MOOD MAPPING

HCD Mood Map (U.S. Pat. No. 10,430,810): is a data visualization used to aid in the explanation and interpretation of multiple outputs used in psychological or neuroscientific applications in market research, to provide an overall summary of the tested experience.

When analyzing the neuroscientific and psychological data, meaningful visualization is paramount. The output is often very complex and extremely data heavy, the results and often the visualization of it can be very confusing. To address this problem, HCD aimed to alleviate this struggle through the development of a simple data visualization to clearly and accurately represent HCD's psycho-physiological approach to measuring emotional response.

The Gold Standard

By incorporating psycho-physiological measures to understand participants' visceral responses, more insight can be gained into a product, brand, context, or concept. The three main neurophysiological measures that are strong indicators of specific emotions include:

Heartrate/Heartrate Variability

Skin Conductance

Facial Electromyography

These measures have direct correlations to what is being measured, thus creating minimal noise when collecting data. Heartrate, for example, measures focused attention. This is a 1:1 measurement, where many brain scan data can be clouded by crosstalk due to other mechanisms occurring in the brain; the sheer magnitude of items being processed simultaneously can make it difficult to identify a specific signal among a myriad of noise. Eye tracking is also frequently paired with these measures to help determine visual attention to contextualize the information being measured.

These psycho-physiological tools have been identified as reliable measures of emotional response elicited during exposure to an ad or product experience:

Heartrate = Focused Attention

Heartrate Variability = Cognition/Relaxation

Skin Conductance = Arousal

Facial Electromyography = Emotional Valence

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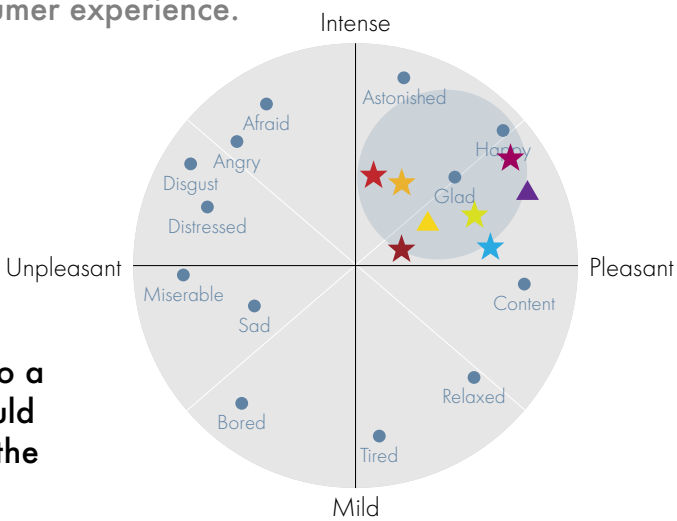
Psycho-physiological tools can be extremely useful for measuring emotional response, but its data output can quickly become overwhelming and difficult to understand, thus inhibiting the ability to make clear conclusions. To condense the information collected in an effective way, HCD reviewed theories of emotion to determine the best means of portraying emotional outputs and developed a Multi-Dimensional Mood Map. The objective of this data visualization is to easily compare test stimuli and benchmarks beyond traditional market research output, such as from hedonics and liking tests. HCD's Mood Map is used to better understand consumers' emotional experiences with products, concepts, messaging, etc. Mapped results of emotional target areas and internal and/or external benchmarks can be compared to experimental stimuli (test products experiences) for clear and actionable performance results and business decisions. Furthermore, by comparing these outputs, this visualization can help to identify and ensure brand harmony, or sensorial cohesion, between product experiences and marketing mix (branding, advertising, packaging, etc.).

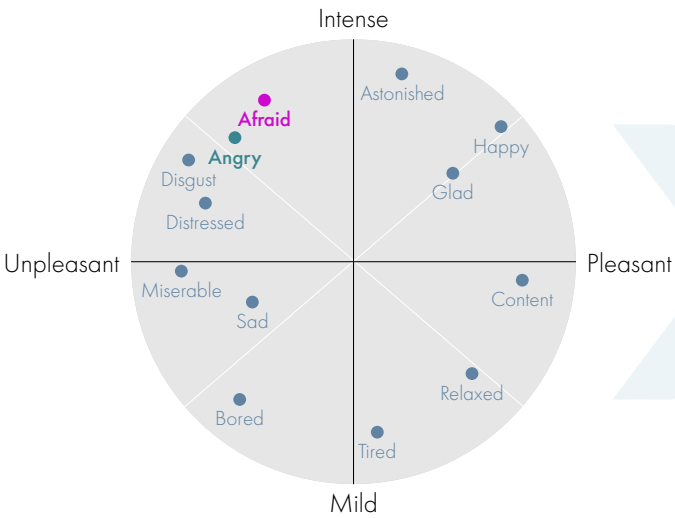
Neuro-psychological (biometric) and cognitive (survey) data should be integrated together instead of compared. By marrying the two results rather than replacing responses, HCD can provide a more complete understanding of the consumer experience.

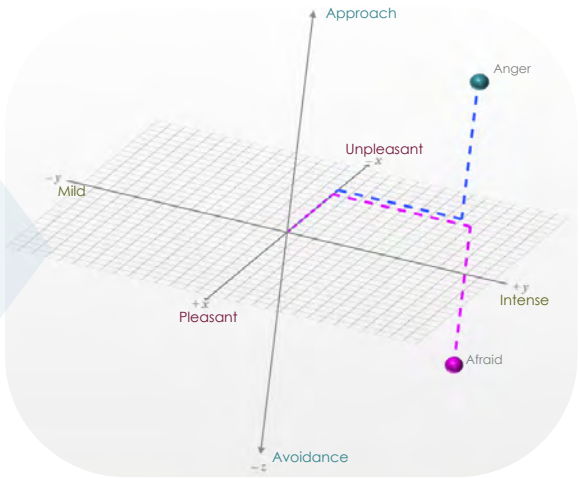
Visualizations, such as emotional maps, are often created in market research to help clients compare samples or benchmarks to the emotional target objective. When using a psycho-physiological approach, skin conductance expresses how mild or intense the stimuli is (arousal), while the facial electromyography depicts the level of pleasantness experienced (emotional valence). During exposure to a stimulus, if the participant feels more pleasant, it would be reflected on the map by being depicted towards the right. For example, on the multi-dimensional mood map, the more intense an experience feels, the output would go up. Experiences that are both more pleasant and more arousing are described as "happy," while experiences that are more unpleasant and less arousing are described as "boring" or "sad."



Shaded Area = Emotional Target
Test Samples = ★
Benchmarks = ▲

Different test samples or benchmarks can be compared based on the levels of intensity and pleasantness. For example, an unpleasant and intense experience can be described as "angry," while a mild and pleasant experience can be called "relaxed." However, the 2D model is limited because of the different descriptors possible within one experience. An unpleasant and intense experience can be described as either "afraid" or "angry," even though we know that those are two very different experiences. To differentiate those descriptors, we include a third measure to determine the most accurate emotional experience. The third dimension of approach or avoidance provides the extra context needed to be able to distinguish the difference between fearful, where we avoid or retreat, compared to being angry, where we approach or confront.

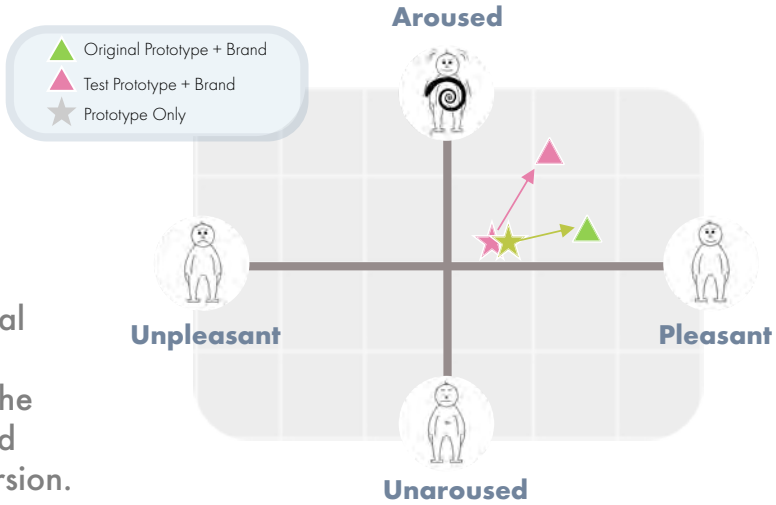




While this approach is useful in breaking apart attributes that may need more context, the mood map is also useful for comparing the emotional experience of products or ads. The ability to clearly visualize this data together allows marketers and product developers to identify opportunities and potential pitfalls of products and ads perceived by consumers. Potentially failures, or mismatching between marketing mix and product (brand harmony), can be avoided and adjusted. Catering to the expectations of the consumer promotes an overall synergistic experience.

HCD Mood Map **LITE**

If budget restrictions are a concern, Self-Assessment Manikin (SAM) can be integrated in lieu of psycho-physiological measures. SAM, a pictorial assessment leveraging the PAD emotional state model (Bradley & Lang, 1994), uses three numerical dimensions: pleasantness, arousal and dominance. These three dimensions mirror the physiological measures of the original Mood Map, making it possible to create a LITE version.



It should be noted that if stimuli are more similar, there is less likely a difference will be shown on the Mood Map LITE. The psycho-physiological data is more differentiating and sensitive compared to the Mood Map LITE; however, outputs will be very similar because the two types of visualizations are correlated. Since SAM is self-reported data, a much larger sample size is needed in order to get strong results. Fortunately, this version can be completed virtually as opposed to an in-person research experience.

Take-away

Mood mapping technology helps to clearly demonstrate the consumer emotional experience for communications, concepts, brands and products. The addition of the third dimension provides a higher level of precision in differentiating where your specific output stands. With this

visualization, the Mood Map delivers actionable information on a discrete, isolated moment to determine its level of emotional and perceptual congruency—a key crucial factor needed for brand harmony success.

IF YOU HAVE ANY ADDITIONAL QUESTIONS ABOUT HOW THE HCD MOOD MAP (U.S. PAT. NO. 10,430,810) MAY BENEFIT YOUR RESEARCH, PLEASE CONTACT INFO@HCDI.NET OR CALL 908.788.9393.