

LONGITUDINAL STUDY ON THE RELATIONSHIP OF WORKSPACES AND WELLBEING (CASE STUDY OF A UNIVERSITY IN UK)

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Available at <http://www.ssrn.com/link/OIDA-Intl-Journal-Sustainable-Dev.html>

ISSN 1923-6654 (print) ISSN 1923-6662 (online).

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Abstract: This paper is extracted from an empirical longitudinal project on seven academic members of a University in UK. The aim was to evaluate their work spaces and investigate potential impact on the well-being and health of the participants. The approach of this research is derived from social design and environmental psychology science. Participants were selected based on, either their expressed dissatisfaction with their work spaces or recommended by their line-manager to improve their low-quality workspaces. The average age of the participants was 46.14. This study was mainly a field study with original data collected using questionnaires, interviews, environmental measures and observations (direct and indirect) during a seven months period. Different psychological measures as well as mixed methods have been used to analyze the data. For questionnaires, the standard psychological measures such as (Hospital Anxiety and Depression Scale) HADS, and behavior questionnaires and for observation measures including 'Mental Status Evaluation Checklist' have been used. Two separate studies have been conducted: first, their work space has been studied for its physical environmental characteristics (from environmental factors to ergonomics) and second was the status of their well-being specifically regarding the common disorders of anxiety, depression, social phobia and agoraphobia. Results of psychological assessment showed from 7 participants 3 had anxiety in abnormal level and 2 had anxiety in borderline range. Anxiety of 4 out of 5 participants has increased during the last 7 months, and just one of the participants stayed in the same level. In case of depression just one of the participants has developed borderline depression during the study period. Regarding social phobia, one of the participants is still in the abnormal range, one is in the borderline range and the third one has improved from borderline to normal comparing to the last assessment. Just one of the participants showed higher mark in agoraphobia and the rest were all normal. Findings suggest that those who were more dissatisfied with their workspaces regardless of having an organized or disorganized office, developed higher level of anxiety or social phobia after seven months. Tables, forms, and charts will demonstrate the changes in their psychological status that has happened during the 7months of the study and the relationships among different environmental factors and participant's well-being.

Keywords: environmental psychology; longitudinal study; mixed methods; wellbeing; work space

INTRODUCTION

Social Design and Environmental psychology

Sommer (1983) defines social design as a type of design which links behavioral sciences to design. It is part of a movement which aims to humanize planning of buildings, neighborhoods and cities. It emerged when architecture was benefiting from new materials and styles and was in the mindset of creating formalist construction booms and impressive state-of-the-art beautiful buildings which led to less and less humanized inhabitable spaces where the gap between people and designers started widening. According to Sommer(1983), Lewis Mumford, Richard Neutra, Jane Jacobs and Paul and Percival Goodman in architecture and urban planning, Roger Barker, James J. Gibson, and Kurt Lewin in psychology are identified as original contributors. Aesthetic or

a specific style has not been associated to this movement, instead the process has had more importance rather than forms or architectural products. Process in this context is defined as identifying user values and bringing people to the planning process.

Environmental psychology on the other hand is very multidisciplinary and gets lots of contributions from psychologist, architects, human geographers, urban sociologists, planners, anthropologists and other relevant professions depending on the project. Uzzell (2000) suggested that there is a gap between the design profession and environmental psychology; he argued that people's environmental experiences should be explored by a range of techniques that can be used by both psychologists and designers. Designers have a responsibility to the people they design for due to the effects their design will have on individuals. From this point of view the satisfaction of users and occupants is vital. Social design aims to work in small scale, in local projects where meaning and context (history, culture, environment,...) has a value to reassure the human oriented approach and appropriate technologies with low cost are applied. It aims to have the process of working with people rather than for them. This merely can happen if people are involved in the process of planning and design, if they are instructed how to use their environment and their space as more efficient and user-friendly as possible, to gain a balance between all aspects of the space such as social, physical and natural aspect of their environment. Social design aims to bring an awareness of beauty, a sense of responsibility to our natural habitat and inform people of the impacts of human activities on our eco-system. These aims are not achievable if people are not involved in the process. It became even more important when the theory of Oscar Newman(1973), the defensible space proved that design, layout and people's participation could solve social problems that even police force could not solve in residential areas. Environmental psychology in essence is looking at context and at people's interactions with the environment as context is an integral part of meaning-making setting shapes perceptions, attitudes and consequently behaviors (Moser and Uzzell, 2002). Researchers in environment-behavior science have a holistic view towards environments. Their analysis is based on both people and environment, for example visual quality of a place and its impact on people in terms of their interaction (perception, cognition, evaluation and behavior) with that place (Uzzell & Romice, 2003). Küller's eight factors including pleasantness, social status, enclosedness, originality, complexity, affection, unity, and potency were the primary descriptors while Hesselgren believed reference to semiotic and emotion were missing, he chose the Plutchik's(1974) work on 'Primary Emotions' because primary emotions are not controlled by a conscious mind but they affect behavior(Uzzell & Romice, 2003). It is possible to observe behaviors and through that find out about emotions.

Empirical research has investigated the manifestation of those effects on health and well-being of people. Reaction to a place and habits (Küller, in Hesselgren, 1987; Mikellides, 1980; Lang and Brunette, 1994), frequency and choice of using a place, level of attachment to a place all are affected by environmental physical qualities. Physical qualities such as shape, size, height, color, exposure of a space to nature, and arrangement of the furniture in a place and the social atmosphere all can have psychological and physiological effects which could be manifested at three different levels:

- At a **psychological level**: Stress, distraction, lack of attention, aggression, mental fatigue, depression, negative emotions,...
- At a **physiological level**: High rate heartbeat, High blood pressure, shortness of breath, ...
- At a **social level**: fatigue (Maslow and Minz 1956), Self-attachment, sense of belonging and preferences for places (Groat, 1982; Hubbard, 1994, 1996; Wilson, 1996 in Uzzell & Romice, 2003), decreasing effectiveness of professional interactions, feeling of space invasion and flight behavior, feeling of losing control, identity and self-esteem of users of spaces (Twigger-Ross and Uzzell, 1996; Uzzell, Pol and Badenes, 2002), feeling of disquiet and attribution of this to invader (Felipe and Sommer,1966; Konecni et al,1975; Terry and Lower, 1979; Smith and Knowles, 1979; Hartig et al, 2003).

Environmental psychologists have taken up Kelly's theory of personal construct as a tool to help them understand their preferences and their evaluation for places (Uzzell & Romice, 2003).One of the arguments in environmental psychology is that there is insufficient attention to the place itself but an over-concentration on how people find the place and interact with it. For this reason, in this project the physical quality of each space and even ergonomics has been studied too to make it applicable to the space and its user.

Educating people to be aware of their psychological and physiological state in relation to their environment could be very useful as it can help them to spot the problems and find solutions. For example if people know that subtle shifts in their body posture can have a huge influence on their thoughts, their feelings and their behavior (Nauert, 2013), then they would pay more attention to their posture and ergonomics while they are working or driving.

Theoretical Framework

As literature on ambient environment and their effects on human's health and well-being are numerous, in this paper the focus is on the issues observed in our case studies and in order to study it in details the model of hierarchy of needs by Abraham Maslow has been selected .

Abraham Maslow (1943) in his seminal paper "A Theory of Human Motivation" explains how different human needs can actually affect his functioning. He explains a hierarchy of needs which has been used widely since its publication in different scientific and social fields. He claims a human cannot reach to self-actualization level if his other needs are not met and he added them to a pyramid of hierarchy. The reason for selecting this model is that it can provide a clear framework to evaluate sustainable development in human work environments, for example what areas in employees' environment and in an institute have not received enough attention. It is clear that not only all these factors play an important role in individuals' lives but also they have a great impact on sustainability of an academic environment where motivation, creativity, problem solving, acceptance of facts are really important. Please see picture1.

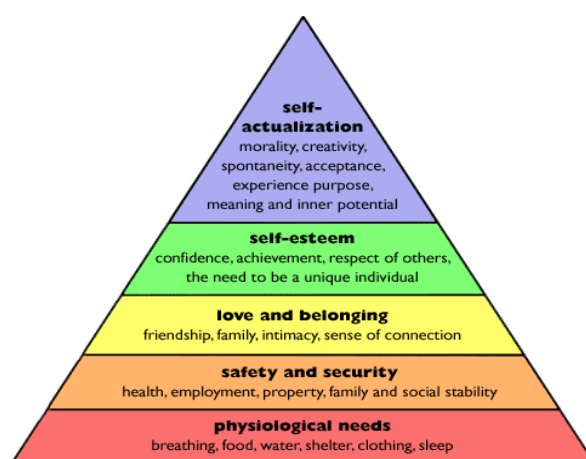


Figure 1: Maslow Model of Hierarchy of Needs

Source: <http://www.theworkplacecoach.com/wp-content/uploads/2013/09/maslows-hierarchy.gif>

In order to go one step up in the pyramid, the needs of the lower step should be met. For example in order to perform well in work, physiological needs are the first to be met, from basic needs breathing (fresh air), water, food, enough and proper sleep before starting the work, homeostasis and excretion all need to be responded properly during the 9am to 5pm working hours. In safety needs, feeling of having a secure job and therefore financial security, feelings of safety against accidents and illness and also health and wellbeing issues should be noted. The third level is about interpersonal relationships. Feelings of attachment, belonging at least to one group, acceptance among that social group is vital. These groups could be co-workers or the organization. Smaller groups can be close friends, intimate partners, mentors, family member. To feel love and being loved is crucial. Research shows absence of feelings of belonging and love can cause social anxiety. In the fourth level, people need to feel they are respected and valued by others. This could affect their self-esteem. The need for lower version of esteem could be associated with the need for status, recognition, attention and prestige, while the higher version of esteem is about freedom, independence, and competence. At the last level which is self-actualization matters of creativity, morality, pursuing talents and self-fulfillment is brought up. In order to have a sustainable functional creative working environment, the needs in lower levels should be answered properly. Surely, some of these needs are answered in the family domain and refer to personal lives but still more than half of them could be fulfilled by the work environment.

MATERIALS AND METHODS

Aims and Questions

The main aim was to study the relationship of academic staff with their work environments. As this project aimed to identify the issues of those offices that gave participants the right to complain, all questions were around the participant's experience of their offices. It was necessary to investigate whether other factors also affected their mood or it was purely their work environment. The main questions were:

- How do participants feel about their offices?
- What do they think of their offices?
- How do they feel when they are inside their offices?
- How do they feel about having visitors in their offices?

The first three questions were written regarding Nasar's suggestion that people evaluate spaces based on how they feel about it, how they feel in it, their thought about it and their behavior in it (Nasar, 2008).

Methodological Approach

Interpretative Phenomenological Analysis (IPA) is the most common qualitative approach used by psychologists in UK (Langdrige, 2007 In Wagstaff et al., 2014). Giving a voice to participants is the goal of IPA and in order to do that, identification, description and understanding of two concepts are important, the first is called '*object of concern*' in participant's world and the second is called '*experimental claims*' made by the participant (Larkin, Watts, & Clifton, 2006). This study's approach is closer to phenomenological approach as it focuses on obtaining individual's detailed personal perception of their experience and emotions towards their offices. It tries to understand each individual, their everyday experiences of living in details, the way they think, what was the essence of their experience of working in those offices, how they felt about it, how they talked about it. All of these are to help the researchers gain an understanding of each individual and put themselves in the shoes of participants to enable them to interpret and reflect it in design for a long term sustainable space. This is a conscious process which helps participants to make sense of their personal world or so called 'sense making' and help the researcher to make sense of them; that is the reason it is also called double hermeneutic (Smith & Eatough, 2012 In Breakwell, Smith, & Wright, 2002). Phenomenological researchers like Kelly and hermeneutic philosophers believe that there is not just one truth but a conceptual horizon which the interpretation by different individuals may help approach that horizon, but it cannot definitely reach the whole exact truth. In other terms our understanding and interpretation of subjects and spaces could be very different. Hubbard supports to assess the meaning of a space to its users and understand the user's construct of their spaces (Uzzell & Romice, 2003) interview could be a good tool, but Uzzell suggests the best way to discover the meaning of a place to its user is to use different methods. Therefore a mixed methods approach has been selected and the method explained below which is designed by the authors.

Case Studies and Participants

In phenomenological studies samples are small as to do justice; individuals should be assigned quite a lot of time for a detailed case-by-case analysis and six to eight has been reported to be a good sample size for Interpretative Phenomenological Analysis or IPA (Smith & Eatough, 2012 In Breakwell et al., 2002), therefore for this study 7 participants have been chosen. Generally for IPA, homogenous samples are selected, which in this project all participants were academic members of staff in more or less the same level and similar type of responsibilities. An initial interview with the head of the Estate Office (Property Manager) of a small university revealed some potential places that could be improved by design. Those offices were suggested based on the complaints received from their users. The selection criteria were first their managers' suggestion to study their work space and second their dissatisfaction of their work place. In the first phase, all possible case studies were checked by an initial assessment by researcher to see which ones had good possibilities of resolving issues and good design potentials. From all offices, seven were selected. While six male participants were dissatisfied with their work space, one female participant was happy with her work space despite the fact that it was the smallest and by researcher's point of view her work space was not that different from others in terms of lacking the architectural standards. This made this participant and her office as a case study particularly interesting in order to find out what were the reasons for her different attitude.

Data Collection Tools and Analysis

To gain trust and confidence of the participants, researchers followed the University's ethic policy to ensure proper procedure was adhered to. Ethics statements including an information sheet and a consent form were given to all participants in a short meeting and their questions were answered so they agreed with their volunteer participation in the study with the strictest confidence that their anonymity is preserved with the hope that maybe some design solutions can help solving the problems of the space. In this project these tools of gathering data has been used:

Questionnaires

Including the standard questionnaires of HADS (Hospital Anxiety and Depression Scale). Questionnaire for social phobia and agoraphobia were designed based on the work of a clinical psychologist and a health/counseling psychologist (Sadler, 2013) who was working at the time on the teacher stress inventory. Questionnaires are quite common in environmental evaluation studies but in this project they have been used just for psychological evaluations because the detailed information was needed. To make sure participants were not affected by other means or situations, the assessment repeated 7 months later. As some of the participants had bereavement of close family members or they had new born babies which prevented them from having enough sleep, or some were going through a hectic times at their work.

Interview

A 20minutes semi-structured interview was designed to explore their experience in-depth and one a one-on-one basis as detailed qualitative information provides further insight into individual's attitudes and behaviors (Binks & Uzzell, 1994). Although in-depth interviews are very time consuming due to the small sample size of 7, and the IPA approach and it was deemed necessary. A key advantage of semi-structured interviews is that it provides the freedom to the participants to express their views and feelings on specific issue which otherwise not be explored. Participants were given a consent form to agree with recording of their interview by a digital voice recorder activated during the interview. During the interview, their body language was documented by the researcher. Each audio file was transcribed after the interview by researcher and the details of their body language, their emotional expressions for each question and initial thoughts of the researcher was also added to the transcript to provide a better understanding of the importance of each matter to participants. In one case where the body language did not match the answers to the questions, the researcher had to repeat the interview and asked exactly the same questions to be able to compare the answers and find out which ones were more important to the participant. The coding framework for this paper focuses on two topics: first, how they feel about their offices, and second, how they feel about having visitors in their offices. Please see table 2 for the participants' responses to these questions.

Observations

Participants were observed formally and informally on different occasions. As mentioned above their body language was documented during the interview. Two formal observations were conducted without the presence of the researcher. A camera was utilized with the knowledge and consent of participants to record two 30 minutes period separately in the morning and afternoon. Informal observation was during the researchers visit to the university when they could see participants at work and their interactions with their colleagues. As observing everything is not possible, for observation a framework is needed in order to address the aim and objectives of the study. The framework for observation in this project covered different aspects as follows:

- physical characteristics of the offices
- the light (sunshine, light, and glare)
- the level of noise (white noise and distractive noise)
- the ergonomics (the way they sat or stood while they concentrated on working)
- to see their different activities and their interactions with their desk, their circulations and the whole office space
- the longest time they could concentrate to work without interruption.

A **mental status evaluation checklist** was completed by researchers after each interview. The checklist included factors such as: mental status descriptors (appearance and self-care, sensorium, relating, affect and mood, thought and language, executive functions, stress, social functioning,...).

An environmental characteristic form was designed and completed for each by the researcher. This measured different physical aspects of their office. All offices were measured and their plans were drawn including the furniture inside.

Table 2: Participants’ answers to “*How do you feel about your office?*” and “*How do you feel about having visitors in your office?*”

<p>An Office in Block A (Former Accommodation)</p> <p><i>“Um.... it’s not great, I don’t like it. It is probably my fault, because I really need to tidy up and organize my work space. I have a much nicer work space at home. It’s not the most sort of stimulating environment but it is fine. I find it kind of bit horrible office. It’s an embarrassment here so I would never meet prospectus students here or clients.”</i></p>	<p>An Office in Block A (Former Accommodation)</p> <p><i>“It’s boring, it is dull, it is depressing, the carpet is horrible. All could be better. It is not an accessible room. It’s cold. I have had to go home occasionally because I have been physically cold, it was cold and my hands were blue. The metal frame brings the cold in. I never bring a guest here. It is not exactly the fantastic environment to work, I will be ashamed.”</i></p>	
<p>An office in Block B</p> <p><i>“That noise. No windows, in summer it gets really hot here, the air conditioner just makes noise. It’s ok. I am not proud of it. It is a bite of hole, isn’t it?! It’s horrible. You got that noise going on. I moved 4 times very quickly, during last 6 months or 3months, each time we moved to a smaller room with less shelves! Porters put them in boxes and moved them. The last time I said if you were going to move me again, I leave them in the boxes. I meet my visitors in staff lounge or outside”</i></p>	<p>An office in Block B</p> <p><i>“It is disgraceful, but I don’t mind, unrespectable! From staff-student perspective....., it is fine it does its job! I can’t do anything about it, there is no way out, there is not a magic wand to change it. I don’t feel embarrassed by it, it is a just a working environment. Poor light, it is not helpful this time of the year. I just look at the window sometimes to see if it is raining, there is not much to see!</i></p>	<p>An office in Block B</p> <p><i>“It’s small, it has never had the right temperature in the hot or cold, too hot normally, up here, no air movement if that door is shut; when I have got a meeting for any duration longer than 20minutes, it would be somewhere else, so most people coming here for 10, 15 or 20 minutes we are having a longer conversation, I take them to a teaching room, or staff room”</i></p>
<p>An office in Block B</p> <p><i>“I like it, it’s a big. I wouldn’t want to be in a room by my own. I’d rather be in a big room with others than being in small room on my own. If I have a visitor then I will meet them outside my room because my office is not professional enough. I have an office about three times of this room at home.”</i></p>	<p>An office in Block B</p> <p><i>“The space I am working in is ok if it was not for my role in University as a program manager with some students having confidential talks it was not a concern. My problem is when it is higher profile person, someone from outside or from industry or other visiting lecturers, the state of the room is embarrassing, I tend to avoid ,or I never take them to my room, ceiling is leaking, carpet is poor, windows are not opened properly either too cold or too hot in summer and winter time.”</i></p>	

Participants Description

Participants were all British citizens with British and non-British ethnical backgrounds. All were married except one who was divorced. They had 0 to 3 children with the mode of 2. They were all lecturers and had managerial responsibilities either in the school level or in the university level. The minimum age of participants was 36 and maximum 54 with the average of 46.14 and S.D. = 6.594 and the mode of 48. In terms of the level of

education, participants included two PhDs, one MPhil., one Master, two post-graduate and one bachelor degrees. For confidentiality reasons their level of education, their academic rank and photos of their offices are not presented in this paper. The control over the financial aspects which may affect their happiness has been done by choosing just academic members with the same level of managerial responsibilities so more or less they have similar amount of income. Research shows income can have an impact on happiness to a certain point of satisfying the basic needs, for more than that it does not have any significant relationship with happiness (Drakopoulos & Grimani, 2013). Table 1 describes participants and table 2 quotes their answers to the question of how they feel about their offices. For Confidentiality reasons quotes in table 2 are not assigned to the participants.

Table 1: Description of Participants

Name	Gender	Workspace area	Type of work space	Physical Symptoms
P1	Male	6.72 m ²	A single room	Hearing loss, dizzy
P2	Male	6 of 30 m ²	In a shared office	Occasional headache
P3	Male	12.14 m ²	A single room	Occasional headache
P4	Male	12.14 m ²	A single room	Stressed backache
P5	Male	9.32 m ²	A single room	High blood pressure
P6	Male	8.1 m ²	A single room	Healthy
P7	Female	6 of 30 m ²	In a shared office	Healthy

RESULTS AND DISCUSSION

Psychological Evaluations

Tables below illustrate the participant's scores for the four behavioral disorders for both assessments. Dark grey shows the results of first assessment and light grey shows the scores from the second assessment 7month later. No manipulation has been done to the offices. As most of the participants felt they had a better situation at home comparing to the last 7 months in terms of enough sleep at nights (two cases), could adapt with bereavement of a close family member (their fathers in two cases) and family obligations, the results of their test showed otherwise which could be related to the effects of their work environment.

After the second evaluation, all participants were informed of their results. Those who wanted to talk about the findings more provided a briefing via a face-to-face meeting and the rest received a written account of their results by an email.

Results showed that participants 1, 4 and 5 were suffering from anxiety. Their anxiety increased from borderline to abnormal level during the 7 months since the first assessment. They were informed about their results by researchers and suggested to meet a counseling psychologist.

Results indicate that participant 1 definitely has been struggling with social phobia from borderline abnormal to abnormal. This result is confirmed by his statements in the interview about the way he felt about his work environment and his office: *"it's sort of away from everyone else. I'm a bit left out, miles away. It's a box in the middle of nowhere"* and *"The recognition is all changed now, nowadays the recognition you will be given is a pay rise, distinctly for the hard work you put in, now it's just the(so sad, could not swallow his mouth water)... criteria ...and tick box exercise, effectively you don't, you just need to answer some questions on a computer and that's it, no more processing, and the heart and soul is gone from the institution"*. Although he had a strong feeling of attachment to the University (*"cut me open and I have got (the name of the university) written on me, inside me"*). He started developing hearing loss which could be one cause for social exclusion, stress and depression. Loud white noise that he has to hear it all the time when he is in his office could be another reason for causing hyper sensitivity and in this case this could even amplify the level of the noise. Participant 3 had a steady trend. Participant 7 needs careful attention as she suddenly her score in social phobia increased while before she was a happy confident woman. In this case, her office could not be the reason as she has been happy with it.

Results show that participant 2 has had a steady trend. Participant 4 have developed depression during the last 7months. His anxiety rate increased as well as depression which indicates he requires addressing them. Participant 1 and 6 showed some tendencies, they should be examined specifically on agoraphobia for a more accurate rate. This may explain why participant 6 spends most of his time in his room and do not socialize as such. The reason he explained for not attending the lunch hour and socializing with other colleagues was: *"I don't like an hour for lunch; my timetable is very sort of a mess. I could finish whenever my lecture, then....., then can pick*

a sandwich whenever I want, I used to do it. It is too institutional; I like freedom flexibility, like to eat whenever I want. Don't want to worry if I am late or early."

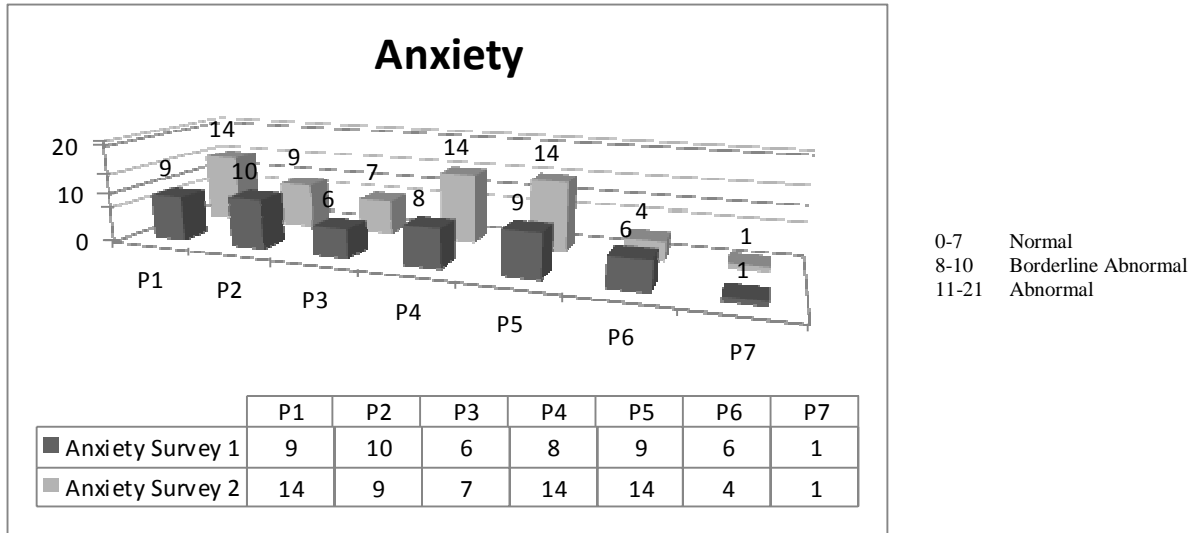


Figure 9. Anxiety Scores of participants in November 2013 and June 2014

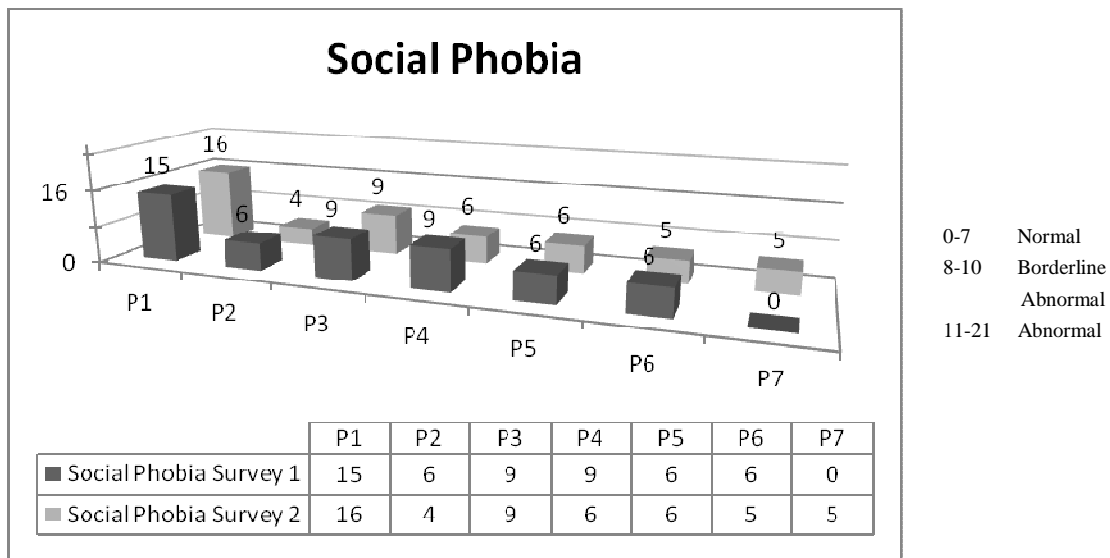


Figure 10. Social Phobia Scores of participants in November 2013 and June 2014

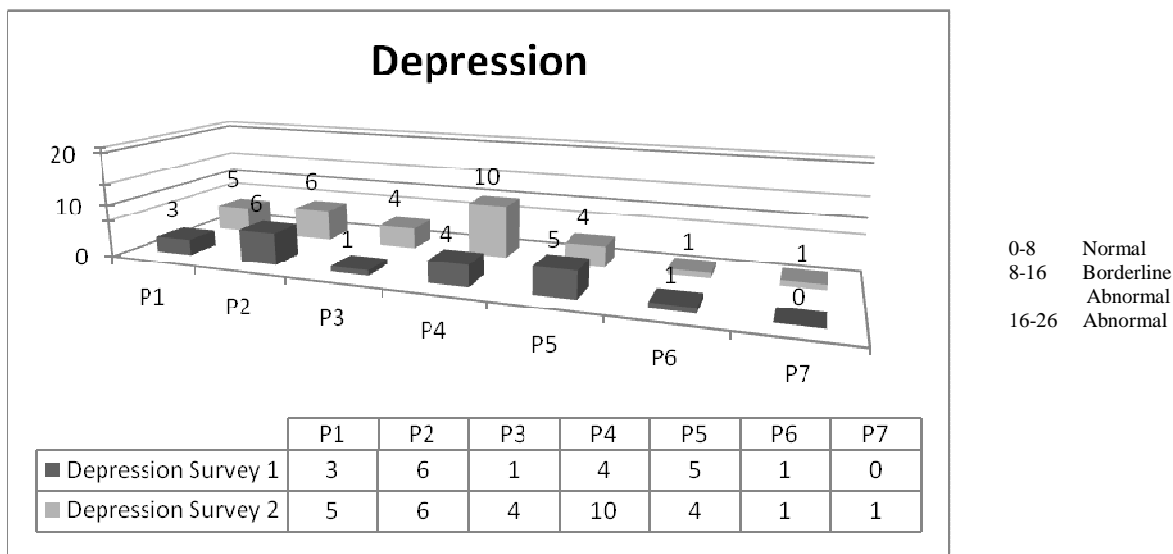


Figure 11. Depression Scores of participants in November 2013 and June 2014

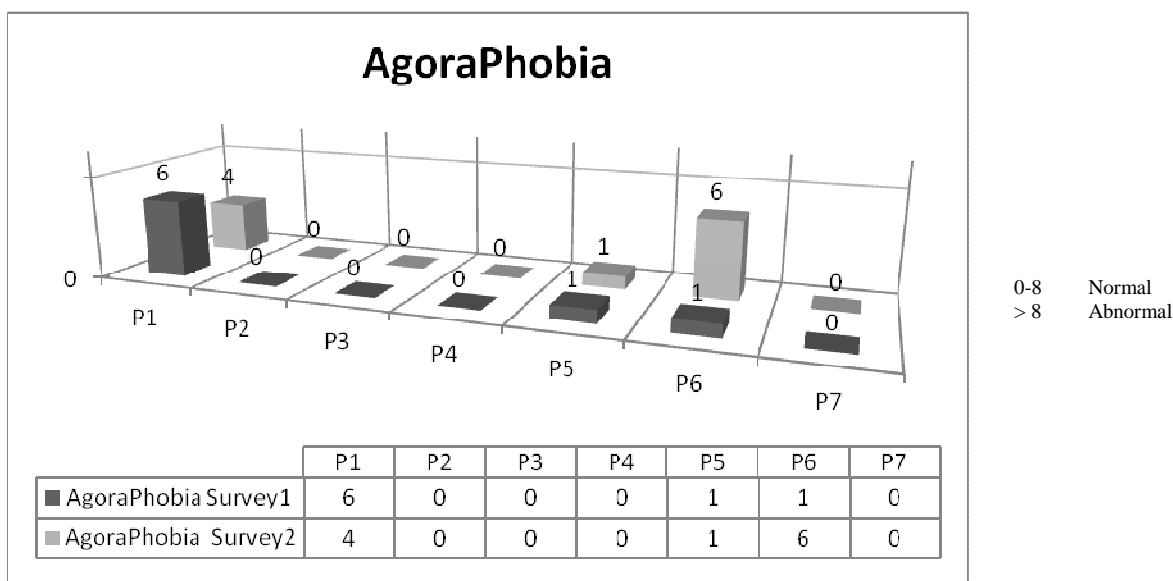


Figure 12. Depression Scores of participants in November 2013 and June 2014

THEMES EMERGED FROM INTERVIEWS

Theme1: Work-Life Balance and Working from Home

Five out of seven participants stated: “home is home, work is work”. They meant they did not like to mingle home with work and they were trying to maintain the balance between work and personal life. Two of these participants checked and responded to their work emails after work. This is particularly important as the two participants were originally in the borderline abnormal anxiety. Three were trying to concentrate and finish their work while they were in their offices. Some stated they would stay extra hours in their offices sometimes till 7 or 8 pm till they completed all their tasks no matter their working space was not comfortable and then went home to relax. The other two said they had a very professional office at their home and preferred to work from home depending on the tasks. They would work in their offices to meet students or to do other routine tasks, but if they had to do something important that needed their full attention like doing research, writing reports or marking

students' assignments and exam papers, then they would definitely prefer to work at home. Results suggest that insisting on keeping the work-life balance and insisting on working just during the office times (9am- 5pm) can be stressful too, as the least anxiety level is seen in participant 3 and 7 who do not mind to work from home and participant 6 who stays in his office till he finishes and then go home to rest. They work where and when they feel more comfortable and productive and do not limit themselves to a specific place or a specific time. This can explain the reason of flexible hours in larger organizations and offices since it is the productivity that matters not physical presence.

Theme 2: Feeling Embarrassed with Their Offices to Have External Visitors

All participants mentioned their offices were not professional enough to have external visitors such as a visiting lecturer, a higher profile person from the industry or even prospective students in their offices because they thought it diminished their reputation even the only one person who was happy working in a shared office said she would not have a visitor there. Table 2 outlines selective statements made by participants about their offices.

Theme 3: Uncomfortable Working Space

The reason a number of participants preferred working from home was due to the fact that they found their work environment to be very uncomfortable. They complained of hot conditions during the summer or very cold temperature in winter. The other problem included poor lighting and lack of air circulation. They claimed in some cases, their students had to sit on the floor of the office which led to overcrowding. This could be attributed to other factors for example ability to organize and manage work as offices are not suited to meet groups of students. Four offices did not have fresh air inside either because they did not have openable windows or the window was too small which could not provide enough fresh air for the specific office. This was another reason from the 'open door policy' which made them to leave their office door almost always open. Frisancho (1979) showed that thin oxygen can have short term and long term impact on people. In short term it could cause enlargement of heart, increased number of blood cells, light sensitivity, desire for sugar, increased adrenaline, testosterone production and menstrual period. In Long term, effects could cause larger lung capacity, different patterns of blood pressure, lower birth weight and slower growth. The importance of enough oxygen for the proper working of heart and brain is a fact and clear. Feeling of disquiet was observed in a participant with the disproportionate room, the smallest room for a person of larger build, as when he stood, there was just 10cm distance between his head and the ceiling which made him to either sit or leave his room more often as he felt trapped inside his office.

Theme 4: Work Load

Just two participants tried to change the arrangement of furniture inside their offices at the beginning of moving in but they stopped personalization after their work load increased and they thought that was the best arrangement they could fit inside that room. This came up in answering to this question: "*Have you ever tried to change the arrangement of furniture inside your rooms or this is how it was before you move in?*"

Another three participants mentioned that due to the increase of their work load and added responsibilities, they have not found a proper time to tidy up or declutter their offices. This causes the feeling of losing control which is one of the direct effects of physical environment, in this case offices and the arrangement of furniture inside them, not really the work load as comparing to other institutions, the work load is similar and in some cases less. Most participants have no control over the orientation of the office design and location of the door. This results in some of them having the backs to the door while working at the desk. They are unable to move their desks to orientate them to face the door. Some cases resulted in people entering the office without the participant being aware of someone walking into their office.

Theme 5: Distractions

Participants found their offices very distractive. This was caused by people's knocking at their door, phone calls, constant emails and overheard mobile phone conversations from corridors. Noise is an ambient stressor. Two of the participants had air-conditioner with a white noise which they found it very annoying and distracting. This is confirmed by other research that most people find the air conditioners noise very annoying (Bradley, 1992 in Bell et al., 2001). Evidence from others also shows one of the effects of noise is hearing loss which is an important health and safety issue to be resolved by the employers. Excessive noise even at lower levels when permanent can causes hearing loss (Kryter, 1994 in Bell et al., 2001) which participant 1 has found the problem. Other health effects of noise are high level of arousal and stress; both participants 1 and 5 were suffering from anxiety and participant 5 who has high blood pressure too which was another result of permanent noise (Cohen et al., 1986; Glass & Singer, 1972; Fay,1991, Kryter, 1994; Passchier-Vermeer, 1993 in Bell et al, 2001).

A considerable number of studies have investigated the effects of noise on people's performance, their physiology changes during the time of exposure and after it. People's noises such as talking on the phone or to other people and other types of distractions such as movements in common areas are distracting and could be felt as arousal (McAndrew, 1993). It is clear from the literature that *one-sided conversations impacted participants' self-reported distractibility and memory* (Galván et al, 2013) this means that those who are exposed to one-sided conversations such as mobile phone conversation in corridors or in public places can be distracted even if they are not consciously aware of it. Furthermore, the annoyance they feel is almost consistent in most studies in this area (Galván et al, 2013). This ultimately could lead to slower and less accurate work performance.

Theme 6: Loving the Work Environment (Social Aspects), Hating the Work Place (Physical Aspects)

The common theme merged from all interviews was their dissatisfaction with their work spaces, while all of them loved their jobs as academic members of a university. One said: *"I love my job, I love teaching and interacting with students, I think it is a root you can add a lot of value to the people and teach and support students along their difficult time, it is the thing I love to do. It's a shame we cannot do it perfectly"*. All mentioned they liked their colleagues and they were in good terms with them but all found their offices not professional and embarrassing which they would not meet an external visitor in it as it could diminish their level of professional reputation. The way they think and they feel means they do not want to be judged by their offices. Probably by experience they have realized the fact that humans used visual cues to show who they are from material objects to the environmental cues. This is supported by Wilson and MacKenzie (2000) which proved that people make inferences and stereotype about occupation, personality, lifestyle, wealth, age and ... by visual cues they get from the other person when they are dealing with them, from just looking at photos of interiors to the type of clothing or color of the car or the posters hanged on the walls.

The terms they used to describe their spaces were mainly negative such as *'disgraceful', 'disrespectful', 'a bit of a hole', 'a box in the middle of nowhere', 'horrible, depressing', 'not the most stimulating environment to work'* and so on. Three out of seven participants are still hoping they can have a better office either by changing their room or improving the conditions inside their rooms while the three other participants feels absolutely disappointed that nothing positive would happen to their room and stopped even complaining.

Window Views and the Attention Restoration Theory

Two of the participants had nice views to an open green area. Another two had views to the roof top of other buildings with a limited view of sky but because of the glare they could not look outside and therefore they either sat with their back to the window or closed the blinds. Two participants did not have any views to the outside as windows in their offices located at a high level as a result they could not see anything sitting or standing and the last participant had a view of a wall, roof and gutter of the next buildings. The well-known theory of attention restoration suggests that nature can restore attention and concentration (Steven Kaplan, 1995 In Bell, Green, Fisher and Baum, 2001). It is clear from literature that people like windows since it provides sunlight as well as a visual connection with outside (Leather, Pyrgas, Beale & Lawrence, 1998; In Bell, Greene, Fisher, Baum, 2001). Therefore having at least a window with a good nature view is very helpful and functional in concentration and work efficiency.

Furniture Arrangement

Osmond (1959) explained how space arrangement can encourage or discourage social interactions. He called those characteristics 'sociopetal' and 'sociofugal'. Sociopetal environments encourage face-to-face interactions by having movable and flexible furniture (McAndrew, 1993). From 7 offices, 5 had sociofugal arrangements of furniture instead of sociopetal, means discouraging others to have interaction with those who worked in those offices. 5 out of 7 had their back toward the door of the room instead of having control over the entrance which this caused them feeling less secured and supported. Just one participant had tried to change the arrangement of his room to find out what was the best way, but some because of the space limitations including the uneven height of the ceiling could not find solution for it. Physical characteristics of a space such as its size, its location, the type and amount of indoor space and amenities including furniture, services, and supportive facilities encourage different activities inside the space therefore it affects the use of a space (Altman & Zube, 1989).

CONCLUSIONS

To have a sustainable work environment, using Maslow Hierarchy of needs could be useful as it provides a solid frame work to control over different factors and have a holistic view of the relationship between human needs, his health, wellbeing and his performance. Emerged themes are linked to Maslow's hierarchy of needs here.

Physical environment (Physiological need/health and safety)

In this project, having architectural standards in spaces including the right temperature, fresh air(oxygen), access to water and bathroom from physiological needs, and paying attention to each persons' ergonomics and space free from noise pollution to help them concentrate and work could be amended to prevent distractibility and improve their concentration. Those who disliked their work offices more had higher scores in disorders of anxiety, depression and social phobia. The relevant themes are work-life balance, uncomfortable working space, having a proper window (for air, light and view) and distractions.

Social environment

Improving their offices via refurbishment in terms of architectural standards, opportunities for staff to have more interactions, to familiarize and feel part of one institution, and feeling of belonging could be improved with designing events and also not having sociofugal environments to improve sociability and decrease social anxiety. Feeling of (personal) space invasion in small offices causes frustration and flight behavior. This causes lack of concentration during conversation with colleagues or students which could force the participant to end the conversation or leave the room. Small offices and work spaces can affect the social interaction as well. In addition, from health point of view staying in a small room causes physiologic problems as shown by Evans (1979). His research showed after 3 hours heart rate and blood pressure of participants in the small room increased compared to those in the big room. In their research, 5 female and 5 male participants were in a 3.5 hour study in a small room and a big room. Furniture arrangement which was mainly sociofugal in most offices and the theme of feeling embarrassed with their offices in front of external visitors all decreases their self-esteem are the relevant themes to this level of Maslow's needs.

Personal differences: esteem, self-actualization (priorities, preferences and attitudes)

One participant mentioned having a shared office may prevent him from doing his job well, he added: *"they (students) want to discuss confidential things; you will not always find empty room to take them. I feel sometimes students may not come to me because I am sharing my space with others."* In contrast, another participant with the shared office found it very useful and said: *"If it is an issue with a student want to talk about something confidential then I can talk to them somewhere else. Some like it in the room because where there are more lecturers in the room and students waiting, they feel more relaxed it is less stressed instead"*.

To conclude, paying attention to different levels of peoples' needs plays the most important role in guaranteeing efficiency in their job performance. While personal differences in terms of attitudes and preferences should be noted, there are general guidelines to consider helping sustainability of a work environment. This paper only focused on the impacts of work spaces on health and wellbeing of seven academic members of staff in a university in the UK via a qualitative study.

For more details please contact the authors.

ACKNOWLEDGEMENT

This research was financially supported by the 'social enterprise and innovation award' by HEFCE, UnLtd. and RAU and provided the needed equipment.

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