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Effect of Technology Driven Built Environments on Mental Health: Assessing Human Attitudes Towards Virtual Realities in Architecture

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ABSTRACT

The model and quality of housing, the neighborhood in which one lives, and community social structures all affect one's physical and mental health. The exploratory research conducts a quantitative evaluation of surroundings' preferences to different individuals following two models the current reality and Virtual reality Grounded on semi- structured interviews with 29 number of complete responses, the researcher assessed which model contributed further to individuals' sense of home and overall well- being. Areas of thematic analysis included three themes: (1) Attitude towards current reality 2) Attitude towards Environment Effect on Wellbeing and Quality of life; (3) Attitude towards Futuristic and Virtual Reality where respondents answered how the emerging terrain whether real or virtual affected their productivity, mental health, physical health and overall wellbeing. This study questions whether the way to human evolution and wellbeing is to proceed in the road of virtuality and artificial intelligences.

Keywords: Quality of life, Built environment, Human Evolution, Mental Health, Virtual reality.

1. Introduction

The effect of the built environment on humans has been proved and many steps have been taken to make sure that architecture creates better environments for human well-being. Most humans spend their days indoors, hence built environments are becoming more and more influential over human's psyche and mental health (Klepeis *et al.,* 2001)

Human well-being is a total of physical, mental and spiritual fulfilment. According to research, spirituality includes meaning, transcendence, value, becoming (growth and progress in life), and connection (with oneself, others, surrounding environment and God) (Ghaderi *et al.,* 2018). More than half a century has passed since the introduction of spiritual health as a concept. First dimension is the connection to self, social circles, the environment, and God. Spiritual health is identified as a proper lifestyle, interaction with others, and wondering about the purpose and reason of life, and transcendence.

Spirituality has increasing importance in research; it is seen as a major factor affecting general health.

Many studies ensure that spiritual health is directly linked and proportional to physical health. It was stated that more spirituality can lead to experiencing less pain for some patients (Ghaderi *et al.,* 2018).

1.2. Technology driven environments

1.2.1. Technology induced stress

Many studies indicate the correlation between human and computer interaction and mental health.

Studies stated that interaction is one of the causes of stress hormone release. The effect is not only physically related, but also biochemical, somatic, and psychological. Those studies have been

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conducted ever since technology took over human lives after the industrial revolution (Smithi *et al.,* 1999).

It was proven that intensive use of Information and communications Technology (ICT) requires more work time and speed. It leads to multitasking, and neurological disturbance caused by the number of tasks at hand and can cause burnout over a long period of time. Anxiety and frustration can also be a side effect of this artificial and -away from human nature- type of interaction. Psychosocial reactions can be defined as cognitive, affective, and behavioral. Those definitions include beliefs and perceptions about interaction, emotional response, and the choice to use or withdraw from technology. These definitions help understand the factors affecting the consequences of extensive use of ICT on humans like anxiety, job dissatisfaction, and low job performance. As mentioned, in severe cases can cause mental health issues and burnout since the extended exposure to stressors creates an environment where all chronic distresses can live and flourish (Berg-Beckhoff *et al.,* 2017).

Ragu- Nathan *et al.* (2008) stated that techno stressors were more present in youngish generations, as it's egregious that the aged workers have better stress operation chops. It was stated that techno stress is a negative emotion linked to the use of computers; its symptoms include inordinate apprehension of computers, avoidance, discomfort and trials to reduce time on screen. Physical health is also at stake with the inordinate use of computers, there's a general agreement in exploration literature that inadequate design of workstations, when coupled with extended quantum of time and poor postures lead to fatigue and numerous serious injuries to chine, hand wrist and neck (Berg-Beckhoff *et al.,* 2017). Light design is also pivotal in workstations to reduce light and add visibility while on screen. Visual comfort generally is compromised due to work cargo, space design, lighting, and task conditions. Cerebral goods include and aren't confined to stress and anxiety (Smithi *et al.,* 1999).

The father of stress propositions Hans Selye defined medical consequences of stress on the vulnerable system, gastrointestinal system, and adrenal glands. Cerebral goods also accompany stress. Lazarus has defined the physical propositions of Stress, Stress is a natural process by which the body attempts to acclimatize to some challenge by marshalling its energy, complaint fighting and survival responses. There are also cerebral and perceptual processes involved in stress responses (Smithi *et al.,* 1999).

Lazarus defined physiological changes performing from feelings due to comprehensions of pitfalls. The quality or intensity of the emotional response and its attendant physiological and behavioral changes depend on the cognitive appraisal of the present or awaited significance of the commerce with the terrain or its" trouble" to security and safety. Levi signed" psychosocial stimulants" to complain when there was habitual exposure to adverse working conditions that adverse psychosocial stimulants have the eventuality to act as stressors (Smithi *et al.,* 1999).

1.2.2. Gen Z and Mixed reality

Summary of general findings from studies Research studies on computer work and stress lead to the following general conclusions Using a computer directly and laterally produces increases in hand stress. The circular goods are primarily intermediated by job design factors. Computer tasks can produce physiological stress responses similar as changes in heart rate, blood pressure, catecholamine position, and brain surge exertion. Work association factors impact cerebral stress and mood countries, and also have a direct influence on upper extremity musculoskeletal pain and discomfort (Smithi *et al.,* 1999).

On the other hand, youngish generations find virtual surroundings largely effective and salutary where the real surroundings can be subject to any dislocation. COVID epidemic that took the world by surprise in 2020 was a clear illustration of how virtual connections can save the world when real meetings, classrooms and gests couldn't be conducted physically and had to be replaced by digital Medias. Generation Z is transubstantiating tourism by demanding theco-creation of transformative gests. Cultural heritage professionals must comprehend the requirements and solicitations of the Gen Z to support theco-creation of transformative gests (Buhalis and Karatay, 2022).

Exploratory exploration was used in a previous study to explore the conception and determine Mixed Reality features for the future. Qualitative exploration was used to allow experimenters to explore all rudiments of Gen Z's commerce with technology and appreciate their comprehensions and conditions (Buhalis and Karatay, 2022). In the below mentioned case, some answers included

supposedly benefits to use technology, because occasionally you cannot touch the factual spots, like artistic heritage, just perhaps they're fragile. In Vietnam, at the Royal Palace, for example it is enjoyable for any visitor for the first 20 minutes, after a while they get weary and need more entertainment or stimulation and more information about the place. MR would have supported live commerce, and other activities, tourists can get fluently bored at artistic heritage places due to lack of conditioning to do. They can always find any information on their phone, searching the internet, but they don't want to look in a small screen. Rather, it would have been nice to have an immersive experience, to spend further time in the palace, hence, to get further recollections and positive print from the visit. Old people or people who are keen on history, love to go there, but Gen Z aren't interested in artistic heritage spots presently, because they find visiting them relatively boring. Unless the technology is combined in artistic heritage, and if they've some different exertion for youthful excursionists to get involved in. The AIA recognizes health as one of its most important points for advancing the field of architecture (Dannenberg and Burpee, 2018). In the best scenario, architects will start to see the importance of the health-promoting aspects of design and put them on top of their priorities. Many features of sustainable design offer co-benefits of promoting health. The use of evidence-based design for promoting health should be generalized to different functions other than healthcare design (Anonymous, 2018).

1.3. Health promoting design.

Since the Ancient Greek 'master builders, we've been obsessed with how people experience structures, and with good reason they've a huge impact on how we feel (Channon, 2018).
MRI reviews show that after an eight- week course of awareness practice, the brain's 'fight or flight' centre, the amygdala, appears to shrink (Channon, 2018). Beside the thermal, aural, aesthetic comfort, also the sense of control is pivotal in living surroundings. This sense tends to drop the stress and situations of cortisol hormone.

Places should be straightforward to understand and use, so a balance needs to be struck between the beautiful and the practical (Joye, 2007).

Zimring *et al.* (1988) showed that, relative to a no odour group, the presence of indeed a relatively obnoxious smell increased situations of aggression. Zimring *et al.* (1988); Mazuch and Stephen, (2005); Wener, (2006). Suggests that windows are further than a luxury for the confined and that lack of contact with the outside world heightens stress and depression.

Color is one of the least precious mending tools. Color can enhance light by cheering or subduing spaces, give sensitive stimulation, give directional and other information, and optically change the proportions of a room (Mazuch, and Stephen, 2005). Research has indicated that visual monotony can contribute to physiological and emotional stress (Küller and Mikellides, 1993). Emotional mapping enables clinicians and contrivers to navigate their way through the feelings, passions, sentiments, and sensations of cases in relation to the healthcare surroundings (Mazuch, and Stephen, 2005).

A polytrauma unit may be colored red to represent fear, anxiety and terror; a children's play area may be rendered yellow to reflect happiness; a chapel space might be mauve to reflect a meditative emotion (Mazuch, and Stephen, 2005).

For each project, a set of architectural 1:200 scale plans are color coded according to the emotion aroused by the various rooms, corridors and spaces, with a color wheel that explains which color relates to which emotion (introspective, vulnerable, relaxed, anxious, agitated, fearful, hostile, thoughtful and so on) (Mazuch, and Stephen, 2005).

People with migraine, for example, should avoid noise, bright light, hot ambient temperatures and saturated colors. The Design Prescription aims to define the precise and optimal conditions for the healing process both for healthcare departments and for specific individuals (Mazuch, and Stephen, 2005).

2. Materials and Methods

The research hypothesis is that virtual realities are causing more harm than good to humanity. They are adding to the artificiality of people's environments hence life, and adding more stressors will

be the root cause to more health deficiencies and diseases as their former technology-based environments has caused to humanity.

The study conducts a survey on a random sample of different people and measures their attitude towards virtual reality vs the real one. And how each of them affects their well-being, hence which type of environment they prefer to be living in.

The survey questionnaire had 2 main sections A and B and an introduction of demographic questions. First part was Demographic and Categorizing questions, which had 7 questions, from Question 1- 7. Second questionnaire section was Section A entitled: Attitude towards Current Reality, it was constituted by questions from 8- 34. And finally, Section B: Attitude towards Virtual Realities, was from question 35- 48. With a total of 48 questions.

3. Results

The complete responses out of 48 responses were 29, of which 9 were males and 20 were females. (Fig. 1) It is worth mentioning that 41% of responses were to people in the category of 35-44 years old. (Fig. 2)

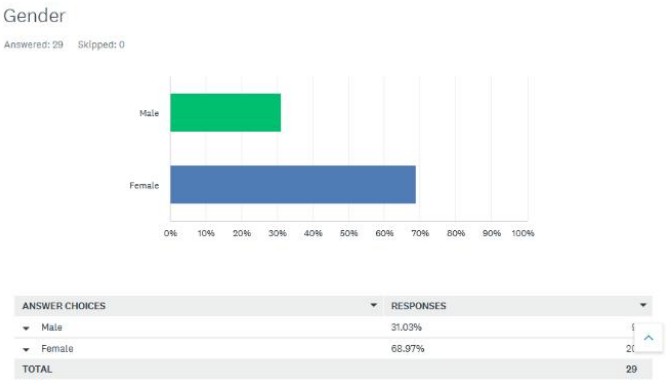

Fig. 1: Gender responses

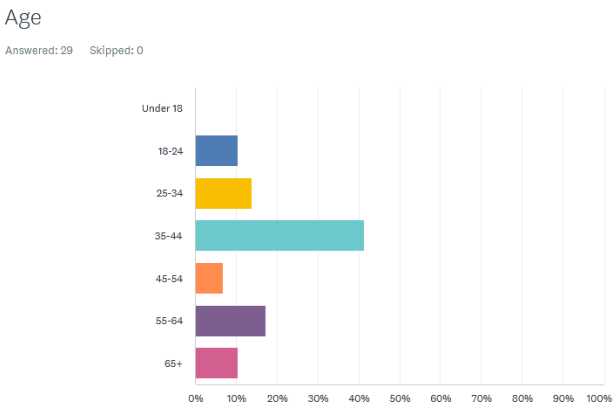

Fig. 2: Age Responses

55% of respondents stated that their personal fulfilment is directly related to major success and achievement. Which implies that daily blessings can be often overlooked by them to feel satisfied. This indicates that their reality is not enough for them, they might feel the need to get out of the ordinary and seek unreal experiences. (Fig. 3)

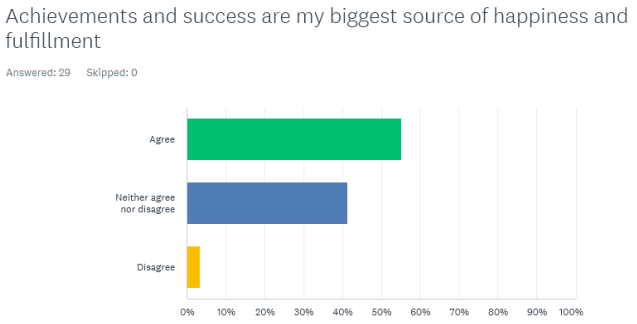

Fig. 3: Respondents' attitude towards major successes

About 65% of respondents stated that they often worry about the future, which indicate their inability to live in the moment, in the (here and now), and be overwhelmed by past pains or future worries. That mindset of not being fully immersed in the present is a field for dissatisfaction and poor life quality. (Fig. 4)

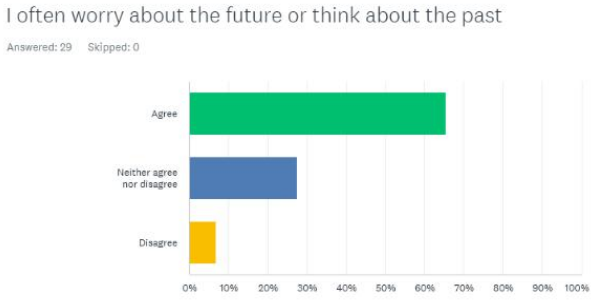

Fig. 4: Respondents' attitudes towards the past and future worries

When it comes to getting back to nature, 55% agreed that this is the way to human evolution. With only less than 15% disagreeing with the statement. This is a curious finding as most of the world is heading to tech, Artificial intelligence and extended realities. (Fig. 5)

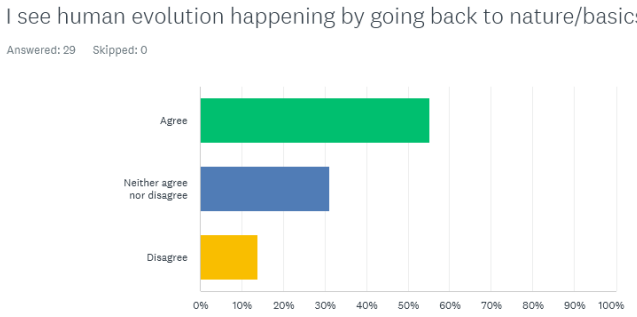

Fig. 5: Respondents attitude towards back to nature movements

Most responses to people's attitudes towards social media, digital media was more of a fifty-fifty with little discrepancies according to the specific question. It was not until the statement

mentioned inserting digital chips in humans that the vast majority strongly disagreed with a solid 90%. (Fig. 6) Also 6% agreed that social media is affecting human relations in a negative way (Fig. 7). Only 50% agreed that technology is the way to human evolution, while the rest were divided between not knowing or disagreeing to the statement, in a good indication that people's attitude towards the benefit of technology to humanity is still debatable, at least evolution wise. (Fig. 8)

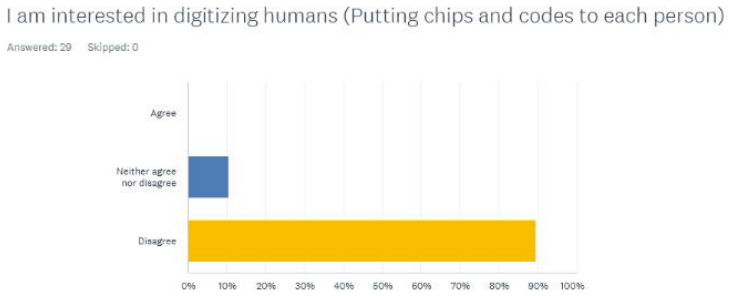

Fig. 6: Respondents' attitude towards digitizing humans

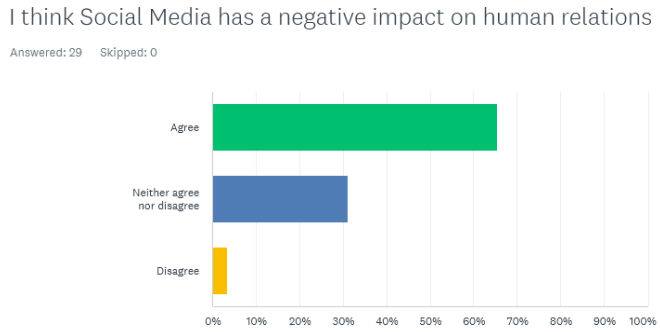

Fig. 7: Respondents attitude towards social media impact on human relations

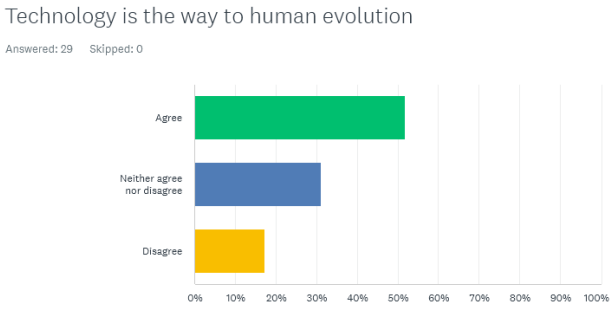

Fig. 8: Respondents' attitude towards technology and its impact on evolution

More than 75% of respondents have agreed that social media has a negative impact on mental health. (Fig. 9)

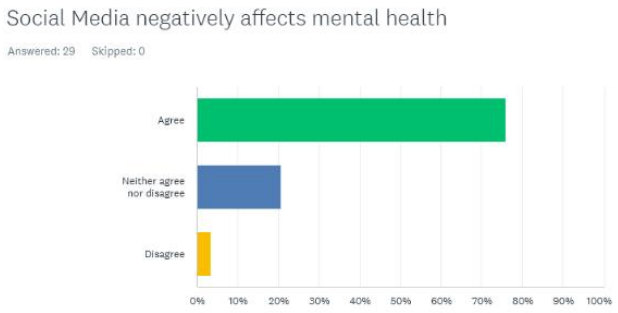

Fig. 9: Respondents' attitude towards social media effect on mental health

4. Discussion

Methodical review of studies on Internet use and internal health in the overall population suggests a positive correlation between Internet use a bettered wellbeing in life. The authors indicated that utmost studies didn't find significant results, and the results were inconclusive. also, the studies hadn't delved ICT used at work, but rather technology used for purposes in rest times. farther exploration is missing to clarify underpinning propositions on how ICT use might affect internal health (Berg-Beckhoff *et al.,* 2017). The observed associations (stress and technology) are substantially present in the middle- progressed working population, (Berg-Beckhoff *et al.,* 2017) aged workers were not shown to be passing further stress or collapse when using ICT. These findings discrepancy with studies on operation stations, which support dropped enthusiasm and increased concern to use new technologies like ICT in aged workers Gender in an analogous study, (Asakura and Yuko, 1993) examined the direct and circular goods of robotization on worker good and health in a sample of 4400 office workers. The results of their study verified those of Carayon, (2009). For manly actors, the goods of robotization on hand well- being and health were nearly entirely intermediated by the goods of job characteristics (however there were two direct benefits). The results for women respondents indicated that the pros of robotization on hand wellbeing and health were entirely intermediated by the perks of job characteristics (i.e. there were no direct benefits of robotization on wellbeing and health) (Smithi *et al.,* 1999)

Linking our environments to a larger existence and thinking they can affect our evolution, by observing the macrocosm, where all operations are changeable and marvelous. Only veritably many processes can be predictable analogous to a trial conducted on two identical halves where results were anticipated and aligned with analogous patterns (Smart, 2012). The transcension and elaboration of humans' proposition proposes that our actuality is anticipated to be repudiated to an inner pace full of networks and algorithms, thick computational equations and scales of energy, time and space, ultimately to what's known as black holes. The cycle of life for all brutes is analogous to a tree where branches grow, bloom, flourish and also shrink, dry and ultimately die. This cycle is the same for all species and matter in all creation. All natural forms are subject to development and also geriatric and death (Smart, 2012).

Quantum physicist Giovannetti *et al.* (2001), also Krauss and Starkman (2004) stated that time will come where we will witness computational miniaturization, in 250- 600 times if acceleration continues at the usual rates according to Moore's Law that states that the number of transistors on a microchip doubles every two times. The law claims that we can anticipate the speed and capability of our computers to increase every two times because of this, yet we will pay lower for them. Research states that this transition might feal a bit longer than anticipated. Yet studies show that in astronomical time, it'll be fairly short (Smart, 2012). The physical limits to calculation have been under active scrutiny over the once decade or two, as theoretical examinations of the possible impact of amount mechanical processes on computing have begun to make contact with doable experimental configurations. We demonstrate then that the observed acceleration of the Universe can produce a universal limit on the total quantum of information that can be stored and reused in the future, putting an ultimate limit on unborn technology for any civilization, including a time- limit on Moore's Law.

The limits we decide are strict and include the possibilities that the computing performed is either distributed or original. A careful consideration of the effect of mid-air on information processing is necessary for this analysis, which suggests that the total quantum of information that can be reused by any bystander is significantly lower than the Hawking- Bekenstein entropy associated with the actuality of an event horizon in an accelerating macrocosm (Krauss and Starkman, 2004). Extraterrestrial intelligent life may nearly live. The apparent failure of similar life to interact with us may be understood in terms of the thesis that they've set us away as part of a nature area or zoo, and it avoids commerce with a lower progressive civilization because it doesn't want to be held back by a less advanced state (Krauss and Starkman, 2004).

5. Conclusion

Respondents of the study survey had shown an interesting discrepancy between the willingness to invest in technology and the hope that it can help in some areas in life for a better future. And the mistrust in social media, digitizing humans, artificial intelligence, and its consequences. The majority of 55% agreed that getting back to nature is the way to a less stressful life, while the rest approved that it is technology that will lead humans to evolution and transcendence.

The only matter that respondents agreed on was that social media is not to be fully trusted, that it is affecting mental health and human relations negatively. It is recommended that further studies scrutinize this matter to follow up the human attitude after the emerging artificial intelligence technology after 2023.

Study limitations

The study was based on many wellbeing notions and criteria referring to the World health Organization questionnaire of quality-of-life WHOQOL. However, it had to cover other notions regarding the built environment and virtual environments, the scope is very rich and full of hypotheses and is a base for future research and more extended studies.

Acknowledgment

Thanks goes to all the respondents who gave their time to answer the questionnaire and gave their insights about this crucial matter in the history of human evolution.

Conflicts of interest

The author declares that there is no conflict of interest whatsoever between any of the involved parties who contributed to the completion of this research.

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