

# Using User Journey to map emotional oscillations during CoVID-19 social distancing

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## ABSTRACT

The CoVid-19 pandemic has demanded society to social distance, which significantly affected not only people's routine but also and their mental health. The way each person is facing this period of confinement is shaped according to their principles, culture, health, and financial stability, thus leading individuals to react emotionally in different ways. Through Design, it is possible to map these experiences and represent them through User Journeys, allowing clear representations of how the experience took place when facing the fear of contagion, the sudden change of routine, and isolation. This study focuses on discussing the effectiveness of unifying different experiences in a single representation, mainly to outline emotional aspects. Trying to balance all emotional variations in a single User Journey prevents the researcher from seeing important details of the users' experience. In this study, the need to use individual User Journeys was evidenced when it is intended to analyse the emotional aspects of users when dealing with products or services, as individuality can shed light on aspects not observable in a consolidated analysis.

**Keywords:** CoVID-19, Emotional Design, Service Design, User Journey, User Experience.

## INTRODUCTION

The outbreak of CoVID-19 imposed the adoption of quarantine for health reasons for the first time in the history of this generation of Brazilians. Not only because it is unprecedented in Brazil, but also because of the absence of wars and conflicts with other parts of the world in recent years, the majority of the Brazilian population is not used to experiencing events similar to what is happening in the world at the moment. This new situation requires society to adapt to a new and unknown reality, changing habits in social and behavioural spheres, in addition to the impact on the mental health of individuals who, from one moment to the next, are forced to quarantine, isolate themselves, and, in some cases, are prevented from carrying out their life projects, concerned with their own health and with the health of those around them.

The experiences of individuals when relating to any element around them are affected. Even elementary survival activities, such as grocery shopping, now require specific behaviours. CoVID-19 has been transforming the experience of the whole society, and the record of these experiences serves as a basis for understanding how society has been reacting to this new reality. Within the field of Design, the recording of experiences by means of User Journeys is a common and fundamental practice to understand a sequence of facts and events chronologically. Journey maps make intangible experiences visible and convey shared

understanding among team members. They are a way to visualize data in a simple and empathetic way (Stickdorn, Hormess, Lawrence & Schneider, 2018).

This work does not intend to determine the society's behavioural patterns in dealing with the pandemic in a broad and definitive way. Several more comprehensive studies, with a focus on sentimental analysis, already have this purpose. The purpose of this article is to shed light on the capacity for emotional analysis represented through Journey Maps that unify and consolidate the experience of a sample in a single representation, ignoring the importance of illustrating and representing the individual emotions of each participant, and from the individualities to stimulate the necessary reflection of designers in their project activities. The best way to successfully design is considering the existence of a number of specific users with specific needs, once, by trying to design a functionality in a comprehensive way, the designer increases the cognitive load and will probably please some users while interfering with the satisfaction of others (Cooper, Reimann, Cronin & Noessel, 2014).

## 1. IMPACT OF COVID-19 ON SOCIAL INTERACTION

### 1.1. Impacts on society

Social isolation requires Brazilians to change their way of thinking, acting, and interacting in all aspects of new forms not yet defined. While individuals are forced to adapt to a new reality, they are not aware of what would be the real adaptations, which are necessary to be made to achieve a condition of stability. Uncertainties are reflected in several aspects: health care, the exact period of isolation, the direction the economy will take, to what extent jobs are secured, and what shape their plans for the future can take. This is aggravated by the fact that human beings have an aversion to uncertainty and unpredictability, trying at all times to minimize prediction errors, and when this does not happen, the cognitive effort increases (Gonçalves, Oliveira and Pinheiro, 2020).

The prolongation of this uncertain condition generates not only fear, but several other psychopathological symptoms, depressed mood, irritability, anxiety, fear, anger, and insomnia (Brooks et al. as cited in Afonso, 2020). In an analysis made by Rogers et al. (2020), several studies on the impact of isolation were identified and the author adds loneliness, boredom, and frustration to the prominent factors of isolation. In addition to these psychological effects, other factors such as economic difficulties and the risk of rising unemployment are also associated with the worsening of the population's mental health (Strandh et al. as cited in Afonso, 2020).

### 1.2. Impacts on social interactions

The prolongation of this condition of uncertainty increases the feeling of danger from exposure to the virus and consequent fear of possible contamination. At the beginning of this study, in April 2020, 76% of Brazilians were in favour of isolation (Instituto de Pesquisa Datafolha, 2020), indicating agreement with initiatives imposed by the government and also individual isolation initiatives as responses to fear of contamination. However, as mentioned, isolation has consequences for individuals' mental health. Regarding the fear of society, Gonçalves (2020) tells us that:

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“In the context of a pandemic, in which the threat to health, well-being, and life become urgent, fear – the pandemic fear – is an expected and adaptive response, being the basis of behaviours that avoid the risk of contamination and increase the probability of survival. . . . The climate of fear associated with a pandemic can, in particular, generate the feeling of terror of losing loved ones and friends, coupled with the longing and sadness of not being able to be in contact with the people that mean so much bring to the personal world of each one. In a digital world, social isolation can be minimized by increasing contacts through digital means (e.g., WhatsApp, Skype, Zoom), which in many cases have been intensified in comparison to the pre-pandemic period (Gonçalves, 2020, pp. 152-153).”

The adoption of quarantine makes us reflect beyond the psychological impacts, observing impacts in the realms of social interaction, which can serve as triggers to aggravate or soften psychological aspects, once social interactions are an essential part of human life. With the sudden change in routine, some social goals are also affected: making friends, persuading, extracting or giving information, supervising others, and according to Trower, Bryant & Argyle (2013), these are desired goals because they provide solutions for basic needs, like affiliation with something and the feeling of accomplishment. According to Hortulanus, Machielse, & Meeuwesen (2006), social relationships are fundamental to personal well-being, and he tells us that:

“The personal network is an important factor in people’s daily lives. It is therefore not surprising that people give a high ranking to social contacts if asked to assess the issues that are important to their sense of well-being. This is especially the case for primary relationships (partner and family), but social relationships in a broader sense are also relevant (Hortulanus et al., 1992). In recent years, many studies have confirmed that people who are embedded in a network of personal relationships generally experience a higher level of well-being than those who are socially isolated (see, for example, Heller and Rook, 2001). They also tend to be healthier (Tijhuis, 1994; Sarason et al., 2001; Pescosolido and Levy, 2002; Jehoel-Gijsbers, 2004, as cited in Hortulanus, 2006, p.14).”

Hortulanus et al. (2006) make a general analysis of the social relationship functions described by Weiss (1974) and Thoits (1985) and suggest a synthesis of the guidelines of these authors, grouping them into three concepts, which will be used as support for the analysis of this study. They are:

1. **Identity:** Personal relationships are important for maintaining our identity because it is in the relationship with other members of your social circle that your identity is manifested. Both the expression of your being and the behaviour of people in interactions with others are constantly assessed and need the appreciation of the other in order to develop their social identity and develop the feeling of belonging. With the existence of social isolation, this study considers this concept as one of the hypotheses which will stimulate individuals to extend their social interactions through digital means as a way to manifest and obtain the appreciation of society about their identity.
2. **Social integration:** In quarantine, the first impact occurs in social interaction routines. Those who move between different environments (work, school, friends' houses, bars, etc.) are entirely restricted to their own homes, only maintaining physical contact with those who share the same household. Social integration is limited to virtual contacts between their closest links, eliminating occasional interactions with acquaintances or colleagues that physical presence imposes. For Hortulanus et al. (2006), this aspect meets a basic need to 'belong', and is present

throughout psychological literature, as they offer the possibility of feeling part of a social group in which they can experience personal involvement, intimacy, and friendship. As in the previous concept, this concept is a fundamental basis for observing the emotions and social interaction manifested by the participants in this study.

3. **Social support:** This concept has two approaches: support to the social companionship, and support to people's experiences and feelings. This study applies the concept of social support as viewed by the second approach, because in the context of this study, and as previously mentioned, the confinement and struggle against Covid-19 increases the levels of stress, fear and other negative feelings that affect mental health. This study observes the activities practiced by the participants in relation to their search for activities or interactions that can serve as social support, attenuating possible negative emotions.

## 2. OBSERVATION OF THE EMOTIONAL EXPERIENCE

According to the concepts previously established, this study will map the users' emotional experience throughout the confinement period. In a complementary way, it will be observed if social and behavioral aspects affect the emotional level of the participants during confinement.

As previously described, the conditions imposed by the confinement affect both mental health and social relationships; thus, we aim to verify the participant's emotional condition, who can range between positive or negative emotions over the days. This variation can be motivated by numerous reasons or agents. For Izard (2013), positive emotions are those that tend to increase the feeling of well-being or sustain constructive relationships with people, situations, or objects. Still, according to the author, negative emotions tend to be perceived as harmful and difficult to tolerate, instigating excitability or non-constructive relationships. In this topic, the study seeks to identify the general classification of emotion felt by the individual at a certain moment. It is not within the scope of this study to identify the exact emotion felt and the exact reasons that evoked a certain emotion. In this way, it is possible to sequentially identify the participant's emotional perception and self-assessment throughout the study.

With the confinement imposed abruptly and without prior planning, it is natural that an effort is made to adapt to new routines so as to minimize the boredom and stress caused by the confinement. This approach proposes to seek evidence if the participants started to perform activities in their routines that they did not have the habit of doing, but started performing due to the influence of confinement, characterizing a possible search for optimization of their time and a mental escape for worries that may be present.

Isolation imposes a drastic reduction in physical contact with other people, which causes social relations to be established exclusively by digital means. This question addresses the extent of social interaction, trying to investigate whether people have expanded their social relationships beyond those they already maintained frequently, characterizing an expansion of usual social interactions.

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### 3. METHOD

This study has as a premise that the participants themselves must self-evaluate and provide the answers when requested, so it is necessary that the method chosen meets two main requirements. The first must be the ability to follow up on the participants in any location, and the second is the ability to follow up on the participants over a long time.

To meet the needs of this study, the Experience Sampling method was adapted, which, according to Hektner, Schmidt & Csikszentmihalyi (2006), makes it possible to collect information about the context and content of individuals' daily lives. One of the advantages is the fact that this method is immediate, requesting that people provide written responses at various times throughout each day within a specified time. It was necessary to adapt the intervention format to the users, using WhatsApp (an online communication application) as a data collection tool. This tool was selected to replace the Pager (originally suggested in the method) because it is more modern, ubiquitous, and is already inserted in the routine of all participants, thus avoiding any friction that a new activity could cause to their routine. The original method also suggests that the samples of experiments be collected at random times; however, for this particular case, an attempt was made to maintain a regular schedule for data collection, varying between the evening and the morning. This regularity was established so as to wait for users to carry out all their daily activities, and thus, be able to have bases and conclusions about their experiences throughout the day to provide more assertive answers. Another important factor in choosing this method is the fact that, according to the author, this method makes it possible to study personal, private behaviours, without the presence of an observer, and also makes it possible to study people and situations.

Data collection started on April 4th, 2020, and ended on June 5th, 2020, totalling 63 calendar days. The questions were sent to the participants at intervals of 24 hours on average, always referring to a particular day at a time, where the participants could answer them whenever it was convenient, and even choosing not to answer. For this reason, not all participants have the same amount of entries registered.

This study does not aim at a quantitative rigor, therefore, based on the guidelines of Stickdorn et al. (2018), a non-probabilistic sample was adopted, composed of 21 participants selected for convenience, whose characteristics are listed in table 1.

**Table 1: Description of the participants and their characteristics**

ID	Risk Group	Isolation level	Financial stability	Place
P1A	No	Non-isolated	Reduced income	São Paulo
P1B	No	Partially isolated	Reduced income	Florianópolis
P1C	No	Partially isolated	Stable	Curitiba
P1D	No	Total	Stable	Florianópolis
P1E	No	Total	Stable	Florianópolis
P1F	No	Total	Stable	Florianópolis
P1G	No	Total	Stable	Rio de Janeiro
P2A	No	Total	Unemployed	São Paulo
P2B	No	Total	Stable	Rio de Janeiro
P2C	No	Non-isolated	Reduced income	São Paulo
P2D	Yes	Total	Stable	Rio de Janeiro
P2E	No	Total	Unemployed	Switzerland
P2F	No	Total	Reduced income	São Paulo
P2G	No	Total	Reduced income	São Paulo
P3A	No	Total	Stable	São Paulo

ID	Risk Group	Isolation level	Financial stability	Place
P3B	No	Total	Reduced income	Dublin / Ireland
P3C	No	Total	Reduced income	Belo Horizonte
P3D	No	Total	Unemployed	Florianópolis
P3E	No	Total	Stable	São Paulo
P3F	No	Total	Stable	Rio de Janeiro
P5A	No	Total	Reduced income	São Paulo
P5B	Yes	Total	Unemployed	São Paulo

Note: Total isolation means people who live only with the people in which they share the household.

### 3.1. Questionnaire used in the research

**Emotional:** Based on the Likert scale, the participants were asked about their emotions that day in relation to confinement and COVID-19, rating their feeling on a scale ranging from 1 to 5, 1 being the feeling of positive emotions, and 5 for the feeling of negative emotions. The first question was: “On a scale of 1 to 5, how did you feel today about confinement and Covid-19? 1 for positive emotions and 5 for negative emotions.”

Emotional levels will be presented graphically through colours, according to the scale below:



Figure 1. Colour scale for representing emotions at each level.

**Behavioural:** To identify whether the participant performed any activity in that period, a simple alternative question was used, choosing YES or NO. If so, the participant had to inform the quantity of and what the activities were performed. If they repeated the same activity on another day, they could register it again. The second question was: “Did you perform any activity that you did not use to perform before, and did you do it under the influence of confinement? If so, what activities?”

**Social:** To identify the level of social interaction, a simple alternative question was used, choosing YES or NO. This question did not provide for the capture of quantity or further details on the type and form of communication established. The third question was: “Did you talk to a friend, acquaintance, or family member today that you hadn't been talking to often before starting isolation?”

## 4. RESULTS AND DISCUSSION

This study gives us the opportunity to discuss and reflect on the efficiency of User Journeys by representing a user's emotional variations along their journey. When consolidating different experiences in a single representation, which synthesizes and tries to present different journeys and emotional variations in the struggle against Covid-19 to be used as a tool for documentation and analysis by designers, we can face a misrepresentation or an underrepresentation. The total amount of registered emotions generated by the twenty-one (21) participants over the study period was 1205 inputs, divided between the 5 emotional levels according Figure 1. For the representation of the unified User Journey, the Mode calculation was used to find the most prevalent emotional levels in each moment, unifying the 21 different experiences in a single representation. By unifying the experience through the most prevalent emotional level in each moment, the most critical emotional levels

disappear. Figure 2 shows the representation of emotional intensity during the generalized experience of the sample:



Figure 2. Unified representation of emotional experience.

The chart above shows a few variations in emotions, representing a balanced experience throughout the period. This representation raises the question about the effectiveness of the unified representation of experiences. To encourage discussion, we individually analyze participants to find out what are the predominant emotional levels (according to Figure 1) in each one and, therefore, we can group them as follows: 32% of participants have the emotional level 1 as the predominant level, 32% have the emotional level 2, 27% have the emotional level 3 and 9% have the emotional level 5 (Figure 3). Despite this grouping by predominance, emotional activities have extreme variation among participants, as can be seen in Figure 4.

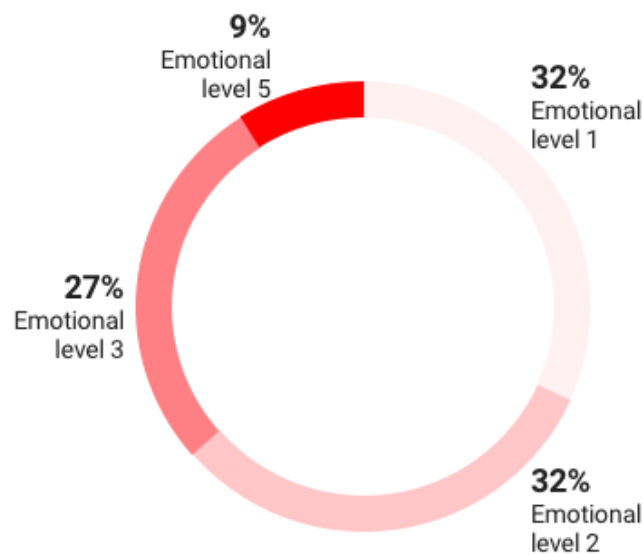


Figure 3. Sample division by predominance of emotional level.

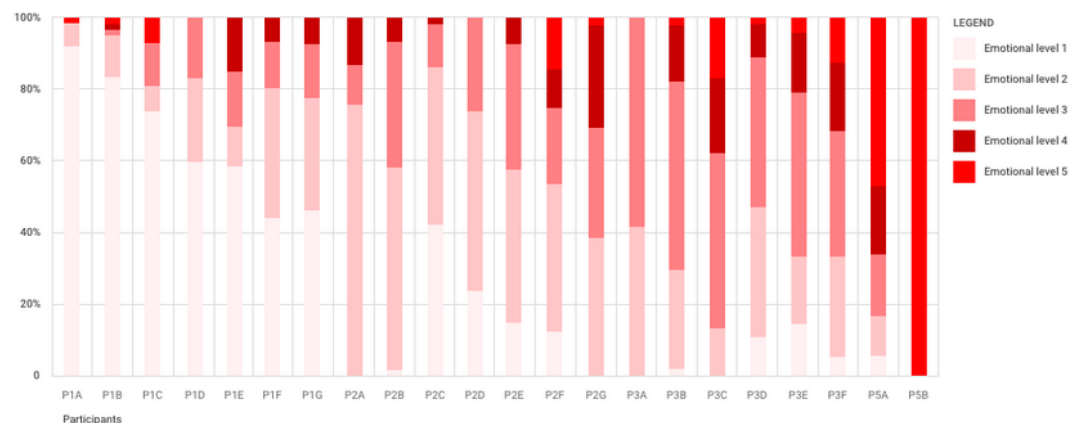


Figure 4. Distribution of emotional level by participant.

Understanding the existence of variations in emotional levels leads us to deepen and explore individual experiences in search of significant evidence of whether or not justify to analyse the experiences of each participant individually. This study proposes reflection through the individual graphs of their experiences because even among participants of the same

predominant group, it is possible to find significant differences in their experiences. Next, we will discuss the individual experiences from the predominant groups.

#### 4.1. Correlation of emotional variations with social and behavioral aspects.

When analyzing the relationship between the three dimensions of analysis (emotional, social and behavioral), it was not possible to find connections that correlate the emotional level with the performance of some behavioral or social activity. As can be seen in Figure 5, 19% of the participants' emotional records are among the serious emotional levels (level 4 or 5), however, 48% of these records occurred on days when there was no behavioral or social activity, and the other 52 % are registered on days when the participants remained active socially or behaviorally.

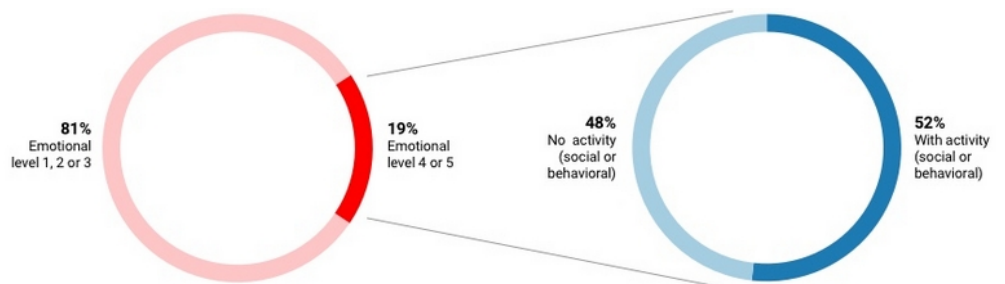


Figure 5. Details of activities carried out by levels 4 and 5.

If we look at each participant individually, the lack of standard will be even more evident. It is possible to identify completely antagonistic behaviors within the same group of emotional predominance. Figure 6 shows a comparison between the two most extreme participants in each group. We can see that both those who frequently remained engaged in behavioral or socially active activities, and those who remained extremely inactive throughout the period of analysis, have the same predominance of emotional level. These variations indicate that behavioral and social activities cannot be considered effective to alleviate bad feelings in general. The influence of these activities on the emotional aspect varies from profile to profile, as it does not consider several external variables that impact on well-being, and which should be further developed in a further qualitative analysis.

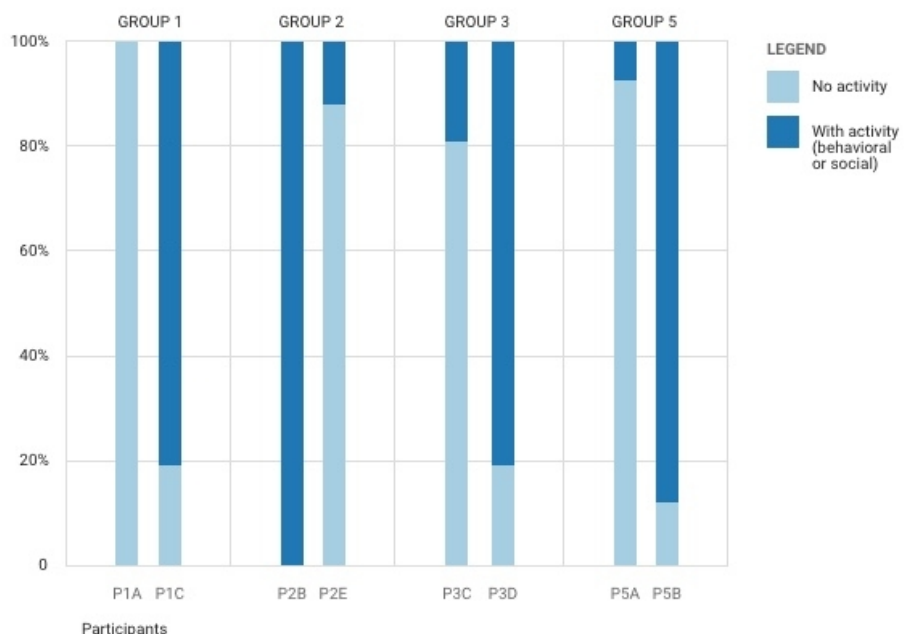


Figure 6. Comparison between participants in the same group.



## 4.2. Predominance of emotional of level 1

This group represents 32% of the sample, and observing the charts, it is possible to observe some consistency through long periods of the permanence of the feeling at level 1, represented by the graphs P1A, P1B, P1C, and P1D (Figures 7-13). Another striking characteristic of this group is the sudden changes in feeling, starting from level 1 to a high level (4 or 5) and returning to level 1 (Example: P1E; Figure 11) in a short time. In addition to the previous characteristics, it is also possible to perceive a decreasing trend, with greater oscillation and concentration of the highest levels at the beginning of the experience and greater stabilization and reduction of emotional levels at the end of their experiences (Example: P1F and P1G; Figures 12-13).



Figure 7. Representation of the P1A participant's emotional experience.



Figure 8. Representation of the P1B participant's emotional experience.



Figure 9. Representation of the P1C participant's emotional experience.

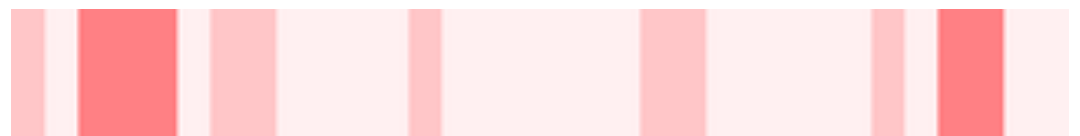


Figure 10. Representation of the P1D participant's emotional experience.



Figure 11. Representation of the P1E participant's emotional experience.



Figure 12. Representation of the P1F participant's emotional experience.



Figure 13. Representation of the P1G participant's emotional experience.

## 4.3. Predominance of emotional of level 2

Like the emotional level 1 group, the emotional level 2 group also represents 32% of the sample. Despite the predominance of level 2, observing the graphs of this group (Figures 14-20), it is possible to perceive great oscillation of some participants towards more negative levels of feeling (4 and 5). The individual graphs make it evident that even though there is a predominance of emotional level 2, the P2F and P2G participants (Figures 19-20) showed

emotional oscillations that show a possibly more troubled journey in relation to the P2C and P2D participants (Figures 16-17).



Figure 14. Representation of the P2A participant's emotional experience.



Figure 15. Representation of the P2B participant's emotional experience.



Figure 16. Representation of the P2C participant's emotional experience.



Figure 17. Representation of the P2D participant's emotional experience.



Figure 18. Representation of the P2E participant's emotional experience.



Figure 19. Representation of the P2F participant's emotional experience.



Figure 20. Representation of the P2G participant's emotional experience.

#### 4.4. Predominance of emotional level 3

The emotional level 3 group represents 27% of the sample. In this group, the variation of emotions for the lower and upper levels is equalized and equally distributed, with the exception of the P3A participant who had an extremely stable experience (Figure 21), a characteristic that can be observed to a lesser extent in the P3B participant (Figure 22). Contrary to what was observed in the level 1 group, in this group it is possible to observe an increase in the level of negative emotions at the end of the analysis period, characterized by the participants P3C and P3F (Figures 23 and 26), however, the P3D demonstrates at the end of the period a stabilization below the predominant level (Figure 24).



Figure 21. Representation of the P3A participant's emotional experience.



Figure 22. Representation of the P3B participant's emotional experience.



Figure 23. Representation of the P3C participant's emotional experience.



Figure 24. Representation of the P3D participant's emotional experience.



Figure 25. Representation of the P3E participant's emotional experience.



Figure 26. Representation of the P3F participant's emotional experience.

#### 4.5. Predominance of emotional level 5

The emotional level 5 group represents 9% of the sample. When analysing the answers of the participants in this group about questions 2 (behavioural aspect) and 3 (social aspect) of this study, we can observe extremely significant variations in behavioural and social activities. For example, the P5B participant remained with 100% negative emotions (Figure 28) throughout the period studied while maintaining 90% of behavioural or social activity execution in the same period. On the other hand, the P5A participant had only 10% of behavioural or social activity. In another analysis, we can notice that behavioural and social activities of the P5B participant took place in moments of extreme negative emotions, while in the other participants, the presence of activities is associated with the days of more positive emotions. Once again, generalization prevents us from observing extreme aspects that make us reflect on the behaviour of each individually participant.



Figure 27. Representation of the P5A participant's emotional experience.



Figure 28. Representation of the P5B participant's emotional experience.

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## 5. CONCLUSIONS

COVID-19 imposed new routines, fears and uncertainty for the future on society. This stimulated society to create habits and find new ways of living, going even deeper into digital ways to compensate for physical limitations. However, as much as the society demonstrates a standardized behavior, this work shows that each individual reacts in a unique and particular way to these new challenges. Each individual is loaded with culture, repertoire and knowledge that will define how they will react to each stimulus. It is up to the designer to think about these stimuli in order to evoke the most positive feelings possible, and it will only be possible to design with this level of detail and attention, avoiding generalizations. The observation of extreme experiences is a great source of information for the design area. Fluctuations in feelings significantly affect people's experience and some moments of extremely negative feeling can be sufficient for a user to define their experience as negative when using a product or service. Standardization hides emotional fluctuations in a user experience journey and prevents designers from observing details and deeply understanding emotional nuances when going through an experience. Digital products need to be aware of these behaviors, and care must be taken when designing functions and values common to the entire user population. The details and particularities of users should not be ignored, as they add value to the product and soften the most critical points of the experience, generating a more homogeneous experience among all.

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