



# Whitepaper Getting started with Neuromarketing



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**ST&T Research**

## Introduction

# Explore the customer's brain

The most valuable marketing insights are hidden in your customer's subconscious mind.

People oftentimes just don't know why they do what they do. Traditional marketing research such as questionnaires, interviews and focus groups are therefore sometimes biased – if not downright deceptive. Techniques such as eye tracking and EEG tap the information straight from the subconscious of your customer.

Neuromarketing research provides profit increasing insights for your website, advertising, products, shelves and overall communication. Effective neuromarketing research begins with asking the right research question.

Let's be honest here: neuromarketing is not the perfect solution for any conceivable research question. But, if used appropriately, neuromarketing brings to the surface insights were deeply buried in the customer's subconscious.

In this whitepaper, you will discover how to effectively utilize neuromarketing research methods.

You will discover:

<b>1. Neuromarketing Research Techniques</b>	Page 6
<b>2. Overview &amp; Explanation EEG Metrics</b>	Page 7
<b>3. Real World Examples</b>	
<b>3.1. Advertising</b>	Page 8
<b>3.2. Online Usability</b>	Page 10
<b>3.3. Retail</b>	Page 12
<b>4. Five Reasons <b>not</b> to use neuromarketing</b>	Page 14
<b>5. Start with Neuromarketing</b>	Page 16

TYPICAL NEUROMARKETING QUESTION

**“How can we increase our online conversion?”**



TYPICAL NEUROMARKETING QUESTION

**“Does this ad compel the customer to buy?”**



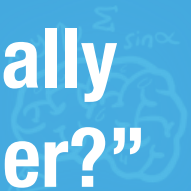
TYPICAL NEUROMARKETING QUESTION

**“Does my packaging stand out in the shelf?”**



TYPICAL NEUROMARKETING QUESTION

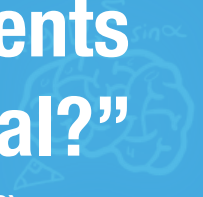
**“Is this retail shelf designed logically for the customer?”**



TYPICAL NEUROMARKETING QUESTION

**“What are the most persuasive elements of our commercial?”**

**(And how can we use them even better?)**



TYPICAL NEUROMARKETING QUESTION

**“How does our customer experience the flow of our website?”**

TYPICAL NEUROMARKETING QUESTION

**“How do our customer’s come to their choices?”**

TYPICAL  
NEUROMARKETING  
QUESTION

**“Which variation of this ad will have the most impact on the market?”**

**“What emotion does the customer feel when interacting with our product?”**

TYPICAL  
NEUROMARKETING  
QUESTION

TYPICAL  
NEUROMARKETING  
QUESTION

**“Welke kernboodschap spreekt de klant het meeste aan?”**

TYPICAL  
NEUROMARKETING  
QUESTION

**“Wat is het beste format voor het prijskaartje in de winkel?”**

# 1. Neuromarketing

## Onderzoekstechnieken



### EEG

**Measures** the emotional and motivational processes in the brain.

**Used for** selecting and optimizing effective ads, websites, products and stores.



### EYE TRACKING

**Measures** where the customer is looking at.

**Used for** determining gaze patterns and which elements are missing attention.



### BIOMETRICS

**Measures** emotional intensity through heart rate, skin conductance and pupil size.

**Used for** enriching EEG data.



### IMPLICIT ASSOCIATIONS

**Measures** the strength between two thoughts (for example, a brand and a characteristic as “healthy”).

**Used for** quantifying brand identity and assets.



### EMOTION RECOGNITION

**Measures** emotions and facial micro-expressions.

**Used for** mapping emotional responses, often combined with EEG data.



### BEHAVIORAL EXPERIMENTS

**Measures** observable behaviour (conversion, signup, purchase, click-through, etc.).

**Used for** testing message variations on effectiveness.

## 2. Overview & Explanation

# EEG Metrics

### EEG measures the customer's specific emotions and motivational patterns

EEG offers the gateway to the brain. This makes EEG a fundamental technique to almost any neuro-marketing study. A brain recording with EEG allows you to measure the subconscious responses to an advertisement, product or website directly from the brain.

Based on raw brain data, we calculate four specific EEG metrics that together shape the customer's experience: Desire, Engagement, Workload and Confusion. These metrics are extensively and scientifically validated, both inside and outside the lab.



### DESIRE

The person experiences positive emotion and is motivated to approach. This metric strongly correlates with buying behaviour, entertainment preferences and even partner choice.

Ohme, R., Reykowska, D., Wiener, D., & Choromanska, A. (2010). Application of frontal EEG asymmetry to advertising research. *Journal of Economic Psychology*, 31(5), 785-793.



### ENGAGEMENT

The person focuses attention. This is usually a sign of personal relevance. Engagement correlates with memory formation and is a solid measure of memorability.

Berka, C., Levendowski, D. J., Lumicao, M. N., Yau, A., Davis, G., Zivkovic, V. T., ... & Craven, P. L. (2007). EEG correlates of task engagement and mental workload in vigilance, learning, and memory tasks. *Aviation, space, and environmental medicine*, 78(5), B231-B244.



### WORKLOAD

The person has to make cognitive effort to process information or make a choice. When the workload is above average, this can be a sign of stress or complicated information.

Tremoulet, P., Craven, P., Regli, S., Wilcox, S., Barton, J., Stibler, K., ... & Clark, M. (2009). Workload-based assessment of a user interface design. *Digital Human Modeling*, 333-342.



### CONFUSION

Confusion occurs when something unexpected happens, a process is inconvenient or the person is suddenly distracted.

Johnson, R. R., Popovic, D. P., Olmstead, R. E., Stikic, M., Levendowski, D. J., & Berka, C. (2011). Drowsiness/alertness algorithm development and validation using synchronized EEG and cognitive performance to individualize a generalized model. *Biological psychology*, 87(2), 241-250.

# 3.1. Real World EEG Example

## Advertising

### Sample Case

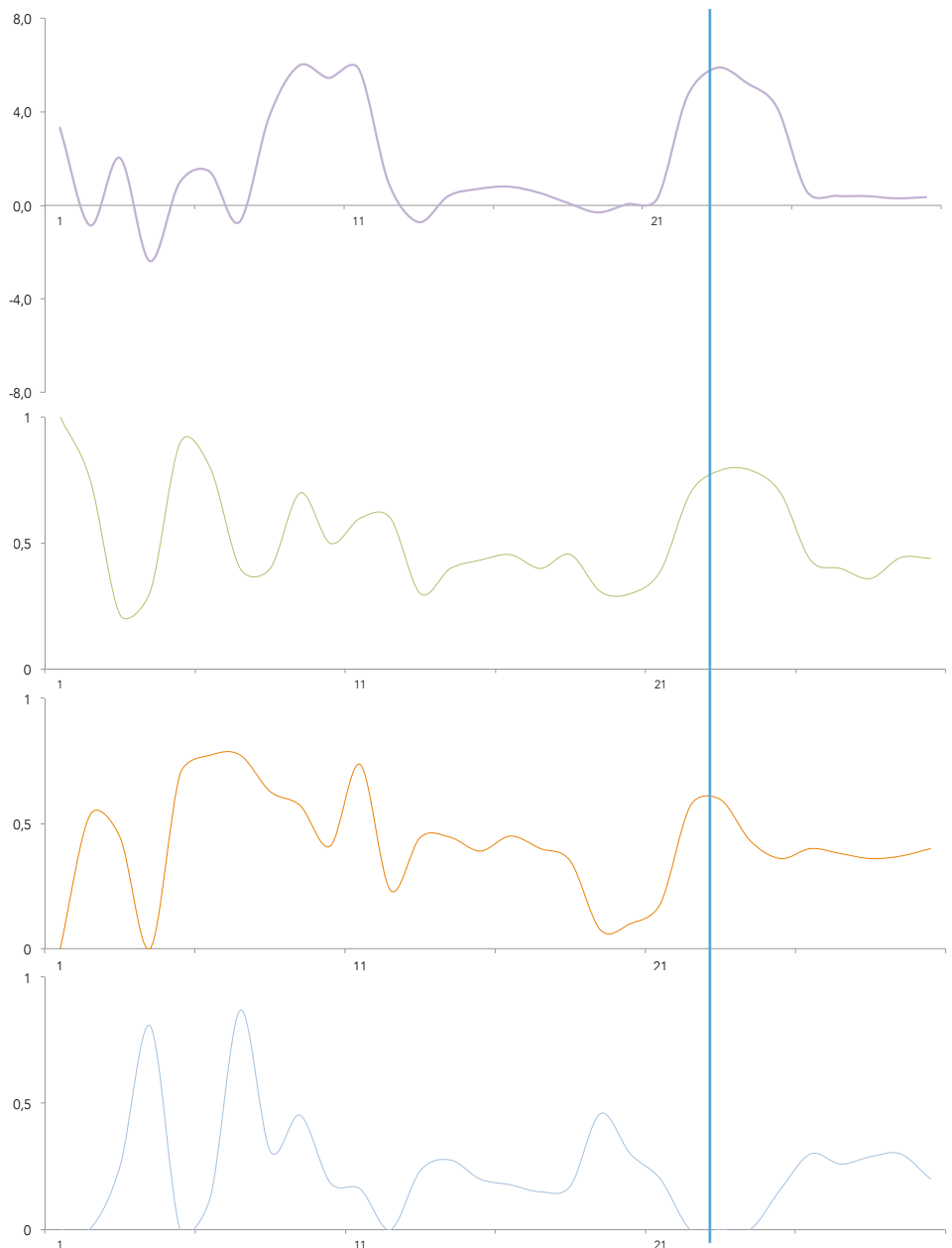
This is an example of an EEG measurement at the famous Heineken Walk in Fridge commercial, available at <https://www.youtube.com/watch?v=yIutgtzwhAc>. The graph displays real-time brain activity from second to second while subjects watched the ad.



### Desire

The extent to which the ad evokes desire and action. This predicts subsequent choice.

Above 0 is positive, below 0 is negative.



### Engagement

The extent to which advertising attract attention and is personally relevant. This predicts ad recall.

### Workload

The extent to which advertisement forces you to think. An optimal workload is 0.5.

### Confusion

Shows unexpected and confusing moments. This is rarely, desirable unless intended by the advertiser.

Timeline

00:22





*Sounds great and all, but what kind of practical insights does EEG dig up?*

Brain activity shows exactly which parts of the advertisement are effective and which parts may benefit from further tweaks. You can see which elements are fun, attention grabbing, complicated and confusing.

Below are two typical example insights for advertising.

## Example Insight 1

### **The opening kills attention**

The commercial's opening is moderately weak. It is characterized by a decrease in positive emotion, lowered attention and a peak in distraction.

The causing factors seem to be the strong background music and the audible conversations of background characters. This makes the dialog between the main characters difficult to follow (which causes the confusion peak).



### **Advice: reduce the volume of the background noises**

The problem of the weak start is easy to solve. Lower the volume of background sounds and/or increase the volume of the primary dialog. Also, the intro includes a mid-shot that goes into a wide-shot. If close-up material is available, we recommend providing a close-up shot between the mid and wide shot. Close-ups attracts the most attention, which can be useful for this commercial moment.

## Example Insight 2

### **The final joke evokes desire**

The moment the clue surfaces (00:21:00) increases positive emotion and engagement. People like the joke.

### **Advice: Use this moment**

The shot of the clue is the most memorable moment of the commercial. This makes it very suitable as a tag-on commercial and further communication.

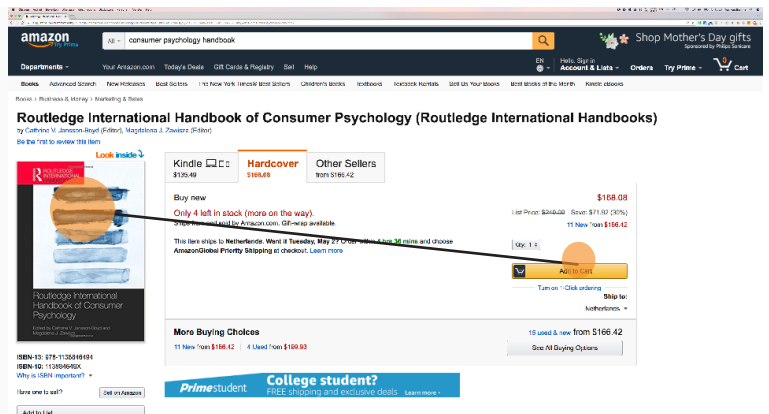


# 3.2. Real World EEG Example

## Online Usability

### Sample Case

This is an example of an EEG measurement to test Amazon.com's online usability. The customer was asked to order a book.



### Desire

The extent to which the content evokes action and consumption. This predicts buying behavior.

Above 0 is positive, below 0 is negative.

### Engagement

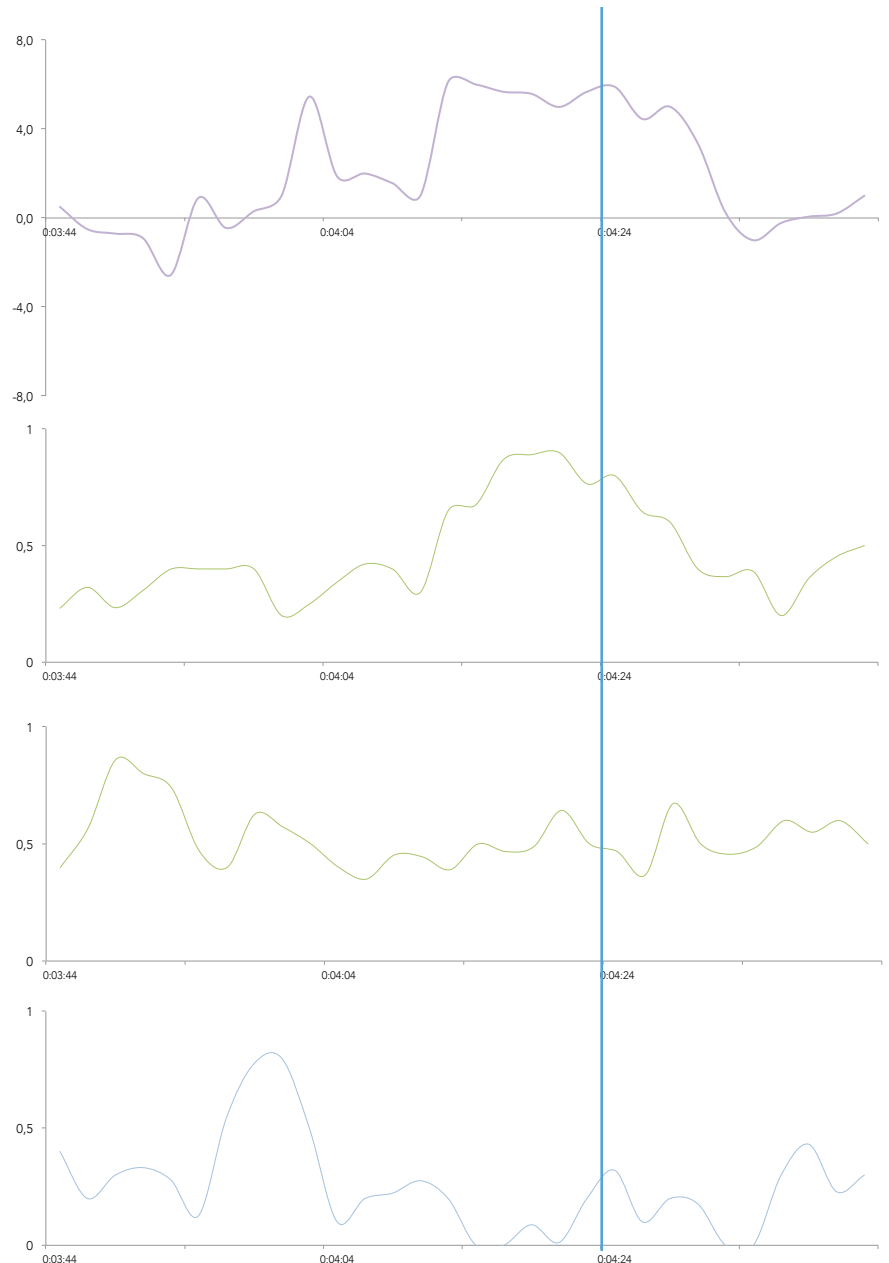
The extent to which content or interface holds attention and is personally relevant.

### Workload

The degree to which the interface is easy to understand. An optimal workload is 0.5.

### Confusion

Shows unexpected and confusing moments. Confusion is detrimental to a good usability flow.



Timeline

0:04:24



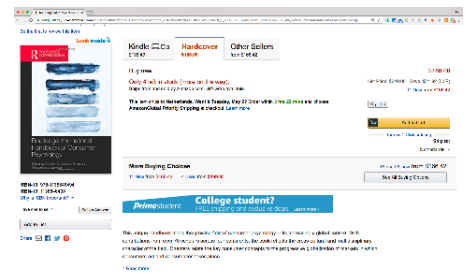
Sounds great and all, but what kind of practical insights does EEG dig up?

While the user interacts with the different elements of the user interface, the EEG records exactly which elements are attractive, attention grabbing, complicated and confusing. The metrics 'Workload' and 'Confusion' specifically highlight the weak spots of the interface. Below are two typical examples of online usability insights.

## Example Insight 1

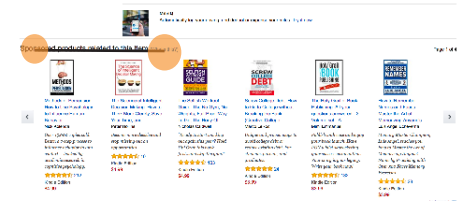
### “Sponsored Products” evokes an aversive response

The new block of “Sponsored Products” raises a negative response on multiple metrics (see 0:03:46). When the customer gazes at the block, we see Desire dip into a negativity. The concept seems difficult to understand, as shown by the high Workload and Confusion peak.



### Advice: Lose the word ‘sponsored’

It doesn't fit well with the expectations of Amazon's. We recommend using more conventional copywriting as “Similar Products” or “Recommended Products”.



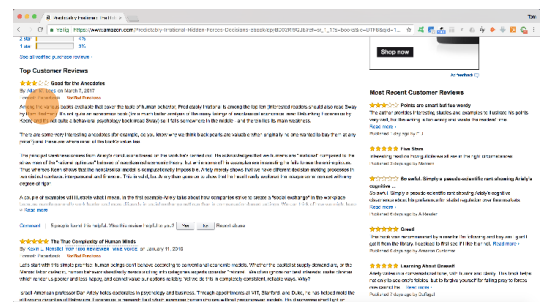
## Example Insight 2

### Reviews evoke positive emotion

When the customer reads the reviews, the EEG registers a peak in desire and attention (from 0:04:07). Interestingly, this applies to both positive and negative reviews.

### Advice: use this to your advantage

The review section is by far the most powerful part of the entire flow. It is interesting to test what will happen when review are featured more prominently. Both in the form of design adjustments (using larger stars in the interface) and content position (reviews on top of the page). Amazon is already taking this to their advantage by putting emphasis on negative reviews.

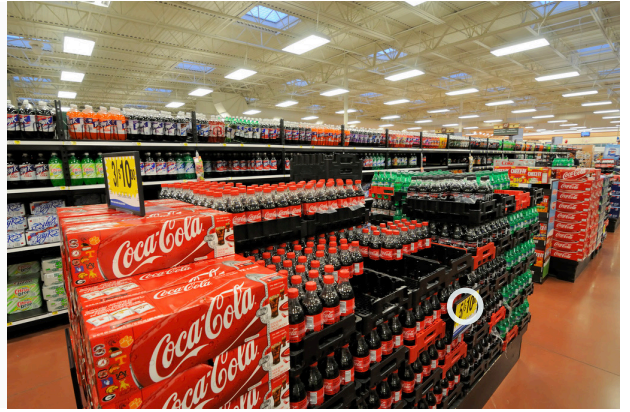


# 3.3. Real World EEG Example

## Retail

### Sample Case

This is an example of an EEG recording that investigates the experience of a physical store. By combining mobile Eye Tracking, HD video and EEG, we can explore the entire experience of a shopping trip.



### Desire

The extent to which the store or product stimulates action and consumption. This predicts buying behaviour. Above 0 is positive, below 0 is negative.

### Engagement

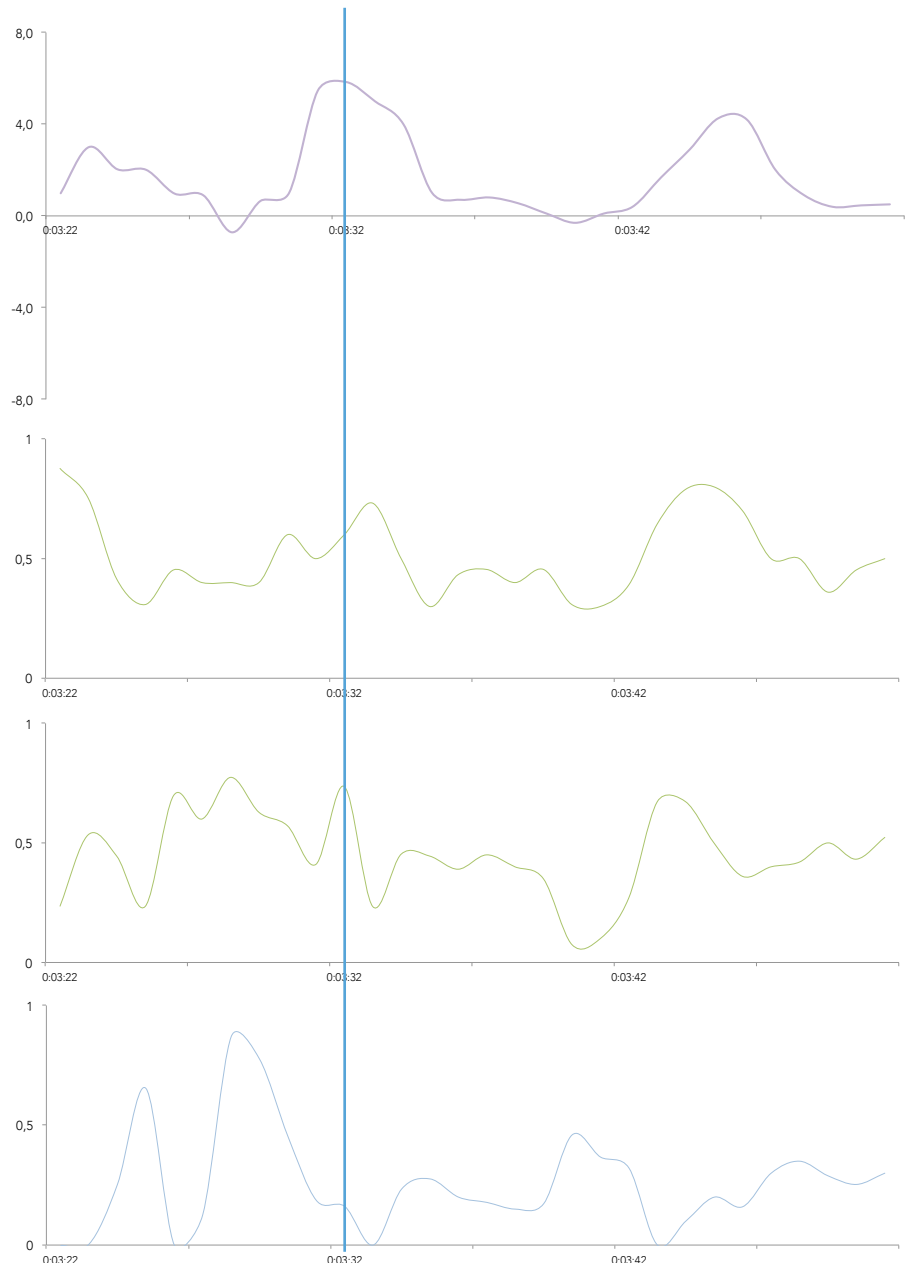
The extent to which the environment and products are perceived to be personally relevant.

### Workload

The amount of stress and effort. An optimal workload is 0.5.

### Verwarring

Shows unexpected and confusing moments. This is a sign that something in the shop is experienced as illogical.



Timeline

0:03:33



*Sounds great and all, but what kind of practical insights does EEG dig up?*

In an exploratory shopping or packaging study, EEG provides insight into the strongest and weakest elements of a store. EEG can also be used to test different variations of a store shelf or product packaging. Below are two typical example insights for Store & Packaging.

## Example Insight 1

### **Soft drinks are experienced as chaotic**

The soda aisle layout is difficult for the visitor to process (0:03:22). This is resembled by the high Workload and Confusion.

### **Advice: Horizontal assortment, based on color**

We recommend reordering the soda in such a way that the categories are distributed horizontally. An order in colour from light to dark is easy to process:



Water

Clear drinks

Light Colors (e.g.,  
Orange Juice)

Dark colors (e.g.,  
Iced Tea)

Black colors (e.g.,  
Coke)

## Example Insight 2

### **The sale sign is tempting, but difficult to process**

The soda sale sign generates longing and attention, but is also difficult to process (0:03:42).

### **Advice: Image to the left and the text to the right**

This makes it easier to process. Separate the small letters from the headline ("4 for 10") so people can easily understand the sale.



## 4. Five Reasons Not to Use Neuromarketing

Neuromarketing techniques like Eye Tracking and EEG enable you to measure customers' pure and automatic response to an advertisement, product or website. This unearths actionable insights and opportunities for optimization.

However, do not blindly dive into the hype. Neuromarketing is not the best method for each and every research question. In this chapter, we outline five common reasons why you should not use neuromarketing.

### #1

#### **You haven't specified or concretized your research question yet**

Neuromarketing is new and innovative. A dangerous combination. It's tempting to simply connect some customers to a brain scanner in the hope that something interesting pops up. Such open-ended research, however, often results in a deception. A vague research question provides vague insights.

Therefore, consider which question you want to answer with neuromarketing. There are two possibilities. On the one hand, neuromarketing is widely used to identify the most effective advertisement, product, store or website among a bunch of variations. On the other hand, neuromarketing can also be used to pinpoint which bits and pieces work extremely persuasively, or are just confusing.

Of course we can help you with concretizing or specifying your question

### #2

#### **You have never done market research**

Within the entire range of methods in market research, neuromarketing is deeply rooted in science. The insights of neuromarketing are clear and concrete, but the underlying methods and data are relatively complex. Raw data requires complex analysis, ideally overseen by a PhD-level researcher. Only then will valid and actionable insights come to fruition.

Just as Rolls Royce is rarely someone's first car, neuromarketing is not an obvious entry in market research. It is intended for companies that already have experience with market research. Only when there is a foundation in market research, it is useful to turn to neuromarketing to gain insight into further sales-enhancing marketing techniques.

## #3

### **You do not have enough research budget**

Neuromarketing uses advanced equipment and software to measure brain activity, turn eye movements into laws of attention, read facial expressions and record autonomous biological processes - often all at once. It is essential to underline research as a serious budgetary aim.

Neuromarketing research is currently not that expensive as it used to be. An in-store study with portable Eye Tracking and EEG is now possible from 18,000, -. Studies in a lab environment are already possible from 8,000, due to the simpler setup and data analysis. Neuromarketing is within reach of much more companies than ever before.

## #4

### **You have ethical concerns involving brain research in marketing**

Most methods within neuromarketing originate from the medical world. Originally created to cure people, these techniques are now being used to make marketing more seductive.

Some people are against using eye tracking, EEG and Biometrics. The subconscious consumer would become defenceless to marketers.

In reality, that's not true at all. Neuromarketing is at its core not that different from traditional market research, but it is simply more effective. Any objection to neuromarketing is equally valid against traditional marketing. For more information about ethics in neuromarketing, we recommend the book *Ethics and Neuromarketing* by Adrew R. Thomas.

## #5

### **Your product or service is being purchased for purely rational reasons**

Neuromarketing looks at the auto-responses in the brain. Traditional market research is looking at consciousness statements.

Usually, the neuromarketing method predicts how the customer will behave in the real world – real purchases – but not always. In the case of so-called 'high-involvement' products, traditional market research appears to have the most predictive value. This concerns the 5% of products that people purchase rationally and thoughtfully. For instance: buying a house, accountancy software or medicines. However, this is a small minority of products.

# Getting Started with Neuromarketing

The results in this report provide a little insight in the world of neuromarketing. Combining gaze patterns with brain activity exposes the strengths and weaknesses of your marketing. The result: actionable insights into what makes your marketing better.

In each and every research product we embark an, we set out with a sufficient number of respondents to provide a reliable answer to your research question.

Do you want to analyse the strengths and weaknesses of your advertisement, retail environment or website? Or do you have a specific research question? Contact Tim from ST&T Research. In an exploratory interview, we assess whether or not neuromarketing research can make a difference in your marketing.

Call now, or send us an email

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