. First, accounting education in the UK is in some ways different to other countries and cultures. It would be interesting to establish whether the model operates equivalently in other countries where governmental, institutional, regulatory, funding and professional forces are different. Second, the paper considers just the narrow discipline of accounting. It would be interesting to establish how applicable the model, and the discarded items and scales derived from the higher education literature, is in other disciplines whether relating to professional practice or not. Third, the paper considers *faculty* views rather than *student* views. As identified in the literature student views on teaching-research relations are potentially very valuable (Neumann, 1992, 1994) so it would be interesting to undertake a comparative measurement study of faculty and staff perspectives.

It is hoped that the measure of the research-teaching gestalt developed and validated in this paper will be carefully and critically examined in future higher educational research. Future work may wish to use all the original items or just the parsimonious measures reported in Table 1. Alternatively

researchers may just wish to use some of the constituent scales if the theory they are using relates to that particular measure.

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

REFERENCES

Allen, M. (1995). Research productivity and positive teaching evaluations: examining the relationship using meta-analysis. *Paper presented at the Annual Meeting of the Western States Communication Association* (Portland, OR, February 10-14, 1995). http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/13/ac/c7.pdf

Astin, A.W. (1993). *What matters in College? Four critical years revisited*. San Francisco: Jossey Bass.

Astin, A.W. and Chang, M.J. (1995). Colleges that emphasize research and teaching: Can you have your cake and eat it too? *Change: The Magazine of Higher Education*, Sept/Oct, 45-49.

Austin, A. (1996). Institutional and departmental cultures: The relationship between teaching and research. In Faculty teaching and research: Is there a conflict? Ed J. Braxton, 61-74, San Francisco, Jossey-Bass.

Barnett, R. (1992). Linking teaching and research: A critical inquiry. *Journal of Higher Education*, 63, 619-636.

Barnett, R. (2007). *A Will to Learn: Being a Student in an Age of Uncertainty*. Milton Keynes: OU Press.

Bellas, M.L. and Toutkoushian, P.R. (1999). Faculty time allocations and research productivity: gender, race and family effects. *Review of Higher Education*, 22, 367-390.

Berry, J.W. (2008). Globalization and acculturation, *International Journal of Intercultural Relations*, 32 (4), 328-336

Bowden, R. (2000). Fantasy Higher Education: university and college league tables. *Quality in Higher Education*, 6, 41-60.

Boyer, E. L. (1992). Scholarship reconsidered: Priorities of the professoriate. *Issues in Accounting Education*, 7, 87-91.

Braxton, J.M. (1996). Contrasting perspectives on the relationship between teaching and research. In *New Directions for instructional research*. Ed. J.M. Braxton. San Francisco: Jossey-Bass.

Brew, A. (1999). Research and teaching: changing relationships in a changing context. *Studies in Higher Education*, 24, 291-300.

Brew, A. (2006). *Research and Teaching: Beyond the Divide*. London: Palgrave Macmillan.

Brew, A. and Boud, D. (1995). Teaching and research: Establishing the vital link with learning, *Higher Education*, 29, 261-273.

Brinn, T., Jones, M.J. and Pendlebury, M., (2001). The impact of research assessment: exercises on UK accounting faculty. *British Accounting Review*, 33, 333-355.

Coaldrake, P. and L. Stedman 1999. *Academic work in the twenty-first century: Changing roles and policies.* Canberra: Department of Education, Training and Youth Affairs.

Coate, K., R. Barnett, and G. Williams, (2001). Relationships between teaching and research in England. *Higher Education Quarterly*, 55 2: 158-174.

Colbeck, C. (1998). Merging in a seamless blend: How faculty integrate teaching and research. *Journal of Higher Education* 69, 647-671.

Coppage, R. E. and Baxendale, S. (2001). A synergistic approach to an accounting educator's primary responsibilities. *Accounting Education*, 10, 239-246.

Cullen, J., Richardson, S. and O'Brien, R. (2004). Exploring the teaching potential of empirically-based case studies. *Accounting Educatio*n, 13, 251-266.

Durning, B. and Jenkins, A. (2005). Teaching research relations in departments: The perspective of built environments academics, *Studies in Higher Education*, 30(4), 407-26.

Elton, L (2001). Research and teaching: conditions for a positive link [1]. *Teaching in Higher Education*, 6 (1), 43-56

Fairweather, J. (1993a). Academic values and faculty rewards, *The Review of Higher Education*, 17, 43-68.

Fairweather, J. (1993b). Faculty reward structures: Towards institutional and professional homogenization. *Research in Higher Education*, 34, 603-623

Fairweather, J. (1994). The value of teaching, research and service. In *The NEA 1994 National Almanac of Higher Education*. pp. 39-58.

Fairweather, J.S. (1996). *Faculty work and public trust: Restoring the value of teaching and public service in American academic life.* Boston: Allen and Bacon.

Fairweather, J.S. (2002). The mythologies of faculty productivity. *Journal of Higher Education*. 73 (1), 26-48.

Felix Committee (2006). *The supply and demand for accounting PhDs*. American Accounting Association, Sarasota, FL.

Ferguson, J., Collinson D., Power, D. and Stevenson, L. (2005). What are recommended accounting textbooks teaching students about corporate stakeholders? *British Accounting Review* 37 (1), 23-46.

Fox, M. (1992). Research teaching and faculty productivity: Mutuality versus competition in academia. *Sociology of Education*, 65, 293-305.

Goldstein, D.L., and Neugebauer, G. (1995). Special preface to R. Feynman (Ed.). *Six Easy Pieces*. London: Penguin Books.

Gonzalez-Brambila, C. and Veloso, F.M. (2007). The determinants of research productivity: A study of Mexican researchers. *Research Policy* 36, 7, 1035-51.

Goode, W. J. (1960). A Theory of Role Strain. *American Sociological Review*, 25, 483-496.

Grant, M., and Piatt, W. (2008). The cost of excellence. *Times Higher Education Supplement*, 6.3.08.

Griffiths, R. (2004). Knowledge production and the research-teaching nexus: the case of the built environment disciplines. *Studies in Higher Education*, 29, 709-726.

Hattie, J., and Marsh, H. W. (1996). The relationship between research and teaching: a meta-analysis. *Review of Educational Research*, 66, 507-42

Helliar, C. V., Gray, R. H., and Monk, E. A. (2006). *The British Accounting Review Research Register*, London: Academic Press.

Hermanson, D.R., and Hermanson, H.M. (1996). Maximising research productivity: Some ideas to consider. *Accounting Perspectives*, 2 Fall, 269-306.

Higher Education Funding Council for England (HEFCE). (2000. The interactions between research, teaching and other academic activities – Annex B: academic activity, in: *HEFCE Fundamental Review of Research Policy and Funding*. London: HEFCE.

Higher Education Funding Council for England (HEFCE) (2007). *Recurrent grants for 2007-08*. London: HEFCE.

Higher Education Funding Council for Wales (HEFCW). (2007). *Circular W07/12HE Recurrent Grant 2007/08.* Cardiff: HEFCW.

Higher Education Statistics Agency (HESA). (2005). *Students in Higher Education Institutions 2004/05*, Table 0a. www.hesa.ac.uk/

Higher Education Statistics Agency (HESA). (2008). *All HE students by level of study, mode of study, subject of study, domicile and gender 2006/07*, Table 2e. www.hesa.ac.uk/

Horta, H., Dautel V. and Veloso F.M. (2012). An output perspective on the teaching-research nexus: An analysis focusing on the United States higher educational system. *Studies in Higher Education*, 37(2), 171-187.

Hu, L.T. and Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55.

Hunter, A-B, Laursen, S.L. and Seymour, E. (2007). Becoming a scientist: the role of undergraduate research in students' cognitive, personal, and professional development. *Science Education*, 91, 36-74.

Inanga E.L. and Schneider, B.W. (2005). The failure of accounting research to improve accounting practice: a problem of theory and lack of communication. *Critical Perspectives on Accounting*, 16 (3), 227–248.

Innovation, Universities, Science and Skills Committee (IUSSC).(2009). Students and universities, 11th Report. London: House of Commons.

Institute of Chartered Accountants of Scotland (ICAS). (2007). *Principles over rules*. Edinburgh: ICAS.

Jenkins, A. (2004). *A guide to the research evidence on teaching-research relations.* York: Higher Education Academy.

Jenkins, A., Blackman, T., Lindsay, R. and Paton-Saltzberg, R. (1998). Teaching and research: student perspectives and policy implications. *Studies in Higher Education*, 23 127-41

Jenkins, A., Healey, M. and Zetter, R. (2007). *Linking teaching and research in disciplines and departments.* York: Higher Education Academy.

Kane, R., Sandretto, S. and Heath, C. (2004). An investigation into excellent tertiary teaching: Emphasising reflective practice, *Higher Education*, 47, 283-310.

Kelly, M., Davey, H. and Haigh, N. (1999). Contemporary accounting education and society, *Accounting Education*, 8, 321-340.

Knight, P.G. (1987). The relationship between teaching and research, *Area*, 19, 350-352.

Lindsay, R., Breen, R. and Jenkins, A. (2002). Academic research and teaching quality: the views of undergraduate and postgraduate students. *Studies in Higher Education*, 27, 309-27.

Leslie, P. L., Harvey L. K. and Leslie, G. J. (1998). Chief academic officers' perceptions of the relationship between faculty research and undergraduate teaching, *Sociological Spectrum*, 18, 151-176.

Lowe, A., and Locke, J. (2005). Perceptions of journal quality and research paradigm: results of a web-based survey of British accounting academics. *Accounting, Organizations and Society*, *30*(1), 81-98.

MacCallum, R. C., and Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology*, *51*(1), 201-226.

Marsh, H.W. and Dillon, K.E. (1980). Academic productivity and faculty supplemental income. *Journal of Higher Education*, 51, 546-555.

McKee, A. (2002). Evidence-based practice in health sciences. *Exchange*, 3, 19-20. www.exchange.ac.uk/issue3.asp.

Mitchell, J.E. and Rebne, D.S. (1995). Nonlinear effects of teaching and consulting on academic research productivity. *Socio-Economic Planning Sciences*, 29, 47-57.

Neumann, R. (1992). Perceptions of the teaching research nexus: A framework for analysis, *Higher Education* 23: 159-171.

Neumann, R. (1993). Research and scholarship: perceptions of senior academic administrators, *Higher Education,* 25, 97-110.

Neumann, R. (1994). The teaching-research nexus: applying a framework to university students' learning experiences*. European Journal of Education*, 29, 323-39.

Noser, T.C, Manakyan, H. and Turner, J.R. (1996). Research productivity and perceived teaching effectiveness: a survey of economics faculty, *Research in Higher Education*, 37 (3), 299-321.

Nunnally, J. C., and Bernstein, I. H. (1994). *Psychometric Theory* (3).McGraw-Hill. *New York*.

Otley, D. (2002). British research in accounting and finance (1996-2001): the research assessment exercise, *British Accounting Review*, 34, 387-417.

Plumlee, R. D., Kalchelmaier, S. J., Madeo, S. A., Pratt, J. H., and Krull, G. (2006). Assessing the shortage of accounting faculty. *Issues in Accounting Education*, 21, 113-125.

Porter, S. R. and Umbach, P. D. (2001). Analyzing faculty workload data using multilevel modelling. *Research in Higher Education*, 42, 171-196.

Power, M. (1991). Educating accountants: Towards a critical ethnography. *Accounting, Organizations and Society*, 16(4), 333-353.

Prosser, M., Martin, E., Trigwell, K., Ramsden, P. and Lueckenhausen, G. (2005). Academics' experiences of understanding of their subject matter and the relationship of this to their experiences of teaching and learning. *Instructional Science*, 33, 137-157.

Ramsden, P. and Martin, E. (1996). Recognition of good university teaching: policies from an Australian study, *Studies in Higher Education*, 21, 299-315.

Ramsden, P. and Moses, I. (1992). Associations between research and teaching in Australian higher education. *Higher Education*, *23*(3), 273-295.

Robertson, J. (2007). Beyond the 'research-teaching nexus': Exploring the complexity of academic experience. *Studies in Higher Education* 32, 5, 541-546.

Robertson, J., and Bond, C. H. (2001). Experiences of the relation between teaching and research. What do academics value*? Higher Education Research and Development*, 20, 5-19.

Romainville, M. (1992). Teaching and research at university: a difficult pairing, *Higher Education Management*, 8, 135-144.

Serow, R.C. (2000). Research and teaching at a research university. *Higher Education*, 40, 449-463.

Shin, J.G. (2011). Teaching and research nexuses across faculty career stage, ability and affiliated discipline in a South Korean research university. *Studies in Higher Education*, 36 (4), 485-503.

Sikka, P. (1987). Professional education and auditing books: a review article. *British Accounting Review* 19 (3), 291-304

Sikka, P., Haslam, C., Kyriacou, O. and Agrizzi, D. (2007). Professionalizing Claims and the State of UK Professional Accounting Education: Some Evidence, *Accounting Education: An International Journal*, 16(1), 3-21.

Sikka, P., and Willmott, H. (2002). Commentary on 'accountability of accounting educators and the rhythm of the university: resistance strategies for post-modern blues', *Accounting Education: An International Journal*, 11(2), 191–197.

Simons, M. and Elen J. (2007). The 'research-teaching nexus' and 'education through research': An explosion of ambivalences. *Studies in Higher Education*, 32 (5). 617-31.

Smeby, J-C. (1998). Knowledge production and knowledge transmission: the interaction between research and teaching at universities, *Teaching in Higher Education*, 3, 7-20

Swain, M.R. and Stout, D.E. (2001). Survey evidence of teacher development based on AECC recommendations. *Journal of Accounting Education*, 18, 99-113.

Tien, F. (2000). To what degree does the desire for promotion motivate faculty to perform research? A test of expectancy theory. *Research in Higher Education*, 41, 723-752.

Times Higher Educational Supplement (THES). (2007). Leader: Excluding the many for the sake *of the few,* 2.2.07. www.thes.co.uk

uz Zaman, M. Q. (2004).*Review of the Academic Evidence on the Relationship Between Teaching and Research in Higher Education. Research Report No 506* Nottingham: Department for Education and Skills, DfES Publications.

Vidal, J. and Quintanilla, M.A. (2000). The teaching and research relationship within an institutional evaluation. *Higher Education*, 40, 217-229.

Volkwein, J. F., and Carbone, D. A. (1994). The impact of departmental research and teaching climates on undergraduate growth and satisfaction. *The Journal of Higher Education*, 147-167.

Webster, C. (2002). Constructing the research-teaching link in the built environment disciplines. *Exchange*, 3, 15-16. www.exchange.ac.uk/issue3.asp

Webster, D.S. (1985). Does research productivity enhance teaching? *Educational Record*, 66, 60-63.

Zamorski, B. (2002). Research-led teaching and learning in higher education: a case, *Teaching in Higher Education* 7(4), 411-427.

Zeff, S.A. (1989a). Recent trends in accounting education and research in the USA: some implications for UK academics. *British Accounting Review*, 21, 159-176

Zeff, S.A. (1989b). Does accounting belong in the university curriculum? *Issues in Accounting Education*, 4 (2), 203-210.

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

Zimbardi, K. and Myatt, P. (2012). Embedding undergraduate research experiences within the curriculum: a cross-disciplinary study of the key characteristics guiding implementation. *Studies in Higher Education*,

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

[i] The American Accounting Association notes a decline in accounting PhDs graduating in the US and Canada from 195 in 1989 to 110 in 2001 (Fogarty, 2006). The Felix Committee (2006).surveying accounting department chairpersons in the US and Canada identifies an estimated shortage of 500 available faculty in 2005-2008.

[ii] The findings of the interviews are not reported within this paper but form part of a larger enquiry into teaching and research relations within accounting academe and professional education.

[iii] The Research Register is a comprehensive listing of individual accounting academics based in the UK and Ireland, by department and rank. It also lists their research and teaching interests and their publications in a bi-annual period. It is published by the British Accounting Association, a learned body whose members are accounting academics in theUK.

[iv] A number of authors).warn against use of more common goodness of fit indices such as the goodness of fit index (GFI).and adjusted goodness of fit index (AGFI).which are widely used in the structural equation modelling literature.

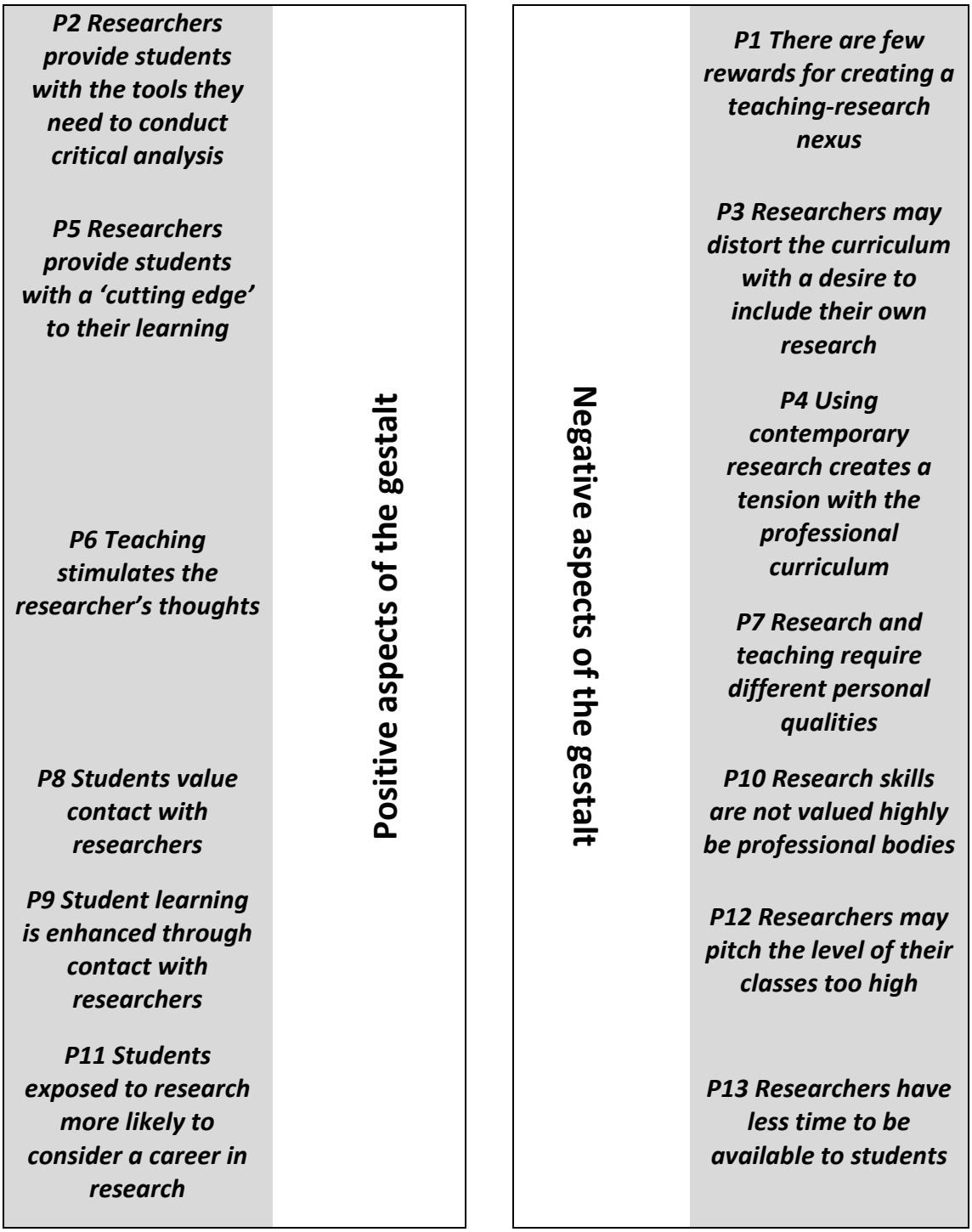
[v] Hu and Bentler (1999 p.26).indicate for samples *N*<500, the combinational rule SRMR < .11 and RMSEA < .08 is "extremely sensitive in detecting model with mispecified factor covariances".

[vi] The RMSEA statistic also reports 90% confidence intervals.

[vii] That is, the sum of item-scores each multiplied by the SRW and the total divided by the sum of the SRWs.

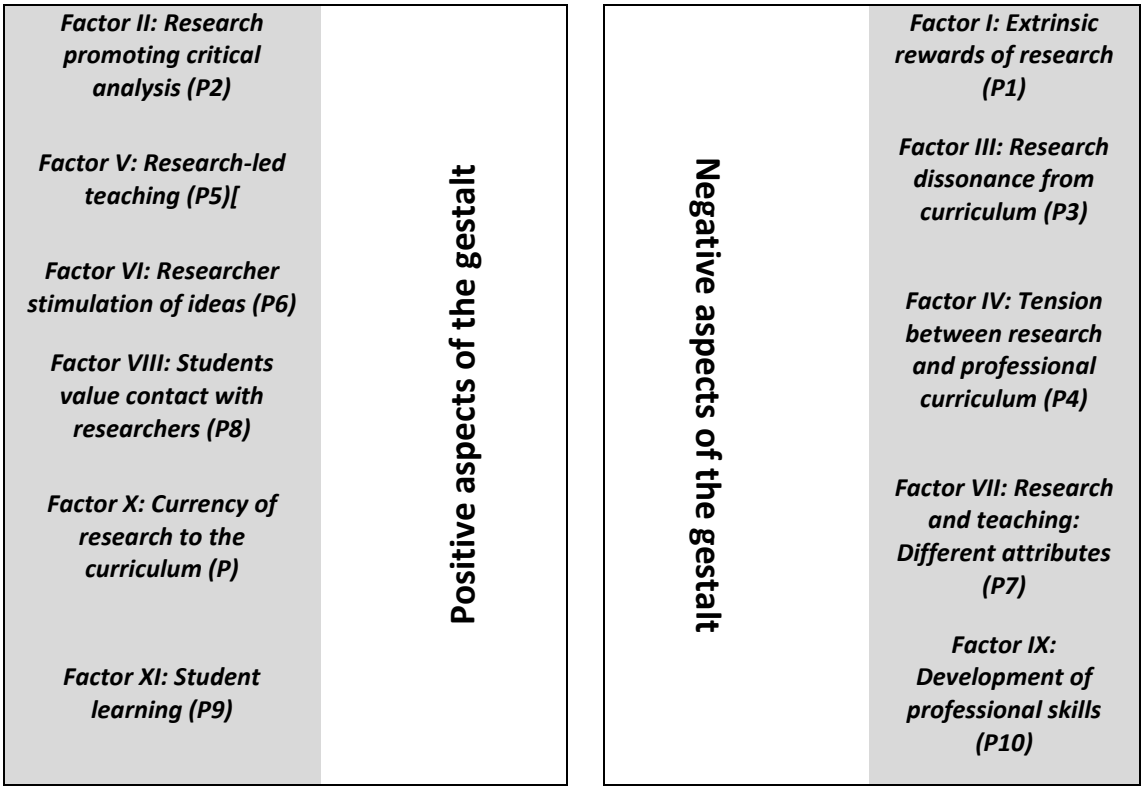
This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

Figure 1: Hypothesised Teaching-Research Gestalt Model



This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

Figure 2: Empirical Teaching-Research Gestalt Model



This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

Table 1: Summary of teaching-research gestalt factors

Item and description of factor	SRW	SMC
Factor I: Extrinsic rewards of research (P1).[-ve] *α = .85*		
Research, rather than teaching is rewarded by promotion at my institution	.880	.775
Research is valued more highly at my institution	.712	.506
Teaching is not a significant factor in faculty rewards	.719	.517
Promotion policies fail to recognise good accounting and finance teaching	.691	.394
Faculty who publish research are better rewarded than those who spend their time on teaching	.622	.387
Faculty who seek promotion, publish in academic journals at the expense of other activities	.628	.394
As a result of the demands of research activity, I cannot spend as much time supporting my students	.420	.177
Factor II: Research promoting critical analysis (P2).[+ve] *α = .85*		
Integrating research into teaching promotes students' critical enquiry	.871	.759
Using research as part of a holistic approach to learning assists students' critical thinking skills	.886	.785
Research-active academics provide students an exemplar of a questioning approach to learning	.747	.558
Research activity contributes to updating the curriculum	.581	.338
Factor III: Research dissonance from curriculum (P3).[-ve] *α = .75*		
Increased specialisation of knowledge means research is remote from what students need to know	.790	.624
Inclusion of an academic's research overloads an already cramped curriculum	.761	.578
Researchers can distort the curriculum with their own research at the expense of subject coverage	.580	.337
Including specialised research leads to lecturers pitching the course too high	.497	.247
Students rarely see staff research as valuable to their own learning	.470	.221
Factor IV: Tension between research and professional curriculum (P4).[-ve] *α = .63*		
Accounting profession's influence on the curriculum creates tension if linking research to teaching	.492	.242
Inclusion of research at the expense of professional syllabus coverage leads to gaps in the curriculum	.943	.889
Factor V: Research-led teaching (P5)[+ve] *α = .73*		
Teaching staff involved in research are more committed to student learning	.817	.668
Teaching staff who are involved in research are more enthusiastic about their teaching	.846	.715
Research active staff adopt a more holistic and interpretative approach to their teaching	.468	.219
Factor VI: Researcher stimulation of ideas (P6).[+ ve] *α = .72*		
Teaching can stimulate research	.616	379
Integrating teaching and research increases research productivity	.677	.459
'Some of my best research ideas have come out in the course of teaching in an area..'	.420	.177
Teaching and research are mutually beneficial	.680	.462
Time devoted to teaching is conducive to research output	.534	.285
Factor VII: Research and teaching: Different attributes (P7).[- ve] *α = .74*		
It is unreasonable to expect good teachers to be good researchers and vice-versa	.707	.500
Teaching and research are different roles requiring different qualities	.828	.686
Factor VIII: Students value contact with researchers (P8).[+ve] *α = .88*		
My students consider my course is up-to-date because of my research activity	.864	.747
My students perceive me as enthusiastic about my course because of my research activity	.909	.826
Factor IX: Development of professional skills (P10).[-ve] *α = .76*		
Students on professionally-oriented courses should focus their learning on 'how to do the job'	.693	.480
Students need professional skills, not research skills	.887	.786
Factor X: Currency of research to the curriculum (P5).[+ve] *α = .59*		

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

'You need research to be at the cutting edge, an outdated course has no point in the real world'	.481	.232
It is important for a lecturer to engage in research as the world is constantly changing	.864	.746
Factor XI: Student learning (P9).[+ve] *α = .62*		
Students enjoy learning activities based on real world examples from practice	.494	.244
Students enjoy learning activities based on real world examples from research	.928	.861
Empirically based case studies provide a means of demonstrating real accounting practice	.419	.176

Table 2: Summary of two second-order factors

Item and description of factor	SRW	SMC
Panel A: Positive gestalt		
Factor II: Research promoting critical analysis (P2).	.643	.414
Factor V: Research-led teaching (P5)	.745	.555
Factor VI: Researcher stimulation of ideas (P6).	.572	.327
Factor VIII: Students value contact with researchers (P8).	.646	.417
Factor X: Currency of research to the curriculum (P5).	.766	.586
Factor XI: Student learning (P9).	.543	.295
Panel B: Negative gestalt		
Factor I: Extrinsic rewards of research (P1).	.441	.195
Factor III: Research dissonance from curriculum (P3).	.888	.789
Factor IV: Tension between research and professional curriculum (P4).	.538	.289
Factor VII: Research and teaching: Different attributes (P7).	.745	.556
Factor IX: Development of professional skills (P10).	.571	.326

Notes:
SRW: standardised regression weights (factor loadings).between unobserved common factors and each of their unobserved scale items. SRWs < .4 are not shown.
SMC: squared multiple correlations measure the percentage of variance of each item accounted for by the variance in the common factor.

Table 3: Goodness-of-fit statistics

Model A: One-factor model
χ2 (779).= 3235.23; χ2/d.f. = 4.15 *p* <.001; RMSEA = .111 (.107-.115); SRMR = .125.

Model B: Eleven-factor model
χ2 (783).= 2094.77; χ2/d.f. = 2.69 *p* <.001; RMSEA = .081 (.077-.085); SRMR = .111.

Model B: 2 second-order factor, eleven first-order factor model
χ2 (617).= 1124.72; χ2/d.f. = 1.82 *p* <.001; RMSEA = .057 (.051-.062); SRMR = ..087.

This is an Accepted Manuscript of an article published by Taylor & Francis in Studies in Higher Education on 21/03/16, available online: http://dx.doi.org/10.1080/03075079.2016.1152465

Table 4: Descriptive statistics

Factor	*Mean*	*Std Dev*	*I*	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*	*X*
I	1.34	.60										
II	1.40	.56	-.01									
III	1.60	.48	.37	-.15								
IV	1.69	.65	.18	.16	.44							
V	2.04	.69	-.20	.38	-.34	-.08						
VI	1.32	.39	.00	.38	-.11	.05	.30					
VII	1.83	.74	.31	-.14	.49	.31	-.30	-.20				
VIII	1.85	.88	-.12	.41	-.23	-.01	.39	.30	-.21			
IX	2.20	.71	.09	-.25	.37	.27	-.20	-.09	.30	-.20		
X	1.39	.53	-.16	.39	-.26	-.04	.48	.27	-.21	.32	-.24	
XI	1.32	.57	-.02	.34	-.09	-.05	.25	.22	-.07	.35	-.11	.31

Factor	*Mean*	*Std Dev*	*I*
A	1.74	.63	
B	1.57	.61	- .30

Note: p<.05 *r*>.15; *p*<.01 *r*>.16