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Visual methods

Emotional dynamics and quality of lived experience: a study of the usage of the Valence-Arousal space with the Spot Your Mood tool

Méthodes visuelles

Dynamiques émotionnelles et qualité de l'expérience vécue : étude l'usage de l'espace de Valence-Arousal par l'outil Spot Your Mood

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Abstract: The emotional dimension of someone's experience and its visualization is a increasingly recurring theme in scientific studies. If emotions are often studied using sensors measuring the activity of the body or the brain of an individual, few tools exist in a strictly qualitative usage (Geneva Emotion Wheel (Sacharin, Schlegel, Scherer 2012), Self-Assessment Manikin (Bradley, Lang 1994), Spot Your Mood (Yvart, Delestage, Leleu-Merviel 2016)). In terms of emotion visualization of participants, the usage of these setups requires them to have a clear and synchronized visualization with the experimental content to be pertinent. Based on 17 clinic cases using Spot Your Mood (SYM), a nonverbal tool for the declaration of emotional states based on the Valence-Arousal space (Russell 1979, Scherer 2005), this article explore the possibilities

of the SYM tool regarding the visualization of the data it produces. The emotional data collected are notably confronted with semi-structured interviews, as well as a second viewing of the videos in the original settings, directly commented by the participant. The resulting analysis of the emotions declared with SYM and the various verbalization methods allowed the emergence of satisfactory correlations to assess the liability of the participants' spots (name given to the self-assessment in SYM). That way, the identification of zones on the Valence-Arousal space describing the quality of the relation between the content and the individual could be done, as well as the implied emotional pathways, allowed to represent the individual's emotional dynamics. It opens the door to a better representation of the emotional experience in a qualitative setting for one or multiple persons in a statistical approach. This article will begin by presenting the different tools used to gather emotional data with a declarative approach. Afterwards, in the context of (Mugur-Schächter 2006) and (Varela, Thompson, Rosch 1993), alongside the experimental results observed in (Delestage 2018a), the communication will describe the possibilities of SYM in the determination of the emotional dynamics of an individual, and particularly, the validation of its results by describing the triangulation tools employed.

Keys words: Spot Your Mood; emotional dynamics; emotion; design of experience; Valence-Arousal

Résumé : La dimension émotionnelle de l'expérience et sa visualisation est un thème à l'intérêt grandissant dans les études scientifiques. Si les émotions sont souvent étudiées à l'aide de capteurs mesurant l'activité corporelle ou neuronale d'un individu, peu d'outils existent dans un usage strictement qualitatif (Geneva Emotion Wheel (Sacharin, Schlegel, Scherer 2012), Self-Assessment Manikin (Bradley, Lang 1994), Spot Your Mood (Yvart, Delestage, Leleu-Merviel 2016)). En termes de visualisation des émotions des coparticipants, l'exploitation de ces dispositifs nécessite qu'ils soient dotés d'une visualisation claire et synchronisée avec le contenu étudié afin d'être rendus pertinents. Sur la base de 17 cas cliniques utilisant l'outil Spot Your

Mood (SYM), outil déclaratif averbal des émotions en temps-réel basé sur l'espace de Valence-Arousal (Russell 1979, Scherer 2005), cet article explore les possibilités de SYM quant à la visualisation des données qu'il produit. Les données émotionnelles recueillies sont notamment croisées avec des entretiens semi-dirigés, ainsi qu'une seconde visualisation des vidéogrammes dans les mêmes conditions de visionnage, commentée directement par le coparticipant. L'analyse des émotions déclarées sur l'outil SYM et des différentes méthodes de verbalisation ont permis l'émergence de corrélations suffisantes pour évaluer la fiabilité des pointages réalisés. Ce faisant, l'identification de zones sur cet espace, décrivant la qualité de la relation avec un contenu, ainsi que le cheminement émotionnel de l'individu, permet de décrire des dynamiques émotionnelles, ouvrant la voie à une meilleure représentation de l'expérience émotionnelle d'un individu dans une approche qualitative, ou celle d'un groupe de personnes d'un point de vue statistique. Dans un premier temps, la communication présentera les différents outils de récolte de données émotionnelles sur une base déclarative. Puis, dans le contexte de (Mugur-Schächter 2006) et (Varela, Thompson, Rosch 1993), avec le résultat expérimental observé à travers (Delestage 2018a), l'article aborde les possibilités de l'outil SYM dans la détermination des dynamiques émotionnelles de l'individu, et particulièrement la validation des résultats obtenus en décrivant les moyens de triangulation méthodologique employés.

Mots clefs : Spot Your Mood ; dynamiques émotionnelles ; émotion ; design d'expérience ; Valence-Arousal

1 Introduction

The question of mood is nowadays approached by many different disciplines. Thus, the need of tools able to give indications with a solid proof of its efficiency and liability arise. Generally studied through a biometrical posture – heart rate, electro-dermal tension, neurological activity, etc., the psychological part of emotions seems less explored than its physiological evidences. It is not because this part is less interesting or pertinent, but a true qualitative approach needs more time investment in gathering and analyzing the obtained data, and

widespread tools are a rarity. In addition, emotion assessment tools vary in terms of invasiveness, which have an impact on the conditions of evaluation. If psychological tools don't require to install a device directly on the person, the question of compatibility with a large-scale study have to be addressed.

The search for the psychological roots of emotion in a qualitative setting appears to be appealing. Distinguishing fear from anger or distress can be key-changing depending the situations. Such a precise information can open doors to many applications, from watching videos to visiting museums or, listening to music – in general, when hedonic contents are involved. Also, as for many tools, regardless of what is measured, the ability to synchronize the measure with the evaluated content represents a paradigm shift for qualitative methods. The most commons tools – questionnaires, semi-structured interviews cannot offer this luxury, and have to rely of the ability of the participant to explain what he felt at this moment – afterwards, when he remembers it¹. Moreover, setups allowing synchronicity between the assessment tools and the content tested (a video, a music, a museum exhibition, etc.) require some technical skills – when such setups are available.

2 Emotions & sense-making²

Yet, we must first address the question of epistemology, as it conditions the usage and analysis of emotional traces. Emotions don't emerge *ex nihilo*, and are part of the perceptual mechanism, which leads us to describe how emotions sense-making are deeply intricated. Following (Varela, Thompson, Rosch 1993) and its theory of enaction, "perception is an action guided by perception". If the sentence seems odd at first glance, it takes account of the retroaction loop inherent to the perception process. Each stimulus considered and analyzed by the agent nourish its sense-constructs, which gives rise to a framework for upcoming perceptual inputs in order to discriminate which stimulus are pertinent

¹ The social desirability bias is a prime example of the risks of such methods, as well as a certain boredom in front of a questionnaire.

² This approach is explained in detail within (Delestage 2018b).

and how these ones have to be processed. This phenomenon is more precisely described in the Method of Relativized Conceptualization (Mugur-Schächter 2006), by the concept of View³. To sum it up, a View is a grid of ways to exploit the perceived stimulus; it is arbitrarily constituted by the agent on the basis of his or her constructs. The results of the operations of the View are confronted to the concepts (the sense constructs already present) and are integrated or rejected. Like a camera, it gives the agent a frame to delimit the very personal portion of the stimuli to apprehend, to analyze and to build on.

We can notice that following these authors, the perception process is deeply (and necessarily) subjective; the agent freely accepts or rejects newly constructed sense from a situation, based on his preferences and concepts already stabilized. This mechanism is well rendered in the concept of horizon of pertinence (Leleu-Merviel 2016). The coherence between the sense already constructed and the sense made out of immediate perception will shape its outcomes, and, as Valera mentioned, guide the following mechanism of perception.

If these theories give their explanation about the sense-making process, they lack an inclusion of the emotional aspects whereas it has been proven that emotional aspects of experience cannot be pulled apart from decisional processes (Simon 1967). It is yet a problematic issue, beginning by the very definition of an emotion⁴. The terms mood, emotion and affect have, depending on the authors and research fields, different definitions or are considered to be straight synonyms⁵. Founding our analysis on more than 200 hundred definitions of “emotion” and about 80 definitions of “mood” gathered in the scientific literature from Charles Darwin to 2015 we could sum up slight

³ The french term Vue is used in the original text (in french).

⁴ “To ask “what is an emotion?” is not, in principle, answerable. The term is a natural language expression that has all the advantages (communicative and inclusive) and disadvantages (imprecise and vague) of the common language” (Mandler 2013).

⁵ (Yvart, Delestage, Leleu-Merviel 2016).

differences between those terms. These differences were decisive during the design of SYM. To keep it short, affect is the portmanteau concept, the meta-category. Moods and emotions (even “sentiment” or “feelings”) refers to special occurrences of affects. Moods are long term emotional states implied in the way we see the world defining from our disposition to our global state. It is interesting to point out that it meets to the popular sense of the term we can meet when we say “I’m not in the good mood to do something” or “I’m in a very good mood”. Mood is a sort of durable substrata to our cognitive life. Even though we are not totally aware of it, we are still able to percept some features or evidence of our emotional state, our mood, at a given time in a given situation. According to Varela it allows or restricts the possibility of some over perceptions thus, it shapes our perception of the world. That way it is also meeting the epistemology of “stimmung” (mood) and “befindlichkeit” (the way we are to the world, our disposition) as defined by Martin Heidegger⁶. This way mood is a key factor to every decision we take (Simon, 1967) or to every situation we have to cope with (Ratcliffe 2013). Mood is also heterogenous. It has a psychological part and it also relies on our physical state. If we are sick, presumably we won’t be in an accommodant mood. Previous self-assessed mood, previous perceptions and features from our physical state are taken as parameter to our immediate mood.

Emotions are very different. Emotions are short-living reactions to environmental stimulation or auto-stimulation (imagining something for example). It appears to be so short and so transient that, most of time, we are not able to label it in real time. Avoiding participating in the old debate between James and Cannon-Bard about either we do understand that the bear is frightening so we feel fear or we are aware of our fear so it’s because the bear is frightening (pardon the caricature), we are able to say that the emotional reaction and lifetime is really short according to sense-making processes. It also

⁶ (Heidegger 1996)

shows us that emotions are also heterogenous affects. Physical reactions and coping strategies are part of the emotional experience as it unsettles us.

Seeing it from the “mood” standpoint we can conceptualize it in a different manner. Mood is present and pervasive. Even if we are not asking ourselves “what is my mood today?” and “how can I say that?” - so, which features from my perceptual or cognitive life allows me to say that I’m in a certain mood - we are able to say quite easily I’m feeling good or not. Mood shapes our perception like a color filter on a camera: to be in a good mood can be easily metaphorized by “seeing everything through rose-colored glasses” or “voir la vie en rose”. In such a manner, mood is our homeostatic state at a given time, in a given situation and emotions arising impact our mood and reshape it step by step. So, it is not directly the emotion we can label but, during or short after an emotional stimulation we analyze the scars and the reshaped mood as compared with the previous mood.

As mood and emotion distinguishes lifetime, it is then decisive to be able to follow and to labelized or point out break points. Break points in mood continuum are traces of a pertinent emotional stimulation. According to Gregory Bateson it is meaningful because it is a difference that brought us a difference (Bateson 1987). We never assess our emotion, we assess the difference in our mood, the delta from a pervasive and macroscopically-constant state to another. Emotion is determined from the delta between two snapshots. If my mood shapes my cognitive life (as it shapes my perceptual life), it constraints it. Being not in a mood to snort can forgive me to laugh to a very laughable joke. Step by step if someone tickles me I may be closer to react with anger than with kindness to the very same stimulation. With the lack of information about the coped ticklings, some external witness could consider a reaction to be random or chaotic as with complex behavioral systems. Emotions can only be understood from the “global” state of the system including mood.

3 Qualitative emotional assessment tools: a (brief) review

There are many ways to assess the emotions of a participant; the main differences lie in the approach and/or the epistemic background motivating the usage of a tool more than another. Considering emotions as a physiological event, one could measure the heart rate, electro-dermal tension, respiratory amplitude, etc. As described in the previous paragraphs, we believe that emotions are a more complex phenomenon, implicating a psychological and a physiological part. If the second can give some information about emotions, the psychological part allows us to be much more precise about what emotion occurred – and where it came from. Being a much more difficult dimension to explore, “[f]or better or worse, self-report represents the most reliable and possibly only window that researchers have on conscious, subjective emotional experience” (Barrett 1996).

A common tool for emotional assessment is the Self-Assessment Manikin (Bradley, Lang 1994). It consists of three 5-likert scales with images representing the possibilities of each scale – valence, arousal and dominance. By relying on likert scales with pictures, it is simple of use. However, in contexts when time is of the essence, using three scales to answer can be problematic, having to answer one at a time. Because of its design, a real-time usage seems at best difficult.

Based on the work of Klaus Scherer, the Swiss Center For Affective Sciences distributes the Geneva Emotion Wheel (GEW). As represented in (Sacharin, Schlegel, Scherer 2012), it is composed of a two-axis space – hedonic valence in abscissa, control in ordinate – completed with aligned circles out of a chromatic flower-shaped wheel. At the end of each circle alignment, an emotional concept is indicated. To use it, the participant simply has to indicate freely where his emotion is on the diagram. Although it has been used in many contexts⁷, its license restricts it to non-commercial purposes.

⁷ (Sacharin, Schlegel, Scherer 2012)

It is noticeable that most emotional assessment tools don't rely directly on words, but more on scales or abstract spaces. This gives a certain advantage for accessibility, noticeably on young⁸ or impaired people⁹. Moreover, even in a common language, definition of emotions can differ from people to people. Abstract spaces give consequently a common ground and soften the differences of definition (or polysemic problems) by relying on the description of the feeling between characteristics, not direct emotional words.

Spot Your Mood (Yvart, Delestage, Leleu-Merviel 2016) is a more recent tool about nonverbal mood assessment. It relies on the Valence-Arousal space, which is composed of a set of 2 axis; a valence axis on abscissa and an arousal axis on ordinate. The diagram is presented without any graduation¹⁰, so it could be grasped as a continuum. The very spirit of Spot Your Mood is to propose to the surveyed a Valence-Arousal diagram to indicate by point out directly with one finger on it where he/she feels like, in a subjective perspective. This one-interaction design allows simple usage and minimizes the interruption on the attention of the participant while interacting with the tool, as for the GEW. It also provisioned an emotion concepts dictionary placed on the diagram, so the user can precise its emotion after indicating where he/she felt like¹¹. Contrary to the GEW and the SAM, it is a smartphone application¹², which takes advantage of the connectivity and simplicity of usage of these platforms. By design, its usage can take place in a real-time setup¹³. Also, if it relies on a qualitative

⁸ (Alvarez, Bellegarde 2018)

⁹ (Bougenies, Leleu-Merviel, Schmitt 2017)

¹⁰ The question of adding graduations on the axis was discussed early in the concept of SYM, but abandoned; the pertinence of the valence-arousal is in its abstract space, adding graduations would be counter-efficient in that perspective in particular.

¹¹ This part is still under development but the main algorithm is based on semantic proxemy analysis as approached in (Yvart, Dutoit, Dupont 2014).

¹² A public Android version is to be released fall 2018, to be followed by an iOS version.

¹³ A example of this setting is developed in this article.

measurement, it can easily be used for quantitative purposes on a large-scale study. However, at the present time, its main drawback is the lack of studies attesting its capability of accurately reflect the participant's mood as it is still under development.

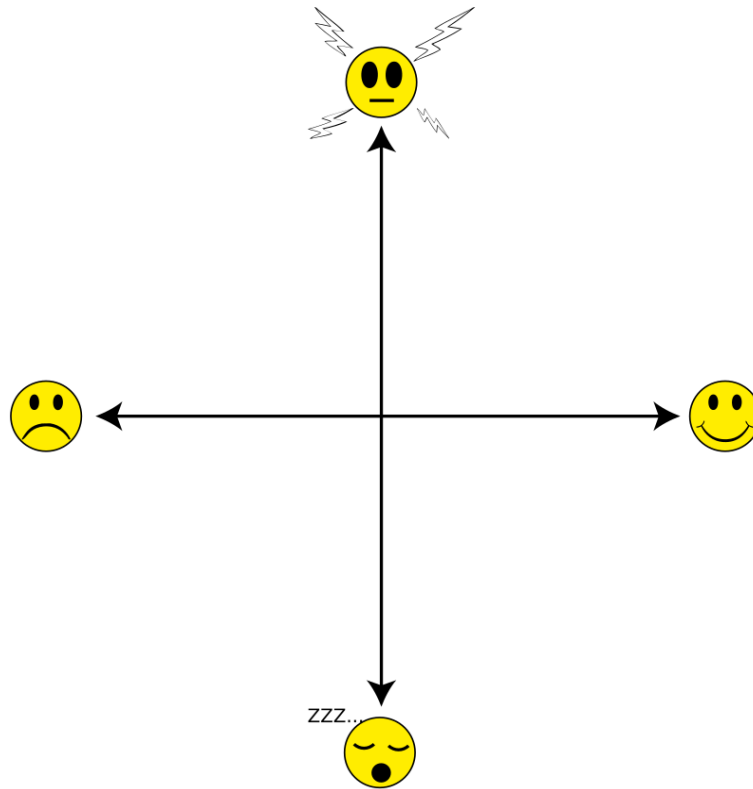


Illustration 1: Valence-Arousal space as used in Spot Your Mood.

4 Spot Your Mood for audiovisual content: experimental setting

On a study exploring the emotional experience of the television viewers, SYM was experimented as part of the protocol, in combination with other tools, to assess its liability. As mentioned earlier, (Yvart, Delestage, Leleu-Merviel 2016) states that the diagram is used in combination with a dictionary of emotional words¹⁴. This semantic dimension is not explored in the study exposed in this article. The reason is simple: the capacity of the tool was never explored before

¹⁴ The emotional dictionary embedded in SYM contains around 2500 emotional concepts with 151 main concepts. It is designed to automatically adjust its mapping of words on the diagram regarding a specified context, in order to give an emotional map of the studied context.

in a real-time usage (yet the Valence-Arousal diagram was previously used successfully in other contexts, but only after the exposition to stimuli, as part of a questionnaire (Bougenies 2015)). Thus, the usability and reliability of the abstract part of the tool during the experiment was to be assessed before exploring the semantic layer.

During the experimentation, 17¹⁵ participants were involved, 8 professionals of broadcasting from various professions¹⁶ and 9 'regular' viewers. The very principle of the experiment was to study the effects induced by the successive presentation of 2 extracts of a concert filmed simultaneously by 2 different teams in size and equipment. In doing so, the sense-making process of each participant was analyzed through a protocol inspired by (Labour 2011), itself based on (Romanello, Dervin, Fortner 2003), altogether crossed with other tools within the following protocol:

- A positioning questionnaire about the participant's habits in terms of music and video;
- A brief presentation of SYM's UI;
- The viewing of the extracts, in a random order. The participants were invited to use SYM anytime during the viewing¹⁷;
- A post-viewing questionnaire about the participants preference of the extracts, will to continue the viewing depending of the extract and emotional response implied by the extracts;
- A semi-structured interview, based on (Labour 2011), including questions about emotions of the participant during the viewing;

¹⁵ The number of participants may seem low, but provides 80% of confidence in the results following (Griffin, Hauser 1993). This particular point will be developed in the next paragraphs.

¹⁶ Producers, directors, rippers, scene designers, director of photography, etc.

¹⁷ Only 3 spots were imposed to the participant: before the first extract (previous/starting mood), between the 2 extracts and after the last (final mood).

- A tentative of accelerated re-situ-subjective interview (Schmitt 2012) based on the SYM spots generated by the participant;
- A final discussion about the estimated size of the teams involved in the production of the extracts (2 or 20 people). This part could¹⁸ be the occasion of a second viewing commented directly by the participant.

As we can see, the SYM tool was used in complement of already well-known qualitative methods (semi-structured interview with open questions, commented viewing) and descriptive quantitative methods (questionnaire and closed questions). Also, it was used in coordination of other tools, for experimental performative enhancements (re-situ subjective). To develop this particular usage, the SYM tool was synchronized with the videos shown to the participant, so that every spot on the diagram could be precisely linked to a second of the extracts using time reference code. Using this feature, segments of 10 seconds¹⁹ were automatically produced each time the participant spotted something in SYM. If the participant chose to indicate its emotional state at this time, it might be linked to a significant change in its emotional perception during preceding seconds. Thus, it can be considered as a moment of interest for the participant, emotionally speaking. On this basis, the re-situ subjective method was used, but without showing the entire video to the participant, only the segments generated by its interactions with the Valence-Arousal space.

5 Assessing the tool

In order to confirm the validity of SYM in this context, the protocol provisioned various criteria to ensure that the data produced through this tool was reliable and usable for further analysis. Particularly, a methodological triangulation²⁰

¹⁸ Even optional, every participant asked for a second viewing. As a matter of fact, it can be considered as a constant of the protocol.

¹⁹ At the second s, the extract generated represented a sequence starting 7 seconds before the pointing and ending 3 seconds after it.

²⁰ As described by (Mucchielli 1996).

was used to reduce bias of each other tool used and compare its results to the SYM metrology. To that intent, the tools used to assess the emotional dimension of the experience were:

- Spot Your Mood, during the viewing of the extracts,
- The post-viewing questionnaire, by a question for each extract: ‘does this extract make you experience emotions?’, associated with a visual analog scale,
- The semi-structured interview, which contained a topic about the emotions felt during the viewing. The other questions, open by design, were also an occasion for the participant to talk about its emotions,
- The accelerated re-situ subjective interview, which moments of elicitation were based on the synchronized spots realized by the participant,
- The second viewing of the extract was also the occasion for the participant to describe its feelings during the experiment.

To assess the correlations between emotions verbalized and the abstract spots on the valence-arousal space, the initial work on the semantics of SYM were used. This labeling effort was produced by taking the emotions words of (Scherer 2005) and adapt them for French emotions labels. These adaptations were needed since emotions are not necessarily understood the same way from a language to another. For instance, being happy and “être heureux” aren’t totally the same thing, as “traduttore traditore” (to translate is to betray).

In general, the placement of emotional concepts by Scherer on the valence-arousal space corelates with the interviews and spots indicated. If some prudence have to be implied regarding translation of emotional concepts within languages, we can consider these emotional concepts sufficiently close in a common occidental culture. Supporting this French emotion cartography of the valence-arousal space, a dictionary of emotions was produced by Willy Yvart, including 2700+ definitions of emotional concepts, regrouped in 151 main clusters, forming the initial semantic layer of SYM.

After the analysis of the corpus of interviews, the emotions verbalized globally matched the spots realized on the tool during the viewing of the extracts. It must be underlined that the emotions described by the participants during the interviews can slightly differ in quality from the ones they actually felt during the viewing. By asking them to verbalize on their experience *a posteriori*, we force them to crystalize their past experience, which was not compulsorily fully conscious nor precisely described, even for them. Yet, the spots indicated by the participants were close to the localization of the words used during the interview, allowing us to make a positive link between emotion felt and indicated on the diagram in real-time.

6 Visualizing emotional dynamics

Another warning sign we have to raise is the individual signification of the valence-arousal space. By giving the freedom to the participant to interpret this representation, one cannot be sure of the word associated with a spot on the diagram by the participant without asking for it. Although, this abstract indication can be assimilated no directly to an emotion concept.

After verifying the strong correlations between verbalized emotions during the interviews and declared using SYM, the question of the meaning of the emotional response of the participant was approached. As part of the perception process, moods are meant to condition the reception or arising of emotions, and have an impact on the sense-making process as those are decisional processes according to (Labour 2011). Thus, having a real-time subjective input of the participant's emotions allows to follow its evolution. With the protocol used during the experimentation, the interviews gave us the opportunity to go a step further by discriminating zones on the valence-arousal space as compared with the "declared-lived experience". We could identify four zones in total:

- 1 An acceptance zone (in grey), implies a reliance between the participant and the content perceived; its constructs resonates with the stimuli, accompanied with creation of new constructs or addition to the existing ones. A certain pleasure is observed, accompanied with preference of the moments tagged in this zone,

- 2 A non-commitment zone (in blue), where no reliance is observed between the participant and the content perceived; its attention is not directed towards the content,
- 3 A rejection zone (in red), indicating dissonance between the perceived content and the participant's constructs. The attention is still aimed towards the content,
- 4 A neutral zone (in yellow), indicating emotional neutrality of the participant; the moments tagged that way were in between video extracts, where nothing was shown to the participant. Moreover, this zone is neutral in terms or arousal and hedonic value, so it can be seen as a non-decision point or a quiet or resting-point.

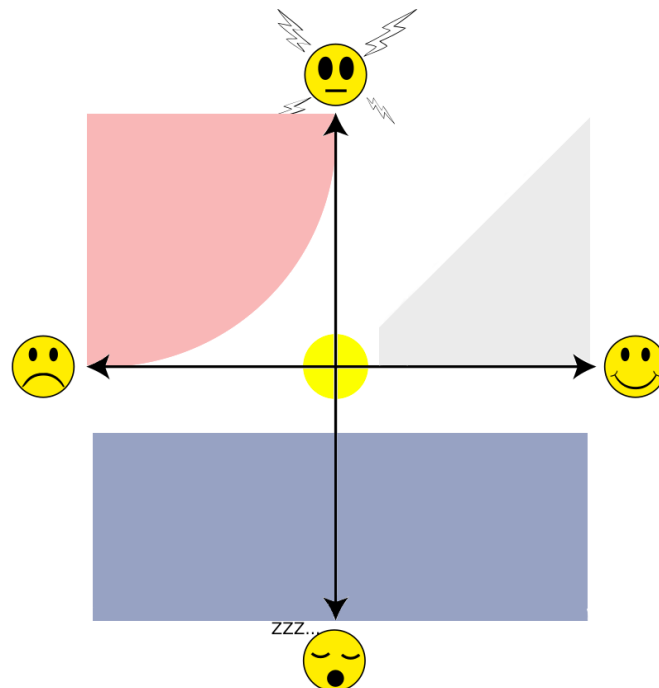


Illustration 2: Zones found on the valence-arousal space with SYM.

Regarding the zones of the valence-arousal discriminated, some remarks can be formulated. Firstly, the abscissa seems to act as a frontier of reliance for the participants; the non-commitment zone implies a lack of interest towards the broadcasted content, but the acceptance and rejection zones explicit a relationship with it – either in favor or not, depending on the horizon of

pertinence of the participant. Also, considering the results of the interviews conducted, the more “on the right” the spots are for a video extract, the more the participant was in favor of that extract. This could subdivide this area to reflect this statement, but it needs more data to be assured. Also, regarding the white space in-between the zones, they seem to act as a transition zone; for instance, a participant (Tyrande) went from the acceptance zone to the rejection one during the viewing. The detection of this transition could be exploited in a different context, where the contents of the videos – or in general of the experimental setting – can be modified in real-time.

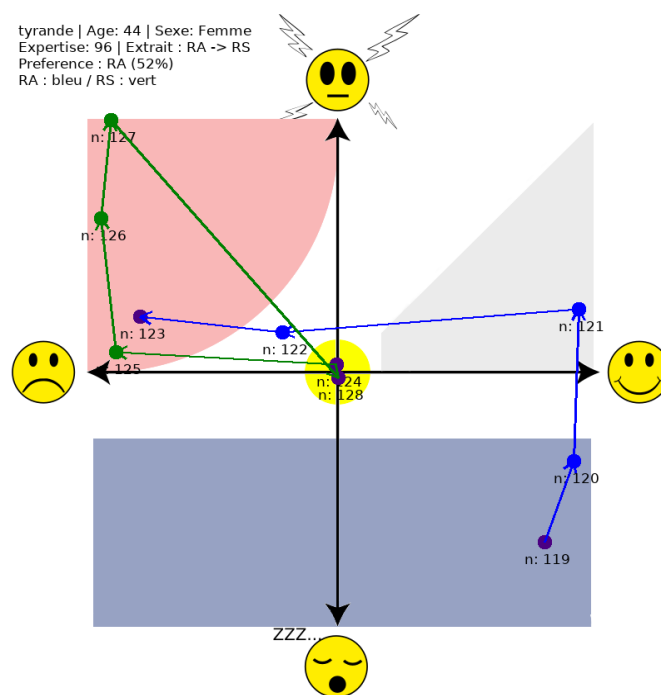


Illustration 3: Spots realized by Tyrande during the viewing. In blue: first extract, in green: second extract. The lines follow the order in which the spots were realized.

7 Discussion

By analyzing a restricted corpus of participants, but with an in-depth protocol on the sense-making process, the visualization of emotional dynamics has been possible, and lead to the identification of 4 zones describing the quality of the relation between the participant and the stimuli presented to him.

Still, the data gathered rely only on 17 participants. Following (Griffin, Hauser 1993), this represents a confidence mark of 80% in the results, which have been obtained through a detailed interview process within a methodological triangulated protocol. Yet, the zones of SYM have to be detailed and consolidated in further experimentations. In particular, the zone of rejection lies on only 1 participant; even if the interview gives proof of its existence, its bounds must be determined more precisely. As for the acceptance zone, our intuition is that the more the spots are on the right, the better the extract was received. This remark must be established with more solid proof. In general, these results must be supported in the future.

In general, this study showed the pertinence of SYM as a tool for the determination of emotions in an experimental setting. This gives hope for the determination of the quality of a relation to stimuli in a real time setting. Yet, these findings must be confronted to a fuller usage of SYM, including the semantic layer. The choice of a word during the indication process induces a perturbation of the participant's attention to the experimental setting, especially when testing audiovisual content²¹. However, it will give a more precise indication of the emotions, the insurance to distinguish mood and emotion, and opens a door to a semantical analysis, particularly useful in conditions where a post-experiment interview is not possible (for example during quantitative setups).

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²¹ The risk. especially, for the participant to fear to miss an important part of the content.

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