Developing a methodology for evaluating the impact of Career Guidance in the modern age

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Abstract

This thesis describes the process for developing a methodology for evaluating the impact of Career Guidance interventions. The first paper gives the results of a systematic literature review which set out to summarise the current range of methodologies published in peer reviewed journals since 1987. This identified the wide range of methodologies and outcome measures being used which made the it hard to compare and accumulate evidence. The recommendations that arose from the study were to develop a framework that could be used to guide and combine results from different studies together with the development of a measure that could be used as a benchmark by a wide range of researchers and practitioners. This led to an empirical study which involved the development of a potential benchmark measure which was then piloted on two very different samples to establish both its usability, acceptability, reliability and sensitivity.

Initial Statements regarding this thesis

Professional practice statement

I am an Occupational Psychologist, Chartered with the British Psychological Society and Registered with the Health and Care Professions Council. As such I am exempt from Part 1 (Professional Practice Portfolio) of this Professional Doctorate. The work in this thesis therefore satisfies the requirements for Part 2 of the doctorate (Research Thesis).

The following provides a summary of my professional practice to provide the context for this thesis.

Education and Professional Associations

I completed my B.Sc. in Psychology at Exeter University in 1974. I then worked at the National Foundation for Educational Research (NFER), initially in the Test Department of the NFER Publishing Company (1976-1979) with Peter Saville. I then moved to the Research Foundation (1979 – 1981) where I led a project to develop a new range of ability tests designed to provide more diagnostic information concerning children's cognitive abilities. This formed the basis for a PhD at Reading University but, after completing that project in 1981, I became self-employed as a consultant psychologist. I then completed the teaching certificate for Further Education at Garnet College which was one of four higher education colleges in London specialising in further and higher education lecturer training. Its main focus was on teaching towards post-graduate qualifications awarded by the Council for

National Academic Awards (CNAA). I qualified with distinction based on two subjects Psychology and Maths. Due to personal circumstances I ran out of time for completing the PhD. However, I was invited onto the British Psychological Society's (BPS) Test Standards Committee on which I served for 4 years (1985-1989). I became a member of the BPS Division of Occupational Psychology (DOP) and subsequently served as a DOP committee member (1993-1995), became an Associate Fellow of the BPS and achieved Chartered status. Since serving on the Test Standards Committee I have been involved in the development and implementation of the new standards for qualifying in the use of Psychometrics as an Occupational Testing Verifier (2003 – 2008; 2017-present), as a BPS Test Reviewer and as a Consultant Editor for the Test Review process (2018-present).

I was the founder of the 16PF Users Group and Chair for 10 years during which time I met Ray Cattell and subsequently organised a series of seminars in which both Ray and myself presented issues and ideas concerning the measurement of personality (ran for 3 years between 1990 and 1992). The 16PF User Group has now changed its focus and name to The Psychometrics Forum. I have personally continued my professional development with a number of short courses including becoming a Certified Human Element Trainer (Train the Trainer 1991- based on FIRO Theory), an Action Learning facilitator and Solution Focused Therapy practitioner.

Psychology consultancy experience

After working as a Research Officer I have worked as a consultant psychologist to many organisations since 1981. This has involved four very different sectors (the business world

such as the European Central bank, UBS, Aggrevo, Boots, Bayer, Waitrose, Go Compare, Oxford University Press), Public Sector organisations (the MOD, Army Officer Selection Board, Admiralty Interview Board, the Civil Service, the UNHCR), Professional bodies (General medical Council, KPMG, ….) and Education (more than 100 universities, schools and colleges). The work has involved four very different kinds of skills which can be summarised as follows:

a) **Diagnostic and analytic consultancy**: I wrote the tender and then delivered a major project which investigated the validity of aircrew selection in each of the 3 forces - Army, Navy and Air Force. I have also conducted numerous smaller scale validation studies for organisations like Boots and Aggrevo and developed many competency frameworks based on best psychological practice.
b) **Personal and team development**: I have designed and facilitated interventions designed to encourage individuals to develop self-awareness and relationship building skills. This involves coaching and group facilitation work.
c) **Training**: I have designed and delivered training to managers, HR professionals, professional coaches, students and psychologists some leading to recognised qualifications including a Diploma in Coaching accredited by Coventry University and the Association for Coaching and several courses accredited by the BPS (the Certificates of Competence in Occupational Testing across a wide range of instruments – Hogan, NEO, 16PF, 15FQ+, FIRO, MBTI, Type Mapping).
d) **Research and Psychometric development**: I have designed, constructed and validated many psychometric instruments often using novel ideas both in terms of what they assess and how they assess it. This covers areas such as values,

resilience, interests, personality, roles and abilities. Some of these have been peer reviewed and achieved Registered Test status from the BPS.

In 2012 my work in the education sector expanded to include the supply of psychometrics that could be used for careers guidance schools. This is a challenging sector because careers guidance is now a legal requirement and yet seemingly underfunded. I began to question how to turn the interventions in this area from being a legal necessity to being a truly valued part of the curriculum. It was apparent that the belief in the value of careers guidance was high within the careers guidance profession but was not hugely respected outside the profession. This led to a desire to demonstrate more clearly the value of helping young people to find a career path that would motivate and fit their interests and abilities. Our tools were being used but the evidence of their effectiveness was lacking. I therefore and began to develop an approach which I called 'Distance Travelled.' It was at this time that I discussed how to make the process more academically respectable with Jo and Rachel which ended up in myself registering for this Professional Doctorate.

Publications in Books and Journals:

1. Review of the British Ability Scales: Published in Test Critiques by the Test Corporation of America, 1984.
2. Item Banking. Published by NFER Publishing Company 1979
3. Norm Referenced Testing and the Standard Scores. Published by NFER Publishing Company, 1979

4. “Educational Measurement.” (section in the Dictionary of Education edited by Phil Hills) published by Routledge and Kegan Paul 1982
5. Learn Together Series.” Test your Maths, English, Reasoning (6 booklets) published by Pan Books 1987.
6. “The Effects of Item by Item Feedback given during an Ability Test” British Journal of Educational Measurement. 51, 336-346, 1981.
7. “A Survey of Numeracy and Communications Tests for 16 Plus.” National Foundation for Educational Research. 1981.
8. Type Dynamics Indicator Manual – Team Focus Limited 2003; 2016
9. “Bring back the colour into personality measurement - a practitioner’s view of the Big Five” published in Principles of Organizational Behaviour by Robert Finch and Peter Rhodes Oxford University Press 2005
10. Assessment in the World of Work (or the Life of Brian) published in an anthology of assessment edited by Professor Dennis Child
11. Coaching with FIRO Element B published in Psychometrics in Coaching edited by Jonathan Passmore Published by Kogan Page 2008.
12. Action Learning Supervision in Coaching - published in Coaching Supervision edited by Jonathan Passmore Published by Kogan Page 2010.
13. Is Career Progression an Exercise in Serendipity – Career Matters Oct 2013
14. The Relational Lens – Cambridge University Press 2016

The following were published by Team Focus or in Selection and Development Review (SDR), British Psychological Society

1. So you want to be an ENFJ? (SDR 2004)

2. Emotional Intelligence and leadership (Team Focus 2011)
3. To give or not to give – that is a difficult question (Challenging assumptions regarding feedback of psychometric tests) (SDR 2011)
4. Level B Full – is it worth it. (SDR 2007)
5. Type Mapping – a more complete operationalisation of Jung's type theory (Team Focus 2010).
6. Do Team Building approaches need to change in 21st Century (Team Focus 2014)
7. Personality at Work (in preparation)

Systematic Literature Review

Career Guidance Interventions Evaluation. A systematic review (submitted for publication)

This paper has been submitted to the Journal of Vocational Assessment.

The Evaluation of Career Guidance Interventions: A systematic review and recommendations for future practice

Abstract

Effective careers guidance is essential if school leavers, and those looking to move job roles, are to make appropriate choices. However, despite the widespread practice, little is known about the effectiveness of career guidance interventions and the methodologies used to evaluate the outcome of career guidance interventions. This review aims to address this gap. Using a systematic approach to review the available literature, this study identified 15 research studies that were specifically designed to measure change following a programme or some other form of interventions. Given the great diversity of philosophies in career guidance, each suggesting different approaches for interventions both in style and content, generalisations concerning effectiveness were not possible. The review identified a wide range of outcome measures and evaluation designs employed in the field. This paper identifies common themes and presents a framework designed to classify interventions and outcomes. In doing so, it aims to allow evidence to be accumulated in a way that allows greater generalisations about what aspects of career interventions are most effective and provide a framework for careers guidance practitioners to evaluate the impact of their work.

Keywords: Careers, Guidance, Intervention, Evaluation, Evidence

Introduction

Careers guidance covers a range of activities specifically designed to assist people at any age and at any point throughout their lives, to make educational, training and occupational decisions and to manage their careers' (OECD 2004). However, the current state of Careers Guidance in schools must be considered against a backdrop of a rapidly changing world of work which is challenging the purpose and content of the educational curriculum - and which is reflected in increasing problems of keeping school children motivated to learn. For many, Career Guidance could play an important role. This is captured in Nietzsche's profound observation that "If we have our own 'why' in life, we shall get along with almost any 'how'" (Nietzsche, 1889). Increasingly pupils, students and even teachers are questioning the purpose and value of what they are being taught. Perhaps a little more career guidance can provide a better idea of possible directions which can feed into the purpose of their learning. In fact, there is substantial evidence that school counselling programs positively influence a wide range of factors such as classroom behaviour, attitudes to school, school attendance and decision making (Borders & Drury, 1992). Others provide evidence that career interventions are generally effective in assisting adolescents with their concerns about career-related decisions (Brown & Krane, 2000). The benefits of Career Guidance could, therefore, include helping people to find a longer-term purpose and to create greater energy and effort for what they are doing now. However, the evidence base is not sufficiently well established (Whiston, Brecheisen & Stephens, 2003) and there is a clear need for outcome-based research to demonstrate the benefits of career interventions.

Baudouin and Hiebert (2007) lament the inadequacy of evidence claiming that funders and policy makers acknowledge that career services are important, but need an evidence based on which to base their policy development – and that the current evidence base is insufficient to support the funding levels that are needed and being requested. Whilst there is a growing body of evidence, insufficient consideration has been given to the way in which careers interventions are evaluated. The current review has therefore set out to establish what is already known about the effectiveness of career interventions – and more specifically, what methods have been used to evaluate its effectiveness.

The purpose of this review is to establish a clearer picture of the approaches used to assess the benefits of career guidance. Rather than examine the utility of different approaches, as has been the focus of some meta-analyses (Brown & Krane 2000, Whiston 2003), this study aims to; examine the variety of the interventions used, consider the research designs employed and understand the outcome measures used to evaluate the interventions.

The changing nature of Careers Guidance

As far back as 1909, Parsons (who is regarded as the founder of the vocational guidance movement), developed what can be called the "talent matching" approach (Parsons, 1909). This has subsequently developed into the trait and factor theory of occupational choice within the evolving discipline of differential psychology. Parsons' core concept was that occupational choice required people to achieve an accurate understanding of their individual traits, (e.g. personal abilities, aptitudes, interests, etc.) together with sufficient knowledge of jobs and the labour market. This would allow rational and objective

judgements to be made. This approach dominated for many years and the person who developed this approach most successfully (and some would say most usefully) was John Holland, who took the proposition that people will gravitate towards environments that suit their personality and proceeded to define basic personality types which could also be used to describe work environments (Holland, 1959).

However, the labour market has changed. The world where people often pursued the same career for much of their working life has been replaced by a more dynamic environment where people are likely to have many jobs and careers – and sometimes in parallel. This makes the matching model not only more difficult but also less appropriate. Jobs are becoming more diversified and less defined. At the same time people's expectations have changed. Choice has increased, and people change jobs many times which is why job matching is like 'trying to place an evolving person into the changing work environment … is like trying to hit a butterfly with a boomerang' (Mitchell & Krumboltz, 2014). It is therefore understandable that there has been a drive for new approaches that adopt more dynamic models - and ones that shift the emphasis from guidance to education.

Today, Career Guidance has widened its remit from the matching approach, as it was increasingly influenced by more psychological and developmental approaches and also the need to factor in the environment, which heavily influences both expectation and opportunity. Changes in this approach were needed as the world changed and our assumptions concerning the stability of personal characteristics and secure jobs became less valid. Also the idea of career progression and hierarchical advancement gave way to concepts such as work-life balance, vocational identity and the more general concept of personal identity. Career planning needed to incorporate the reality of career flexibility, 'portfolio careers' and life trajectories. This means that Career Guidance needs to focus on

broader issues of career skills, self-efficacy, strategies for survival and the dynamics of coping, rather than focusing on the addition of information or content. Huteau (2001) claim that a significant contribution to the change in approach required, was a method developed at Laval University (Quebec) called the Activation of Vocational and Personal Development (Pelletier 1984). This was developed during the 1970s and was heavily influenced by the ideas of Carl Rogers and Jean Piaget, suggesting a more active and autonomous view of the individual.

A decade of public policy and practice inertia in the UK

This is important because helping individuals to find work that is suitable has many benefits to individual health and productivity, as well as to productivity and health of organisations (Waddell & Burton, 2006). Failing to find work that is suitable and meaningful is therefore likely to bring a range of challenges. This fact is well recognised, as demonstrated by recent reviews commissioned by the UK government. In 2007, Lord Sainsbury published a review of science and innovation policies called 'Race to the Top' in which he noted:

"There is a widespread consensus across the UK public and private sectors that the careers advice on offer in this country is severely lacking. .. ... In addition to being insufficient and of inconsistent quality, existing careers services provide advice too late to students" (Sainsbury, 2007, p. 104).

In 2011 Michael Gove (UK Minister for Education) claimed that up to a third of young people were wasting their time on college courses that did not lead to jobs or further

training. He was reacting to the government Review of Vocational Education conducted by Professor Alison Wolf (Wolf, 2011) who, in the Executive Summary wrote:

"The staple offer for between a quarter and a third of the post-16 cohort is a diet of low-level vocational qualifications, most of which have little to no labour market value. Among 16 to 19 year olds, the Review estimates that at least 350,000 get little to no benefit from the post-16 education system."

Whilst the authors could not identify any definitive studies that could be used to quantify such claims in an evidence-based way, there is clearly a concern that young people who take a vocational qualification in one field very often end up working in quite different ones. Moreover, the lower level the qualification, the less likely it is to be associated with employment in the sector concerned. For example, someone with a 'level 4' nursing qualification is more likely to be employed in the health sector than someone with a 'level 2' ICT qualification is to work in computing.

In 2013, schools became legally responsible for securing access to independent and impartial careers guidance for all their students in Years 9 to 11. Ofsted conducted a survey whereby inspectors visited 60 secondary schools and academies between December 2012 and March 2013 to evaluate how well this new duty was being carried out. In their report 'Going in the right direction?' they suggest that career guidance in schools is not working well enough:

"Only one in five schools were effective in ensuring that all its students in Years 9, 10 and 11 were receiving the level of information, advice and guidance they needed to support decision-making" (Ofsted, 2013, p. 5).

In 2014, the Gatsby Charitable Foundation commissioned (yet another) review of Career Guidance in which Lord Sainsbury wrote the forward. He makes this comment in the foreword (i.e. seven years after he wrote 'Race to the Top'):

"Very few people would disagree that good career guidance is critical if young people are to raise their aspirations and capitalise on the opportunities available to them. Yet equally few people would say that all is well with the current system of career guidance in this country. It is especially regrettable therefore that the current situation, in which so many young people are kept in the dark about the full range of options open to them, has been allowed to persist for so many years ..... Over the last 30 years governments of every hue, while reorganising and renaming the system, have spectacularly failed to take the actions necessary to improve the quality and consistency of career guidance provision for all young people. It is an appalling history which reflects well on no-one" (Sainsbury & Holman, 2014, pp. 2-3).

In December 2014, the then Education Secretary, Nicky Morgan, made a statement to the House of Commons (as recorded in Hansard) in which she said:

"It is widely acknowledged that careers provision in schools has long been inadequate…… I am pleased to tell the House that Christine Hodgson, chair of Capgemini UK and someone with a strong track record of developing young talent, will chair a new careers and enterprise company for schools (Morgan, 2014, column 892)".

In September 2015, Sir Michael Wilshaw gave evidence to the Education Committee in which he described careers guidance as

a "disaster area" in schools.

Numerous reports outside the UK have sought to outline the challenges and propose solutions (e.g. Outcomes for Career Guidance, OEDC, 2003; Career Guidance: New Ways Forward, OEDC, 2003). This shows that it is not lack of awareness that is the issue. The issue is clearly raised but there appears to be a lack of adequate implementation which boils down to two questions; 1) Is there sufficient funding? 2) Is the funding that is available being spent wisely? Both these questions would be addressed more effectively if there were a better evidence base. Understanding what information and practices are effective, for whom, and a clear description of valued outcomes would help to inform policy and practices.

The present study

No matter how we choose to define 'the client' in Career Guidance, those who embark on a particular course or intervention deserve more than a belief or hunch formed by the

service provider. Providing objective reasons is at the heart of evidence-based practice and outcome-focused research. It requires that there is a clear link between certain types of intervention and demonstrable indicators of success. As more research is undertaken, it should be possible to draw findings together with rigorous meta-analyses. A number of these have been conducted in this area: Oliver & Spokane (1988); Whiston, Sexton & Lasoff (1998); Brown & Krane (2000); Whiston, Brecheisen & Stephens (2003).

Thus Oliver & Spokane (1988) examined 58 different investigations, made 240 comparisons between experimental groups and the control groups and used approximately twenty different criteria and 7,311 subjects. They employed a fairly detailed coding system (total sample size, type of client, age of client, type of treatment, a detailed breakdown of treatment classes, level of counsellor training, intensity of treatment based on the number of sessions and total number of hours, size of each group, type and reactivity of outcome measures). They concluded that individual counselling produced more client gain per hour (or session) than any other intervention mode and that 'intensity' was the only significant contributor to outcome magnitude. This would seem to be an important finding - but we are then faced with two significant issues. The first is that this was dated 1988 and it is very likely that significant advances in technology could be transforming provision. The second is that the classificatory detail is still insufficient for guiding the design and implementation of interventions.

Brown et al. (2003) criticise previous meta-analyses for using data sets that only partially overlapped and for employing different meta-analytic methodologies. They conducted their own meta-analyses in which they identified five intervention ingredients that were individually associated with career choice outcomes (Brown et al 2003). These were written exercises, individualized interpretation and feedback of career inventories,

information on the world of work, modelling, and attention to building support. They also conclude that:

"The evidence clearly converges to suggest that career interventions are demonstrably real, yet probably of moderate magnitude... (and) the yield from these meta-analyses has been disappointingly meagre.... Unfortunately, the results of these analyses have consistently failed to identify client characteristics that might moderate effect size, and have yielded inconsistent results in analysis of treatment format, with the exception that fully self-directed interventions tend to be less effective than other formats" (Brown et al., 2003, p. 412).

To address these limitations., and to provide a platform for future research and practice, this study aims to review the evidence for the effectiveness of career guidance. Since the quality of empirical studies can vary greatly it was decided to restrict the review to studies that adopted pre- and post- designs within peer-reviewed publications only. This approach enabled the review of those studies that attempted to report the impact of career guidance interventions over time, rather than those that reported cross-sectional associations between concepts of interest (Hooley & Dodd 2014). Whilst this may miss relevant evidence that has not yet made it into the academic literature, it does provide a benchmark for what is currently recognised and acceptable in this field.

It is also recognised that qualitative studies could also provide a different perspective for evaluating impact. Whilst such data may provide useful insights, they are unable to provide measurable indications of impact. This makes them harder to convert into cost benefits which can be particularly important to policy makers and funding bodies (Hooley & Dodd 2014). It was therefore decided to restrict the search to quantitative data since this

would be more likely to provide evidence that would be most meaningful and impactful to policy makers rather than to career professionals.

Method

The purpose of this study was to review the published evidence for the effectiveness of career guidance interventions. The starting point was the identification of key journals in the field. The following were identified as providing a rich source of relevant articles: The Career Development Quarterly; The Journal of Vocational Behaviour; The Journal of Career Assessment; The Journal of Career Development; The Journal of Educational and Vocational Guidance. The next stage was to explore the use of different databases using a range of search terms. These were career, guidance, intervention, evaluation, impact and outcome. It was found that using the term 'career guidance' filtered too many articles and so the word 'guidance' was omitted. Four databases were considered (PsycINFO- Ovid; PsycARTICLES- Ovid; Education Research Complete - EBSCO; ERIC - EBSCO) but EBSCO was found to provide a sufficiently comprehensive range of articles that included articles from the journals identified and so was used for the first formal searches. Three searches were conducted with the terms; Career AND Intervention AND Evaluation (yielding 347 articles), Career AND Intervention AND Impact (yielding 314 articles); Career AND Intervention AND Outcome (yielding 431 articles). The 1,092 articles were eventually reduced to 15 by the process as summarised in Figure 1 on the next page:

Figure 1

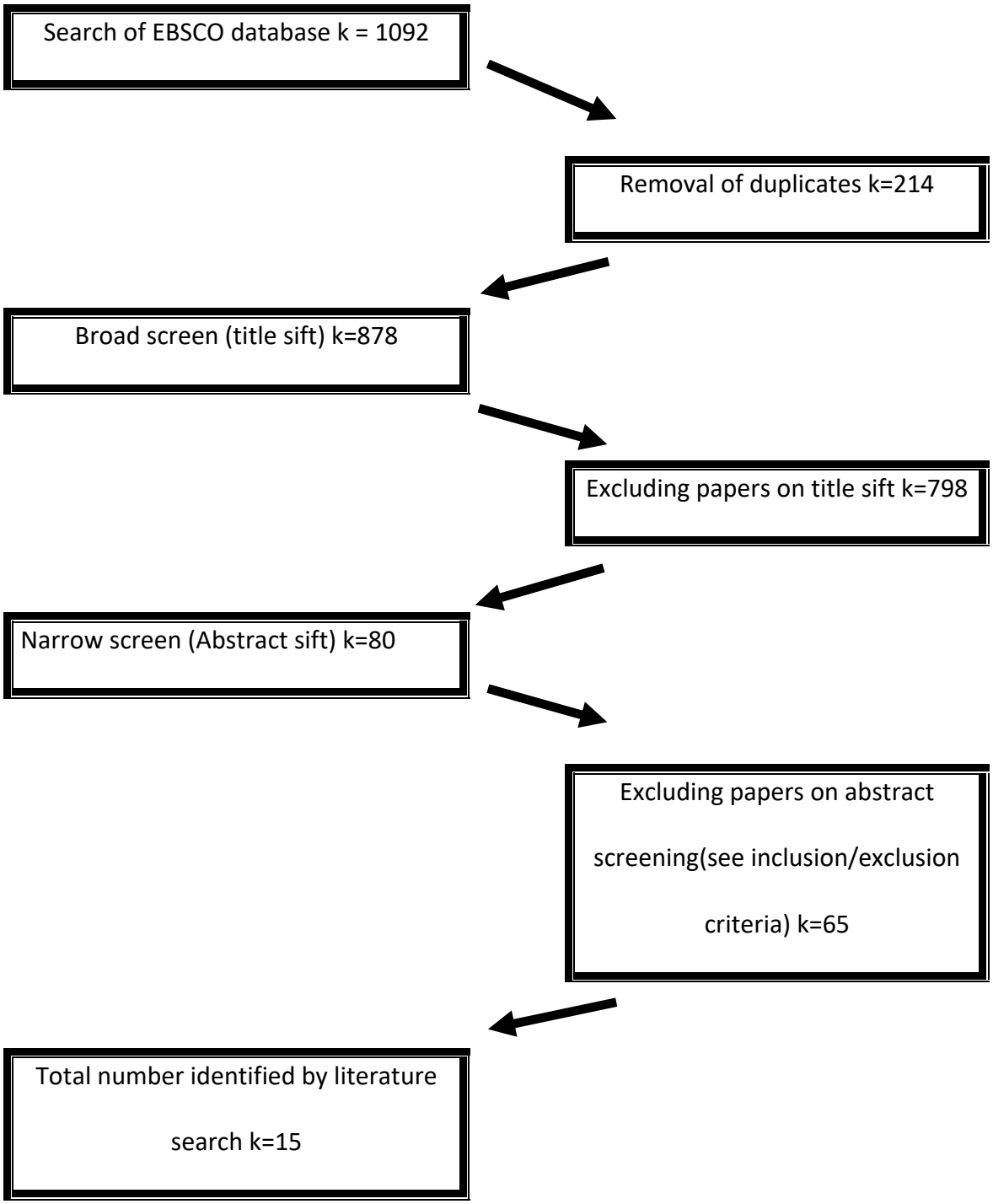

Figure 1. Systematic Literature Review Sequence

The removal of duplicates was conducted by the author. Methodological rigour for further exclusion (based on the title sift and the abstract sift) was completed by the author

and his supervisors using the SPIO criteria (Study, Participants, Intervention, Outcomes) independently and then combining viewpoints to agree a final list to be included. The criteria are summarised as follows:

Study: to be included, the studies needed to be quantitative with a pre and post intervention measurements using an experimental or quasi-experimental design. Case studies were specifically excluded.

Participants: to be included, the participants needed to be in a career intervention designed to help with seeking a job or career. Specific occupational groups were excluded (e.g. nurses, engineers) as well as groups with specific issues (e.g. health, emotional distress, disability, disadvantaged) as well as those already in employment.

Intervention: to be included, the study needed to specify an intervention that was specifically focussed on career guidance whether using generic or unspecified methodologies or whether created from a particular theoretical or philosophy perspective.

Outcome: to be included there needed to be measures that quantified outcomes that were clearly related to the aims of the intervention.

Findings

The 15 papers that met the criteria of the screening process are listed in Table 1 on the next page:

	Author and Date	Title	Sample sizes[1]	Summary
1.	Anderson (1995)	The use of a structured career development group to increase career identity: An exploratory study	13/0/0	Using a group format, 13 students wrote 6 essays designed to encourage self-exploration of how they had developed their current self-concept and career identity (historically). This was followed by group discussion and 1:1 guidance.
2.	Behrens & Nauta, (2014)	The self-directed search (SDS) as a stand-alone intervention with college students	39/0/41	The experimental group (n=39) completed and scored the SDS and were instructed on using results with the Occupations Finder. The control group (n=41) simply completed the pre and post measures.
3.	Pinto, Loureiro & Taveira (2015)	Psychological intervention in Portuguese college students: Effects of two career self-management seminars.	58/0/62 62/0/36	218 students attending workshops (up to 18 hours) developed by the authors (psychologists) to help with career exploration, goal setting, career plans, career problem solving, and decision making.
4.	Cassie & Chen (2012)	The gender-mediated impact of a career development intervention.	200/0/171	371 Grade 10 students attending a classroom-based course to explore the gender mediated impact on Career maturity.
5.	Cheung & Jin (2016)	Impact of a Career Exploration Course on Career Decision Making, Adaptability, and Relational Support in Hong Kong	172/0/218	380 students attended 13 weekly classes (3 hours each) designed to help them explore, analyse and understand careers and career management issues through contextual, organisational and individual perspectives.
6.	Croteau & Slaney (1994)	Two methods of exploring interests: A comparison of outcomes	48/0/47	95 male psychology students were helped to explore career options using an 'Authority led intervention' versus a 'Self-generated intervention'.
7.	Davey, Bright, Pryor & Levin (2005)	Of never quite knowing what I might be': Using chaos Counselling with University Students	42/0/0	42 students watched a 15 minute video of 2 students answering 5 key questions about their careers designed to emphasise chaotic concepts.

[1] presented as numbers in Treatment A/Treatment B /Control Group

8.	Herman (2010)	Career HOPES: An Internet-delivered career development intervention	20/20/24	20 adults followed a 4-week internet based course (Career HOPES). 20 more adults followed the same course but had a professional moderator; the control group was 24 adults who had minimal intervention.
9.	Jurgens (2000)	The undecided student: Effects of combining levels of treatment parameters on career certainty, career indecision and client satisfaction	37/0/0	17 volunteer students followed a 4 phase intervention and 20 followed two of the phases only.
10.	Kerr & Erb (1991)	Career Counseling With Academically Talented Students: Effects of a Value-Based Intervention	41/0/0 19/0/18	78 students attending a 3-session values based intervention (group life-planning; an assessment session using (VPI, PRF, RVI); individual counselling.
11.	Koivisto, Vuori & Nykyri (2006)	Effects of the School-to-Work Group Method among young people	201/0/206	334 students followed a highly structured course over 5 consecutive days (20 hours) focusing on boosting self efficacy.
12.	Kraus & Hughey (1999)	The impact of an intervention on career decision-making self-efficacy and career indecision.	30/0/30	60 pupils attending eight 50 minute lessons over 4 weeks.
13.	Littman-Ovadia, Lazar-Butbul & Benjamin (2014)	Strengths-Based Career Counseling: Overview and Initial Evaluation	31/0/31	61 unemployed job seekers receiving Career Guidance. Treatment A was a 4 session Strengths-based approach; condition B was conventional career counselling.
14.	Obi (2015)	Constructionist Career Counseling of undergraduate students: An experimental evaluation	25/0/25	25 undergraduates attending six 45-minute Constructionist Career Counselling sessions and a further 25 allocated to the control group (delayed intervention).
15.	Turner & Lapan (2005)	Evaluation of an intervention to increase non-traditional career interests and career related self-efficacy among middle school adolescents	107/0/53	107 middle school pupils followed the Mapping Vocational Challenges programme and 53 were allocated to the control group (delayed intervention).

Since the aim is to contribute to creating an evidence-based approach for the evaluation of career guidance it is necessary for the wide range of research studies to be classified in such a way that they can be accumulated into a coherent body of knowledge. Hence the papers have been reviewed and classified in a way that may prove useful for subsequent meta-analyses. There are 5 classifications described and summarised below:

1. Models, theories and approaches

There are several approaches adopted by the papers reviewed. These are summarised below; Strengths-based interventions, Chaos Theory inspired, essay writing and developing personal narratives, clarifying occupational interests (e.g. Holland, SDS and Jobs Finder), extending career information and building skills such as planning, exploring, goal setting, problem solving and decision making, increasing self-awareness, personal values and personal growth and reducing doubt and indecision.

There is no natural or agreed way to classify these approaches. For example, Crites (1974) proposes five major theoretical approaches to career counselling: psychodynamic, developmental, trait and factor, behavioural, and client centred. However, the approaches above could easily be classified under more than one category. This could be an issue for the development of evidence-based practice.

2. Types of interventions

The interventions, whether inspired by theory or practicality, were varied in both extent and duration. They also differed in the degree that they used technology and/or face-to-face contact or were dominated by a particular philosophy and approach. Thus, some were direct attempts to measure the impact of a single theoretical approach (such as chaos theory, Strengths-based etc.), whilst others were more interested in significant outcomes and hence were far more eclectic. Another way that the interventions could be

classified depending on whether they were 1:1 or group facilitated; used technology and/or direct counsellor facilitated; used questionnaires for facilitation rather than measurement; included visits to workplaces and/or careers fairs; involved work experience; invited presentations by employers; made use of career videos; provided methods (and websites) that assisted with career knowledge accumulation etc. These are important variables when considering the impact of career guidance and so it would be useful for studies to give more detail concerning what is involved – and perhaps having a clearer framework for categorising the interventions would encourage this. To make a step in that direction, the papers reviewed have been mapped onto the classifications given in Table 2. This table immediately demonstrates the range and gaps in the studies reviewed. It also points to possible limitations when studies are collected for meta-analytic purposes. If one aim is to secure funding for more Career Guidance, then it will be important to show which kinds of intervention are most effective, which will require better frameworks for grouping and classifying them. Table 2 is presented on the next page:

Table 2

Table 2: Classification of Career Interventions				
	Individual (1:1 Counselling)		Group (1:many)	
	Face-to-face	Electronically mediated	Face-to-face	Electronically mediated
Guidance sessions/ discussions	1, 9, 13, 14	None	9	8
Use of an Interest Questionnaire	2, 6, 9	None	None	None
Use of additional psychometrics (Ability and Personality)	None	None	None	None
Access Internet Resources for careers	10	None	None	None
Take an Internet-based course for careers	8	None		None
Attend a career workshop (generic)			1	None
Attend a career workshop(s)(proprietary)			3, 4, 5, 7, 10, 11,12, 15	15
Visit a careers fair			None	None
Attend employer presentations			None	None
Visit organisations and workplaces			None	None

3. Research design

This review specifically excluded case study approaches and focussed on studies that adopted an experimental or quasi-experimental design. This means that the format was essentially a pre-test followed by an intervention/treatment condition followed by a post-test (abbreviated to PTP). Some of these included a control group (PTPC) and some included a delayed follow-up (PTPD or PTPCD). A further distinction was those that may or may not have involved a control group but did compare alternative treatments (PTPA or PTPCA). This is summarised in Table 3 below:

Table 3

Table 3: Classification of Research Designs.			
Study design	Studies with post testing at final session	Studies with post testing with 1-4 weeks delay	Studies with post testing with more than 4 weeks delay
Pre, Treatment, Post (PTP)	1, 10	7	None
PTP with Control (PTPC)	2, 3, 4, 5, 10	12, 15	11, 14,
PTP with Alternative (PTPA)	6, 9	None	13
PTP with Control and Alternative (PTPCA)	8	None	None

Table 3 shows that most of the studies measure change immediately after the intervention. The three studies that had more than a four week delay (i.e. an eight week, a three month and a seven month post-test) were from quite different populations (i.e. from a school, a university and an adult unemployed group). Such a diversity of populations is likely to be critical variables in the evaluation of impact as different populations due to socio-economic status, life experience or other features may moderate outcomes.

4. Demographic variable

There is no doubt that the timing of Career Guidance will be critical. The question as to whether schools should introduce in the early teenage years (perhaps to help with subject choice) or whether they are still too far from the world of work for such interventions to be meaningful is still an open question. Clearly different kinds of intervention are likely to have differential impact on different stages of life. Would a focus on self-knowledge and personal growth be more important at age 13 or age 30? Is it useful to visit workplaces after leaving school or earlier? What is the difference in impact for school/college leavers and the long-term unemployed? Are there differential gender effects? The ranges of populations in the papers reviewed are shown in Table 4. It can be seen that the majority are further education/university students. Whether this reflects the age group that are most in need of career guidance or simply the ones to which there is easiest access is not clear. However, this is another critical variable in the search for evidence of what is effective and with whom.

Table 4

Table 4: Classification of samples in the research.			
School pupils	University Students	Adults in work	Adults out of work
4, 11, 15	1, 2, 3, 5, 6, 7, 9, 10, 14	8	13

5. Outcome measure

One of the issues with the evaluation of Career Guidance interventions is the range of different outcomes that can legitimately be measured – sometimes called the Criterion Problem' (Watts & Kidd 1978). Since there is no simple or universally agreed measure of outcomes, many research studies have created their own measures. Whilst this can sometimes mean that they are sensitive to the intervention being used, it means that it is difficult to review the studies and to treat them as an accumulation of evidence. It also brings into question how the various meta-analyses that have been conducted have been able to provide a classification that makes their results meaningful and genuinely generalisable. It should be noted that this issue is not restricted to Career Guidance since associated disciplines such as coaching suffers from the same criticism of lacking objective or meaningful outcome measures (Passmore & Fillery-Travis 2011).

First consideration. What are the characteristics that outcome measures should have? There have been significant attempts to answer this question (Savickas, Nota, Rossier, Dauwalder, Duarte, Guichard, Soresi, Esbroeck, Vianen (2009 et al. 2009, Maguire & Killeen 2003) which appreciate the complexity in determining what constitutes a career intervention (which is not usually just a discrete input) and the range of methods that can be used to collect both subjective and objective data. The outcomes are often influenced by the theoretical perspective of the researcher. Huteau addresses the issues of defining the objectives as well as problems associated with outcomes which involve both the gathering of the data and their subsequent analyses (Huteau 1988; Huteau & Loarer 1992). He then suggests (Huteau 2001) three characteristics that provide an overarching set of criteria that most researchers could apply to their own approach. These three characteristics are that 1)

They must be pertinent and varied objectives; 2) There must be formalised methods of observation/data collection; 3). There must be an experimental (or at least a quasi-experimental) methodology.

Huteau argues that it is not sufficient to have global objectives that are inherently ambiguous - such as the participant's satisfaction or a shift in vocational choice or an increase in knowledge or knowledge seeking. These need to be adequately operationalised, reliably measured and used in conditions where the effects can be attributed to the intervention.

Second consideration. Is there a way to classify the wide variety of outcome measures that are used? Without consensus 'benchmark measures' it is more difficult for evidence to accumulate and be compared. Career Guidance is not the only field where developing good outcome measures is problematic – there are clear parallels with attempts to measure the impact of a wide variety of training interventions. Hence it could make sense to borrow from the field of training interventions and the most quoted approach is Kirkpatrick's Four-Level model (Kirkpatrick 1967). This model is not without criticism. For example, Holton (1996) argues that it is a taxonomy which describes possible outcomes, whereas there is a need for model that can define causal constructs. Without a causal model it is difficult to interpret correlations since they do not tell us whether it is the intervention that is effective or ineffective, or whether the evaluation model and its measures are not valid. Nevertheless, the Four-Level model does provide a map which can help the understanding of the range of outcome measures that have been used in the papers being reviewed. Kirkpatrick's four levels can be summarised as; 1) Reaction - the participant's experience of the intervention; 2) Learning - the participant's change in knowledge or capability; 3) Behaviour - the transfer of learning to observable (and

maintained) behaviour and 4) Results - the effect on the wider context (individual, organisation, society) (Kirkpatrick 1967).

To make this more useful, the four levels have been further sub-divided based on the concepts that are used in Career Guidance. It may also be useful to differentiate between measures that are necessarily and predominantly subjective (such as beliefs or attitudes) and measures that are potentially more objective (i.e. where it could be possible for an observer to record and quantify). For those who favour (or who expect) 'evidence-based practice' to focus on objective outcome measures, it is important to recognise that it can be perfectly legitimate to consider subjective change as the primary aim. In fact, with the advent of more developmental approaches to Career Guidance there has been a clear focus on subjective measures such as self-efficacy, confidence and satisfaction. Even 'knowledge' (for which a more objective measure could be derived) it is usual for a subjective measure to be used (i.e. a measure of whether a person believes they know a lot or a little about particular careers rather than a test of what they actually know). Table 5 shows the mapping of the studies to Kirkpatrick's (1967) model. It also provides examples of instruments that have been used to assess these areas in the papers reviewed.

Table 5: Classification of outcome measures (part one).				
Kirkpatrick's 4-Levels	Potential domains to be assessed	Subjective (self-report) Measures[2]	Papers that use the measure	Objective measures[3]
Reaction (experience of the intervention)	Intervention Satisfaction	None Identified	None Identified	Not Applicable
Learning (change in knowledge or capability)	Attitudes (to school or work)	None Identified	None Identified	Not Applicable
	Beliefs (personal employment outlook)	CES (scales 11-16)	2, 3, 5, 7	Not Applicable
	Confidence (self-esteem and efficacy)	CDMSES; RSES	2, 6, 7, 12	Not Applicable
	Self knowledge	SUS	13	Not Applicable
	Career knowledge confidence,	CPEE	15,	None Identified
	Breadth and depth of career knowledge	CES (scale 6), EVDS	2, 3, 5, 7, 15	None Identified
	Level of satisfaction with career knowledge	CES (scale 8)	2, 3, 5, 7	Not Applicable
	Clarity of career interests and options	None Identified	None Identified	None Identified
	Certainty of career choice and direction	CES (scale 7)	2, 3, 5, 7	Not Applicable
	Confidence in capability for making career plans and career decisions	CPEE	15,	Not Applicable
	Anxiety concerning career issues	None Identified	None Identified	None Identified

[2] These abbreviations are described more fully in Appendix A
[3] The shaded boxes show Not Applicable since the constructs, by definition, cannot be measured objectively.

Table 5: Classification of outcome measures (part two)				
Behaviour (change in observable behaviour)	Taking steps to explore self	CES (scale 2); CE (scale 2);	2, 3, 5, 7	None Identified
	Taking steps to explore careers	CES (scales 1, 4, 5); CE (scale 1); CEPI; CEBS (1)	2, 3, 5, 7 13, 7, 8	None Identified
	Making career plans	CES (scale 3)	2, 3, 5, 7	None Identified
	Seeking job information and opportunities	None Identified	None Identified	None Identified
	Taking steps to reduce career stressors	CES (scales 9, 10)	2, 3, 5, 7	None Identified
Results (impact on self or organisation)	Achieving academic grades	None Identified	None Identified	None Identified
	Achieving employment	None Identified	None Identified	50
	Reporting job satisfaction	None Identified	None Identified	None Identified
	Reporting good life quality	None Identified	None Identified	None Identified
	Organisational Performance	None Identified	None Identified	None Identified

CES (Career Exploration Survey); CDMSES (Career Decision-Making Self-Efficacy Scales); RSES (Rosenberg's Self-Esteem Scale); SUS (Strengths Use Scale); CPEE (Career Planning and Exploration Efficacy); EVDS (Educational and Vocational Development Efficacy); CE (Career Exploration); CEPI (Career Exploratory Plans or Intentions); CEBS (Career Exploratory Behaviours Scale).

Table 5 shows that there was only one objective measure used in the studies reviewed. Clearly some constructs are subjective by definition (as indicated by the shaded boxes). However, the lack of more use of objective measures should be noted.

Given the range of outcome measures being used it would be useful to consider the over-riding aims of Career Guidance. Thus, Huteau (2001) suggests that there are two over-riding aims. These are: 1) that Careers Guidance should help people to define their interests/preferences and 2) to help them to build their confidence about making career decisions. All the above can be seen as aspects or manifestations of these two aims. Huteau (2001) also claims that many studies do not focus on a precise type of behaviour, but rather on general attitudes. The above table would tend to confirm this critique. Only one study used an objective measure. This helps to highlight a significant issue. The nature of many objective measures is that they tend to be complex composites and are dependent on many factors. Thus, the objective measure in the table - employment status–will be influenced by factors such as current job market conditions (i.e. job availability and applicant competition for those jobs). In addition, there are significant issues concerning timescales. What is the appropriate time interval between an intervention and any follow-up? It certainly takes time to get an appropriate job and even longer to determine whether it provides the anticipated job satisfaction. The Littman-Ovadia, Lazar-Butbul and Benjamin (2014) study above conducted the follow-up after 3 months with a group of unemployed job-seekers. It is likely that this group alone was highly complex with a variety of age, mental and emotional differences. This highlights the need for greater detail regarding demographics and intervention methods to make any outcome measurements more sensitive and meaningful.

A further difficulty is getting agreement concerning the definitions of outcomes together with operationalising them. Thus the original concept of self-efficacy, as developed by Bandura, has been applied to make it career specific by a number of researchers (Bandura & Walters, 1963). This is sometimes ad hoc, relying on the researcher's rational analysis leading to an instrument that asks a few simple questions. These tend to have good face validity (i.e. there is a good logical link between the items in the scale and the scale name/definition) but the quoting of high internal consistency on the basis of a few similar questions cannot be considered to offer any kind of construct validity (i.e. that the scale has a real relationship to the underlying construct established through theory and empirical evidence). The same criticism can be made regarding many of the instruments used in Careers Guidance research, which currently lacks clear benchmark tools that define the constructs clearly and which can help with the accumulation of research findings (i.e. the rigours of a proper psychometric – clear theory and rationale, inclusion and exclusion criteria for the items, trialling to provide more than internal consistency statistics and then testing for sensitivity rather than reliability). This would help with some of the outcome criteria, some of which appear esoteric until properly understood. For example, there is considerable emphasis on career decision making and this has important distinctions within it, such as a focus on indecisiveness (which may be more of a personality characteristic) versus a focus on certainty of career choice (an issue of readiness). Furthermore, a good measure of career decidedness would need to be able to distinguish between the person who has narrowed down their choice between two competing careers versus those who have no idea of what they want to do versus those who are clear but who doubt their ability to follow that career.

Discussion

This literature review shows that the attempts to evaluate the impact of career guidance involve many small-scale studies which use a wide variety of intervention approaches and outcome measures. Some key issues to note are as follows:

1. Models, theories and approaches

The papers reviewed showed a range of different approaches being used to inspire and structure Career Guidance interventions and measures. In order to pull the evidence together into a coherent body of research, some agreement concerning their theoretical foundations would be helpful. Crites (1974) proposed five major theoretical approaches as follows: psychodynamic, developmental, trait and factor, behavioural, and client centred. However, the seven models/theories/approaches identified in the papers reviewed do not fall neatly into these five categories. An alternative could be to start with broad categories that reflect the historical evolution of career guidance and which are associated with known contributors in the field, these are detailed in Table 6 below:

Table 6: Categories of the career guidance approaches					
Name of approach	Description	Definition of approach	Key ideas and influences	Key theorists	Measurements
Matching Approaches (these involve the idea of 'fit').	These focus on diagnosis and prescription using trait/factor models and include much from a psychometric perspective.	Guidance is a process of matching with expert guidance counselling.	Building psycho-technical approaches to find 'fit' based on people's values, competencies and personality (underpinned by the theory that people are attracted to job environments that suit their personality).	Frank Parsons, John Holland.	Measurements focused on the individual's personality, values and interests which are mapped against work environments (e.g. VPI, SDS, DOT).
Development Approaches (these involve the idea of enabling personal growth).	These focus on personal growth, self-esteem and self-efficacy (taking a psychological perspective).	Guidance is a process of facilitating the development of the client's self-concept and self-esteem.	Client centred and humanistic approaches and the concept of life-long development and vocational maturity.	Donald Super, Mark Savickas (Gerard Egan).	Measurements focus on subjective factors such as self-efficacy and self-esteem (e.g. CDMSES, RSES).
Environmental Approaches (these involve the idea of how circumstances shape ideas).	These focus on how circumstances, opportunity, community and significant others shape a person's perception and expectation (taking a sociological perspective).	Guidance is seen as broadening the environment, introducing resources (e.g. vocational information, role models and mentors) who help create narratives that bring a person's experiences together and help them with.	Planned happen stance, chaos theory, constructivism	John Krumboltz, Linda Gottfredson, Bill Law, Peter Daws, Pryor and Bright.	Measurements focus on skills and behaviours such as career exploration and career options (e.g. CES, CEBS).

Clearly these three approaches are not exclusive. Perhaps a cognitive process approach (i.e. one which focuses on how people make meaning rather than how they discover facts, focusing on how people acquire and change their preferences through the interaction of genetics, environment, learning experiences, performance skills, cognitive and emotional responses) might present a way of integrating the different approaches. This is clearly behind some of the measurements that focus on decision making and degrees of career certainty or indecision.

2. Types of career interventions

Some of the interventions were clearly inspired by particular theoretical positions (e.g. Chaos Theory or Strengths Based Theories). However, others were described in much more generic terms with little reference to a theory or approach. An alternative (or additional) way to classify interventions would be in terms of method. Examples would be the inclusion of 1:1 counselling sessions or structured access to career information online etc. Agreement on a classification of methods, together with an agreement describing interventions would go some way towards providing information that could be compared. Unfortunately, the descriptions in the papers reviewed did not allow the identification against the 8 methods used in Table 2 – Classification of Career Interventions and so many can only be described as 'number of workshops attended' which provides little insight into what was most effective within the workshop.

3. Research design

This review was restricted to studies that had an experimental design, whereby pre-intervention and post intervention measures could be used to evaluate change. However,

given that the measures were almost exclusively subjective, there is always the danger that the change is due to the Hawthorne Effect (Mayo 1933) which suggests that individuals modify an aspect of their behaviour in response to their awareness of being observed rather than the behaviour being directly attributable to the intervention. Hence it is clear that control groups are a necessary part of the research – and these were included in 66% of the studies. However, a significant weakness in the studies reviewed is the 'bounce effect' – the danger that any intervention is going to have some effect but the real question is whether any change is sustained (i.e. has a significant impact on longer term direction and behaviour). It would be useful to see more studies that addressed this more effectively.

4. Demographic variables

Many studies lack demographic details. Furthermore, the pre-dominant groups studied are students. This is clearly an issue since different age groups are going to have different levels of interest and motivation concerning jobs and careers. For example, periods which require educational decisions will be different from those involving direct job decisions. It has already been pointed out that different kinds of interventions are likely to have a differential impact on different stages of life. There may be times when a focus on self-knowledge and personal growth would be particularly important. There is no doubt that visits to workplaces will have a different impact for those who have never left the educational world compared to those who have some work experience. We can also speculate that there may be significant gender differences.

More information and analyses of variables such as ethnic background, community affiliation, location, local resources, and economic conditions could help identify if different intervention work better with particular groups of people. It is understandable that, when

samples are small, any analysis of such background variables can be meaningless. However, if the studies provided such data consistently it would make future meta-analyses more powerful. Further differentiation of a whole range of contextual and practical issues (e.g., economic, labour, time constraints in public high schools, specific needs of the participants) would also add to meta-analytic power.

Often the intervention descriptions are vague (Whiston et al 2003). Hence, practitioners may be impressed by reports of positive outcomes of individual career counselling but have very little information on what elements should be included in their career counselling practice (Heppner, Kivlighan & Wampold 1999).

5. Outcome measures

The outcomes reported in these studies are dominated by subjective measures – (i.e. questionnaires asking about self-efficacy, confidence and decision making. These fit with the move from the job fit approach towards helping people with their life trajectories – a move from prognosis (where the aim is to clarify the direction of travel – and hence a focus on the clarity of career choices and options) towards diagnosis (where the aim is to support and facilitate personal development – and hence a focus on subjective feelings such as career indecision, self-efficacy and confidence). This shift is understandable but perhaps something has been lost along the way. People still need some idea of career direction since there are thousands of jobs which can feel like seeking a needle in a haystack. There is no doubt that some of the interventions help with job knowledge and direction. However, there does not seem to be much emphasis on using this to monitor change as a result of the intervention. It may well be that policy-makers and funders would be more impressed with outcome measures that are more specific about career direction rather than generalised

feelings such as career certainty and indecision. Knowing that a person wanted to be an astronaut but has since realised that this was less attractive (after the intervention) and had decided on a career in farming instead, is a far more tangible outcome – and possibly more impactful on the person's career behaviours and more durable. In fact, many of the subjective measures fail to demonstrate real evidence of changed behaviour and lasting outcomes – they may quite often simply reflect a kind of Hawthorne effect which does not survive long after the intervention.

6. Limitations

This literature review was restricted to quantitative empirical studies with a pre and post design that had been published in peer reviewed journals. It is recognised that there could well be more studies that were not picked up by the search terms used or that exist in the grey literature. Whilst this was done to ensure a level of quality that would be acceptable to academics in this field it does leave open the consideration that more recent evidence, perhaps using different approaches, exist but have not yet made it into the mainstream. It is also recognised that qualitative studies could have identified evidence that does not feature in the quantitative literature. This is an area worth investigating further to check on the generalisability of the findings in this paper.

Summary

In summary, it is important to recognise that attempts to undertake definitive studies or provide conclusive evidence of the outcomes of Career Guidance activities continues to be beset by a recurring set of issues. Hughes, Bosley, Bowes and Bysshe (2002) summarised these as follows; 1) There are a wide range of factors which influence individual career choice and decision-making, and/or which can impact on outcomes; 2) Career Guidance is frequently not a discrete input, but rather is embedded in other contexts, such as learning provision, employer/employee relationships, and or within multi-strand initiatives; 3) Comparing the evidence available in different studies is problematic when the

nature of Career Guidance, the depth of work undertaken and client groups, varies considerably and 4) There is not an agreed set of outcome measures for Career Guidance, or common methods of collecting output, or outcome data, except in the case of a limited number of discrete programmes/areas of work.

Recommendations

Based on the findings of the present systematic literature review of career guidance, the authors have identified three recommendations for future researchers and practitioners:

1) The development of a framework for classifying interventions.
2) The more widespread usage of agreed benchmark measures.
3) The development of measures that monitor change in career direction to supplement the current dominant subjective measures.

Conclusion

There are many small-scale studies and many show impact and outcomes that are valuable. However, the samples are often small, have insufficient range of demographics (especially age) and do not follow-up over a sufficient long-term period in order to demonstrate lasting effects. Future meta-analyses would benefit from a more universally accepted framework within which to place the studies so that evidence can meaningfully accumulated, and more meaningful generalisations can be made.

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Appendix A – List of outcome measures and abbreviations

Tool
Curiosity – Exploring Behaviour
CES – the Career Exploration Survey
CE – Career Exploration
CEPI – Career Exploratory Plans or Intentions
CEBS – Career Exploratory Behaviors Scale
NOC – Number of Occupations Considered
Confidence – Self-Efficacy and Self-Esteem
CDMSES-SF – the Career Decision-Making Self-Efficacy Scale–Short Form
RSES – Rosenberg's Self-Esteem Scale
SUS – Strengths Use scale
CPEE – (part of MGCS Missouri Comprehensive Guidance Survey)
EVDS - (part of MGCS Missouri Comprehensive Guidance Survey)
VSSE – Vocational Skills Self Efficacy
CDI – Career Development Inventory
MVS – My Vocational Situation
CSESS – Career Self-Efficacy Sources Scale
ESEM – Employment Self-Efficacy Measure
CAAI – Career Adapt-Ability Index
Concern – Career Decidedness
CDS – Career Decision Scale
CFI – Career Factors Inventory for Career Indecision

CDP – Career Decision Profile
CAAS – Career Adaptability
CDDS – Career Decision Difficulties Scales
CDOE – Career Decision Outcome Expectations
Career Interests and Values
SDS – Self Directed Search
UNIACT-R – Unisex American College Testing Interest Inventory
PQ – Perceptions of Career Interest Intervention Questionnaire
VNS – Vocational Needs Scale
RVI – Rokeach Values Inventory
WVI – Work Values Inventory
OAQ – Occupational Alternatives Question
VIA-IS – Values in Action Inventory of Strengths
CAS – Career Aspirations Scales
SII-SCII – Strong Interest Inventory (formerly Strong Campbell)
VCS – Vocational Card Sort
Personal Style
VPI – Vocational Preference Inventory
I-E Scale – Internal-External Locus of Control Scale
CDR – Career Development Responsibility
KTS – Kiersey Temperament Sorter
RS – Relational Support
PRF – Personality Research Form

Personal Goals and Life Satisfaction
SDI – Student Development Inventory
GHC – General Health Questionnaire
SWLS – Satisfaction with Life Scales
SQ – Satisfaction Questionnaire
UCCS – Undergraduate Career Choice Survey
MCGS – Missouri Comprehensive Guidance Survey
PPA – Personal Project Analysis
GHQ-12 – General Health Questionnaire
DEPS-10 – Risk of depression

Empirical Study

Developing a methodology for evaluating the impact of Career Guidance in the modern age

Abstract:

This paper describes a framework for evaluating the impact of Career Guidance interventions that can respond to the challenges and opportunities of the modern age. This is a challenge given the changing nature of the workplace and the changing expectations of the workforce. The opportunities include the increasing use of technology and the advent of 'Big Data'. These combine to change the research paradigms traditionally used within the field of Career Guidance from tight parameters that can be subject to formal hypothesis testing to loose parameters requiring continuing monitoring and discovery in a rapidly changing world. To make the most of the huge data sets that can now be collected this paper proposes a framework for collecting relevant data that is sufficiently generic to have wide applicability across different intervention philosophies, different populations and samples and different ideas about the goals that the interventions aim to meet. Such a framework could provide a consistency of approach which would go some way to addressing the criticisms raised in meta-analyses regarding the diffuse and varied nature of outcomes and approaches used to evaluate interventions (Borenstein et al 2009; Eysenck 1978). The framework presented in this paper was developed by distilling the variety of interventions and outcomes reported in current literature and is used to create a generic assessment tool – the Career Choices Questionnaire (CCQ). The CCQ is available online and is intended for use alongside other assessments in order to provide a common core around which the vast amount of other

data (note: Big Data often unstructured by definition) could be analysed. This aims to make the continual monitoring and discovery of trends easier and clearer. The tool was piloted on two samples as a proof of concept. This paper describes how the CCQ can measure meaningful change and, if used on a larger scale, could help to provide insight into the intervention factors that may be influencing that change. This information would be of value at the local level for intervention facilitators but, when pooled, it would also be valuable form informing both funding bodies and policy makers.

Key words: careers, guidance, intervention, evaluation

1. Introduction

Careers Guidance is widely considered important but suffers from a lack of evidence concerning its effectiveness. This lack of evidence to guide best practice is highlighted as a global concern in the OECD published 'Careers Guidance: New Ways Forwards' (OECD, 2003) in which it makes the case for improving the provision and delivery of careers guidance by describing its key purpose or role as follows:

'Career guidance plays a key role in helping labour markets work and education systems meet their goals. It also promotes equity: recent evidence suggests that social mobility relies on wider acquisition not just of knowledge and skills, but of an understanding about how to use them. In this context, the mission of career guidance is widening, to become part of lifelong learning.'

In the UK every government has funded career guidance initiatives since before World War II when it set up the Juvenile Employment Service. They have created multiple service providers (the Youth Employment, Youth Training Schemes, the ConneXions services, Careers Scotland, Careers Wales, the National Careers Service, the Guidance Partnership for Adults, Careers & Enterprise Company, National Networks for Collaborative Outreach, Job Centre Plus etc) (Oliver & Spokane 1988; Peck 2004). They have also commissioned recurring reviews such as that by Gibson, Oliver and Dennison (2015), Sainsbury and Holman (2014), the National Careers Council report (2013), the Wolf Report (2011) as well as regular OFSTED (Office for Standards in Education, Children's Services and Skills) reports. The picture that emerges from these reports is that Careers Guidance is not delivering enough. For example, Michael Wilshaw (Chief Inspector of Education, Children's Services and Skills) in the 2012 report 'Going in the right direction' says

"About four out of five schools visited did not evaluate the quality of their careers guidance effectively."

Such negativity indicates that all is not well and that there is a need to demonstrate effectiveness in a way that is meaningful, credible and up-to-date.

There are four overarching reasons that underpin the need to change the way we think about careers guidance and how we evaluate its effectiveness. These are i) the changing nature of work, ii) the changing methods for delivering of career interventions, iii) the

change in the focus of the interventions and iv) the changing definitions of effectiveness of career interventions. These are described in more detail below:

i) The changing nature of work

The nature of work is going through its biggest transformation since the industrial revolution (Frey & Osborne 2013). At one level this involves the increasing mobility of labour brought about by globalisation and opportunities to travel widely. At another level there are forces that drive change in the nature of work activity itself such as Nanoscience, 3-D printing, Robotics, Big Data – all driven by advances in artificial intelligence. It is inevitable that many jobs that will disappear or become automated or change out of all recognition. To illustrate, consider the role of a librarian. The need for this role to involve a person who is physically present has been transformed by digitization and the internet. In the past they needed to be an expert with the Dewey Decimal System. Today they need to help people research a vast collection of resources and information and so their skills involve helping people find resources by savvy online searches, suggesting keywords and identifying helpful websites. Frey and Osborne (2013) estimated that nearly half the jobs that existed at the time of writing will have disappeared in the next 20 years. In the PwC Economic Outlook article 2018 'Will robots steal our jobs?' Berriman and Hawksworth give a detailed account of which industries are likely to change the most (such as manufacturing, transportation, storage, wholesale and retail) and ones where the impact is likely to be less (such as health and social work) (PWC, 2018). Whilst these are only projections there is considerable agreement concerning the magnitude of job change. However, not only do jobs change but also

people change (Mitchell & Krumboltz 2014). They presented a memorable image for comparing the matching of people to jobs – 'like trying to hit a butterfly with a boomerang.' In other words, they suggest that the challenge of helping people to navigate meaningful career direction is between two moving targets. These changes in work itself raises significant implications for the content of careers interventions, how and when careers interventions are delivered, and what outcomes are relevant to measure effectiveness or success.

ii) The changing methods for delivering of careers interventions

In addition to the changes in the world of work there is an increase in the delivery options that have been brought about by the use of the internet (Harris-Bowlsbey 2013, Oliver & Spokane 1988). Not only are searches becoming more sophisticated but there is new content being added to the internet every day. For example, Marr (2018) estimates that there are 2.5 quintillion bytes of data created each day at our current pace, but that pace is only accelerating with the growth of the Internet of Things. Over the last two years alone 90 percent of the data in the world was generated. This means that there are many more options for those on careers guidance programmes and not all of these are registered as part of a particular programme. Thus the sources of accessible information are much more than the curriculum of any particular programme. Even if a programme were to remain the same, the experience of the participant could change significantly due to their ability to access new interactive content outside of the programme plus easier accessibility to personalised feedback and counselling using online connections such as Skype or Hangouts. The barriers due to cost or geography are reducing as a result.

These changes mean that we should question whether the research that identified what was most effective 10 (or even 5) years ago is still valid today.

Therefore, to evaluate the effectiveness of career interventions in this dynamic and changing environment there is a need to collect data that is constantly being updated and that can be analysed readily and with the benefits of 'big data'. This means that there is need to develop ways to classify what participants experience with different content and methods of career guidance, used at different times, across different locations and with potentially diverse combinations of strategies that are being used in career interventions.

iii) The change in the focus of the careers interventions

Careers guidance programme developers and facilitators have not been blind to these changes. Whilst the early days were dominated by the concept of matching people to jobs or job environments (Holland 1959), the last 20 years have involved a notable shift away from matching people to jobs and towards a more personal process of developing people's self-awareness and self-confidence (Plant 2004). This is in recognition of the rapidly changing job market and the recognition that people are likely to face many critical career decision points in their lives. The focus has, therefore, shifted towards equipping people with better decision-making skills and resources so that they are better able to navigate the changing terrain of employment. This is eminently sensible but has resulted in the focus on increasingly subjective measurement of career intervention effectiveness (e.g. career decidedness and self-efficacy (Betz 2007), Self-confidence (Oliver & Spokane 1988). Such measures are also prone to misinterpretation with the

expectation being that scores should increase. However, this need not always be the case. For example, a person may begin with a high level of 'career decidedness' (i.e. they are clear they want to become a doctor) but the intervention helps them to understand that this is not what they want to do. It is also possible that the intervention does not always result in the person finding an equally compelling alternative career. In such cases, a decrease in 'career decidedness' may be a positive outcome since it may have helped the person from investing time in an inappropriate career direction.

iv) The changing definitions of effectiveness of career interventions

To evaluate effectiveness it is necessary to clarify aims. Huteau (2001) suggests that there are two over-riding aims in careers guidance – to help people to define their interests/preferences and to help them to build their confidence about making career decisions. Few would disagree with these aims. However, they are very high level and broad. This means that they encompass multiple components each of which is likely to be influenced by different elements of an intervention (e.g. a person may be confident about their career knowledge but less confident about their own competence). When we look at the research into the effectiveness of careers guidance, it can all be fitted into a simple process of classifying different kinds of input and measuring different kinds of outcomes. However, the simplicity ends there because of the variety of both inputs and outcomes.

2. The need for a new framework to evaluate careers guidance

Together, these four factors suggest that we need to consider whether current research methodology is sufficiently effective in a rapidly changing world and whether there should be new ways to evaluate the impact of careers guidance initiatives and what aspects of an intervention have most influence on that change. This paper describes an approach that is designed to take advantage of modern technology, provide data that is timely and up-to-date and which can benefit three key stakeholders – the individuals that receive careers guidance, the programme creators and facilitators and the policy makers who need evidence that is more widely generalisable and relevant to the current era. Following a review of methodologies being used (Childs, Lewis & Yarker, 2018) a case can be made for using a more standardised way of classifying and collecting data. This is discussed in more detail below:

i) The need for a more standardised and generic classification for career guidance interventions

There is a great diversity of approaches to careers guidance. The Socrates Programme (i.e. the European Union action programme in the field of education) published a Career Guide for Schools (Gikopoulou 2008) in which they classify six approaches based on six different philosophical or theoretical schools of thought (matching, developmental, occupational allocation, learning, psychodynamic and community interaction theories). There are other approaches that extend this range yet further (such as Strengths-based or Counselling led approaches) and when we consider that even within each of these

approaches there is considerable variety the potential richness is impressive. The reverse side of the coin is that this also presents a significant challenge for those wishing to measure effectiveness since each approach is likely to focus on different outcomes. Added to this variety of philosophical or theoretical approach is the variety of methodologies used for delivering the interventions. There are short programmes (e.g. a 15 minute video with 25 minutes answering questions; Davey, Bright, Pryor & Levin, 2005), intensive programmes (20 hours over 5 days; Koivisto, Vuori & Nykyri, 2014) and longer programmes (e.g. weekly 3-hour sessions over 13 weeks; Cheung & Jin, 2016). There are highly intensive and personal programmes involving much face-to-face contact (including 1:1 sessions) and there are more technological programmes which may have very little human contact.

This variety makes it very hard to make any generalisations about what makes the most impact in careers guidance. Whiston and Li (2011) describe a systematic method for synthesising research for meta-analysis in counselling research which demonstrates the complexity of the process as well as the dependence on the subjective judgements of the researcher. Since there is considerable overlap between Counselling and the way that Careers Guidance is practiced today (Ali & Graham 1996) we can assume that emulating the process she describes for Careers Guidance would involve a similar degree of complexity. Whilst this would provide a significant degree of rigour and provide valuable insight, it would also be both time consuming and dependent on experts. This is not always the best approach when researching in a dynamic and rapidly changing environment where any data collected may have a limited shelf life. There would be a great benefit from creating more immediate ways to collect data which would allow the

monitoring of trends in the rapidly changing field. There would be a great benefit in using the increasingly sophisticated analyses that are being developed to manage 'Big Data' (Sivarajah, Kamal, Irani & Weerakkody 2017) which is promising advances in predictive analytics and data visualisation. However, without a more standardised classification of interventions and outcomes, such analyses would be harder to interpret and would still require experts to use a complex methodology as described by Whiston (2011). The pooling of data into large sample sizes would open up opportunities to make much more meaningful and generalisable interpretations of differences between different populations in different locations with different interventions.

ii) The need for a more standardised and generic classification for career guidance outcomes

There have been a number of meta-analyses of studies (Brown et al 2003; Whiston, Li, Mitts & Wright 2017) which summarise outcome measures – the main eight reported outcomes being labelled as follows: vocational identity, vocational congruence, career maturity, career decidedness, career decision making self-efficacy, perceived environmental support, perceived career barriers and outcome expectations. Each of these has multiple elements coming from different philosophical or theoretical roots. As such they appeal to different facilitators and researchers. Whilst this clearly adds to the richness in the field, it does mean that each research study chooses the elements that best fit the aims based on their approach. It also appears that assessing all of these outcomes in any one research study has not been done (Childs, Lewis & Yarker 2018) – presumably because of the impracticality in terms of assessment time. With such a

diversity of outcome measures it can be hard to extract key findings which, in turn, make it more difficult to communicate key messages to people outside the profession (especially policy makers). This picture of diversity in outcome measures used in careers guidance research was supported by a literature review (Childs, Lewis & Yarker 2018) which identified 48 instruments (see Appendix 2) designed to measure the impact of a careers guidance intervention. Without an overarching framework for structuring the information in this field it is difficult to amalgamate the evidence into messages that are easy to understand.

3. Method

This study involved the development of a generic assessment tool (requiring the development of a generic classification of interventions and a generic classification of outcomes) which was then trialled on two different samples. This process is detailed below:

i. The development of a generic framework to evaluate careers guidance interventions

The first step was to review what has already been done. Brown et al. (2003) used a classification system developed by Ryan (1999) which identified 18 specific categories (see Appendix 3). This was used by Whiston, Li, Mitts and Wright (2017) where they replicated, extended and updated Brown and Krane's meta-analysis (Brown 2000). Whilst this classification system is detailed and potentially very useful it requires the facilitator to identify the factors that feature in their intervention. This is clearly useful and important since this information provides information that they understand and can lead to programme improvement. However, the 18 categories are not particularly meaningful to the participants themselves. A small trial with 12 students on a career workshop attending a university employability module revealed that they would not be able to use the 18 categories to classify their experience of the programme. Thus, whilst the classification has an important place in the research literature it represents the facilitator's expectation rather than the participant's experience. This issue is

exacerbated in those situations where the career intervention is not compulsory which means that participants may attend or experience only parts of the programme. Hence it would appear that obtaining a participant view of the intervention is an important element that has been missing from these meta-analyses.

A useful addition to the research literature would be a classification system that participants can recognise and complete themselves. Such a classification could provide facilitators with an additional (rather than an alternative) lens for evaluating effectiveness by identifying elements that are more obvious, straightforward and generic (such as employer presentations or attending careers fairs). It would also, potentially, provide a clearer link to cost and resources which is important in evaluating value. Following discussions with programme facilitators at three universities and drawing from the literature and personal experience working in the field, a clear consensus emerged regarding the activities participants were asked to complete/attend. These were:

1. Completing a/some Career oriented questionnaires specifically designed to help clarify career direction/options (Yes/No)
2. Completing a/some other questionnaires designed to help clarify self-efficacy, personality and emotional intelligence (Yes/No)
3. Receiving 1-to-1 feedback discussion with a career professional (measured by time)
4. Attending Career Workshops (measured by number of sessions)
5. Attending Career Fairs (measured by number of sessions)
6. Attending Employer Presentations (measured by number of presentations)

7. Visiting different workplaces (measured by number of visits)
8. Accessing career information online (measured by number of hours spent).

A key criteria for this classification was that it should be recognisable to the participants of various ages. This was tested on a small pilot trial – including both university students (n = 12) on an employability module and Year 11 (n = 11) school students. This confirmed that participants could reliably identify what they had experienced. In addition their facilitators commented that this classification would help them to evaluate the value of different parts of their intervention. Of particular interest to them was to be able to justify the value of high resource elements (such as one to one feedback) versus lower resource intensive elements (such as Careers Fairs and employer presentations). This would allow research into exploring the primary research questions:

Research Question 1: *'Do different intervention categories have a differential impact on the outcome measures?'*

ii. The development of a standardised and generic framework to evaluate careers guidance outcomes

In order to develop a generic framework to evaluate outcomes it is important to be able to summarise the common threads in what is currently being measured and to identify any gaps. The challenge is the diversity and complexity of these outcome measures as identified earlier (Brown et al., 2003; Whiston et al., 2017). Given the clear parallels between the evaluation of career guidance outcomes and the evaluation of training outcomes it was decided to map these areas onto one of the best-known models in this

area – the Kirkpatrick model (Kirkpatrick 1967). Whilst not without limitations, (Alliger & Janak 1989; Reio, Rocco, Smith & Chang 2017) the model can nevertheless provide a useful heuristic way to guide the development of an evaluation framework. In summary, the Kirkpatrick model (1959) proposes that there are 4 levels that need to be addressed – reactions, learning, behaviour and results. The author added an additional feature to Kirkpatrick's model to help differentiate between outcomes with a more subjective focus (i.e. on a participant's beliefs and self-efficacy) and outcomes with a more external or objective focus (i.e. seeking information, exploring, understanding and finding a real world career direction). This remains true to Kirkpatrick's model but adds a level of detail that differentiated the outcome scales identified in the systematic literature review (Childs, Lewis & Yarker 2018) in a useful way. A summary with this additional feature is shown on the next page:

Table 1		
Kirkpatrick's 4 Levels	Internally focused (subjective)	Externally focused (objective)
Level 1: Reaction The degree to which participants find the training favourable, engaging and relevant to their jobs (measured by happy sheets, surveys)	**1a. Participant Satisfaction** Enjoyment of and belief in the benefits of the careers programme	N/A
Level 2: Learning The degree to which participants acquire the intended knowledge, skills, attitude, confidence and commitment based on their participation in the training (measured by pre and post – questionnaires, tests, interviews)	**2a. Learning about self plus building self confidence** Learning more about own interests, abilities and motivations; developing competence, confidence and self-belief to identify and pursue career aspirations	**2b. Learning about the world of work/education** Acquiring knowledge about the realities of particular careers, education and realistic career opportunities
Level 3: Behaviour The degree to which participants apply what they learned during training when they are back on the job (measured by questionnaires, observation, 360)	**3a. Preparing to make decisions** Using learning to consider or discard career paths and clarifying options	**3b. Identifying career direction** Using skills to explore different options and creating plans to pursue specific career directions
Level 4: Results The degree to which targeted outcomes occur as a result of the intervention (measured by questionnaires and objective records)	**4a. Career Engagement** Achieving job satisfaction	**4b. Career Achievement** Achieving career (or educational) goals

The outcome measures that were identified in the systematic literature review (Childs, Lewis & Yarker 2018) were mapped onto this version of Kirkpatrick's model which showed that, of the 7 possible areas described in the table above, only 4 were being measured (i.e. 2a, 2b, 3a and 3b – see appendix 2 Table 1a). Perhaps the omission of

Kirkpatrick's Level 1 can be explained by the fact that a participants' reaction to the intervention, whilst important to maximise attendance and engagement, it is not a measure of impact. Hence facilitators may well collect this information but it does not feature in the published research. It can be argued that engagement is needed to create change on other measures and so it is a pre-cursor that does not need to get featured in research papers.

The omission at Level 4 could be more serious since a long-term aim would be to maximise career engagement and success/achievement. However, career engagement requires the resources and motivation to follow up as part of a tightly controlled research study. As such measures of this kind would need to be added at a later point as part of that longer term follow up. When we consider the rate at which jobs and careers are changing, it may be unrealistic or unfair to expect direction achieved today to be fulfilled in the longer term. We know that many people's career journey changes along the way – and more so in today's world. For example, would it be fair to judge an intervention where a person starts off in the direction of medicine but ends up in Finance? The same issues apply to career achievement. It is recognised that these areas will continue to be important and clearly should continue to be researched but such evidence would normally require funding as part of a controlled research study and, as such, will be fewer and far between.

The picture that emerges from the analysis of outcome measures (and summarised in the table above) is that the main emphasis is on helping people by 'having the tools to make decisions about suitable careers' on an ongoing basis (i.e. boxes 2a, 2b and 3a above).

Since careers guidance began with a greater emphasis on matching people to jobs (i.e. choosing a career direction – box 3b above) this would suggest that there has been a significant shift of emphasis. One of the theories that has influenced this shift is Bandura's concept of Self Efficacy (1977) which focuses on an individual's belief in his or her capacity to execute behaviours necessary to produce specific performance attainments. In other words, the measurement of outcomes is dominated by scales that indicate how much an individual feels prepared to make decisions rather than knowing which decisions to make. This can be summarised as an overall concept of 'Career Preparedness'. What is almost entirely missing is how a person's ideas about their specific career direction has changed. To rectify this, the assessment tool was designed to assess the 4 areas identified in the Kirkpatrick model above. Thus a scale was created to measure each box as follows:

Box 2a: Learning about self plus building self-confidence – labelled as Career Self-efficacy.

Box 2b: Learning about the world of work/education – 2 scales labelled Career Exploration and Career Knowledge

Box 3a: Preparing to make decisions – labelled as Career Decidedness

Box 3b: Identifying career direction – labelled as Identifying career direction.

Summing the four scales in boxes 2a, 2b and 2c can provides an overall index of Career Preparedness. Career Direction was more problematic to measure since identifying change at the level of individual jobs is impractical due to the vast number of jobs involved. One option is to measure changes in career interests using Holland's Career themes (Holland 1959). However, measuring change at such a broad level (i.e. the whole World of Work covered by 6 themes which Holland labelled: Realistic, Investigative,

Artistic, Social, Enterprising, Conventional) is likely to be insensitive to significant changes within each broad (and overlapping) areas. A solution to this problem was addressed by the Unisex Edition of the ACT Interest Inventory (UNIACT) which identified 26 job families (Prediger & Swaney 1995) and produced a World of Work WoW) map. Whilst this may be sufficiently detailed for detecting meaningful change UNIACT only measures Holland's (1959) six career themes. It achieves differentiation at the 26 job family level using Holland's (1959) hexagon theory which uses the relative strengths of these six scales to suggest job family preferences. Hence the differentiation in outcomes is achieved with very limited measurement. In addition the rate at which new jobs are being created and disappearing is well documented (PWC 2018) and so the UNIACT Job Families will inevitably need reviewing and updating to ensure that new jobs (such as Chief Listening Officer and Penetration Tester) can be meaningfully allocated. It was decided to revise the World of Work map based on a theoretical model which was used to develop the CII-Dodec (Childs, Gosling & Parkinson 2015). This resulted in a slightly adapted version of the 26 job families. This development uses the six Holland themes which are divided into 12 sub-themes and 24 Job Families (JF). Ratings of interest in each of the 24 job families was then added to the Career Choices Questionnaire (i.e. the CCQ which is the questionnaire developed to measure change in outcomes) since this would increase the sensitivity of measurement rather than relying on the 6 career theme scores as in UNIACT. However, to evaluate the benefit of having a six-theme measurement of change versus a 24 Families measure of change ratings were on the six Career Themes were also invited. Hence the measures developed cover the areas identified earlier as shown in Table 2 on the next page:

Table 2		
Level 2: Learning The degree to which participants acquire the intended knowledge, skills, attitude, confidence and commitment based on their participation in the training (measured by pre and post – questionnaires, tests, interviews)	**2a. About self** a) Career Preparedness – Self efficacy (CP-SE)	**2b. About the world of work and/or education** b) Career Preparedness – Career knowledge (CP-CK)
Level 3: Behaviour The degree to which participants apply what they learned during training when they are back on the job (measured by questionnaires, observation, 360)	**3a. Making Decisions** c) Career Preparedness – Career Decidedness (CP-CD)	**3b. Identifying a career direction** d) Career Preparedness – Career Exploration (CP-CE) e) Career Direction – Career Interests (CD-CI) f) Career Direction – Career Interests (CD-JF)

In summary, there were four Career Preparedness (CP) scales plus two measures of Career Direction based on ratings for 24 job families and ratings for the six Career Themes. These would provide a way to address three further research questions as follows:

Research Question 2: *Do the Career Preparedness outcome measures register significant change following the intervention.*

Research Question 3: *Do the Career Direction outcome scores register significant change following the intervention.*

Research Question 4: *How do changes in career direction (as measured by changes in people's interests) using Holland's 6 themes differ from changes as measured using 24 job families.*

iii. The development of a generic assessment tool

To address the research questions that have been posed above, an online questionnaire was developed called the Career Choices Questionnaire or CCQ (see appendix 1). Following a review of existing scales used to measure outcomes (Childs et. al 2018) items were written to cover the four Career Preparedness areas identified in Table 2 above. Up to 10 items were written for each area as defined in Table 1 above and as labelled in Table 2 above.

Career Self efficacy (2a): Learning more about own interests, abilities and motivations; developing competence, confidence and self-belief to identify and pursue career aspirations

Career Knowledge (2b): Acquiring knowledge about the realities of particular careers, education and realistic career opportunities

Career Decidedness (3a): Using learning to consider or discard career paths and clarifying options

Career Exploration (3b): Using skills to explore different options and creating plans to pursue specific career directions

These items were then trialled on a sample of 24 students using a 7-point scale (Nunnally & Bernstein, 1994). Following feedback concerning the students' ability to understand

each question, and any potential ambiguity, items were chosen for the final questionnaire to be programmed into the new assessment too – the Career Choices Questionnaire (CCQ). To ensure that these provided adequate reliability for measurement purposes the CCQ was trialled on a larger sample (320 students) and subjected to an item analysis. The result in terms of the internal consistency of the scales are shown below using coefficient alpha which indicates the degree to which the scale items inter-correlate suggesting that they all share common variance (i.e. measure the same construct):

1. Career Decidedness (CD) – 5 questions; alpha 0.66
   (example question: I am very clear about which job/career I would like to follow.)
2. Career Self-Efficacy (CSE) – 5 questions: alpha 0.89
   (example question: I feel sure that when the time comes, I will have the skills I need for my chosen career.)
3. Career Knowledge (CK) – 4 questions: alpha 0.92
   (example question: I think I know a lot about the world of work and the jobs that people do.)
4. Career Exploration (CE) – 5 questions: alpha 0.71
   (example question: How much time have you spent exploring different job options using books and online resources in the last 4 weeks outside of any workshops or lessons?)

A commonly accepted criteria is that coefficient alpha values above 0.6 are acceptable and above 0.7 are good estimates of the scale's reliability (Kline 2015). The results above therefore suggest that the Career Preparedness scales demonstrate acceptable or good reliability.

In addition, two measures of Career Direction were developed. The first was a description of the six Career themes which could then be rated using a 7-point scale and is referred to as the 'Career Direction – Career Interests (CD-CI)' in Table 2 above. The second was a description of the 24 Job Families which gave a good idea of the breath of jobs that the family could involve and is referred to as the 'Career Direction – Career Interests (CD-JF)' in Table 2 above. The same 24 students completed the trial versions and the feedback suggested the need for more concrete representations of the jobs involved. This led to a second versions whereby each of the job families was presented with both an extended description and a picture designed to provide a more concrete indication of what could be involved. An example for Job Area 1 – Engineering and Specialist Technical Services – is shown below:

Figure 2

The CCQ was then re-trialled and the feedback suggested that it was both more engaging and raised less questions about what the area involved. However, the items do not combine to form a scale and so the traditional indicator of reliability (i.e. internal consistency) is not appropriate. The items, therefore, should be treated as analogous to

survey questions whereby change is measured directly from the rating to the individual items.

iii. Trialling the generic assessment tool

a) Procedure

The procedure was designed to be as straightforward as possible since it would require the co-operation of the facilitators and the engagement of the participants. This was reinforced during the process of recruiting the samples. The Careers Services in eight universities and four schools were approached and invited to participate in what was called 'a Distance Travelled' research project. All said this was valuable and expressed interest, but gaining commitment to allocate time was harder since involvement required a time commitment from already hard-pressed facilitators. Eventually one University (Sample 1) and one school (Sample 2) were able to commit fully. A further university and school were able to provide access to small numbers for pilot testing.

The facilitators in both institutions were asked to familiarise themselves with the CCQ using an online link to the questionnaire and to supply details of the interventions (the modules) prior to discussing the logistics regarding access and timing for both samples. The guidance given was as follows:

1. to administer the CCQ pre version before or as close to the beginning of any intervention

2. to administer the CCQ post version at the end or at some elapsed time after the intervention which, in their judgement, would be most sensitive (or useful) for identifying impact with minimal sample attrition.

This was followed by discussions regarding how to present the research to the participants and deciding on the best timing for completing both the CCQ-pre and the CCQ-post. Once this was agreed all participants were briefed by the facilitator and told to expect an email which would give them details of how to complete the questionnaire online together with their personal licence number and password. With Sample 1 the facilitators made it clear that they have no formal role or authority with which to persuade students to co-operate after the module has finished. Hence the CCQ-post was scheduled to coincide with the last module of the intervention. With Sample 2 the facilitators did have a continuing role after the intervention (which was only a half day careers module) and so it was decided that the CCQ-post would be best administered in the term following the intervention to allow time for change to 'mature'.

To make the process more attractive to the participants all would receive a report summarising their results so that they would see how much they, as an individual, changed during the process.

In summary, the study can be described as a non-randomised Pre-test/Intervention/Post-test design. At this stage in the development of this methodology the study was conducted without a control group (i.e. a group which does not receive the intervention

and which therefore provides a benchmark for quantifying change that can be attributed specifically to the intervention).

b) Description of the Samples

Sample 1 (N=227): this consisted of 227 students taking a 1-year full-time M.Sc. in Accounting and Finance. All these students needed to complete a compulsory employability course (the intervention) alongside their Finance modules. This intervention involved classroom learning, psychometrics, group and individual feedback discussions. The CCQ-pre was administered on 2 November 2017 and the CCQ-post was administered on 13 March 2018. The average age of this sample was 23.7 years (SD 2.49) and 86 reported as males (38%) and 141 as females (62%)

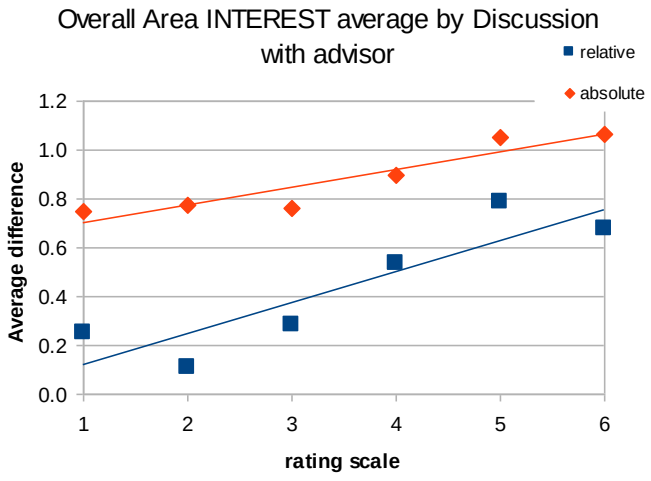
Sample 2 (N=77): this consisted of 77 Year 10 school pupils who were due to attend a half day event where they would be presented with some careers information and ideas concerning the writing of a CV. The CCQ (pre and post) were administered on 10 May 2018 and 18 June 2018. The average age of this sample was 14.8 years (SD 0.38) and 22 reported as males (33%) and 45 as females (67%)

c) Analytical strategy

Since the aim is to identify change the key analysis concerns identifying change in the dependent (outcome) variables moderated by the independent (input) variables. This means that the primary interest is on how scores have changed. However, it needs to be remembered that the aim is not for all scores to increase. For example, becoming less

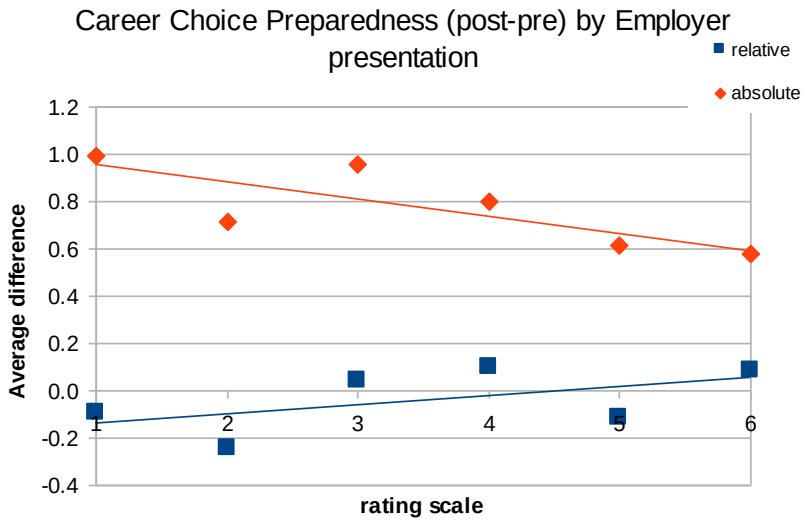
decided about career direction could be a positive result (e.g. thinking of becoming a doctor becomes less clear when a person becomes realistic about what is involved). Hence analysing simple difference scores (henceforth labelled Relative Differences) could be misleading since it is the absolute degree of change that is important (Haley & Fragala-Pinkham 2006) (henceforth labelled Absolute Differences). Hence all outcome scores would be evaluated by calculating the Relative Difference (for communication to individual participants) and the Absolute Difference would be calculated for both samples and tested for significance using the t-test. The effect of the independent variables would be analysed using both correlational analysis to reveal whether 'more' of a particular aspect of the intervention was associated with 'more' change. Furthermore, to avoid potential misinterpretation of the correlations it is important to remain aware of the difference between Relative and Absolute differences. This can be illustrated using an actual example from Sample 1. Both the relative and Absolute differences in overall interest (average of 24 Job Families) were correlated with Discussions with Advisers. The correlation is positive for both Relative differences (+0.154) and for Absolute differences (+0.121). This is illustrated using the plot below:

Figure 3



However, taking another example, using the Relative difference in Career Preparedness and Employer Presentations, the correlation is positive (+0.06) whereas using Absolute differences the correlation is negative (-0.153). To better understand this result it is useful to examine the plot of Relative and Absolute scores as shown below:

Figure 4



In this second example the Relative Difference scores start as a large negative difference. This indicates that, on average, students felt less prepared (the Career Preparedness scores dropped) after the intervention. However, those who attended more Employer Presentations had a smaller drop in scores. In fact, those attending 4 or more Employer Presentations actually increased their Career Preparedness score. In other words, the difference reduces as the number of Employer Presentations increases which is what the positive correlation is describing (i.e. the difference is becoming less negative and eventually becomes positive). Meanwhile, the negative correlation obtained with Absolute differences indicates that differences reduce in magnitude as Employer Presentations increase. In other words, students who attend more presentations report

less change (whether this is an increase or a decrease) in their Career Preparedness score. This illustrates the need to investigate these correlations carefully. An uninformed interpretation of the positive correlation could lead to the erroneous conclusion that more intervention leads to more change in Career Preparedness whereas these results suggest the opposite. However, since the main indicator of intervention impact is the degree of change (whether up or down), the approach taken in this paper will be to calculate correlations against Absolute differences unless otherwise indicated.

Also of interest is whether interventions are more or less effective depending on group characteristics such as gender or age groups. With large data sets it is useful to identify areas that are more useful to investigate in detail. On the basis that most of the intervention categories have been assessed using at least an ordinal scale, linear regression will be used to identify those variables that have the most significant relationship with difference scores. The data collected in this study will be restricted to age and gender although the methodology will allow identification of many sub-group differences when larger data sets are available.

4. Results

The results are presented below and structured around the research questions above.

Research Question 1: ***'Do different intervention categories have a differential impact on the outcome measures?'***

The CCQ-post invited participants to indicate what they had experienced (or taken advantage of) during the intervention period. The results below show the mean rating and SD for each of the intervention categories based on a 6-point scale where the rating

corresponds to either a number of 'events' (for intervention categories 1-5) or the time spent in minutes (for intervention categories 6 and 7):

Table 3						
Rating	1	2	3	4	5	6
Interpretation 1: Number of events	0	1	2	3	4	5+
Interpretation 2: Time spent in minutes	0	20-40	41-60	61-90	91-120	121+

Table 4 below shows the average ratings for the different intervention categories:

Table 4					
Average ratings for the different intervention categories (6-point scale)					
Intervention categories	Sample 1		Sample 2		Diff between samples
	Mean	SD	Mean	SD	
1. Careers questionnaire and report	4.49	1.20	3.65	1.34	**-0.83*** **
2. Careers Workshops	2.99	1.50	1.74	1.02	**-1.25*** **
3. Career Fairs	3.07	1.48	1.40	0.77	-1.68
4. Employer presentations	3.28	1.58	1.43	0.73	-1.85
5. Workplace visits	2.85	1.51	1.67	0.91	**-1.17*** **
6. Discussion with Adviser	2.65	1.44	1.78	0.92	**-0.88*** **
7. Online searches	3.78	1.41	2.40	1.14	**-1.38*** **

*significance p<0.05 **significance p<0.01 ***significance p<0.001 (Mann-Whitney rank test)

Table 4 shows that the average number of workshops attended by Sample 1 was 2.99 whereas Sample 2 only attended 1.74. Hence Sample 1 attended significantly more Career Workshops than Sample 2 (p<0.001). Although the results above are all based on the 6-point scale, the Discussions with Advisers and Online searches can both be

translated into time spent (see Table 3 above). Hence the average for Discussions with Advisers was 43 minutes (Sample 1) and 21 minutes (Sample 2). The average time spent on online searches was 72 minutes (Sample 1) and 36 minutes (Sample 2). The overall picture is the significantly lower level of intervention for sample 2 and the clear restriction in range in these ratings (see Appendix Four Table 4a for more details of the distribution).

To explore which (if any) of the intervention methods had any impact on outcomes the correlations between them were calculated. Since it is change (either up or down) that gives the best indication of impact this will be best reflected by using the absolute difference in outcome scores. In this way it is the magnitude of the change rather than the direction of change is then correlated with each of the intervention scores and these results are presented on the next page:

i) Correlations with changes in Career Preparedness

The results for the correlations between input measures with relative and absolute differences in the four Career Preparedness scales for Sample 1 (Lancaster) are shown on the next page:

Table 5

Correlations with ABSOLUTE differences in Career Preparedness

Interventions Outcomes	CII Report	Discuss with Adviser	Career Work shops	Career fairs	Employer presents	Work place visits	Online search
Sample 1: Career Preparedness (Overall)	-0.08	0.01	-0.05	-0.12	**-0.15***	-0.07	0.03
Sample 2: Career Preparedness (Overall)	-0.24	0.07	0.06	**0.28***	0.15	0.01	-0.07
Sample 1: Career Decidedness	-0.07	-0.10	-0.06	-0.08	-0.09	-0.06	-0.02
Sample 2: Career Decidedness	-0.13	0.20	0.23	**0.37****	0.11	-0.04	0.12
Sample 1: Career Self-efficacy	-0.06	-0.06	-0.10	-0.13	**-0.20****	**-0.17***	0.05
Sample 2: Career Self-efficacy	-0.13	0.12	0.00	0.22	0.01	-0.04	-0.04
Sample 1: Career Knowledge	0.00	-0.04	-0.07	-0.07	-0.09	-0.05	-0.01
Sample 2: Career Knowledge	**-0.34****	-0.02	-0.10	0.15	0.01	0.11	-0.10
Sample 1: Career Exploration	-0.05	**0.17***	0.07	-0.00	-0.05	0.05	0.09
Sample 2: Career Exploration	-0.15	-0.15	-0.06	0.00	**0.34****	0.15	-0.12

*significance p<0.05 *significance p<0.01 *significance p<0.001

The picture presented for Sample 1 is that the overall score on Career Preparedness was not correlated with any of the intervention categories except Employer Presentations

where increasing numbers of presentations were associated with reporting less preparedness overall (correlation of -0.15). Analysing the sub-scales shows that there are 3 correlations that reach significance which lead to tentative suggestions that Discussions with Advisers could be having a small impact in stimulating career exploration and that attending Employer Presentations and Work place visits could be reducing the students' sense of self-efficacy.

The picture presented for Sample 2 shows that the overall score on Career Preparedness was not correlated with any of the intervention categories except Careers Fairs (0.28). This is somewhat surprising since the intervention was not strictly a 'Careers Fair' as was offered to Sample 1. The Sample 2 intervention consisted of a half day with employers who had both formal presentations and were available for individual/group discussions. Table 4 shows that the mean and SD for Careers Fairs was 1.40 and 0.77 respectively. This suggests that some students recognised that this was not a Career's Fair (and rated it 1 meaning no experience) and some saw the whole event as a Career's Fair and rated it 2+). This suggests an ambiguity in the definitions used (at least for this younger age group) which would need to be addressed in a future trial. However, it does suggest that the intervention did increase the gap between pre and post Career Preparedness and Table 9 shows the Relative difference is negative suggesting that the overall effect was to make them feel less prepared overall. The sub-scales suggest that the Careers Fairs has the greatest impact of Career Decidedness, that the Career Interest Inventory impact was on Career Knowledge and that Employer presentations impacted Career Exploration. However, as previously indicated, these results need careful interpretation due to the

limited scale of the intervention, the highly restricted range in the intervention scores, the possible ambiguity in the definition of Career's Fairs and the age of the participants.

ii) Correlations with changes in Career Direction

As well as Career Preparedness, the samples were asked to rate their interest using both the 6 broad career themes and then the 24 job families. Absolute differences were then correlated with scores on the 7 intervention categories and the results are presented below for both samples:

Table 6

Correlations between intervention measures and Absolute Differences in Career interests

Differences Post-Pre	CII Report	Discuss with Adviser	Career Work shops	Career fairs	Employer presents	Work place visits	Online search
Sample 1							
6 Career themes Interest – overall	-0.01	**0.17****	0.05	0.09	0.01	0.11	0.05
24 Job Families Interest – overall	0.00	0.12	0.06	0.07	0.04	0.01	0.10
Sample 2							
6 Career themes Interest – overall	-0.12	**0.33***	0.24	0.08	-0.18	-0.17	-0.12
24 Job Families Interest – overall	0.02	**0.25***	0.15	0.15	0.05	-0.12	0.02

*significance p<0.05 *significance p<0.01 *significance p<0.001

These results suggest that, for Sample 1, the only intervention that is associated with a change in the students' level of interest was Discussions with Advisers (0.17 p< 0.01) and

that this is only evident when measured using the 6 themes method rather than the 24 Job Families. However, Table 11 (which shows relative and absolute differences rather than the correlations - see below page 96) shows that the 24 Job Families do change significantly in the level reported (see Absolute differences) and that this is predominantly in the direction of increasing students' interests (see Relative differences). The results above, however, show that this cannot be associated with a particular category of the intervention.

The picture is not quite the same in Sample 2. It is the Discussion with Adviser category that is most associated with change (as measured by both the 6-theme and 24-family approach) which supports findings from previous research (Whiston et al 2017). However, examining Table 11 for direction of change (see below page 94) whilst the Absolute differences for all job families are significant, it is only Business job family which shows a clear direction. Surprisingly (for a sample that is studying for an M.Sc. in Accounting and Finance) the interest level goes down.

A more detailed breakdown of the correlations with change across all 6 themes and 24 Job Families can be found in Appendix 5. These give a more specific picture of change whereby:

6 Career theme changes

a) In Sample 1 the Discussions with Advisers and attending Careers Fairs were both associated with an increase in one specific interest theme – the Artistic theme.

b) In Sample 2 the CII report tended to reduce interest in all themes whereas several of the interventions were associated with increases in both the Realistic and Investigative themes.

24 Job families changes

a) In Sample 1 none of the overall changes were significant. However, there were significant changes in the interest levels in specific job families (see Appendix 5 Table 6b). Examples are as follows:

   i. Discussions with Advisers was associated with significant change in 8 of the job families (i.e. Construction, Transport, Agriculture, Biosciences, Creative Writing, Business, Financial, Legal)

   ii. CII Report was associated with significant change in 4 of the job families (i.e. Transport, Agriculture, Physical/Mathematical, Creative Writing)

   iii. Workplace visits were associated with significant change in 5 of the job families (i.e. Design, Therapies, Financial, Quantifying, Public Service).

b) In Sample 2 Discussions with Advisers, Career Workshops and Careers Fairs all showed levels of significance. However, there were significant changes in the interest levels in specific job families (see Appendix Five Table 6b). Examples are as follows:

   i. Discussions with Advisers was associated with significant change in 9 of the job families (i.e. Protective, Customer, IT, Performing Arts, Creative Writing, Therapies, Customer Intelligence, Quantifying, Public Service)

ii. Career Interest Inventory was associated with significant change in 4 of the job families (i.e. Transport, Protective, Biosciences, Medical, IT, Performing, Business, Customer Intelligence)

iii. Careers Fairs were associated with significant change in 11 of the job families (i.e. Engineering, Construction, Agriculture, Medical, Performing, Writing, Education, Customer Intelligence, Buying and Selling, Public Service).

To explore potential group differences on the main effect detected above (i.e. Discussion with Advisers) a linear regression was conducted. This describes the extent of any **linear** relationship between the dependent variables (i.e. changes in the outcome measures) and one or more independent variables (i.e. the intervention measures plus any sample characteristics such as age and gender). The table below shows the results using the absolute difference between pre and post ratings for Overall Area Interest:

Table 7

Coefficients	t-value
(Intercept)	2.48*
Gender	-2.69**
Age	-1.26
Value of CII report	0.10
Discussion with Advisors	2.65**
Career Workshop	0.37
Career fairs	-0.68
Employer presentation	-0.26
Online searches	0.14

Table 7 shows that there is a gender effect in relation to Discussions with Advisers. To understand this better, the table below illustrates how, in Sample 1, change in interests varies by gender. The difference scores are based on the 7-point scale (which relates to how much time was spent with the Adviser as described in Table 3 above):

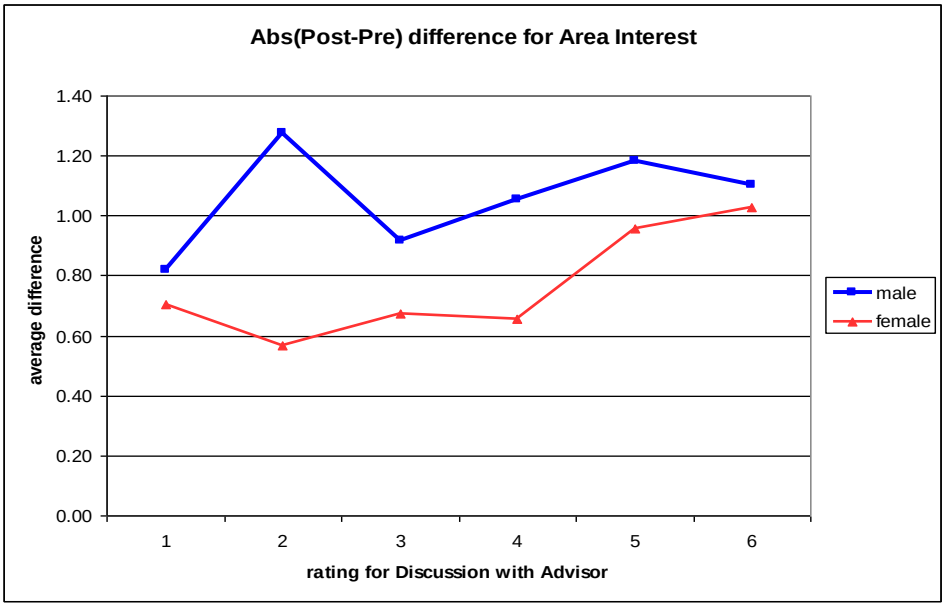
Table 8

Overall Area Interest (post-pre) by Discussion with Advisor and gender

	Relative differences		Absolute differences		Number students for each rating	
rating	male	female	male	female	male	female
1	0.14	0.31	0.82	0.71	21	39
2	0.68	-0.14	1.28	0.57	16	38
3	0.31	0.27	0.92	0.67	21	38
4	0.85	0.05	1.05	0.66	17	11
5	1.18	0.49	1.18	0.96	6	8
6	0.73	0.64	1.10	1.03	6	7
overall	0.533	0.184	1.018	0.686	87	141

The Absolute differences are presented graphically below:

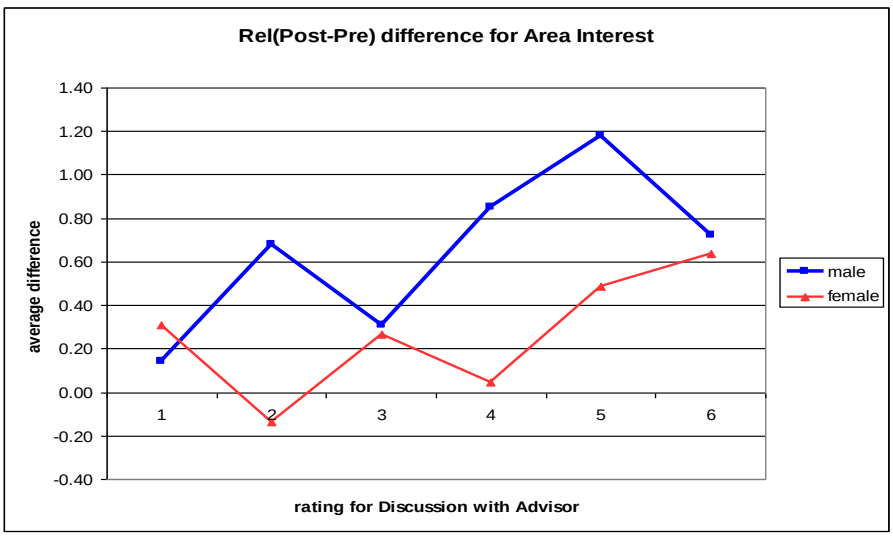
Figure 5



The absolute differences indicate a difference in effect size by sex. Males show a larger overall absolute change which increases with the rating level (i.e. more discussion leads to larger change). It is noticeable that the shortest discussion (rating 2- which represents a minimum of 20 and a maximum of 40 minutes adviser time) shows quite different picture for males and females. However, the sample size means that such a result is purely indicative prior to obtaining larger data sets for a better understanding of trends and effects.

The Relative differences are presented graphically below in order to show how the trend with the difference scores is broadly in the direction of more adviser time is associated with an upward trend in overall interests:

Figure 6



The above graphs show how linear regression can be used to identify areas for further investigation.

Research Question 2: *Do the Career Preparedness scores register significant change following the intervention?*

Sample 1: the changes can be found in a basic group report (as supplied to the facilitators) in Appendix 1. The report shows the amount of change between CCQ-pre and CCQ-post on the 94 items in the questionnaire. Below are the mean scores (both pre and post intervention) for each of the 4 scales used to measure Career Preparedness together with the overall measure of Career Preparedness based on summing the 4 underlying scales. The table also shows the differences in scores – both the relative and the absolute differences for both samples.

Table 9

Generalised Measures of Career Preparedness – Mean Scores and Differences (7-point scale)

	Career Preparedness	Career Decidedness	Career Self-Efficacy	Career Knowledge	Career Exploration
Sample 1					
CCQ-Pre	4.58	4.92	4.89	4.83	3.93
CCQ-Post	4.56	4.81	4.95	4.92	3.83
Relative Difference	-0.02	-0.11	0.06	0.09	-0.10
Absolute Difference	**0.56*** **	**0.74*** **	**0.71*** **	**0.72*** **	**0.77*** **
Sample 2					
	Career Preparedness	Career Decidedness	Career Self-Efficacy	Career Knowledge	Career Exploration
CCQ-Pre	3.96	4.24	4.36	4.49	3.18
CCQ-Post	3.69	4.06	4.14	4.25	2.73
Relative Difference	**-0.28** **	-0.18	-0.22	-0.24	**-0.45*** **
Absolute Difference	**0.62*** **	**0.76*** **	**0.92*** **	**0.87*** **	**0.69*** **

*significance p<0.05 *significance p<0.01 *significance p<0.001

This table shows that the overall change in Career Preparedness was significant for both the relative and absolute differences in Sample 2 (although it was only the relative

difference for Career Exploration that changed significantly at the sub-scale level). In Sample 1 all the sub-scales changed significantly when using the absolute differences but none changed significantly when using the relative differences.

Research Question 3: *Do the Career Direction scores register significant change following the intervention?*

Below are the results showing the amount of change for each of the six themes where interest ratings were invited using a 7-point scale from 'Extremely interesting' to 'Not at all interesting':

Table 10

Sample 1 (7-point scale)							
CD6-CI Interest Diff	Overall	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
CCQ-Pre	4.87	4.40	5.42	4.35	4.94	4.78	5.36
CCQ-Post	4.99	4.72	5.52	4.57	4.97	4.88	5.27
Relative diff	**0.11***	**0.32*****	0.10	**0.22***	0.03	0.11	-0.09
Absolute diff	**0.55*****	**1.14*****	**0.82*****	**0.98*****	**0.95*****	**1.02*****	**0.92*****
Sample 2 (7-point scale)							
CD6-CI Interest Diff	Overall	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
CCQ-Pre	4.05	3.97	4.16	4.49	4.15	3.66	3.85
CCQ-Post	4.18	4.33	4.07	4.49	4.46	3.61	4.12
Relative diff	0.13	0.36	-0.09	0.00	0.31	-0.04	0.27
Absolute diff	**0.68*****	**1.16*****	**1.22*****	**0.96*****	**1.24*****	**1.06*****	**1.34*****

*significance p<0.05 *significance p<0.01 *significance p<0.001

Table 10 shows that, when considering Absolute differences, there are significant changes in Career Direction in both samples across all 6 career themes. In Sample 2, the change is not consistent (some may go up and others go down) since none of the Relative differences are significant. However, in Sample 1, the Relative differences show that there is a significant increase in interest for both the Artistic and the Realistic themes. Overall it is the absolute changes are more highly significant than relative changes.

Change in levels of interest was also measured across all 24 job families and these results are presented below:

Table 11

Pre and Post scores on Interests for 24 Job Families

		Sample 1				**Sample 2**			
		CCQ-Pre	CCQ-Post	Rel diff	Abs diff	CCQ-Pre	CCQ-Post	Rel diff	Abs diff
Overall interest – 24 Job Families	Theme↗	4.07	4.29	**0.22***	**0.57***	2.92	2.93	0.01	**0.53***
1 Engineering	R	3.38	3.79	**0.41***	**1.25***	2.79	2.55	-0.24	**0.87***
2 Construction	R	3.14	3.53	**0.39***	**1.15***	2.45	2.43	-0.01	**0.79***
3 Transport	R	3.36	3.85	**0.49***	**1.35***	2.67	2.69	0.01	**1.00***
4 Protective	R	3.35	3.71	**0.37***	**1.28***	3.88	3.85	-0.03	**0.93***
5 Agriculture	R	3.69	4.11	**0.42***	**1.32***	2.88	2.94	0.06	**1.25***
6 Customer	R	4.56	4.72	0.16	**1.09***	2.91	3.07	0.16	**1.33***
7 Biosciences	I	4.07	4.24	0.17	**1.2***	2.96	2.67	-0.28	**0.97***
8 Physical/Maths	I	3.82	3.96	0.15	**1.32***	2.3	2.51	0.21	**0.87***
9 Medical	I	3.36	3.59	**0.24***	**1.18***	3.03	3.22	0.19	**0.91***
10 IT	I	3.94	4.14	0.2	**1.14***	2.81	2.88	0.07	**0.79***

11 Design	A	4.06	4.39	**0.33***	**1.19***	3.9	3.55	-0.34	**1.06***
12 Performing	A	3.8	3.96	0.16	**1.19***	3.72	3.52	-0.19	**0.97***
13 Writing	A	4.01	4.37	**0.36***	**1.19***	3.04	2.96	-0.09	**1.22***
14 Social	S	4.32	4.39	0.07	**1.06***	3.48	3.58	0.1	**1.33***
15 Therapies	S	3.86	4.01	0.15	**1.23***	3.12	3.21	0.09	**1.16***
16 Education	S	4.19	4.43	**0.24***	**1.02***	3	3.18	0.18	**0.84***
17 Business	E	5.38	5.41	0.03	**0.98***	3.67	3.22	**-0.45***	**1.16***
18 Financial	E	5.65	5.64	0	**0.81***	2.19	2.48	0.28	**0.88***
19 Legal	E	4.04	4.22	0.19	**1.15***	3	3.21	0.21	**1.34***
20 Cust Intel	E	4.65	4.73	0.08	**1.11***	2.75	2.73	-0.01	**1.24***
21 Buying Selling	E	5.11	4.93	-0.18	**1.1***	2.33	2.58	0.25	**0.97***
22 Quantifying	C	4.43	4.57	0.15	**1.18***	2.48	2.67	0.19	**1.33***
23 Quality	C	3.76	4.2	**0.43***	**1.21***	2.54	2.39	-0.15	**1.07***
24 Public Service	C	3.7	4.03	**0.33***	**1.27***	2.12	2.25	0.13	**0.94***

*significance p<0.05

[↗] 6-theme classification (Realistic, Investigative, Artistic, Social, Enterprising, Conventional)

Table 11 shows that there are significant changes in Career Direction both at the overall average as well as at the individual job family level. In Sample 1 it is the interest in Transport that is the most significant change – the level of interest goes up. In Sample 2 it is the interest in Business that changes most – the level of interest goes down. Sample 2 also shows the Legal job family is the most significant change when considering the Absolute differences but that this is not so clearly systematically up or down since the Relative difference is not significant. Once again, the absolute changes are more highly significant than relative changes.

Research Question 4: *How do changes in career direction (as measured by changes in people's interests) using Holland's (1959) 6 themes differ from changes as measured using 24 job families?*

Participants' levels of interest in different job areas was measured in two ways. The first was a more generalised approach whereby they were given a description of each of Holland's 6 career themes and asked to rate their level of interest in each one on a 7-point scale from Extremely interesting to Not at all interesting. These results are labelled CD6-CI in the table below. The second approach involved a more detailed approach whereby they were given a description of the 24 job families and asked to rate their level of interest in each of them, again on a 7-point scale from Extremely interesting to Not at all interesting. These are labelled CD24-CI in the table below. The average change using both methods for both relative and absolute differences:

Table 12

Average change in career interests using 6 career themes and 24 job families (7-point scale)

	CD6-CI		CD24-CI	
	Sample 1	Sample 2	Sample 1	Sample 2
CCQ-Pre	4.87	4.05	4.07	2.92
CCQ-Post	4.99	4.18	4.29	2.93
Relative Difference	**0.11***	0.13	**0.22*****	0.01
Absolute Difference	**0.55*****	**0.68*****	**0.57*****	**0.53*****

*significance p<0.05 *significance p<0.01 *significance p<0.001

Table 12 shows that absolute changes are more highly significant than relative changes and that both samples show significant overall change using the 6 themes and the 24 job families. However, Sample 2 does not show an overall direction of change since the Relative differences are non-significant.

Discussion

This study aimed to present and pilot a new framework to evaluate Careers Guidance Interventions. The results described above demonstrate that the framework developed for assessing change following a Careers Guidance intervention was able provide evidence both in terms of what changed (the outcome measures) and what Career Guidance intervention(s) (which input elements) were most closely associated with those changes. There are clearly statistically significant changes in outcomes, and these varied depending on the intervention(s) that the student participated in. However, the purpose of the study was to trial a generic framework which had potential to be used across a wide range of different Careers Guidance interventions. Hence the results that have been presented are to illustrate the kinds of findings that could be useful rather than findings that may have wide generality. This is partly due to the sample sizes but also to the peculiarities of the two samples (i.e. where one sample was a cohort of students on a Finance and Accounting M.Sc. and the other was school aged students receiving their first introduction to careers through a half day 'stimulus event'). Hence the data should not be used to make broad generalisations since this would require the collection of much bigger data sets – which is what this methodology was designed facilitate (by using technology with a simple interface designed to have once access point for all measures). Nevertheless, the results do support the proposition that this framework could be used for those interested in promoting a more evidence based rationale for supporting careers guidance initiatives – based on a process that would allow the continual updating of evidence in a common framework which could be used to identify trends on a continual basis. The data also provides evidence of how it could help local careers facilitators to

fine tune their programmes by identifying what was working well and what was not working as expected. This will be elaborated below, once again using the four research questions to structure the discussion.

Research Question 1: *'Do different intervention categories have a differential impact on the outcome measures?'*

The question of whether different categories intervention are more or less effective is fundamental to those who need to design, deliver and justify the time and expense. The results presented above need to be understood in the light of the very different nature of the two samples. Table 4 shows the means and SDs for each of the intervention categories for both samples. The level of the intervention experienced by each sample is highly significantly different ($p<0.001$) for five of the seven categories. For this reason, the correlations between each category and each outcome measure are presented for both samples separately.

Analysing the results for Career Direction (as measured using the six themes – see Table 6a, Appendix Five) this shows that, of the 42 possible correlations between the Career Direction and the intervention categories, only two were significant in Sample 1 and 12 were significant in Sample 2 (note: the overall correlations are not being included). This suggests that the intervention was having a greater impact on reported interest in Career Direction in Sample 2. This may be unexpected since Sample 2's intervention was of less duration and covered less content than Sample 1's. One explanation could be that the younger group, being at an earlier stage of their Career journey, were more susceptible to

any kind of input. More surprising, however, is the fact that many of these correlations are negative. Of the 42 possible correlations 15 were negative in Sample 1 and 13 were negative in Sample 2. Since these results are with Absolute differences this means that more intervention created less change (either up or down). Examining the differences in Table 9 for Sample 1, the Relative differences are very small and non-significant. This indicates that the students are reporting feeling more and less prepared in more or less equal proportions. In Sample 2 the picture is slightly different because the Relative differences are all negative which indicates that more of the students are reporting feeling less prepared after the intervention. Whilst this could be a positive outcome – perhaps a reality check where the students recognise their lack of preparedness which could, in turn increase motivation to become more prepared – it could also be a negative outcome if it means that the students feel demoralised. Either way, this is critical information for the facilitators in terms of taking the next steps in the career guidance process.

Considering the differences in Career Preparedness for Sample 1, where the students had already made significant career choices, it could be hypothesised that they would show little change in either Career preparedness or in Career Direction. Table 9 shows that the absolute differences are all highly significant (and just as large as in Sample 2). This does suggest that a significant number of students in Sample 1 still have work to do in order to feel more prepared. However, examining Tables 10 and 11 shows that there is significant change in their reported interests. Table 10 shows that there are significant increases in both the Realistic and Artistic themes and Table 11 shows that this increase is reflected across 23 of the 24 job families (with 12 of these being significant $p<0.05$). The only Job

Family to show a decrease in interest was Buying and Selling although the drop was not significant. Perhaps there is a positive message here for the facilitators – the increase in interests could mean that the students have discovered an interest in a wider range of job areas where they could apply their skills and qualifications but this will need to be monitored over time. There is a lack of information about how careers guidance affects people's Career Direction in the research literature. Where it does exist it either uses unstructured (free answer) methods (Donohue & Patton 1998) which do not lend themselves to large scale data analyses or measurement is based on broad Career Themes (Prediger & Swaney 1995) which do not provide sufficient sensitivity to reflect change and impact.

This methodology can also address the fundamentally important question of how different group respond differently to different intervention categories. There are, for example, well documented gender differences in occupational choices, aspirations, opportunities and, further down the line, in the gender pay gap (Hutchinson, Rolfe, Moore, Bysshe & Bentley 2011). How or why men and women are disproportionately represented in different jobs and receive different levels of pay is not the purpose of this study. However, if adopted such that larger samples would be available for analysis, the methodology could help to develop a better understanding of what choices people make and why and how they are influenced. To illustrate with the small sample sizes in this current study, the differences in outcomes was subjected to a regression analysis using the intervention categories plus age and gender. Table 7 shows the result for one of these analyses using Sample 1 where the dependent variable was Absolute difference in

the overall level of interest (as measured by the 24 Job Families method). The results showed that the two variables that were most associated with this difference were gender and Discussion with Adviser. Table 8 then shows both the Relative and Absolute differences between males and females for each level of the rating given for Discussion with Adviser. These were plotted in the results above (Figures 4 and 5) which show more clearly how both sexes show greater change (difference) depending on time spent with an adviser. However, this change is more marked for males. Once again, this should not be over-interpreted since the numbers in each cell are relatively small. However, if the datasets become much larger these are the kind of results that may provide useful understanding of how different groups respond differently to different intervention categories.

Research Question 2: *Do the Career Preparedness outcome measures register significant change following the intervention?*

Career Preparedness covers the most commonly assessed outcomes found in current research into Career Guidance effectiveness (Childs, Lewis & Yarker 2018). To make sense of the results it is important to note the very different nature of the two samples. Sample 1 consisted of students with an average age of 23.7 who had already chosen an educational path (following their first degree they were now specialising further in Finance and Accounting at Masters level). It might, therefore, be expected that they were already fairly well prepared as they embark on their career path. Sample 2 consisted of students with an average age of 14.8 (Year 10) who would have had very

little formal input in terms of exploring possible careers. It might, therefore, be expected that they would not be particularly well prepared in terms of choosing career paths and make career decisions. The results in Table 9 show that both samples report significant changes in Career Preparedness when considering the Absolute differences and that the degree of change is very similar between the two samples. However, examining the Relative differences it would appear that the change in Career preparedness in Sample 2 is to report being less prepared (i.e. the post minus pre differences are all negative). However, in Sample 1, the changes are more evenly split between those that feel more prepared and those that feel less prepared. As previously mentioned, feeling less prepared may not have been an intention behind the interventions but this can still be a positive outcome since the individuals concerned may have found themselves stimulated by previously unconsidered possibilities or they may now have a more realistic appraisal of what is involved.

Research Question 3: *Do the Career Direction outcome scores register significant change following the intervention?*

The same considerations regarding the nature of the samples and the differences in the interventions apply to changes in Career Direction as apply to changes in Career Preparedness. The results show a similar pattern in that the Absolute differences are more significant than the Relative differences in both samples using both methods (i.e. the 6 Themes versus the 24 Families).

Considering the 6-theme approach first, Table 10 shows that all of the Absolute differences are highly significant ($p<0.001$) in both samples. However, none of the Relative differences reach significance in Sample 2 and this pattern is similar for Sample 1 although the Relative difference for the overall just manages to reach significance at $p<0.05$ due to the significant correlations with the Realistic and Artistic themes. This confirms that the 6-theme method for assessing change is not particularly sensitive – which is to be expected since the themes are very broad such that different aspects within each theme could be increasing and decreasing and hence cancelling each other out.

Considering the 24-families approach, Table 11 shows that all the Absolute differences are highly significant in both samples. Some of the Relative differences for specific job families also show significant change in Sample 1 and these are all positive. For example, on the 7-point scale (where 7 means Extremely interesting and 1 means Not at all interesting) Agriculture is below the mid-point before the intervention (3.69) and above the mid-point after the intervention (4.11). This could suggest that the M.Sc. students, in spite of their having chosen a general career path in Finance and Accounting, had discovered areas of interest they had not previously considered. This demonstrates how information of this kind, if available to the facilitators quickly and easily, could help them to understand the impact of their intervention and consider if it is in line with their aims – which could lead to ideas for adjustments if that were appropriate.

Research Question 4: *How do changes in career direction (as measured by changes in people's interests) using Holland's 6 themes differ from changes as measured using 24 job families?*

The CCQ used two different approaches to measuring changes in the students' interests in terms of their Career Direction. These have been labelled as the 6-theme method and the 24-job families method. Table 12 shows the overall differences for both methods in both samples. This suggests that, overall, both methods reveal significant differences in interests. As before, the Absolute differences show a higher level of significance. The question of whether the additional assessment time required for the 24-job family method versus the 6-theme method therefore comes down to the value of identifying more specific areas where change is occurring. Table 10 showed that Sample 1 had a relative increase in interest for the Realistic and Artistic themes. To understand why or how would require much more detailed knowledge of the intervention since it may be due to specific local factors (such as the quality of a specific Employer Presentation, for example) which is something that the facilitators would be in a better position to understand and to whom such information could be useful in planning future interventions. Future research could adopt a real world or process evaluation approach (Pawson & Tilley 1997) to help understand how not only the discrete components of the intervention(s) but also how it was delivered and received. These insights may help elucidate why preferences within some themes changed.

Table 11 shows the changes in the specific job families and all the jobs that changed (mainly increased) the most. There is clear correspondence between these and the 6 themes since all the 6 job families classified under the Realistic theme show significant increase in interest. However, of the 3 job families classified under the Artistic theme, one of these does not show an increase in interest (i.e. Performing Arts). The more

detailed job families method also picks up that there is a significant change (increase) in interests in the Medical, Education, Quality and Public Service job families.

The value of this extra information at the more detailed level would need to be judged by the facilitators unless, over time, it is discovered to be a common finding across many different samples or interventions.

5. Summary

This study was prompted by a desire to improve the evidence base for the effectiveness of Careers Guidance interventions in order to build the argument for more resources to be allocated. This led to the realisation that, with the increasingly dynamic and changing nature of the world of work plus how measuring effectiveness has changed over the years – and will continue to change – that a different approach would be needed to produce good quality evidence. As well as requiring easy access via online technology, any approach should take advantage of the opportunities that are presented by the accumulation of Big Data. Big data changes the paradigm of research by focusing more on the concept of Data Mining (i.e. exploring large, unstructured data sets to discover trends rather than in making hypotheses to be tested). This paper embraced that approach and set out to explore some broad research questions rather than to tests specific hypotheses. Nevertheless, Big Data does present difficulties since so much unstructured or disparate data can make it hard to see and understand what is happening.

This study therefore began by creating some standardised frameworks for both the inputs (interventions) and outputs (outcomes) that covered the ground distilled from current

practice. Essential to the process was to then make these into an assessment that was easily accessible across many different situations – and hence capable of accumulating data over time in many different samples.

The results are sufficiently encouraging – changes are being identified, intervention methods could be having differential impact and it has been possible for the process to be accessed and used by facilitators in the field. There are improvements that could now be made to the assessment process but it has been useful to establish the process even if just as a proof of concept.

Whilst, it unwise to draw any generalised conclusions from these data, especially because the two samples are small and at very different stages of their career journey, it is interesting to note that Discussions with Advisers is one of the intervention categories that features as having significant impact. This is consistent with previous findings (e.g. Whiston, Brecheisen & Stephens 2003). Less commonly reported is the impact of Employer Presentations which did feature in some of the analyses. However, such an intervention category may require more careful analysis since we can presume that such presentations are highly variable in terms of quality and relevance to the audience. Nevertheless, such data as feedback to the facilitators who are delivering the intervention could prove very valuable for their continuing design and delivery. Perhaps the days of designing a programme which remains the same for years are numbered.

There are also implications for those who approach Career Guidance from a particular theoretical perspective. Many modern theoretical perspectives have focused on

increasing confidence, information, choice and decision making in a changing world – and their outcome measures are clearly linked to the theory involved. This sometimes leads to detailed outcome measures which are valuable to facilitators who use that approach but can be too detailed or less appropriate to facilitators from a different theoretical persuasion. It may also mean that other areas considered important get neglected. For example, there has been a shift towards focusing on the person's internal experience and certain external manifestations of impact (such as Career Direction) have been neglected. This study set out to provide an overarching framework which could be used by many, if not all, the different practitioners who come from very different theoretical perspectives. Of course, this will not answer the deeper questions that they would consider important but it could make it easier to amalgamate findings which can be communicated to wider audiences. Potentially this approach could provide a benchmark of consistency in amongst the richness of other data which will, no doubt, continue to be collected and analysed.

The implications for practitioners could be considerable. Access to regular and ongoing feedback concerning what is changing and what is most likely to influence that change means that interventions can adjusted in the light of concrete evidence. Furthermore, this evidence is likely to enable discussions with policy makers and funding bodies to be less based on conviction and more on evidence. It is to be hoped that this would be a more effective way of justifying the allocation of resources and for channelling these resources into the most appropriate and effective areas.

Finally, it should be noted that the study was an initial pilot designed to demonstrate feasibility. As such the intention was not to report generalisable findings but to establish

feasibility in terms of developing a tool that is easy to use and could accessed on a wide scale by people from different institutions in different parts of the world. It has also demonstrated that the outcome measures within this framework do give significant indications of change. The greatest limitation of this study is that there was no control group by which to evaluate change over and above the natural uncertainty that people have concerning their careers. The everyday process of living can influence what people think, both in terms of which career they wish to pursue and in terms of their confidence in so doing. Hence an intervention needs to contribute to change over and above that which can occur naturally which is why study designs include control groups alongside the intervention groups so that these differences can be examined in a robust way (Webster & Sell 2014 p.53).

Another limitation is that the details concerning the reliability of the measures is incomplete. Whilst the Career Preparedness measures demonstrate acceptable internal consistency this is a limited indicator of reliability. Good practice would also establish the short- and long-term test re-test reliabilities with groups that experience no intervention (such as would be obtained using a control group). The Career Direction measures do not lend themselves to internal consistency analysis and so there is a clear need to establish test re-test reliabilities for these measures as well. Once these have been established (with any modifications that emerge as potentially useful) the next stage would be to engage different facilitators from different theoretical persuasions to add the measure to their own research and data collection in order to build an large enough data pool for more significant analyses from which more generalisable findings could be reported.

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6. Appendices

Appendix 1: Career Choices Questionnaire (CCQ) Report

Appendix 2: Outcome measures analysed in terms of the Extended Kirkpatrick model:

Table 1a		
Kirkpatrick's 4 Levels	Internal	External
Level 1: Reaction The degree to which participants find the training favourable, engaging and relevant to their jobs (measured by happy sheets, surveys)	**1. Participant Satisfaction**	N/A
Level 2: Learning The degree to which participants acquire the intended knowledge, skills, attitude, confidence and commitment based on their participation in the training (measured by pre and post – questionnaires, tests, interviews)	**2a. About self** CES, CE, CDMSES, RSES, SUS, CPEE, EVDS, VSSE, MVS, ESEM, CAAI, CAAS, GHC, SWLS, SQ, UCCS, DEPS	**2b. About the world of work or education** CES, CE, CDMSES, EVDS, VSSE, CDI, CAAI, CAAS, CDDE
Level 3: Behaviour The degree to which participants apply what they learned during training when they are back on the job (measured by questionnaires, observation, 360)	**3a. Making Decisions** CES, CDMSES, VSSE, CDI, MVS, CAAI, CDS, CFI, CAAS, CDDE, UCCS	**3b.Identifying a career direction** CES, CEPI, NOC, CDMSES, CPEE, VSSE, CDI, ESEM, CAAI, CAAS, SDS
Level 4: Results The degree to which targeted outcomes occur as a result of the intervention (measured by questionnaires and objective records)	**4a. Career Engagement**	**4b. Career Achievement**

Appendix 3: Summary of Outcome measures and authorship:

Key to measures	Authors
CES - the Career Exploration Survey	Stumpf, Colarelli, & Hartman 1983
CE - Career Exploration	Littman-Ovadia (2008)
CEPI - Career Exploratory Plans or Intentions	Betz & Voyten (1997)
CEBS - Career Exploratory Behaviors Scale	Krumboltz & Thoresen (1964).
NOC - Number of Occupations Considered	
CDMSES-SF - the Career Decision-Making Self-Efficacy Scale–Short Form	Betz, Klein, & Taylor, 1996 (Taylor & Betz, 1983 50 items)
RSES - Rosenberg's Self-Esteem Scale	Rosenberg 1965
SUS - Strengths Use scale	Govindji & Linley 2007
CPEE - (part of MGCS Missouri Comprehensive Guidance Survey)	NOICC (National Occupational Information Co-ordinating Committee) 1986
EVDS - (part of MGCS Missouri Comprehensive Guidance Survey)	NOICC 1986
VSSE - Vocational Skills Self Efficacy	McWhirter et al 2000
CDI - Career Development Inventory	Super, Thompson, Lindeman, Jordan, Myers 1981
MVS - My Vocational Situation	Holland, Daiger, Power 1980
CSESS - Career Self-Efficacy Sources Scale ?	
ESEM - Employment Self-Efficacy Measure	Vinokur et al
CAAI - Career Adapt-Ability Index	
CDS - Career Decision Scale	Osipow, Carney, Winer, Yanico & Koschier 1976
CFI - Career Factors Inventory for Career Indecision	Chartrand, Robbins, Morrill, & Boggs, 1990
CDP - Career Decision Profile	Jones 1989
CAAS - Career Adaptability	Savickas & Porfeli, 2012
CDDS - Career Decision Difficulties Scales	Gati, Krausz & Osipow 1996
CDOE - Career Decision Outcome Expectations	Betz & Voyten, 1997
SDS - Self Directed Search	Holland 1994
UNIACT-R - Unisex American College Testing Interest Inventory	Swaney 1995 (Lamb abd Prediger 1981)
PQ - Perceptions of Career Interest Intervention Questionnaire	based on Slaney 1978
VNS - Vocational Needs Scale	
RVI - Rokeach Values Inventory	Rokeach 1982
WVI - Work Values Inventory	
OAQ - Occupational Alternatives Question	Zener & Schnuelle 1976 (Slaney review 1988)

VIA-IS - Values in Action Inventory of Strengths	Peterson & Seligman 2004
CAS - Career Aspirations Scales	O'Brien 1996
SII-SCII - Strong Interest Inventory (formerly Strong Campbell)	
VCS - Vocational Card Sort	Slaney 1978
VPI - Vocational Preference Inventory	Holland 1985
I-E Scale - Internal-External Locus of Control Scale	Rotter 1966
CDR - Career Development Responsibility	Thomas 1974
KTS - Kiersey Temperament Sorter	Kiersey & Bates 1984
RS - Relational Support	Cheung & Arnold 2010
PRF - Personality Research Form	Jackson 1974
SDI - Student Development Inventory	Hood 1986
GHC - General Health Questionnaire	Goldberg 1972
SWLS - Satisfaction with Life Scales	Diener, Emmons, Larsen & Griffin, 1985
SQ - Satisfaction Questionnaire	Zener & Schnuelle, 1976
UCCS - Undergraduate Career Choice Survey	
MCGS - Missouri Comprehensive Guidance Survey	Gysbers, Multon, Lapan, Lukin 1992
PPA - Personal Project Analysis	Little 1983 (Nurmi & Salmela-Aro 2002)
GHQ-12 - General Health Questionnaire	Goldberg 1972
DEPS-10 - Risk of depression	Salokangas et al 1994

Appendix 4: Categories of interventions

Table 1
Intervention components coded by Ryan (1999)

Components	Definitions
Critical components	
Workbooks and written exercises	The use of workbooks, logs, and other written material that require participants to write their goals, future plans, occupational analyses, etc
Individualized interpretations and feedback	The provision of opportunities to receive individualized feedback on test results, goals, future plans, etc. regardless of intervention format
World of work information	The provision of opportunities in-session to gather information on the world of work and on specific career options
Modeling	Exposure to models of career exploration, decision-making, career implementations, etc
Attention to building support	Activities designed to help participants understand or build support for their career choices and plans
Other components	
Computer-guided assistance	Interactions between a client and computer program that can involve self-assessments, career options, occupational/school information, etc
Self-report inventories	The use of self-report inventories to identify interests, needs, skills, abilities, personality, etc. (except as outcome measures)
Counselor support	Activities by the counselor designed to impart feelings of support to the client and interventions that were described as supportive in nature
Cognitive restructuring	Attributional retraining and other activities intended to confront and challenge maladaptive beliefs and to entertain more adaptive beliefs
Vocational exploration	Exploratory and information search activities generally taking place outside of regularly scheduled sessions
Values clarification	Activities designed to explore career-related and personal values as they relate to career choice, including needs clarification activities
Card sort procedures	Use of card-sort procedures to help clients arrive at a career choice or gain clarity concerning variables personally important in making career choices
Decision-making models and strategies	Explanations or activities designed to help clients understand the decision-making process, the steps involved in making a good decision, and factors involved in decision-making
Outside reading	Use of outside reading assignments to learn more about career development models and strategies
Personal performance accomplishments	Activities designed to help clients acquire success experiences in activities involved in career-decision making and choice implementation, including simulations and role play activities
Anxiety reduction	Activities designed to help clients reduce or manage anxiety over current and future career-related activities
Vicarious achievements	Activities designed to help clients to reflect on past achievements to increase skills and confidence
Attention to decreasing barriers	Activities designed to help clients identify or deal with career-related barriers
Other	Intervention activities that cannot be coded reliably into one of the above categories

Appendix 5: Distribution of ratings for the 7 intervention categories

Table 4a: Distribution of ratings for the 7 intervention categories							
Sample 1							
No of events	None	1	2	3	4	5+	total
Careers questionnaire and report	2	9	26	62	64	30	220
Careers Workshops	53	36	49	54	23	13	228
Career Fairs	39	47	58	45	20	19	228
Employer presentations	40	38	46	51	28	25	228
Workplace visits	67	28	47	55	21	10	228
Discussion with Adviser	60	54	59	28	14	13	228
Online searches	4	43	62	52	25	42	228
Sample 2							
No of events	None	1	2	3	4	5+	total
Careers questionnaire and report	5	5	14	22	9	3	66
Careers Workshops	36	18	10	2	0	1	67
Career Fairs	52	9	4	2	0	0	67
Employer presentations	46	14	5	2	0	0	67
Workplace visits	36	19	9	2	1	0	67
Discussion with Adviser	37	16	11	3	0	0	67
Online searches	14	31	11	8	2	1	67

Appendix 6: Correlations with changes in Career Direction

The results for the correlations between input measures with absolute differences in the 6 Career Themes are shown below:

Table 6a Correlations between intervention measures and Absolute Differences in 6 Career Themes interests							
	CII Rep.	**Discuss with Adviser**	**Career Work shops**	**Careers fairs**	**Employer presents**	**Work place visits**	**Online search**
Sample 1							
Overall difference	-0.01	**0.17**	0.05	0.09	0.01	0.11	0.05
1 – Realistic	-0.10	0.04	-0.02	0.06	-0.08	0.03	0.01
2 – Investigative	-0.10	-0.02	0.02	0.01	0.07	0.07	0.01
3 – Artistic	0.00	**0.17**	0.05	**0.15**	0.10	0.10	0.05
4 – Social	-0.07	0.09	0.03	0.05	0.00	-0.01	-0.00
5 – Enterprising	0.09	0.00	-0.09	-0.04	-0.08	0.03	-0.00
6 – Conventional	-0.10	0.03	-0.02	0.01	-0.03	0.09	0.01
Sample 2							
Overall difference	-0.12	**0.33**	**0.24**	0.08	**-0.18**	**-0.17**	-0.12
1 – Realistic	**-0.22**	-0.01	**0.15**	0.06	**0.25**	**0.16**	-0.03
2 – Investigative	**-0.21**	**0.22**	**0.19**	0.04	**0.16**	0.01	0.08
3 – Artistic	-0.13	**-0.13**	-0.03	0.08	0.03	-0.07	-0.03
4 – Social	**-0.19**	0.10	**0.28**	0.07	0.06	0.12	0.03
5 – Enterprising	0.06	**0.14**	0.13	-0.03	-0.10	-0.06	0.06
6 – Conventional	-0.01	0.08	0.09	-0.02	-0.12	-0.05	0.12

Correlations with changes in Career Direction for all 24 Job Families – Sample 1

Table 6b Correlations between intervention measures and Absolute Differences in 24 Job Family interests							
Differences Post-Pre	**CII Rep**	**Discuss with Adviser**	**Career Work shops**	**Career fairs**	**Employer presents**	**Work place visits**	**Online search**
Sample 1							
Overall interest in 24 Job Families	0.00	0.12	0.06	0.07	0.04	0.01	0.10
1 Engineering	0.10	0.10	0.08	0.02	-0.05	-0.05	0.12
2 Construction	0.10	**0.23**	**0.14**	0.07	0.07	0.02	0.10
3 Transport	**0.14**	**0.16**	0.03	0.07	-0.02	0.00	0.08
4 Protective	0.07	0.11	-0.03	0.04	0.02	0.06	0.12
5 Agriculture	**0.16**	**0.13**	0.06	**0.15**	0.08	0.10	0.05
6 Customer	0.01	0.03	-0.06	0.03	-0.02	-0.10	0.08
7 Biosciences	0.03	**0.13**	0.04	0.12	0.08	0.08	0.08
8 Physical/Maths	**0.20**	-0.03	0.01	-0.05	-0.01	-0.04	0.12
9 Medical	0.09	0.07	0.01	0.10	0.01	0.05	-0.01
10 IT	0.03	0.00	-0.02	0.03	-0.01	0.09	-0.06
11 Design	-0.06	0.12	0.05	0.09	0.08	**0.17**	0.13
12 Performing	-0.09	0.02	-0.06	0.01	0.00	0.04	0.03
13 Writing	**0.14**	**0.15**	0.11	0.06	0.03	0.10	**0.14**
14 Social	0.00	0.07	**-0.15**	-0.03	-0.06	-0.05	-0.03
15 Therapies	0.07	0.09	0.04	0.11	0.09	**0.20**	0.08
16 Education	0.06	0.05	-0.09	0.07	-0.07	0.09	0.07
17 Business	-0.06	**0.22**	0.05	0.08	0.04	0.10	0.08
18 Financial	0.00	**0.17**	0.06	**0.15**	0.05	**0.16**	0.09
19 Legal	0.04	**0.16**	0.08	0.05	0.08	0.11	-0.03
20 Cust Int	-0.04	0.02	-0.06	-0.03	0.01	0.00	0.06
21 Buying Selling	-0.06	-0.02	-0.10	-0.13	**-0.15**	-0.10	-0.05
22 Quantifying	-0.01	-0.04	-0.11	-0.06	-0.10	**-0.13**	-0.03
23 Quality	0.05	0.03	0.03	0.02	-0.11	0.03	0.03
24 Public Service	0.09	0.08	0.13	0.12	**0.21**	**0.16**	0.11

Correlations with changes in Career Direction for all 24 Job Families – Sample 2

Table 6c							
Correlations between intervention measures and ABSOLUTE differences in 24 Job Family interest measures							
Differences Post-Pre	**CII Rep**	**Discuss with Adviser**	**Career Work shops**	**Career fairs**	**Employer presents**	**Work place visits**	**Online search**
Sample 2							
Overall interest in 24 Job Families	0.02	**0.25**	**0.15**	**0.15**	0.05	-0.12	0.02
1 Engineering	-0.07	-0.01	0.08	**0.29**	0.00	0.02	0.11
2 Construction	0.05	-0.04	-0.09	**0.17**	0.01	-0.02	0.13
3 Transport	**-0.20**	0.09	**0.16**	0.11	0.02	0.12	0.00
4 Protective	**-0.13**	**0.15**	**0.29**	-0.07	-0.06	0.03	0.01
5 Agriculture	-0.05	0.06	**0.21**	**0.28**	**0.16**	**0.35**	0.11
6 Customer	-0.03	**0.38**	0.02	0.05	-0.07	**0.16**	**0.23**
7 Biosciences	**0.15**	-0.04	-0.01	-0.02	-0.05	**-0.27**	0.06
8 Physical/Maths	0.08	0.04	-0.03	-0.06	0.11	**0.14**	0.08
9 Medical	**0.28**	-0.06	-0.03	**0.23**	0.04	0.03	0.12
10 IT	**0.26**	**0.20**	**0.16**	0.11	0.03	-0.06	**0.25**
11 Design	0.03	-0.06	-0.02	0.11	0.08	-0.08	-0.12
12 Performing	**0.22**	**0.14**	**0.14**	**0.34**	**0.27**	0.06	0.00
13 Writing	0.08	**0.29**	0.09	**0.21**	**0.23**	0.02	0.07
14 Social	0.12	-0.02	0.10	0.08	-0.05	0.03	**-0.16**
15 Therapies	0.05	**0.25**	0.09	0.11	-0.06	**-0.14**	**-0.14**
16 Education	0.11	0.09	0.02	**0.20**	-0.04	0.01	0.06
17 Business	**-0.38**	-0.11	-0.02	0.00	-0.06	0.00	-0.06
18 Financial	0.06	0.05	**0.16**	0.12	0.04	**0.23**	0.06
19 Legal	-0.02	-0.05	**-0.30**	-0.07	-0.12	0.00	0.05
20 Cust Int	**0.19**	**0.17**	0.04	**-0.15**	-0.11	**0.13**	0.05
21 Buying Selling	-0.07	0.02	-0.04	**-0.17**	-0.04	0.05	0.06
22 Quantifying	0.09	-0.04	0.11	-0.03	0.02	0.11	0.03
23 Quality	-0.05	**0.15**	0.12	0.06	0.09	**0.20**	0.11
24 Public Service	0.10	**0.13**	**0.22**	**0.23**	0.01	**0.19**	**0.19**

Reflective review of the process of undertaking the Professional Doctorate in Occupational and Business Psychology at Kingston Business School – September 2016 to February 2019

Professional Doctorate in Occupational and Business Psychology: Reflective Review Document
Do fill in this template as you go through each stage in your doctorate. This is not a fixed template but rather to be used as a guide for the type of questions you may want to reflect upon. You are free to tweak, delete, amend and add questions as you prefer. The aim of the process is to demonstrate your personal growth and development; and to document the cognitive processes and justifications that you have made at each stage of the process.

Stage - Scoping	Questions	Reflections
Scoping out your research idea	What challenges did you face and how did you overcome them?	I started on this Prof Doc journey having worked with the Careers Services in Universities since 2005. Over time it became evident that budgets were constantly being squeezed. It seemed that, whilst lip service was given to the importance of helping students find their path, resources were hard to obtain. I began working with schools in 2012 who were also needing to provide Careers Education as part of the curriculum. This has become imperative with the publication of the Gatsby Benchmarks which schools will need to implement by 2020. My intention when starting out on this PhD was to help beleaguered and underfunded careers departments to justify their existence – and hopefully to give them some tools and evidence that would help them to justify the funding they received and, hopefully, help them to secure more funding more easily. The challenge was to provide evidence that they were delivering good quality careers guidance that had impact – and that this was being done in a cost-effective way. I intended to assist this by collecting evidence that would demonstrate value to both the educators and the funding bodies.
	Did your initial idea change during this stage? If so, how and why?	In scoping out the project I found myself wanting to cover so many different aspects of what is, ultimately, a hugely complex process. All the elements that are involved in helping people find their vocation range from the deeply personal to broad sociological, cultural and economic issues. The discussions with Jo and Rachel kept bringing me back to the dangers of including too much and of losing focus. The key thing I learnt was that the research would need to be both meaningful and communicable. This meant striking a balance

		between the comprehensiveness of the ideas and the simplicity of the message.
	How did this process differ from your expectations?	I had expected the requirement to involve embedding it all into a broad theoretical and conceptual framework for the research. The process of focusing on the essentials and narrowing the scope was not what I had expected.
	What were your key learnings from this stage?	My key learning was how useful it was to clarify the research question. The danger of being too loose at this stage, given the great diversity and complexity of the topic, became apparent and I had to maintain a mantra of keeping it sufficiently simple (to aid communication) whilst maintaining usefulness (to aid engagement). I also realised the dangers of assuming knowledge and understanding simply because I have been involved in this area for a number of years. The discipline of formulating the research question revealed many areas where my understanding lacked sufficient depth – that generalised concepts are not real understanding without the detail that lies behind them (e.g. job satisfaction, career certainty).
	What would you do differently if you were to go through this process again?	If doing this again I would spend more time questioning the practitioners to understand what really matters to them and to narrow this down to the main things that would have impact rather than hope to cover too many ideas and angles.
Stage SLR	Questions	Reflections
The systematic review: Developing a protocol	What challenges did you face and how did you overcome them?	The first challenge was understanding how the concept of a literature review has evolved with the increasing sophistication of search engines. This then required getting to grips with the technology – both making searches and then recording and saving the details. This was made more difficult by the variety of search terms I used and how that threw up so many irrelevant papers. However, this also helped to narrow down and focus the research question. At the time it felt as though I was losing a significant amount of time which caused feelings of frustration although, in retrospect, this was a necessary part of the process.
	How did this process differ from your expectations/plan?	I had expected the search engines to understand what I was looking for. I thought I knew what I wanted but clearly people use words in many ways (e.g. guidance, intervention etc.) and the computer

		will find anything that is vaguely related. I had to get familiar with the software, the terminology, the different databases and how they worked and presented the information in different ways; accessing and using Ref Works.
	What were your key learnings from this stage?	Having access to all this research was like being in a sweet shop. My key learnings were 1. It is too easy to be distracted by interesting articles. There is a lot to be gained from searching and dipping into a wide range of papers early on without being too structured too early. This stimulates thinking to help identify a more precise about the research question. However, it is also important to keep focused since the ideas can mushroom. 2. You can't cover everything - there is always another paper and you have to call a halt. 3. Recognising the value of previous review papers to quickly assimilate what has been done and what the field considers to be important. 4. Choosing good search terms and limiting the databases to be searched – this requires trial and error before finding those that identify the most relevant papers. The process of coming up with key words that identified the most relevant papers was surprisingly difficult and then identifying databases that made the numbers manageable was a trial and error process. The discussions with Jo regarding inclusion and exclusion criteria was particularly useful. 5. The value of having a systematic process which is a great improvement on the traditional ''follow your nose'' literature review. However, you are reliant on imperfect indexing and software which isn't always as logical or accurate as you expect – but hopefully this will improve as systems improve 6. That the 'body of knowledge' is not as coherent as I might have expected or hoped. I had expected a little more agreement about how to classify a 'careers intervention' and how success was to be judged. 7. That there are many ways to approach the topic and that any project could end up being too large and diverse. I decided to limit the scope of the project by focussing on the commonalities that would be most useful to the career professionals who were designing the interventions and still provide evidence of value to funding bodies
	What would you do differently if you were to go about developing a protocol again?	Given the time I spent in reading interesting articles and how it put me behind my intended schedule, I think I would have gained from reading some of the general reviews earlier in the process. This could

		have helped to make my reading around a little more focused. I now recognise how the formulation of the research question is an iterative process requiring early ideas and an openness to the information that is uncovered leading to a more precise formulation to steer the more systematic literature review.
Stage	Questions	Reflections
The systematic review: Conducting searches	How did you come to a decision on the keywords, databases and inclusion/exclusion criteria to use?	This was a trial and error process whereby different search terms were used which identified thousands of articles. After much effort and being guided by Jo and Rachel I identified likely articles, noted the key journals, found which databases listed them and then restricted the search to the EBSCO database.
	What challenges did you face and how did you overcome them?	The search identified 1092 articles but removing duplicates and clearly irrelevant titles reduced this to 798 – still daunting. However, the sift on abstracts reduced his to 65 and applying the inclusion/exclusion criteria (i.e. quantitative studies with pre and post intervention assessments but excluding specific groups such as nurses or those with mental distress) left 15 articles to review in depth.
	How did this process differ from your expectations/plan?	The process culled far more articles than I expected.
	What were your key learnings from this stage?	I learnt to apply the criteria quite ruthlessly – and not be swayed by articles that were outside the criteria (although they were still interesting).
	What would you do differently if you were to go about conducting systematic searches again?	I would want to keep better records at the start of the process since it is easy to proceed and to forget exactly what was done at each stage.
Stage - Submission	Questions	Reflections
The systematic review: Assimilation, write up and submission	How did you come to a decision on the way to cluster the data and tell the story? How did you make the choice of target journal?	I summarised all the final 15 papers in an excel spreadsheet. This involved adding columns as I went into each paper – and then going back to previous papers to fill in details that I may have missed first time. Thus the building of the columns in the spreadsheet was an evolving process. However, this was what provided the picture for how to tell the story.
	What challenges did you face and how did you overcome them?	I felt that the spreadsheet helped to structure the story but my first write-up was based on how I saw things rather than how a journal would want to receive it.
	How did this process differ from your expectations/plan?	I had to learn that I was fitting into someone else's system rather than basing things simply on my own ideas.

	What were your key learnings from this stage?	I needed to think about the audience for a specific paper rather than the population I had in my own mind.
	What would you do differently if you were to go about writing up again?	I would identify the journal to which the paper would be submitted earlier.
	From your SLR, what information regarding methods have you considered in the design of your study? What methods predominated? Were they the most appropriate? What was missing?	Since I had restricted the SLR to quantitative studies with impact assessments it is not surprising that this fitted the research design I had in mind. However, the sheer variety of outcome measures was daunting – and suggested that gathering data that could be accumulated into a body of knowledge that would be useful was not going to be easy. What was missing was an overarching framework for guiding the various research studies leading to an accumulation of data that was not easy to combine and make sense of.
	What has and hasn't been explored before empirically? Why might that be? Why are you in a position to explore these gaps?	It became evident that the lay person's view of career guidance was that it would suggest jobs/careers for an individual to consider/pursue – something that certainly part of early thinking in the development of careers guidance. However, this feature was almost entirely absent in the outcomes being measured. Instead, individuals were assessed on how clear or certain they were about their career direction with no specifics about what or where. There are understandable difficulties in doing this but it did highlight a challenge for my research study.
	What alternative conclusions could you have drawn from your SLR in terms of opportunities for further research?	I could have concluded that, in a changing world, career guidance needs to focus on subjective feelings of preparedness rather than trying to identify how individuals are impacted in terms of career direction – which seems to be the direction of most of the research. It felt like this was an important element that was missing and presented a real challenge to find a meaningful way of filling the gap.

Stage - Design	Questions	Reflections
Research Study: Design	How did you come to a decision on the study/studies you were going to undertake?	I had originally thought that I would develop a comprehensive set of outcome measures and trial them on willing samples which would reveal how the measures could be used to demonstrate the impact of the intervention. This meant using a pre-test/post-test design.
	How did your SLR provide the basis for your study?	The variety and number of tools used in the SLR studies confirmed that there was no leading outcome measure that could be used as a benchmark in the field. It also revealed that the questionnaires being used had been developed some time ago and that they were not making the most of modern technology which could

		make the collection of data easier and more interesting.
	How is your research unique and what will it add to the literature base?	This study is therefore unique in that it uses an outcome measure that pulls together the commonalities across the field and delivers the assessment online making it not only easier to access but also uses pictures to make the engagement with the process a more positive experience.
	Why did you decide to use the particular methodology/ analytical process?	The methodology was designed to cover the main areas that needed to be assessed without making the assessment too long in order to maximise co-operation and completion – hence short, sharp, useful and engaging.
	What other design could you have chosen to answer your question and why was yours more appropriate? Please consider at least two alternatives and describe why you haven't progressed with these.	I considered the advantages of using a qualitative versus a quantitative approach. Given the subjective nature of people's experience as they consider their career options, a qualitative approach would be more likely to capture the idiographic nature of the change. There were three reasons for rejecting this approach. The first was that it would be both time and resources intensive – conducting interviews requires skill/training of the researcher/interviewee plus there is the demand on time from both the researcher and the interviewee. The second reason is that a qualitative approach is labour intensive which would preclude it from being rolled out and scaled without very significant funding. The third is that qualitative results can be harder to communicate and are less likely to be understood, recognised and valued by people outside the profession – especially policy makers and funding bodies. In choosing a quantitative approach to the research I could have selected an existing measure and hence built on an existing body of research. However, the SLR had confirmed that research in this field used a range of outcome measures. Very often they were developed by the researcher themselves but none stood out as having captured the acceptance of the field and become the measure of choice or the benchmark in the field. In addition, they were traditional self-report measures which were not making best use of modern technology which allows the measures be both more interesting and more easily accessible – they tended to be rather lengthy paper and pencil questionnaires
	If you have chosen measures, why did you choose them? List alternatives you	See SLR Appendix

	considered and why they were rejected.	
	What challenges did you face in the design process and how did you overcome them?	The challenge was to develop the outcome measure such that it would capture the commonality of what was being measured in the literature but to also design a way of measuring the gaps as identified in the SLR. In particular this meant finding a way to quantify changes in Career Direction given the rapid change in the world of work. Added to this was the challenge of making a questionnaire more engaging and then proceeding to making it available online. The measure developed has been called the Career Choices Questionnaire (CCQ) which has a pre intervention version (CCQ-pre) and a post intervention version (CCQ-post).
	How did this process differ from your expectations/plan?	I had expected to find a greater convergence of ideas regarding how to measure the impact of careers interventions. I was aware as a practitioner that individual careers guidance facilitators were not focused on measuring impact. There is a tendency to 'know and believe' that their own interventions are valuable and there is some resistance to formal evaluation of impact. This is partly because there is a belief that this would not capture the important but less tangible impacts but it is also partly a fear that it will not reveal what they believe. However, I had expected more convergence in terms of what to measure and how to measure it from the research literature. This made the development of a measure that could have universal appeal particularly challenging.
	What were your key learnings from this stage?	I learnt that practitioners become very wedded to their approach and beliefs and that evaluating impact can lead to resistance – sometimes through the fear of exposing less effectiveness.
Stage	Questions	Reflections
Research Study: Gathering data	How did you go about gathering data and accessing participants? Why did you choose this route?	Since this was a pilot to establish a methodology I wanted to monitor change in at least two different populations. Clearly a key focus would be young people since this is where most interventions are focused (school and higher education) and clearly the stage a person is at on their career journey would be an important variable. Hence age is a factor but there are many others such as gender, educational level, culture, geography, local employment conditions and general market conditions.
	How did you choose the number and type of participants and why is that appropriate?	I realised that accessing older people who were in career transition (and even those transitioning from work to retirement) would be a very interesting group but the difficulty of accessing them and providing them with the incentive to participate was beyond the scope of the resources available. I therefore decided to focus

		on the most researched group – university students – and decided that a contrasting group would be a younger cohort of school students. The rationale was that the school students would be less certain and less knowledgeable than university students and hence be more receptive to change their ideas as a result of an intervention. University students would have already made subject/discipline choices which, presumably had been influenced by ideas about careers. Hence, whilst this is a long way from evaluating the wide range of variables that are involved it would provide a reasonable contrast for the pilot.
	How did you choose your recruitment strategy and why? What are the limitations of this approach?	I approached several universities that already used a career interest inventory supplied by my company Team Focus – and so there was a pre-existing relationship. Whilst all expressed interest in the concept – which I called 'Distance Travelled' I also asked a career guidance provider to identify any schools that might be interested.
	What challenges did you face when gathering data/accessing participants and how did you overcome them?	Converting interest into action – the reality of overstretched staff finding the time to a) understand what was being proposed b) understanding why it would be valuable to them and their organisation c) engaging the co-operation of other staff and organising the logistics d) selling the idea to the students e) finding the time to administer the questionnaire at the appropriate points before, during and after the intervention f) achieving the follow-up assessment.
	How did this process differ from your expectations/plan?	I had expected a greater understanding of the value and benefit of the process and that this would be sufficient motivation for getting the time commitment to implement the process. It was true that there was initial enthusiasm for the idea. However, getting that translated into a time commitment by the facilitators was not so simple. An example was one school that wanted to get the whole of year 9, 10 and 11 to complete the CCQ. This involved several hundred pupils. As the time elapsed the Careers facilitator was finding it hard to get the logistics organised – especially getting the co-operation of other members of staff. His enthusiasm took him so far but at the 11th hour he said he would have to pull out. This was a significant amount of my time lost as well as his. I have learnt the need to help them be more realistic rather than to hope their enthusiasm will carry it through.
	What were your key learnings from this stage?	Whilst the process is conceptually simple, the implementation requires a lot more effort and the logistics which should not be under-estimated
	What would you do differently if you were	I would spend more time in converting initial interest in participating in the research into active participation and follow-through. This requires greater emphasis on

	going to begin this stage again, and why?	the benefits and reducing the apparent load on the guidance facilitator who is key to the participation.

Stage	Questions	Reflections
Research Study: Analysing data	How did you go about analysing your data? Why did you choose this route?	The analysis was chosen to meet the needs of different audiences. At one level, there is the participant who completed the questionnaire who deserves some feedback on what has changed as a result of the intervention. To make this useful and immediate the analysis needed to be understandable to someone with no specialised knowledge. This was achieved by having relatively self-explanatory scales which could be reported as an overall score and which could therefore also show the actual raw score difference between the CCQ-pre and the CCQ -post. In addition, changes in Career Direction could be readily understood by reporting the actual raw score change (in both interest and in knowledge) between the CCQ-pre and the CCQ-post. This simple analysis could also be easily understood by programme facilitators by presenting exactly the same information but for a whole group/cohort. I also wanted to explore analyses that would inform questions raised by external bodies – policy makers and funding bodies). Here issues concerning what methodologies were most effective and were they equally effective in different groups (such as different genders, ages, ethnicities, geographical regions, market conditions/employment prospects etc). Since this was a pilot to explore how the CCQ reflected changes, the analysis was not to test hypotheses but to discover what changes were being revealed, whether any of these were significant and whether these data would be useful to explore the bigger questions once larger datasets became available.
	What challenges did you face when analysing your data and how did you overcome them?	The main challenge in performing the analysis was to manage the sheer quantity of data and to identify the most useful areas to explore in this data set – for both samples separately. This required a preliminary analyses of difference scores and the identification of areas to subject to further analysis.
	How did this process differ from your expectations/plan?	I always knew this would be a challenge. Having done many analyses in the past I was surprised at the amount of effort required to keep on top of it and boil it down to the key messages.
	What were your key learnings from this stage?	I learnt that simply running many analyses too meant that I had so many print outs which felt a bit overwhelming for a while. I also learnt (yet again) the great value in keeping much of the analysis simple because, ultimately, it needs to be communicable if it

		is to have impact. In future I would start with more focused explorations and get some early wins/findings and build from there.
	What would you do differently if you were going to begin this stage again, and why?	I would restrict the temptation to run lots of analyses too early. The sheer number of print outs meant that I felt lost for a while. In future I would start with more focused explorations and get some early wins/findings and build from there.
Stage	Questions	Reflections
Research Study: Writing up	What challenges did you face when gathering writing up your study and how did you overcome them?	A key challenge was finding uninterrupted time to focus. Working full time and managing various business crises meant that there were significant interruptions and coming back to pick up where I had left off was time-consuming.
	How did this process differ from your expectations/plan?	I naively thought that I would be able to block out time to do more in one sitting.
	What were your key learnings from this stage?	Create more uninterrupted time
	What would you do differently if you were going to begin this stage again, and why?	Find a way to prevent interruptions – giving up work would be one but probably unrealistic – in order to be able to give the process greater focus for more extended periods of time.
Stage	Questions	Reflections
Overall Doctoral Process	Reflecting on your doctorate, how do you feel you have developed (e.g. technical expertise, theoretical knowledge)?	There were two areas where I feel I have developed the most. The first is obtaining the broader understanding and knowledge of the field. Without the PhD and the access to papers and the library I would never have discovered all the things that people are trying to do and to research. The second biggest development is my understanding the process and the difficulties in conducting an SLR. Clearly technology has changed and is still changing and so how this is being done is still developing but it has taught me to respect other people's SLRs far more. It is not as simple a process as the headline would suggest and it does mean that the work being done in the field is more likely to be accumulated and synthesised.
	Can you see any changes in your practices and/or professional plan as a result of undertaking this doctorate and associated learnings?	The PhD has prompted more in-depth discussions with careers guidance professionals and broadened and deepened my understanding of what we are trying to achieve. The biggest impact has been on the way in which I position careers guidance. Whilst all of those in this field recognise that the process is a journey there may sometimes be an over-emphasis on the intervention (whatever that intervention might be) whereas the reality is how the intervention is one way to set the journey in motion. This may be particularly true about the way in which tools (questionnaires and tests) are used in an intervention

		and the importance of the surrounding support. I can't say I didn't realise this before, but this has become more central to the way in which I discuss and help other practitioners to position the part we play. I think the result is to stimulate a more individualised and flexible approach when structuring interventions.
	What has been the most useful element of the process for you?	The most useful part of the process has been creating the time (in spite of the difficulty of doing that whilst working full time) to think more deeply about all the issues.
	What has been the most rewarding element of the process for you?	The most rewarding part of all of this has been recognising the passion that guidance practitioners have for their work and the concern they have regarding the outcomes for the individuals they are dealing with. Most clearly believe in what they are doing – they have a purpose which fits their values – and that is refreshing. Since I work with all kinds of professionals in the corporate world, I have been struck with the contrast.
	What has been the most challenging element of the process for you?	The most challenging element has been to focus on what is needed for the Prof Doc rather than exploring wider questions. Associated with this has been the discipline of writing for an audience in a style and format that is prescribed by particular journals rather than following my own style and inclinations.
	What has been the most frustrating element of the process for you?	The most frustrating elements have been managing interruptions and then trying to pick up where I had left off previously after a break from the process. The other frustrating element has been to put interesting ideas and questions aside because of the need to focus on the topic and the requirements of this process.
	What would you tell someone beginning this process? What are the key things they should know/avoid/prepare for?	No matter how knowledgeable you are, remember that there is even greater amount of knowledge that you don't know. Be prepared to read, listen and learn and to suspend some of your pre-existing ideas so that you are receptive to what others are doping and thinking.