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MIXED METHODS- THEORY AND PRACTICE. SEQUENTIAL, EXPLANATORY APPROACH

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ABSTRACT: *There appears to be a paucity of research undertaken in emotional intelligence in higher education suggesting a gap in which research can be undertaken that can provide new insight and add together with knowledge and understanding. This article discusses a study using sequential, explanatory, mixed methodology, which was undertaken on a sample of 533 academics (those employed by a university full time, part time, and hourly and who may be lecturers, tutors, instructors, researchers). The reason for collecting sequential quantitative and qualitative data into one study brings together two types of information providing greater understanding and insight into the research topics that may not have been obtained analysing and evaluating data separately. The findings from interviews helps explain the findings from quantitative data.*

KEYWORDS: Mixed Methodology, Sequential, Explanatory.

INTRODUCTION

Background and justification

There is a paucity of research undertaken in emotional intelligence in higher education (Briner, 1999; Woods, 2010). There is, therefore, a gap in which research can be undertaken. A mixed mythological study using a sequential, explanatory approach has been undertaken of a survey sample of 533 academics from universities (Bowen, Pilkington and Rose, 2016). Interviews were also undertaken (Bowen, Rose and Pilkington, 2016). The findings from the interviews) provide greater depth and understanding as to how the academic feels (Gratton and Jones, 2010). The findings from the interviews also helps explain the findings from the quantitative data. The main finding suggests that there is an inverse relationship between emotional intelligence and perceived stress; the higher the emotional intelligence- the lower the perceived stress the academic experiences. (Bowen, Pilkington and Rose, 2016)

The purpose of this article explains the process of undertaking sequential, explanatory, mixed methodology undertaken in this study. This article also contributes to the existing literature, with the desire of encouraging researchers to continue to undertake studies associated with mixed methodology. It also adds to existing research, informing those undertaking future research the value associated with using the mixed methods approach.

Researchers undertaking mixed methodology have in recent decades described it as hybrid, combined, and multi-method (Creswell and Plano Clark, 2011). However, there appears to be no single exhaustive list of mixed method designs (Johnson and Onwuegbuzie, 2004). Mixed methodology may not include both quantitative and qualitative methods (Morse and Niehaus, 2016). However, it is described as quantitative and/ or qualitative data combined within a single study complementing each other by integrating their strengths (Green and Caracelli, 1997;

Tashakkori and Teddlie, 2003). The approach, to the order of collection of data, may also vary, where quantitative and/or qualitative phases may be concurrent or sequential (Creswell, Fetters and Ivankova, 2004).

Mixed methodology is the corner stone of research within social science that is experienced within everyday life" (Creswell and Plano Clark, 2011; Johnson and Onwuegbuzie, 2004). Mixed methodology is described as being "the third paradigm" (Johnson and Onwuegbuzie, 2004:15); a "third methodological movement (Teddlie and Tashakkori, 2009:1); and includes two (or more, or both) quantitative and/or qualitative approaches (Morse and Niehaus (2016). It no longer restricts the researcher to particular paradigms that have been traditionally the case and is considered a legitimate means of undertaking research in social and human science (Creswell and Plano Clark, 2011).

Quantitative and qualitative approaches to research can be used with any paradigm (Guba and Lincoln, 1994), linking the purpose (research questions) with procedures (research methods) (Morgan, 2014). Using mixed methodology can help blend different approaches allowing the researcher to design research questions within the context and parameters of their study (Johnson and Onwuegbuzie, 2004). Bernard (2014) adds that mixed methodology has led to an explosion of collaborative and creative research across disciplines. It helps to address broader questions providing a more expansive and creative approach to research (Johnson and Onwuegbuzie, 2004). The mixed methods approach includes a multiple level strategy incorporating a two phase approach where (for example) quantitative research is undertaken first, followed by qualitative research; a systematic and planned approach to research (Creswell, 1995; Flick, 2011). Each phase can then be triangulated into a third phase where quantitative data can provide general patterns and width and, qualitative data reflects upon experience and depth (Newby, 2014). The findings from the qualitative data can also help contextualises and enrich findings (Bryman, 2004, Mason 2006), increase validity when interpreting the data (Bazeley, 2002; Orgard, 2005), and generate new knowledge (Stange, 2006).

Using mixed methodology can help understand the topic area in greater depth (Hoover and Krishnamurti, 2010). It can help increase confidence in findings, providing more evidence while offsetting possible shortcomings from using a single approach (Albert, Trochelman, Meyer and Nutter, 2009; Bryman, 2004; Caruth, 2013; Creswell and Plano Clark, 2011; Tashakkori and Creswell, 2008). Whereas undertaking research using mixed methodology can be time consuming it can help to address broader questions adding insight that could have otherwise have been missed (Creswell and Plano Clark, 2011).

Tashakkori and Teddlie (2003) identify around forty mixed methodologies. Of these, the sequential, explanatory, mixed methodology is regarded as a popular approach to undertaking research, but not easy to implement (Ivankova, Creswell and Stick, 2016). There are two main categories that emerge: a) mixed method design- that mixes the methods and; b) mixed model design- that mixes the different stages of the research (Tashakkori and Teddlie, 2003). Leech and Onwuegbuzie (2009) developed the categories further to provide a typology when undertaking mixed methods research. These include: a) partially/ fully mixed design; b) concurrent/ sequential design and; c) equal/ dominant status of quantitative and qualitative data.

The mixed method approach, in this study, uses the sequential, explanatory approach evaluating the concept of emotional intelligence in the higher education context (*University*).

The table below shows the research design and process undertaken.

Figure 1.	
Research design	
Research Design	**Research approach**
Theoretical paradigm	Pragmatic, explanatory, systematic approach Quantitative research using Statistical Package for Social Sciences (SPSS). Qualitative research (interviews). Thematic analysis (TA) using NVIVO.
Methodology	Fixed approach, explanatory sequential approach, and systematic approach. Questionnaire/ survey, multiple case studies (interviews). (Mixed method) (Emergent theory)
Participants	Academics at universities
Data collection method	Questionnaire/ survey (via Bristol Online Services- BOS) on line. Interviews carried out; one to one or on line/ telephone
Ethical factors	The University code of Ethics is followed. Data protection is ensured (Data Protection Act 1998).
Data analysis	Questionnaire/ survey analysed and evaluated using SPSS Thematic analysis of qualitative data gathered, analysed and evaluated NVIVO. Statistical coding undertaken
Validity, reliability	Measures and factors will be taken into consideration to ensure that the research is valid and reliable as possible.
Limitations	Limitations identified and acknowledged.
Source: Adapted from Bryman (2004)	

Method: Sequential explanatory approach

Tashakkori and Teddlie (2003) identify three different approaches to mixed methodology; these being concurrent, sequential and conversion. This study undertakes the sequential approach where the quantitative phase (numbers) is followed by the qualitative phase (personal experience) (Creswell, 2013); where the qualitative findings are used to contextualise the quantitative data (Creswell, Plano-Clark, Gutmann and Hanson, 2003).Qualitative data can also enhance and enrich the findings (Taylor and Trumbull, 2005; Mason, 2006) and, help generate new knowledge (Stange, 2006).

The study

The aim of this study combines the strengths of both quantitative and qualitative research, linking concepts and views and, comparing findings with data from different situations and times (Alhojailan, 2012; Griffin and Ragin, 1994). The study is broken into 3 separate phases shown in the table below.

Figure 2

Overview of research (Triangulation: explanatory/ sequential process)
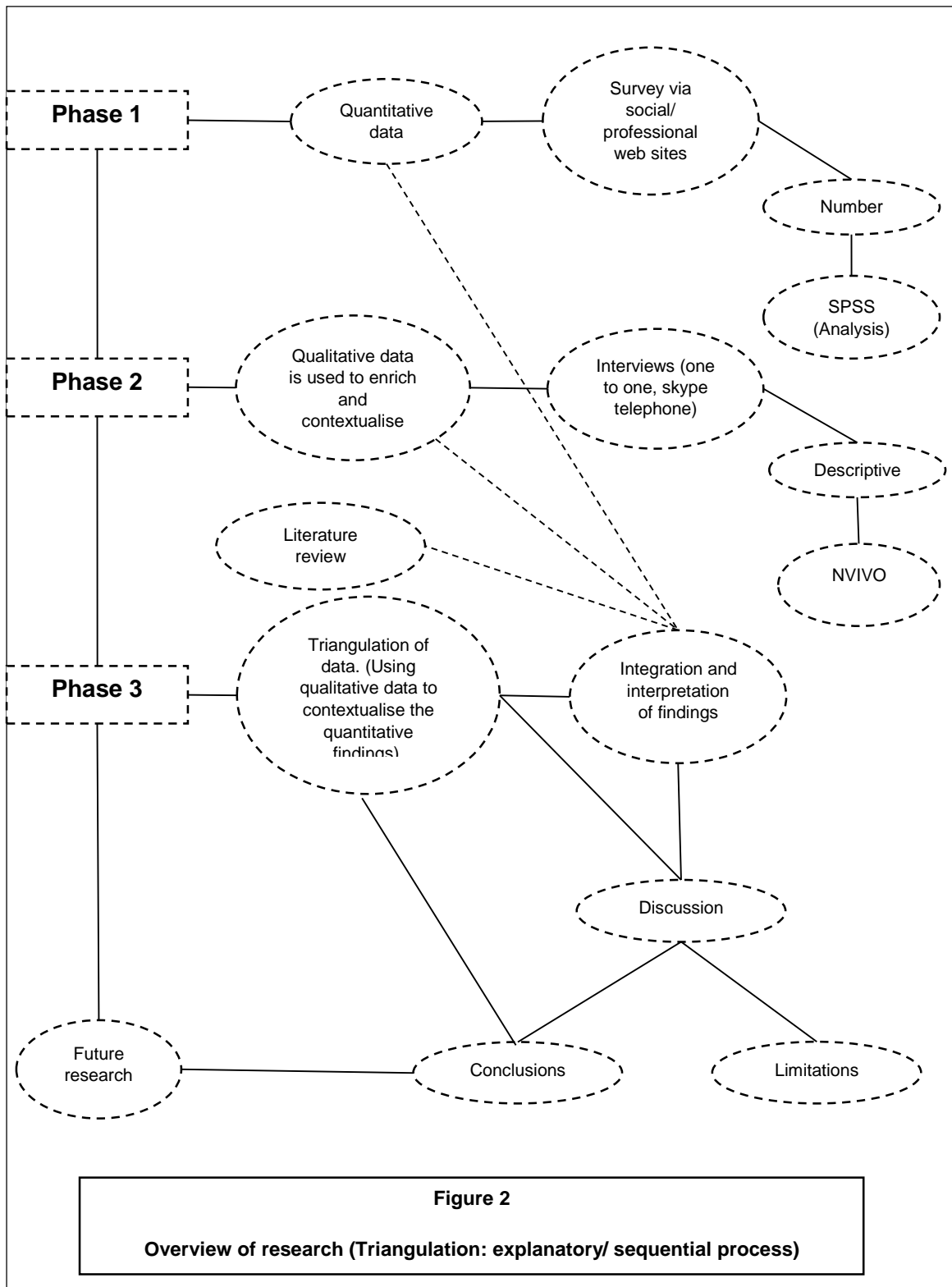
Phase 1 collects, analyses and evaluates quantitative data; phase 2 involved arranging, undertaking interviews, analysing and evaluating the qualitative data and; phase 3 qualitative data contextualises the quantitative findings.

Phase 1

Quantitative

This study incorporated the use of online social networks together with an online questionnaire. Undertaking paper based questionnaires and interviews can be laborious and time consuming (Marshall, 2002) where data needs to be collected, analysed and evaluated. Web based questionnaire/ surveys are inclined to be user friendly and flexible. Gosling and Johnson (2010) suggest that the internet, that includes social media, is providing a revolution in the way psychologists carry out behavioural research. Furthermore, there appears to be insignificant difference between the use of paper based and web based questionnaire/ surveys (McCabe, 2004; Carini, Haek, Kuh, Kennedy, and Ouimet, 2003; Denscombe, 2006; Fleming and Bowden, 2009).

The software embedded into the web site allows for the data to be collected reducing the time and cost of manually handling the data (Flick, 2011). It may also be possible to reach a wider and more diverse population group that may not be possible with traditional approaches to collection of data (Gosling and Johnson, 2010). Another advantage is that with wireless technology, the person responding to the questionnaire/ survey does not have to work off a wired computer.

Tierney (2013) points out that many people spend significant time online and new computer software and hardware allows the researcher to obtain data via the internet. Lee, Fielding and Blank (2008) adds that the internet has an impact on research in all fields and it is therefore not surprising that researchers have been attracted to online research methods (Evans and Mathur, 2005). It is therefore unsurprising that the use of web based questionnaire/ surveys appears to be increasing where, for example, approximately a third of questionnaires/ surveys are undertaken online (Evans and Mathur, 2005).

In the first instance, it was necessary to obtain a population sample. This was achieved using social network facilities including LinkedIn to connect to academics who work in Universities anywhere in the world. Sites including Academia.Edu, Facebook, ResearchGate and, Twitter were used in this study however, connections made were found to be disappointing. In contrast, LinkedIn allowed in excess of 3,900 academics to be contacted, each having their own e mail address. Whereas this process was time consuming (over one year), it was a worthwhile exercise. LinkedIn was therefore used as the main method of communication with potential participants in the study.

There are a number of online organisations that provide support for undertaking online questionnaires/ surveys. Several were tried and Bristol on line surveys (BOS) was used as it was felt to be user friendly. Each potential participant was contacted by e mail and then directed to the online questionnaire/ survey. This was also a time consuming exercise. Each of the 3,900 connections were e mailed individually over a period of two weeks. A reminder e mail was also sent which took another two weeks. It was initially planned that the questionnaire/ survey would remain open for a period of three weeks. However, it was acknowledged that this was too short. The time frame in which the questionnaire / survey was to remain open was therefore extended to a total of seven weeks.

Participants were directed to the self-administered online questionnaire/ survey. A question was placed on the questionnaire/ survey asking the participant to confirm that they were an academic (those employed by a university full time, part time, and hourly and who may be lecturers, tutors, instructors, researchers). Participation was voluntary and each individual had the capacity to make their own decision as to whether or not they would like to take part. The sample was self-selecting. They were directed to the online questionnaire/ survey, negating the need for them to identify who they were, thus ensuring anonymity and confidentiality.

Sample

Participant age range who responded to the questionnaire was 24 to 78. The sample size of 100% (N =533); 45.8% (N = 244) male, with a mean age of 48.78 (SD = 10.9); and 54.2% (N = 289) female, with a mean age of 47.29 (SD = 9.78).

Instruments used

Questionnaires/ survey sources that are academically reputable were selected and incorporated into a wider questionnaire/ survey. These include: Carver et al (1989) stress/ coping, Petrides (2009) (Version 1.50- TEIQue-SF), Cohen et al (1983) Perceived Stress Scale (PSS), an extract from the Copenhagen Psychosocial Questionnaire (COPSOQ) (2003), and an extract from Querstret and Cropley (2012) home/ work recovery.

Checks were undertaken on internal consistency using Cronbach's alpha coefficient (reliability of scales). Tests were then carried out using ANOVA and MANOVA. Reliability of scale helps to identify how free the sample is from random error. Type 1 errors were checked to find out if there are differences between groups (when they don't) and type 2 errors were checked to find out where they do not differ (when they actually do). Tests included checks on sample sizes, effect size (eta squared- difference between groups).Reliability "indicates the degree of exactness in measurement (precision of an instrument)" Bortz and Doring (2006:196). Easterby-Smith et al (2008) identifies three questions associated with reliability. These are: 1. Will measures give the same results at other times and occasions? 2. Can similar observations be achieved by others? and 3. Is there clarity as to how sense is gained from the original data?

Validity is also considered within the context of this study. Coolican (2014:109) defines external validity as an investigation that can be "generalised beyond the exact experimental context". There are three main areas of external validity. 1. Population validity (Bracht and Glass, 1968); 2. Ecological validity (Brunswick, 1947); 3. Historical validity (Coolican, 2014).

Threats to validity may occur and this study includes examples. For example, attrition occurred. In this study, 3,900 were invited to participate in the questionnaire, of which 543 actually participated. The passing of time is another example that can affect the way a participant views a particular experience. Trust is placed in the person to be able to remember events, experiences and how they felt. However, they may remember differently to that which was experienced at the time. The participant may not clearly remember the event as it happened. He/ she may misinterpret how they felt at the time. The participant's more recent experiences could also influence the way they view earlier experiences. This is acknowledged as a challenge when undertaking social research.

Research example

Bowen Pilkington and Rose (2106) undertook a study investigating the relationships between emotional demands, emotional intelligence and perceived stress in a sample of academic employees. Pearson's (parametric test) product-moment correlation is undertaken on managing emotions and PSS. The findings suggest that the greater the perceived stress (PSS) the person experiences the less they manage emotions. Whereas, the statistical findings suggest a relationship, it may not follow that one causes the other. Each academic has their own experiences and this may not come out in the quantitative data, questioning possible credence (Bassey, 2001). It challenges the generalisation of quantitative findings. However, there was a reasonable sample of 533 academics, suggesting that findings could be applied to a larger sample from which fuzzy generalisations can be made. It is therefore helpful to undertake qualitative analysis into the research to provide depth and explanation to findings. This was undertaken in the second phase.

Phase 2 Qualitative

King and Horrocks (2010) comment that qualitative research has become a prominent approach within social science that allows the researcher to delve deeper into finding out what people think and feel; and how people cope with particular experiences and (Kahn and Canell, 1957; Seale, 2004). The purpose of qualitative research is to explain and describe experiences and events (Willig, 2008). Kvale (1996) adds that interviews are essential, providing knowledge of the social world; and how others may make sense of the world around them (Willig, 2008). It can also enhance and enrich the findings from quantitative data (Smith, 1996; Taylor and Trumbull, 2005).Themes can emerge from the findings, providing a detailed and rich account of data (Braun and Clarke, 2008).The purpose of phase 2 of this study was, therefore, to find out personal experiences and knowledge that could then identify themes with the support of the specialised computer software (NVivo, version 10) that helped to speed up handling of large data (Silverman, 2005). NVivo also helps to avoid information overload and to help make sense of the data. (Miles and Huberman, 1994).

Semi structured interviews were undertaken in this study as structured interviews would not allow sufficient flexibility and unstructured interviews would be too flexible. Willig (2008) explains that semi structured interviews combine features from formal and informal interviews focusing on personal experience that can lead to unexpected results coming to light that may enhance findings (Hair, Celsi, Money, Samouel and Page, 2011).

As recommended by Magnusson and Maracek (2015), pilot interviews were initially undertaken, to test the questions in the semi structured interviews, allowing revisions and feedback to be made before the formal interviews were carried out. It was an excellent way to fine tune the content and process (Carson, Gilmore, Perry, and Gronhaug, 2005).Pilot interviews were undertaken on university campus and in different environments (including offices and classrooms). Notices and requests for privacy were also made. However, there was extraneous noise from students in neighbouring rooms or corridor, students came in the room and, the telephone rang. Pilot interviews were subsequently undertaken on Skype or telephone outside normal office hours. It was found that this minimised distraction and allowed the interviewee and interviewer to focus on content of the interview.

Formal semi structured interviews were undertaken in March 2015, allowing participants to share their thoughts and feelings (Reid, Flowers and Larkin, 2005). The formal interviews were

carried out using Skype or landline telephone. This was helpful as it allowed for interviews to be carried out in different parts of the world. It could have been costly and time consuming if interviews were carried out person to person. Audio recordings were made using three separate devices, in case one, or more, failed. Each recording was then transcribed. A limitation of undertaking interviews via Skype or telephone was that there were occasions where that said could not be heard on the playback tape due to breaks in content. Each device picked up the communication break and was only identified when transcribing the conversation. However, the breaks were short (less than a second) and information could be gained from which themes were be identified.

Brocki and Wearden (2005) provide examples where in one study one participant is interviewed (Robson 2002). In another study, 30 people are interviewed (Collins and Nicolson, 2002). The largest number of transcripts identified in a study is 48 (Clare 2002, 2003). Smith and Osborn (2003) advise that there is no correct sample size. However, there does appear to be a consensus where smaller sizes are emerging (Brocki and Wearden, 2005; Reid et al, 2005; Smith, 2004). The findings from these studies were considered in the sample size for this study.

Sample

When e mails were sent out to invite academics to participate in the questionnaire, invitations were also sent to ask them to respond if they would be interested in participating in an interview. A total of 15 people responded and offered to be interviewed. The 15 respondents were contacted again when interviews were being arranged. There were approximately three months between the end date of the questionnaire/ survey and start of the interviews. Of the 15 people, nine people responded. Two further participants (snowball) were added to those interviewed after they were referred on by 2 of the 9 participants. In total eleven people were interviewed with an average length of approximately 40 minutes. Seven participants were interviewed in the UK by Skype and one by telephone. Three others were interviewed via Skype who were located in, the USA, Portugal and Germany.

The selection of participants ranged from 29 to 58 for the interviews. The interviews incorporated 5 males and 6 females. A summary of information relating to those interviewed is shown below.
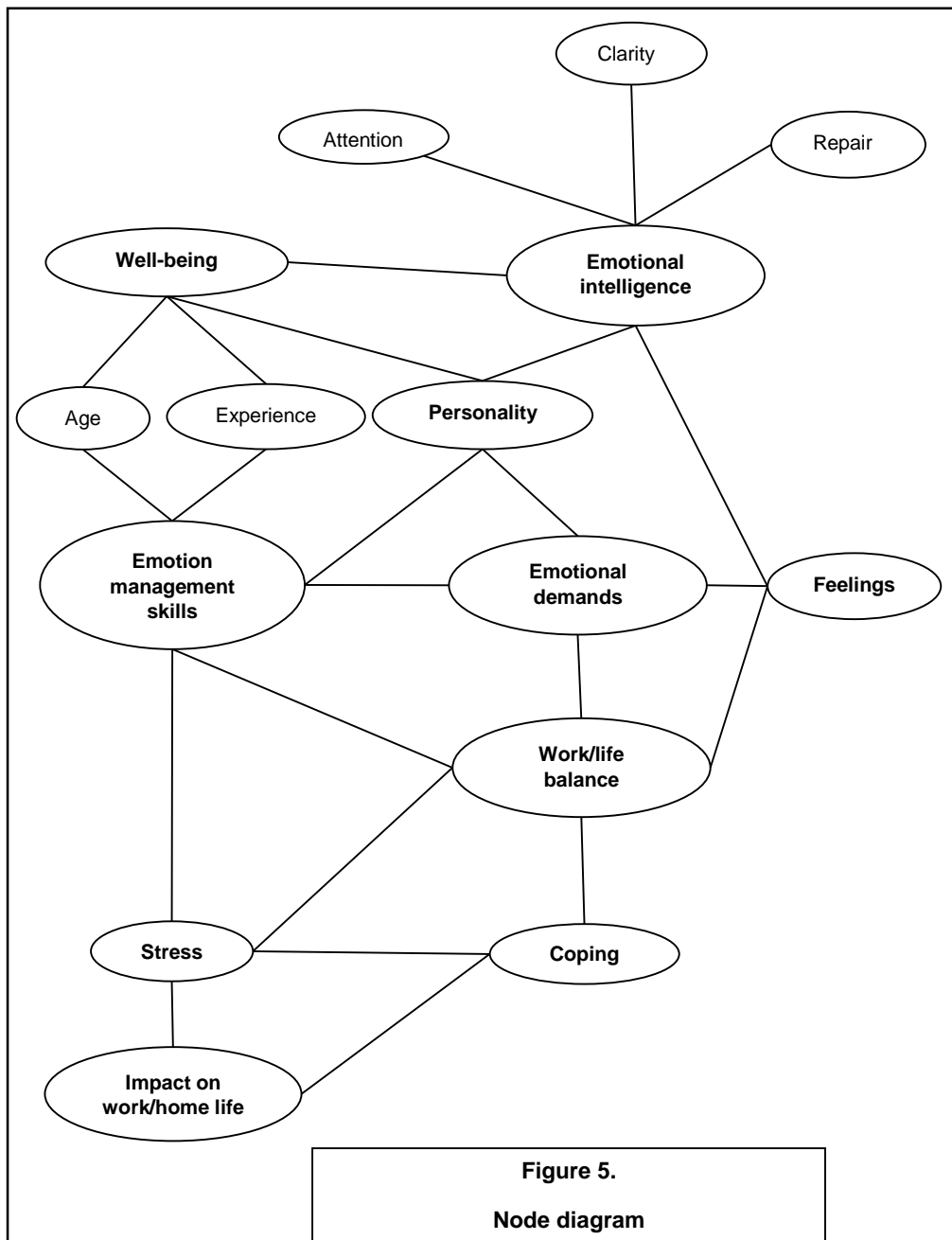
Figure 3	
Summary of those interviewed	
Item	**Total**
People interviewed	11
Length of interviews	23.06 minutes to 1 hour and 11 minutes
Average length of interview	43 minutes
Ages of those interviewed	29 to 58 (2 people did not provide age)
Average age	47 (2 people did not provide age)
Male/ female	5 males. 6 females
Full time/ part time	9 full time. 2-part time/ temporary
Roles	2 Head of Department; 1 professor; 8 lecturers
Participants location when interviewed	8, UK, 1 Portugal, 1 USA, 1 Germany

Figure 4

Additional data of those interviewed

Stage and case study number	Particip ant code	Gender	Length of experienc e (years)	Age/ age group (where provided)	Full time/ part time	Current role/ job
Pilot interview 1	CL	Female		51 to 65	Full time	Lecturer
Pilot interview 2	LK	Male		51 to 65	Full time	Lecturer
Pilot interview 3	PJ	Female			Full time	Lecturer
Pilot interview 4	MH	Female			Full time	Lecturer
1.1	CC1	Male	3		Full time	Lecturer
1.2	FR1	Female	11	40	Full time	Head of Department
1.3	WP1	Male	6	58	Full time	Lecturer
1.4	MA1	Male	31	57	Full time	Head of Department
1.5	LB1	Male	2	29	Full time	Lecturer
1.6	WA1	Male	8	39	Full time	Associate Professor
1.7	MA(2)1	Female	6	46	Full time	Lecturer
1.8	HL1	Female	25 approx. (with time out for family)	57	Adjunct/ part time/ temporary	Lecturer
1.9	WI1	Female	10 approx. (with time out for family)	46	Part time/ temporary	Associate Lecturer
1.10	ML1	Female	7		Full time	Lecturer
1.11	SS1	Female	7	54	Full time	Lecturer

Themes

Braun and Clarke (2008) state that whereas thematic analysis is widely used in psychology, it is rarely acknowledged beyond. They add that there is no clear agreement as to exactly what thematic analysis is. However, Boyatzis (1998) comments that it is a process that can be used with most, and possibly all qualitative methods, where words and phrases can be identified, applying the findings into themes and where patterns emerge (Braun and Clarke, 2008; Namey, Guest, Thairu and Johnson, 2008). The advantages of using thematic analysis is that it can be used in different circumstances and also is flexible (Bryman, 2012). It can also provide meaning when summarising and organising findings from large data (Pope, Mays and Poay, 2007). However, a limitation of using thematic analysis is that it does not necessarily lead to the production of a theory and may conclude with identifying the obvious (Coolican, 2014).

This study identified common themes (repetition) (Shaw, 2010) where similarities/ differences were identified (Ryan and Bernard, 2003). The initial analysis undertaken identified broad themes (free nodes) that were subsequently developed and refined to produce sibling nodes; nodes that provided hierarchical categorisation of the broad themes. A diagram was developed identifying possible associations and theoretical links (Bazeley and Jackson, 2013) and to create a visual model. The diagram/ model is shown below. It helps to explain how the nodes fit together, providing a story.

Figure 5.

Node diagram

Themes and sub themes emerged from the words and expressions used by academics and these are shown in figure 6 below. This then provided valuable information to develop and contextualise the findings in phase 3.

Figure 6	
Themes and sub themes of qualitative data analysis	
Theme (node)	**Sub theme (includes specific examples)**
Emotional intelligence	Participant's understanding of emotional intelligence, participant's understanding of someone who is emotionally intelligent
Attention	(Being aware of who I am),
Clarity	(Being able to discriminate feelings)
Repair	(Mood repair)
Challenging experiences	Financial resourcing, Long hours, Marking, Personal life, Physical manifestations, Politics, Responsibilities, Staffing, Students, Teaching
Coping	Exercising, students, problem focused, emotion focused
Emotional management skills age/ career	
Emotional demands	Students
Feelings	Moods and negative feeling, Questioning oneself, Positive feelings, Venting, Context, frustration, sadness, anger, worried, attention, clarity, empathy
Interpersonal relationships	Experiences, context, students, staffing, colleagues, management responsibilities
Stress	
Well being	Physical activity

Denzin (1978) refers to triangulation as combining two or more sources and the examination of phenomena. The objective is to compare and contrast findings, looking for contradictions, convergence and complementariness increasing understanding of the phenomena (Courtney and McCutcheon, 2010; Robinson, David, and Hill, 2016). Triangulation helps to provide meaning gaining broader and more precise understanding than by using one method or one source data source and can help increase validity (Denzin, 1978; Wald, 2014).

In this study triangulation was undertaken following the analysis and evaluation of the quantitative and qualitative data. The findings identify that participants may use more than one approach to coping. This only appeared when qualitative data was compared with quantitative data. Findings from interviews suggest that participants may use several ways of coping, while the findings from the questionnaire suggest the participants may use one approach to coping. Using triangulation and in this study therefore helped to strengthen the research rigour and to increase validity, reducing possible bias and limitation, generating new knowledge (Denzin, 1978; Jick, 1979; Orgard, 2005; Lincoln and Guba, 1985; Stange, 2006).

Limitations

Limitations are identified within the use of mixed methodology and study undertaken. For example, different samples, models and instruments may have been used in earlier research and it is therefore challenging to compare and contrast findings.

Online questionnaires/ surveys rely on the participant being able to access the internet and to be connected to the same site that the study is being undertaken. There may also be cultural differences. Studies are carried out in different countries, which may give rise to cultural influences affecting the findings.

The studies undertaken spread across several decades and that which may have been relevant and appropriate several decades ago may not be the case in later years.

A further limitation is that participants may have had different views, thoughts and understanding of the Likert scales in the questionnaire/ survey. It was not possible to ascertain the base level for each participant. This could therefore influence the responses, analysis and evaluation.

There are also individual differences, and thus challenges, in generalising beyond the sample size. In this study, the samples are considered to be reasonable across a wide age range, different countries, background and experience. It was, therefore, felt reasonable that the findings from this study could be expanded to apply to a larger sample from which fuzzy generalisation could be made helping to inform and contribute to theory and future research (Bassey, 1999; 2001). Fuzzy generalisations are, therefore, made that replace the certainty of scientific generalisations that help contribute to theory and future research.

Rational and justification

Little research has been undertaken in emotional intelligence with academics in higher education (Alter et al, 2013; Woods, 2010) identifying a gap within which research can be undertaken. A quantitative study provides width allowing a large sample to be analysed and evaluated. However, once the questionnaire is released it is not possible to add/ change the questions and the academic is not able to ask questions to help clarify responses. Responding to questionnaires relies on the academic being honest and to be able to clearly remember how they felt, providing a true assessment (Kahneman, Krueger, Schkade, Schwarz and Stone, 2004). Interviews can provide depth explaining how academics feel, allowing interviewer and interviewee to ask further questions that may not be asked as part of the questionnaire.

The study discussed in this paper uses mixed methodology where findings from interviews helps explain findings from the questionnaire; findings that may not be identified if one approach was used alone. Undertaking the study sequentially was found to be a sensible and practical way of undertaking the research, where the questionnaire was undertaken first followed by the interviews. It allowed for clarity of collection of data, analysis and evaluation.

Limitations are likely to be inevitable when undertaking research with people. However, using mixed methodology can help reduce possible limitations where findings from interviews can be used to explain findings from quantitative surveys. In turn, fuzzy generalisations can be made (Bassey, 2001). As further studies are undertaken greater clarity may be forthcoming. Dutton (2013:92) provides a good explanation in which "the screen of life is densely populated with millions upon millions of pixels; the repeated interaction of which, gives rise to the bigger picture."

CONCLUSION

The traditional view of undertaking research is to keep within the stricture of paradigms (for example: positivism, phenomenology, ethno methodology) and undertaking research using quantitative and qualitative data should not be combined (for example: Bryman, 1988, 1998; Rossman and Wilson, 1985; Sarantakos, 2013; Silverman, 1993; Smith, 1983). The argument being that each paradigm is associated with its own assumptions. For example, quantitative methodology may be associated with positivism where truth and reality exist and can be measured. It, assumes that people are rational, there is no free will, and thoughts and views can be realistically measured (Sarantakos, 2013). However, a person is seldom likely to give a full account about what they experienced (Denzin and Lincoln, 2002) as they may not be able to give clear and accurate explanation of their actions, thoughts, feelings and intentions. They may only be able to offer their accounts and stories. A further challenge is that the person undertaking the research can only interpret and create understanding from the information heard and/ or seen.

Each person has different background, experience and understanding of the world around them and to be able to measure and compare individual responses as to how he/ she feels is likely to be unrealistic. Beliefs and values may also influence experiences and interpretation. It is not possible to detach from beliefs and values when undertaking research. Therefore, measuring and comparing findings may be subjective. If the social world is subjective then the challenge is how to measure and undertake social research. Certain assumptions have to be made and this includes the acknowledgement that each person has their own views and thoughts of the world. However, their views and thoughts are valued for inclusion within quantitative and qualitative research (for example: Campbell, 1974; Cronbach, 1975; Denzin, 1978).

Bartholomew and Brown (2012) identified that the mixed approach provides a valuable investigative tool for those researching in areas such as psychology, developing interesting points that may have not materialised if a single approach to research was used. The acceptance of a mixed approach to research gained greater acceptance in the late 1980s (for example: Brewer and Hunter, 1989; Bryman, 1998; Fielding and Fielding, 1986; Greene, Caracelli and Graham, 1989) in which they brought together quantitative and qualitative research where neither type of method is inherently linked to one particular paradigm (Greene et al, 1989) and is now regarded as a methodology in its own right (Johnson, Onwuegbuzie and Turner 2007), which Greene (2007) defines as "multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important and to be valued and cherished" (p.20).

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