Can awareness-based practices benefit co-creation in community social innovation.

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Abstract

Multi-disciplinarity requires team members to justify and competitively defend their disciplinary perspective, which creates a risk of them becoming ego-centric (Fisher & Smith, 2011). Whiteley (1993; 2010) examined the problem of multiple intentions affecting social development projects and recognised that to design responsibly, the designer must facilitate a co-creative process. Service Designers have been seen to accommodate co-creative design activities in recent projects.

In the UK, different studies to develop collaborative practices utilise diet, exercise, meditation and different group working strategies and are objective and empirical, conducted in clinical settings. However, design-based social innovation projects occur in real life (live) community contexts and mostly produce case-studies as outcomes, which are subjective and biographical. Therefore, this research looks to create a mixed-method. The research process is also multidisciplinary, whilst based in design it has a complexity science, holistic perspective, incorporating physiological and psychological methods.

The derived methodology described in this paper utilises social interactions, physiological information and psychological data to build a holistic set of methods to triangulate the effects that meditative practice can have on co-creating individuals and teams. The corresponding analysis requires a three step process; firstly, generating themes or hypothesis(es), secondly, coding data based on the hypothesis and thirdly, categorizing the themes based on their relevance and importance within a multidisciplinary social innovation context by reducing the instance of ego-centricity in its team members. The contribution of the paper is that it demonstrates that a hybrid methodology can be derived to create evidence-based research to support the development of more open, collaborative and human centred approaches to innovation.

KEYWORDS: Co-creation, research method, awareness based practices

Introduction

Service Design is being increasingly used to improve the experience and solve problems in the field of social innovation. Service design can address such issues in many different ways. One of these ways is Co-creation, where the designer is a facilitator for change so that stakeholders can generate solutions to bring about change from within their community. Co-creation in design is also called co-design, where not only the community, its representatives and support workers are learning to contribute solutions, but also the designer is learning to work 'with' these stake holders instead of working 'for' them (Siodmok, 2011). Thus, the co-creation method challenges the traditional definition of designing, where the designer is in charge of generating solutions to bring about change, based on the requirement provided by the client. The difference is in two ways: Firstly, the designer needs to relinquish control over the solution and the process that generates the solutions. The designer has to patiently watch as solutions emerge from within the community being designed for; Secondly, the designer is responsible for manipulating the context so as to facilitate conditions that boost others to co-design solutions. This requires the designer to work within a multi-disciplinary team and understand different disciplinary viewpoints. Research into design shows that, understanding and defending different disciplinary viewpoints can be stressful to the designer and the design team (Bason, 2010, p. 52).

Reducing stress during the co-creation process in the workplace and at a community level has gained attention from the government and private initiatives in the UK, such as The Wellbeing Programme, Health Work Wellbeing Initiative, WEL program and many others. They utilise diet, exercise, meditation and different group working strategies to improve co-creation; But these initiatives are all clinical researches. This is because intervention in the real world and researching the effects during co-creation requires a rigorous research method that can justify the success of the intervention. The tools utilised for investigation by most researches today, involve either:

» Case studies as biographical methods for gathering empirical evidence of change in experience (Sevaldson, 2010; Scott, Melles, Gavin & Howard, 2012) or;
» Medical tests such as the cortisol test, heart rate variability, Electrocardiographs etc. as a Physiology based method for gathering empirical evidence of change in stress or;
» Surveys as a Psychology based method for gathering empirical evidence of change in experience.

The context of this research, conducted at Northumbria University is to investigate if awareness based practices can bring about improvement in the co-creation process when used for service design-led social innovation. The criteria for successful change in the co-creation process, is the reduction of stress and improved experience during co-creation, rather than just successful outcomes. One of the objectives of the research is developing a robust method that leads to a holistic research, which is descriptive as well as objective. A mixed-method is described in this paper that can evaluate multi-disciplinary teams for changes in stress at physiological, psychological and social levels during the co-creation process.

Co-creation for Social Innovation (The Context)

In social development projects, participation of multi-disciplinary stakeholders is crucial as they bring different perceptions and criteria to the solution. This participatory approach is

essential to draw together all key stakeholders for common intention and collective innovation (Cooke and Kothari, 2001, pp.2-4; Kothari, 2001, p.134). Recent works have acknowledged the impact of multi-disciplinarity as sources of knowledge, technique and expertise within co-creational spheres (Cooke and Kothari, 2001; LeCompte and Schensul, 1999; Jegou and Manzini, 2004). This impact is true for any product-service-system, but in social innovation, the contributors can be part of a community and may possess no relevant expertise or experience. This makes co-creation a crucial ability. Harwood (2009, p.15) emphasises the importance of Co-creation when he says "...Our ability to co-create and collaborate with others will become business critical, and those unable to make the shift will be left behind." So what is co-creation?

The London Research & Consulting Group at the London School of Economics and Political Science defines co-creation as "creative, eclectic in its methods and theory based, facilitated, strong on the quality of relationships and a learning process and collaborative". Thus, co-creation can be perceived as an extension of Sfards' (1998) 'two metaphors of learning', namely, learning by acquisition and learning by participation. Participation in this case is; "contribution to a shared knowledge-base", where knowledge is generated through interactions and co-owned by the team (Platts, 2013). Thus, this aspect needs to be clear in its definition of co-creation. On the other hand, RED, a research group that spun out of the UK Design Council, defined co-creation in terms of interaction, participation and joint problem solving between users, workers and professionals. They argued that co-created services would differ in terms of their design, content, systems and their structure of delivery. Taking these into consideration, the authors' definition of co-creation for this research is: *an eclectic process of collaboratively creating shared knowledge and co-operating to generate outcomes that are co-owned.*

Breeding healthy competition within team members is the source of knowledge that distinguishes co-creation process from other processes. It is important to note that "Co-creation is neither the transfer or outsourcing of activities to customers nor a customization of products and services. Nor is it a scripting or staging of customer events around the firm's various offerings. Co-creation puts the spotlight squarely on *consumer-company interaction as the locus of value creation*. There can be multiple points of interaction anywhere in the system, which includes the traditional point of exchange" (Prahalad & Ramaswamy, 2004: p.10). In recent years, due to the rising need for collaborative efforts, co-creation has become a buzz word, and repeated interactions have blurred the boundary between different disciplines (Payne et.al., 2008; Jani and Sawhney, 2012). Formerly, every discipline had a defined role; Engineering would develop technology, Design would manipulate products to meet the needs of the market while Marketing would research and manipulate market needs to generate demand (Sennett, 2008: p. 24). Even the conventional value creation process defined discrete roles of production and consumption for companies and consumers respectively. Blecker and Friedrich (2007: p. 139) mention "Products and services contained value, and markets exchanged this value, from the producer to the consumer". But now, the traditional concept of a market being company-centric has changed (Fisher and Smith, 2011). So has the process of value creation (Vargo et.al., 2008). The fading boundaries, lack of clear roles for different disciplines and the transition from a firm-centric view to a co-creation view, have brought out a new endeavour between co-creating team members (Prahalad & Ramaswamy, 2012).

When dealing with a multi-disciplinary group environment, Stacey (1993, p. 303-323) notices day to day politics as affecting the decision making process and in turn the solutions that are generated and their impact. Similarly within social sciences, many researchers have

recognised issues in 'the participatory approaches to social development projects' (or co-creation) such as politics, representation (Cooke, 2001) (Kothari, 2001), transformation (Mohan, 2001), governance, citizen-state engagement (Taylor, 2001) and power relations (Cooke, 2001). With respect to multi-disciplinary environments, Scharmer (2010, p.2) brings to light "the challenge of missing collective leadership[1]" which becomes more apparent during the long process of social innovation. It is our understanding of Scharmer's work that, this missing collective leadership stems from multiple perspectives being input from multiple stakeholders and managing these viewpoints becomes difficult. All of these researches recognise that, the clash of egos between people from different disciplinary backgrounds, is causing certain hindrance to social development projects and that from this arises a need for transformation in multi-disciplinary designing.

With respect to co-creation for social innovation, critiques generally focus on differences in definition and interpretations, objectives of participation and personal agendas, appropriateness of techniques and tools and last but not least the applicability and impact (Nelson & Wright, 1995). Though these are major aspects to focus on, Cooke (2001, p. 6) explains that this is a limited critique and gives importance to 'reflexivity' and promotes teams being collectively "cognizant of the issues of diversity and differentiation." Whiteley (1993, pp. 94-97) also examined the problem of multiple intentions affecting the social development projects in the context of Design. He recognises that socially responsible designing is the designers' or design team's responsibility. In recent years, Service Design has been utilised to address this issue e.g. IDEO (2009), NESTA (2012) etc. However, designers in multi-disciplinary groups rarely have the power or independence to be solely 'responsible' in terms of the design solutions they deliver to a market or an industry (e.g. www.designagainstcrime.com). If designers have the responsibility to rise to the challenge of letting go of the control of creation during the co-creation process and take charge of socially responsible designing as directed by Whiteley (1993), then how can they develop this ability?

Philosophical Understanding

Heidegger suggests that doing is more fundamental to understanding than reflection. As an example, Heidegger suggests that when hammering you are involved in the activity of hammering and not in reflection on the hammer and that reflection comes in when a "breakdown in the activity occurs" (Heidegger, 1988: p. 293). We believe that this interpretation is too restrictive and it is more correct to suggest that reflection exists in the activity of hammering all the time. The hammerer is tacitly aware and reflecting (moment by moment), at least on the current outcome of the activity, and adjusting his actions accordingly. Whilst doing and reflecting are inseparable from the process of knowing, we should realise that there is another form of action that (although often unappreciated within Western culture) is equally important to knowing the World: The action of examining personal experience, or as Varela puts it 'the act of becoming aware' (Depraz, Varela & Vermersch, 2001). Thus, Enactive Cognitive Science points to a disciplined act of cultivating our capacity 'of becoming aware' of the sources of our experience and, thus, opening up new possibilities in our habitual mind stream. In Varela's work, this action of becoming aware is punctuated by three 'gestures': (1) Suspension – a conscious transient suspension of beliefs

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[1] Collective leadership becomes possible when the members of a group, motivated by a common purpose, begin to build relationships with each other that are genuinely respectful enough to allow them to co-construct their shared purpose and work. This is about expanding from the solo perspective of "I" to include the "We" (www.ethicalleadership.org).

about the thing being examined; (2) Redirection – turning one's own attention from the object to its source, backwards towards the arising of the thoughts themselves; and, (3) Letting go - changing one's attitude from looking for something to letting it come (Depraz, Varela & Vermersch, 2001).

Rothwell (2010), Still (2006) and Martin (1997) all delineate two different intellectual environments that have influenced and contributed to the contemporary approaches to Awareness in research and clinical applications. On one hand there are the holistic approaches, mostly adopted during cross-cultural experiences with the east. They are associated with the basic insight of the meditative traditions, epitomized in the paradoxical turning towards one's symptoms and with an appreciation of the religious roots and resonances of meditation practice that can be found within contemporary psychodynamic, humanistic, transpersonal, and postmodern streams of psychotherapy (e.g., respectively, Epstein, 1995; West, 2000; Boorstein, 1996; Norum, 2000). In this approach, interventions incorporate meditation and spiritual practices to cultivate ways of being, rather than specific outcomes (Rothwell, 2006). Such interventions are building their own evidence bases, strengthening their appeal within the social and cultural discourse that has allowed integrative medicine to grow and flourish. On the other hand there is the discourse associated with the cognitive behavioural therapies. Within these therapies, identifiable forms of Awareness-based or informed intervention have arisen, which may or may not include meditation practice for cultivating Awareness, and which predict outcomes based on cause and effect (Rothwell, 2006). Such interventions have found significant appeal within the dominant social and political discourses and practices of health care, particularly in the U.S., where evidence-based practices have a preferred status (Ma & Teasdale, 2004). However, there have been very few Awareness based interventions for organizational learning, social experimentation and strategy development (Dryden & Wells, 2006). In physiology based studies the focus is on healing physical aspects and in psychology based studies the focus is on healing the mental aspects. But team members in co-creation scenarios do not necessarily suffer from any known mental or physical conditions. The study of social scenarios does not necessarily focus on a common illness or suffering. While studying co-creation, we focus on awareness enhancing practices affecting the clash of egos within the multi-disciplinary design team. We appreciate that people are fundamentally different from each other. A simple mental arousal in any person is dependent on many factors including; personality, time of day and use of stimulants. Different personalities will have different arousal levels; introvert people have a high arousal and extrovert have a much lower arousal level (Kofman *et al.*, 2006). Maximal mental arousal will not always occur in every situation, however in order to think logically and effectively a minimal degree of mental arousal is necessary. Thus to study Co-creation as a service design process we require appropriate tools and techniques for conducting research.

Past researches

Teaching awareness enhancing practices is an inductive process, but studying the effects on co-creating teams can be carried out in different ways. As discussed before, awareness enhancing practices are being utilised by different disciplines in different ways. The choice of methodology depends on the traditional research techniques that the researchers are well versed in. Thus, the methods for building evidence of improvement in practitioners differ based on the discipline conducting the research:

» Physiology based methods for gathering empirical evidence of change in stress (Medical tests such as cortisol test, heart rate variability, Electrocardiographs etc.).

Responses to stress are difficult to quantify even in a laboratory setting (Cerutti *et al.,* 2006); however, computer analysis of physiological (HRV viz, Heart Rate Variability, BP viz. Blood Pressure and HR viz. Heart/Pulse Rate) changes could be studied and thereby make some conclusion on the physiological response to stress (Cerutti *et al.,* 2006). In the study conducted by Kofman *et al.* (2006) the occurrence of stress was identified by observing changes in HRV and questionnaires rather than by measuring arousal and alertness (Kofman *et al.,* 2006). These studies are objective and focus on the effects during the process and the outcomes of the process do not affect the research itself. But most studies are conducted in clinical settings. There are basic limitations for using clinical research methods for studying co-creation. Clinical studies simplify the complexities of the real world to study a few variables (Collins, 1999). The protocols for clinical study are rigid and predefined and not many changes can be expected while conducting the study. However, clinical study isolates the participants to controlled interactions. Thus, clinical settings may end up creating a simplistic understanding and a limited view if utilised for studying co-creation.

» Biographical methods for gathering empirical evidence of change in experience (Case studies) (Sevaldson, 2010; Scott, Melles, Gavin & Howard, 2012)

Case studies are powerful tools that not only focus on results but also the context in which the results were generated (Collins et.al., 2004). IDEO (2009, p. 20) report that qualitative research methods such as case studies, enable the design team to develop deep empathy for people they are designing with, to question assumptions and to inspire new solutions. This method is widely utilized in design led research, for example, the Dott 07 and Dott Cornwall Projects (Siodmok, 2011) and the NESTA's Public Services Lab projects (NESTA, 2012). These projects are glowing examples of success for co-creation in service design being utilised for social innovation. Case studies have detailed descriptions of context, process and outcomes and do not alienate participants from the research. Thus, Case studies overcome most drawbacks of the physiological methods. But case studies have their own limitations. Case studies are subjective records of the researcher. This makes the case studies singular events, within singular scenarios. To become objective, multiple inputs from different stakeholders can be used. However, until the researcher is part of the project, subjectivity remains within the case study. A well defined scope of study is crucial for the case study, yet this also means that most case studies end up considering co-creation process, people and outcomes all as indivisible parts of the scope of research. Researching process on its own is crucial for objective analysis of co-creation, as the outcomes can take precedence and can end up justifying the process (Seppa, 2012). Thus, using case studies become insufficient.

» Survey as a Psychology based method for gathering empirical evidence of change in experience

Psychology based surveys pre-define context and enquire into the process. The enquiry is of real life scenarios and can focus on the process while not letting outcomes influence the research. The questionnaires can be designed to gather as much information as needed about co-creation, but survey as a research method has a limitation because questionnaires are impersonal and rigid in the data they provide. The researcher can either confirm or deny certain facts, but cannot find new information outside the scope of the research.

Conducting Research

This research studies PG student working with the urban redevelopment community in a Northumberland post-industrial town. For this research, a combination of abductive, inductive as well as deductive thinking, and puts forward a mixed methodology for holistic understanding of the co-creation process. This research can be understood through an interpretation of Schon (1983) 'Reflective Practioner'. The researcher in this research is just another tool, recording and analysing the reflections of a practitioner. It is appreciated at this point, that a certain amount of subjectivity is always expected in any qualitative research, but this can be tackled by defining robust coding and analysis techniques.
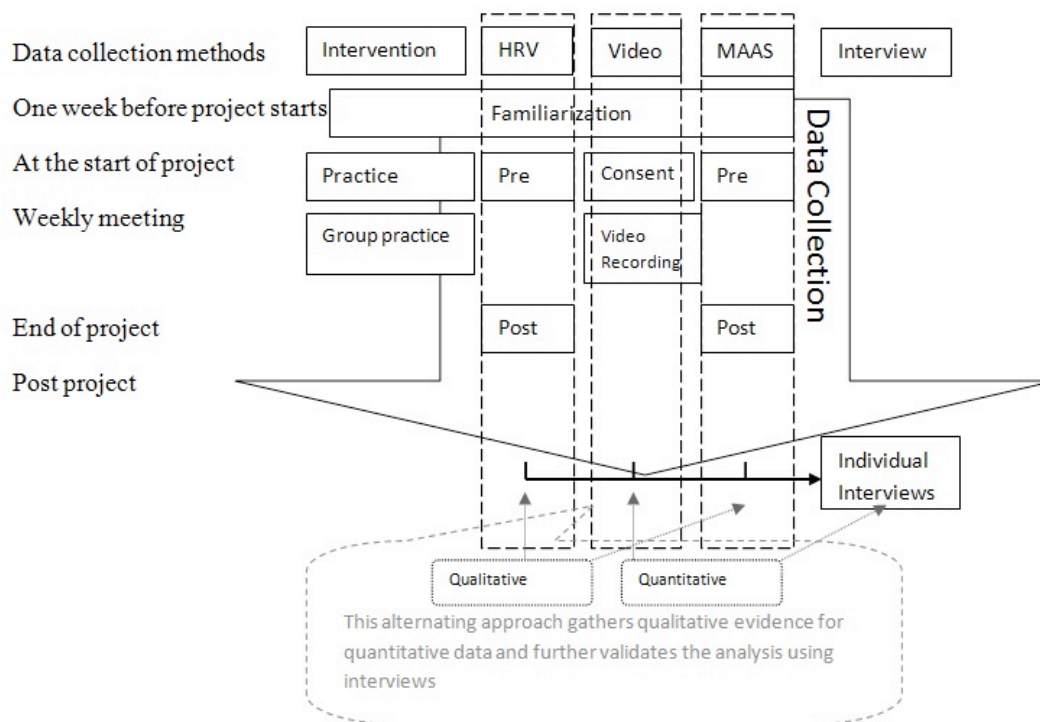
Figure 1. Pictorial representation of the research process

The intervention focuses on enhancing awareness. The participants are provided with access to the guided meditation, which they access remotely from a website. Thus, during the term of the social innovation project, the practice schedule of each participant can be monitored remotely using their unique login information. Interpretations and their representation are deeply intertwined (Denzin, 1998, p. 322) more so in empirical research. The process of evaluation and interpretation cannot be terminal or mechanical. It is an emergent and ongoing process of unpredictable iterations of analysis and reflection through writing. The evidence for sociological changes can be collected by video recording the co-creation process and through interviews utilising a self reflection technique and positive reinforcement questioning e.g. the questions asked in comparison to past hardships are followed by the steps the participant took to overcome those hardships. The researcher then highlights the progress the participants have made. Changes in the perception of participants during the project are observed using a psychological questionnaire called Mindful Attention and Awareness Scale (MAAS). Physiological changes are observed by analysing Electro Cardio Graph data to generate a Heart Rate Variability (HRV) score.

Key features of the research method

Qualitative data

Analysing qualitative data can be subjective. This is because the descriptive reflections from the participants are detailed yet a number of interpretations can be derived. To get an overview of the responses from the participants, the answers have to be expressed in a single word response and then tabulated. Though this approach is reductionist, it provides an overview of the complete data. The tabulated view can then be used to build themes for analysing interview transcripts. Following this, the audiovisual interview data is converted into a more accessible format. This can be done in many different ways. Clipping is a process of converting video recording into small pieces of recording based on certain pre-selected criteria. Clipping leaves data susceptible to physical damage because clipping is essentially breaking of information flow, which corrupts data at the beginning and end of each clip. The other method strips the audio from the video, but this leads to the loss of a very important aspect of the qualitative data; expression through body language. Transcribing is the most appropriate method for this research as transcripts of interviews can be made in different ways. The most common method is just making notes of what is said by the participant. However, the level of details can be added, like in a drama script.

Validity

During transcription, key expressions should be noted when interpretation of data can vary if the expressions is lost (Guion et.al., 2011). Thus, sarcasm, parapraxis, innuendo, euphemism, metaphoric expressions, slang etc. should be noted during the process of transcription. The transcripts are further coded at regular intervals with a timestamp of the original audio-visual file. This assists during the analysis process, also after the analysis is complete, to backtrack and verify the conclusions. Thus, validity of the qualitative data has been maintained by transcribing the interviews. The transcripts have been processed using the coding technique to maintain the confidentiality and anonymity aspects. Following these steps, the qualitative data was considered ready for analysis.

Anonymity

Anonymity is a crucial aspect of this data collection process. For maintaining anonymity, data is processed prior to analysis. The data is converted using a method called coding, where information on each participant is represented by their status as a meditative practitioner or non-meditative practitioner. This status is followed by the unique identifier number assigned to each participant or group of participant. For example, a participant in group 1 assigned the number 3 and who chose to meditate will be represented in data as Meditator 1.3. This method not only provides anonymity but also creates a back tracking system from the processed data to the raw data.

Confidentiality

Before the interview, participants are instructed to reflect on themselves. However, during the interview, some participants are expected to mention the names of their team members or the title of their current or past project. To maintain confidentiality, these sections of the interview transcripts had to be coded using the same process as explained before.

The three step analytical process

The first step of analysis in this research was generating themes or hypothesis(es) from literature of co-creation. The second step was coding data based on the themes. Codes are words, sentences, phrases, expressions etc. of the participant, categorised based on concepts determined for the research. Codes were derived by conscious or sub-conscious mental strategies that are required for analysis.

The third step was categorizing the themes based on their relevance and importance with regard to the aim of the research. The codes were categorised based on conceptual similarities or dissimilarities.

Quantitative data

The quantitative data was collected using the Mindful Attention and Awareness Score (MAAS) questionnaire and Heart Rate Variability (HRV) score. This data was collected either at the start of and just before end of the social innovation project, or periodically during the social innovation project. The choice depends on the length of the social innovation project. For example, for the six week project being studied at Northumbria University, data was collected at the beginning and towards the end of the project. The data requires normalization, which is a process of recognising the outliers using two steps viz.; goodness of fit (how a participant's data fits into data from other participants) and recognising the reason for it being an outlier. The need for normalization in statistics is, removing anomalies to provide a consistent data set for analysis.

The data collected for HRV and MAAS was checked for goodness of fit using the Anderson-Darling test, which is one of the most powerful statistical tools for detecting most departures from normality. The test assumes that there are no parameters to be estimated in the distribution being tested, in which case the test and its set of critical values is distribution-free. The Anderson–Darling test (1954) assesses whether a sample comes from a specified distribution.

$$AD = -N - \frac{2i-1}{N}\left(\ln\left(F(Y_i)\right) + \ln\left(1 - F(Y_{N+1-i})\right)\right)$$

When the goodness of fit (represented by p) is lower than 0.05, then Grubbs test is used to pinpoint the outlier. The Grubbs test (1969) is based on the difference of the mean of the sample and points to the most extreme data considering the standard deviation (Grubbs, 1950, 1969; DIN 32645; DIN 38402). The test can detect one outlier at a time with different probabilities from a data set with assumed normal distribution. If n>25 then the result is just a coarse approximation but it's perfect as the data sample n<25 for current data set.

$$T_{max} = \frac{x_n - X_{mean}}{s} \qquad T_{min} = \frac{X_{mean} - X_1}{s}$$

where
X_i or X_n = the suspected single outlier (max or min)
s = standard deviation of the whole data set

For analysis, the data was arranged in two groups for comparison, viz. meditators and non-meditators. The first step of the quantitative analysis is called regression analysis during which, certain assumptions with regards to co-creation can be verified to generate a set of hypotheses (Cooper & Torczon, 2005). The second step of analysis is Dependence analysis. This step was carried out to statistically verify or deny the hypotheses generated in step one

(Cooper & Torczon, 2005). The most to least statistically important hypotheses were further analysed by iterating the above two steps.

Triangulation

The key themes generated from qualitative and quantitative data were categorised from the most relevant to least relevant with regards to the aim of the project. The themes were used to find relationships between the evidence from qualitative and quantitative data. This cycle will be repeated for all possible themes. During the triangulation phase, quantitative data in the form of ECG was collected using the PowerLab device to connect the physiological state of the participant to their already analysed psychological and social states.

Limitations and Conclusions

This hybrid method is new, and risk analysis shows limitations of the method at different stages. The awareness based intervention is dependent on the intentionality of the practitioner. The remote delivery makes developing intentionality very difficult. A teacher can clear doubts and answer questions during the meditative practice. On the other hand, remote delivery is non-restrictive and a practitioner can utilise the guide at any time and any place. But the participant slowly becomes irregular in practice and may stop practicing completely. The ethical implication is about maintaining the participant's arousal level, so that they do not get bored or agitated (under aroused or over aroused). A simple monitor of the sleepiness created by the intervention can help the researcher with the problem of arousal. The data collection needs to be conducted in a place, which imbibes confidence in the participant.

The qualitative and quantitative analysis is time consuming and triangulation is cumbersome. Thus commitment of the researcher to the process is as important as the rigor of the process itself. Similarly, choosing a project, which lasts around four to eight weeks and is being conducted by a team of six to eight people, is ideal for appropriate application of the research method. Qualitative data is the reflections of the meditative and non-meditative practitioners. The researcher has to take special precautions to not draw interpretations and to remain objective. Quantitative data is HRV and MAAS scores. Data storage is a crucial part and should be planned before any data collection is conducted.

Further Research

The project selected for data collection was with the Ashington Community in collaboration between Northumbria University, Akzo Nobel and Northumberland County Council. The participants co-designed as teams along with the people from the town of Ashington to encourage social innovation in the local community. Ethical approval for this project was acquired from the ethics committee at the Faculty of Arts, Design and Social Sciences, after a consultation and feedback form the ethics committee in the Faculty of Health and Life Sciences in Northumbria University. The data was collected for the selected project using the method described above and analysis is currently being carried out.

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