Cognitextual:
A Neuroanalytic
Study of Contextual
Ad Effectiveness

Contents

gumgum The Leader In Contextual Relevance

CONTEXT MATTERS MOST

For years, digital advertising has promised brands a simple, oft-repeated value proposition: to deliver the right ad, to the right person, at the right time.

Whereas traditional television and print media had previously restricted advertisers by forcing them to show the same ad to every consumer, the rise of programmatic advertising has empowered brands to match each individual impression to the user's tastes and behavior in any given moment. Central to this effort has been the application of huge troves of third-party user data, information that brands acquire from outside sources to better understand a user's demographic data, purchase history and online browsing footprint.

But now, third-party data is in decline. The European Union's General Data Protection Regulation and The California Consumer Privacy Act have placed meaningful restrictions on how brands can collect and share this information, and major browsers like Google Chrome are sunsetting the cookies that have long fueled the third-party ecosystem.

How, then, can advertisers continue to pursue digital's tantalizing promise of the right ad, for the right person, at the right time?

The answer lies in the text, photos and videos that are already on the user's page. After all, if someone is viewing a photo gallery of Hawaiian beaches, it's a good bet they may be interested in seeing a hotel offer—even if you don't have third-party data that tells you they've been browsing airfares.

We call this sort of information contextual data, since it provides crucial insights into the context in which brands advertise. When used properly, it's just as

Intro

powerful as third-party data, if not more so.

With GumGum's proprietary computer vision technology, we're able to understand the text, videos and images that appear on millions of websites all over the world. Through these tools, we deliver contextually relevant advertising that empowers brands to, for instance, advertise athletic wear to a sports fan right as they're reading an article about their favorite team.

In order to prove the immense effectiveness of contextual advertising in a post-third-party world, we teamed up with the neuroanalytics company SPARK Neuro to study the way contextual relevance impacted consumers' emotion and attention as they looked at ads. What we found is that more relevant ads consistently drove higher neural engagement, better advertising recall and greater purchase intent than less relevant ads.

This guide is both a supplement and a review of our study, offering deep insight into the data points we uncovered with SPARK Neuro and a whole host of case studies designed to help marketers understand and harness the best kept secret in digital advertising.

If this guide piques your interest, visit our website at https://gumgum.com/ to learn more, or read up on how we handle user data at https://gumgum.com/terms-and-policies.

GUMGUM + SPARK NEURO: HOW WE CAME TOGETHER

With advertisers increasingly turning to contextual targeting in the post-third-party era, we at GumGum wanted to prove once and for all what we've known for over a decade: that contextually relevant messaging is a key driver of advertising success.

That's why we reached out to SPARK Neuro, a neuroanalytics company that studies brain activity, eye-movement and physiological response to better understand how consumers relate to advertising on an emotional and attention level.

Together, we designed an experiment to expose 50 participants to six different articles and track how consumers reacted to the ads on the page. In addition to measuring the brain's electrical activity, facial movement and other physiological responses, we used a survey to learn which ads consumers remembered best.

The end result? A detailed, informative study that definitively proves the impact of contextual relevance on ad performance.

"When GumGum approached us about this project, we knew it was exactly the sort of inquiry our company exists to dive into. We've long been aware of GumGum's leadership in the contextual relevance space, and we leapt at the opportunity to explore the different ways relevance influences how people consume digital advertising. We can't wait to work with these folks again." -- TK TK, tk of tk, SPARK Neuro

"SPARK Neuro's suite of physiological tracking technologies is like a lie-detector test on steroids. We're extremely grateful for the expertise they demonstrated throughout our partnership, which produced a detailed, eye-opening study we're all very proud of." -- TK TK, tk of tk, GumGum
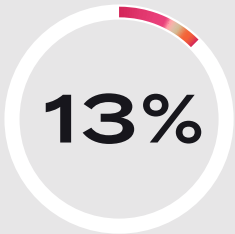
gumgum

GumGum in collaboration with Spark Neuro

ENGAGING, MEMORABLE, EFFECTIVE ADS

Contextual ads are outperforming non-contextual ads in these three key areas

Higher Contextual Relevance = Higher Neural Engagement

With increasing contextual relevance from low to high, neural engagement increased by 13%

13%

High Contextually Relevant Ads Are More Memorable

The memorability of high contextually relevant ads is 1.6X that of a low contextually relevant ad

1.6X

Key findings

Ads Can Be More Engaging Than Article Content

Ads with high contextual relevance proved to be 10% more engaging than the article content

10%

Banner Ads Are the Most Engaging But Hard to Remember

Banner ads are 20% more engaging than In-Screen ads, but In-Screen ads prompt higher memory coding

20%

Ads Need to Be Contextually Relevant to Drive Sales

Across all 18 brands, brands displayed within a high context ad garnered higher purchasing intent

$$$

It wasn't all that long ago that context was a concept foreign to most marketers: As recently as mid-century, television viewers might be as likely to see a Marlboro Man ad while watching "I Love Lucy" as they would during "Gunsmoke." Yet by the late 1950s, researchers were beginning to explore the idea that the environment in which consumers viewed an ad might matter nearly as much as the content of the ad itself.

Sixty years later, marketers are still learning about the role that context plays in how ads are perceived—and in the digital age, they're finding that it may be more important than ever.

"The new research clearly corroborates the premise that the context in which an advertisement is placed likely will influence consumers' perceptions of and response to the advertising," writes Horst Stipp of the Advertising Research Foundation in a recent article for the Journal of Advertising Research. "It confirms that the processes that generate such effects are complex."

The reasons why may be complicated, but the bottom line of contextual advertising is pretty simple: Ads that are contextually relevant are more engaging, more memorable and more likely to drive purchase intent than ones that aren't. GumGum recently partnered with neuroanalytics firm SPARK Neuro to test this notion and to explore the nuances of contextual advertising content and placement.

Participants were asked to read six articles in random order, while biometric sensors tracked their neural and physiological responses to the advertisements therein. Using devices such as EEG, facial coding and eye tracking, researchers measured participants' attention and emotional intensity toward a variety of ad formats and contexts, from high-context in-screen ads to low-context banners. Combined with subsequent surveys and interviews, the results offered a glimpse into how engaging and memorable each of the ads were.

A few key findings: There was a correlation between an advertisement's degree of contextuality and the engagement the ad elicited. Simply put, the more contextual the ad, the more engaging it was. The same principle held true when testing how memorable an ad was, with high-context ads remembered an average of 10 times more than low- or medium-context ads. Banner ads proved to be the most attention-grabbing, while in-screen formats were most memorable. And across the 18 widely varied brands featured—from Acura to Target—the more highly contextual ads also resulted in greater purchase intent.

So we know that context can elevate an advertisement's engagement and effectiveness, but that begs the question: Why?
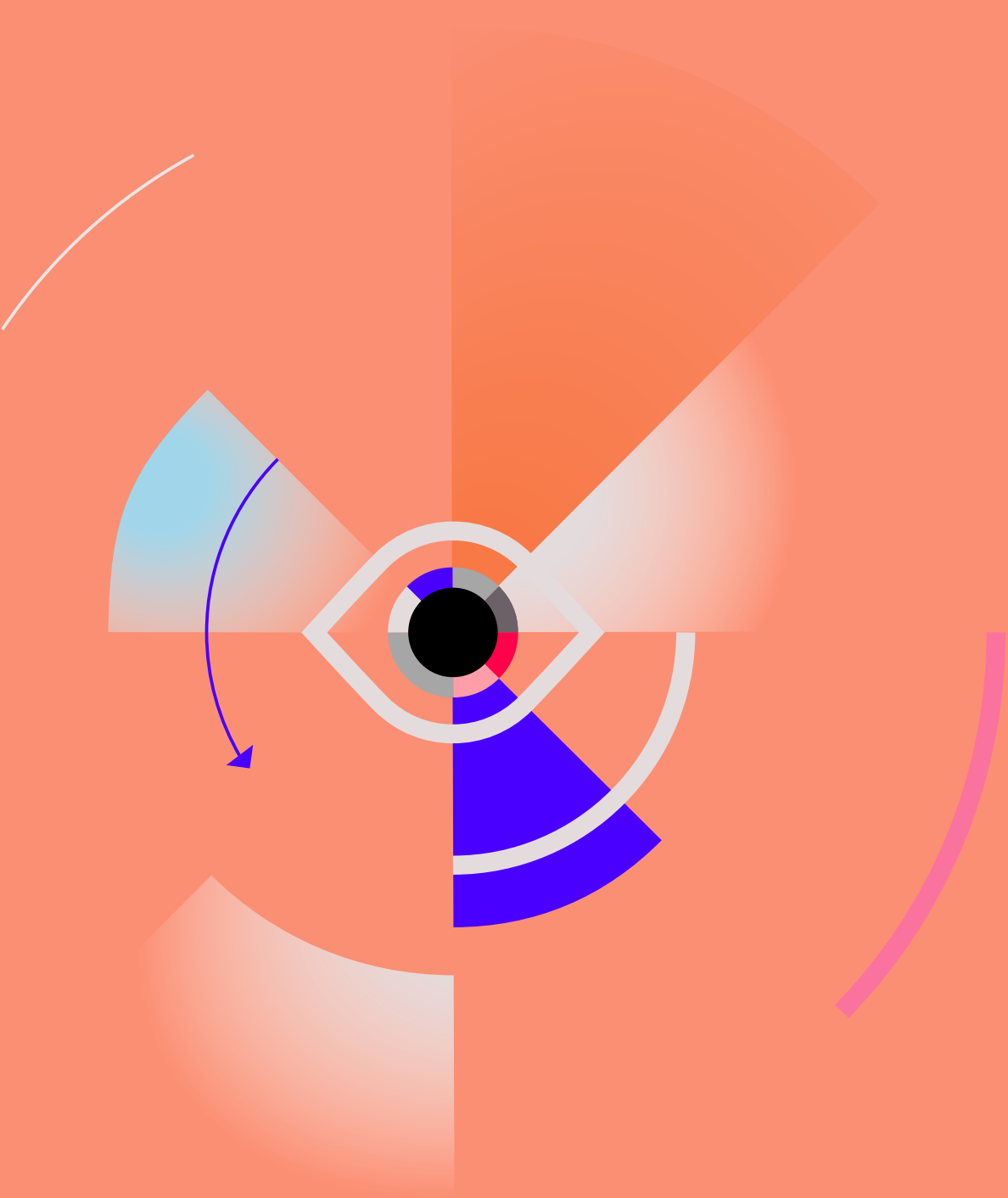
"In the attention-transfer process, other things being equal, an advertisement seen or heard in a context that a consumer pays more attention to more likely will be seen
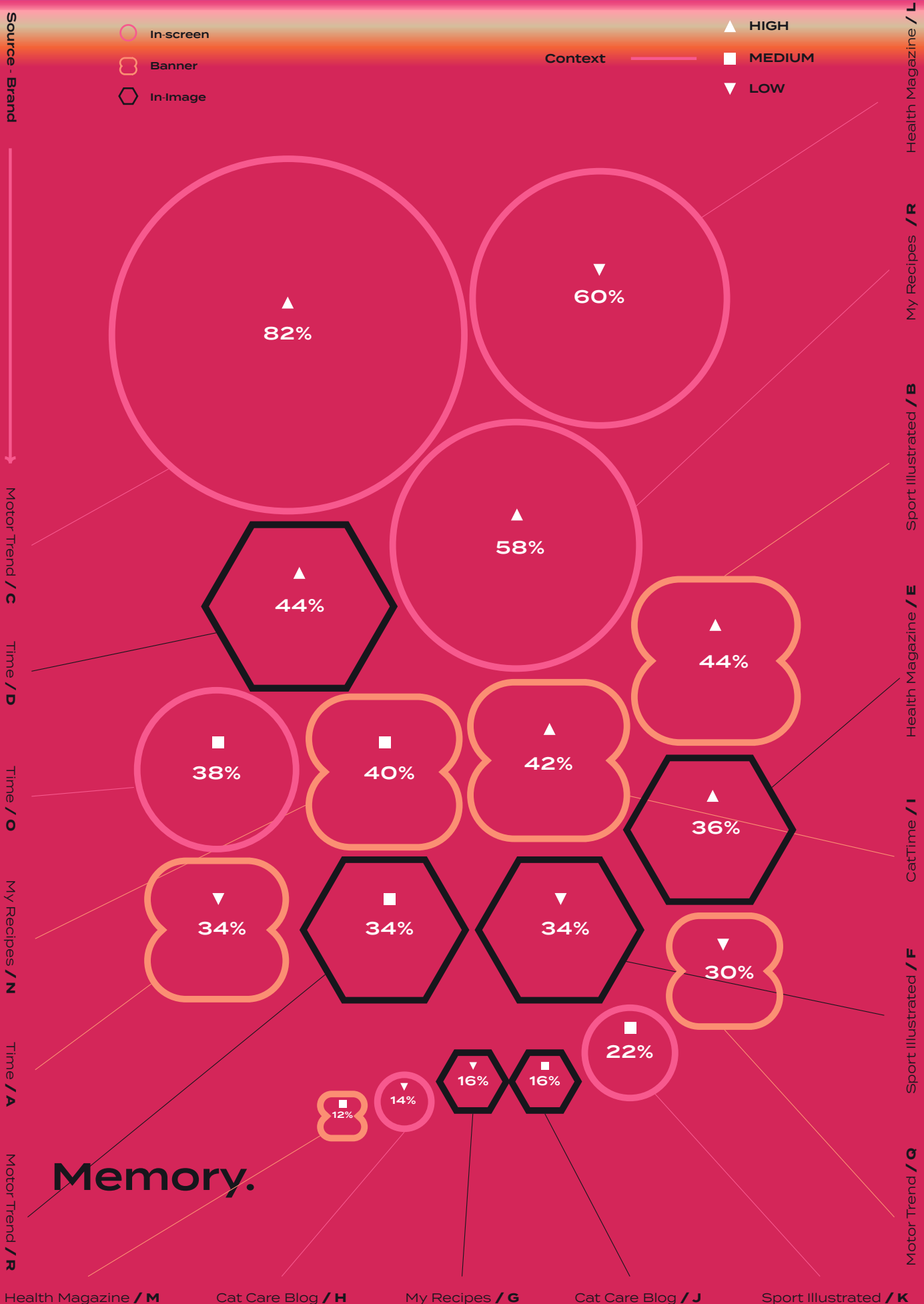
Why Contextual Ads Are More Engaging
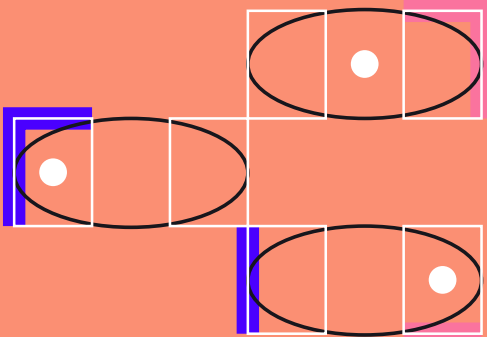
or heard," Stipp writes. "High correlations between attention to content and advertisement recall have been shown repeatedly."
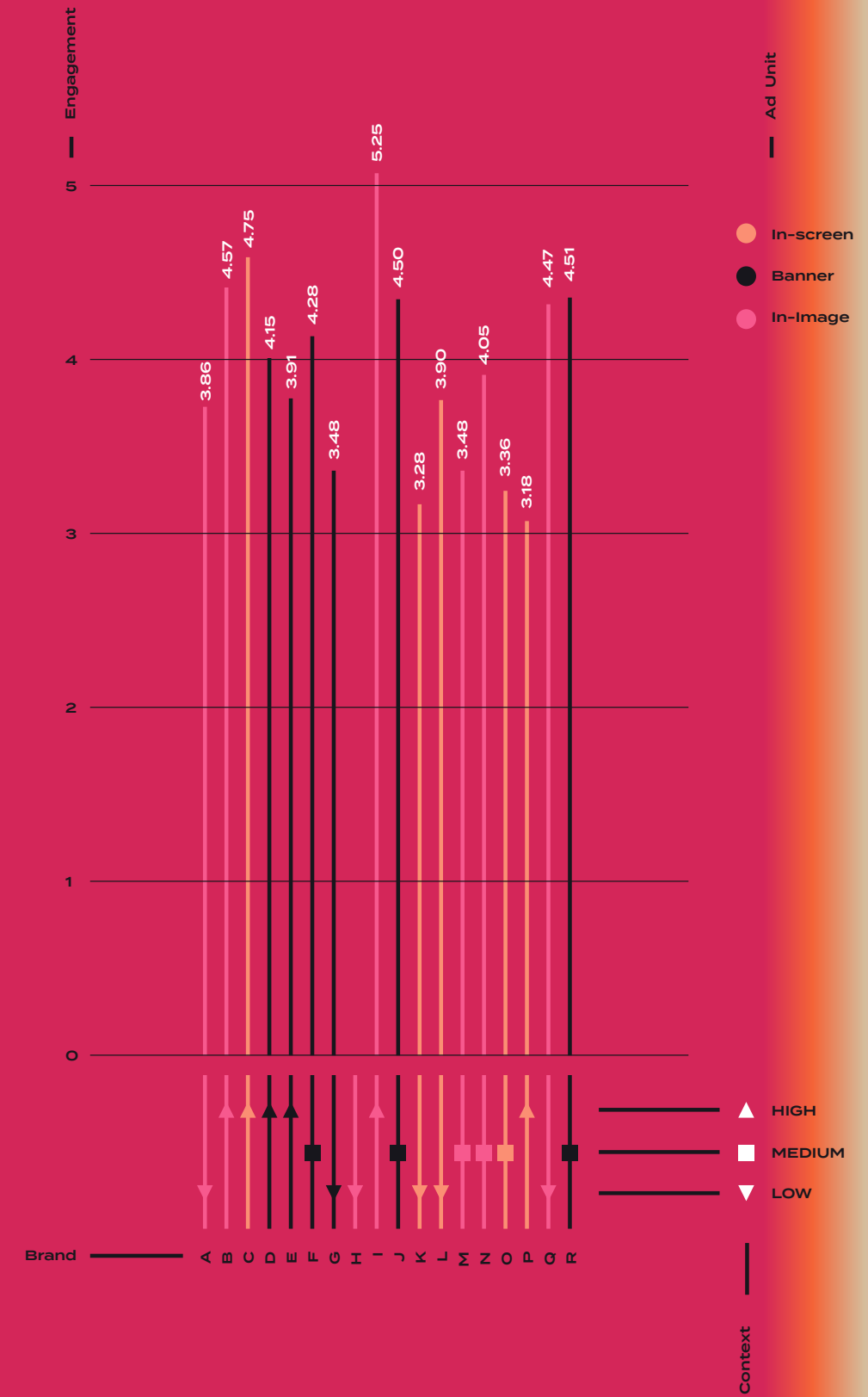
Yet content isn't the only context to consider: The media platform, device, time and even location where consumers view an ad can also affect their response to it. And it's important for marketers to understand not just if, but why consumers connect to particular content, in order to use what Stipp and others call emotional targeting. By exploring what drives preferences for platforms, content and interest in the brand itself, he writes, advertisers have an opportunity to connect with consumers on a deeper level.

"If marketers understand their specific targets' affinity to the content with which their consumers engage, as well as the role of other contexts—such as other media platforms, time and place—there are real opportunities to enhance the effectiveness of advertising messages," he writes. "When it comes to context effects, there are no one-size-fits-all rules."

In-screen
Banner
In-Image

Context

HIGH
MEDIUM
LOW

Health Magazine / L

My Recipes / R

Sport Illustrated / B

Health Magazine / E

CatTime / I

Sport Illustrated / F

Motor Trend / Q

Motor Trend / C

Time / D

Time / O

My Recipes / N

Time / A

Motor Trend / R

82%
60%
58%
44%
44%
42%
40%
38%
36%
34%
34%
34%
30%
22%
16%
16%
14%
12%

Memory.

Health Magazine / M   Cat Care Blog / H   My Recipes / G   Cat Care Blog / J   Sport Illustrated / K

Engagement

Ad Unit

In-screen
Banner
In-Image

5

4

3

2

1

0

3.86   4.57   4.75   4.15   3.91   4.28   3.48   4.50   5.25   3.28   3.90   3.48   4.05   3.36   3.18   4.47   4.51

HIGH
MEDIUM
LOW

Brand   A B C D E F G H I J K L M N O P Q R

Context

Neural Engagement.

* The Epson in-screen banner had the lowest amount of total fixations out of any Area of Interest, too few to confidently provide an average level of engagement.

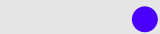"Feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril."

Name, Information.

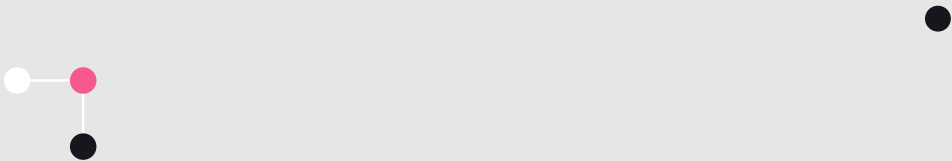"Feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril."

Name, Information.

"Feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril."

Name, Information.

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Name, Information.

"Feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril."

Name, Information.

Quotes from participant interviews

Neural Engagement

▲ 4.75%
Brand C

■ 4.51%
Brand R

▼ 4.47%
Brand Q
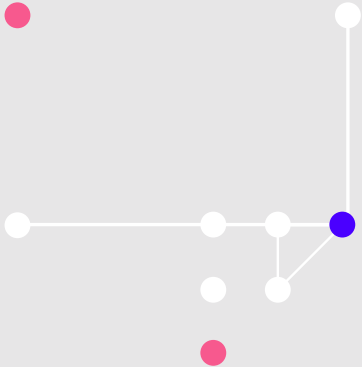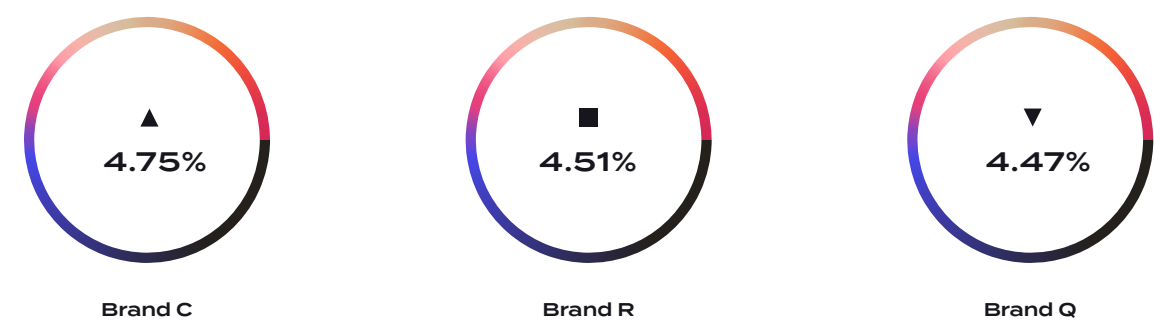
Participants' gaze patterns confirm the neuro data, showing people only focused on the external borders of the Brand Q ads, but were able to incorporate the Brand C and Brand R ads much more holistically.


Brand Recall

■ Brand R 34%

10

▲ Brand C 82%

1

○ Overall Memory Rank

13

▼ Brand Q 30%
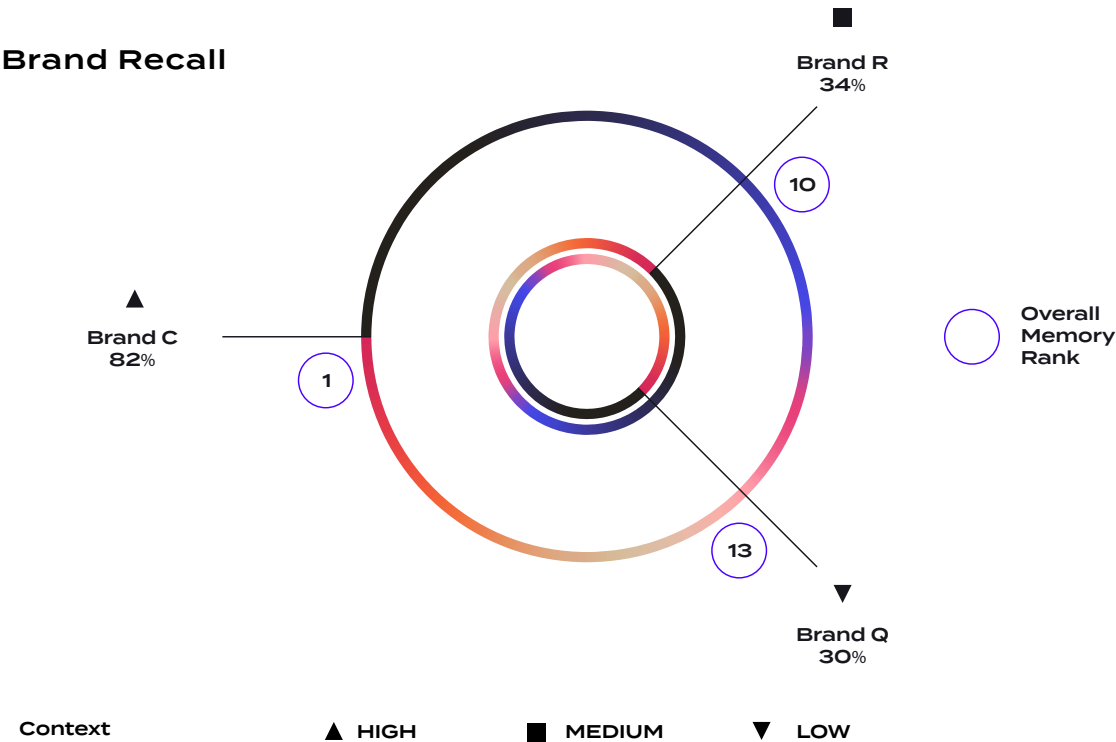
Context   ▲ HIGH   ■ MEDIUM   ▼ LOW

Motor Trend
/ Relevance takes the checkered flag

A car brand placed a highly relevant ad on a Motor Trend article, driving a staggering 82% memory among surveyed consumers—the best of any ad we studied. Eye-tracking data confirms that users saw only the outside borders of the least relevant ad on the page.


Neural Engagement

▲ 4.57%
Brand B

■ 4.28%
Brand F

▼ 3.28%
Brand K
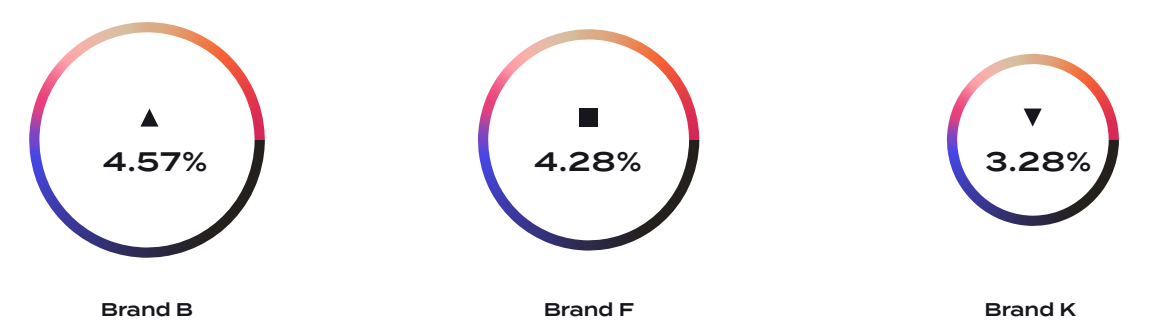
Participant eye-tracking gaze patterns easily and 2 naturally spilled over onto Brand B's banner ad, and onto Brand F's in-image ad. Even though the majority of readers looked at the in-screen Brand K ad, the neuro (and survey) data shows that they were not paying much cognitive attention to the ad, nor were they encoding it into memory.


Brand Recall

■ Brand F 34%

11

▲ Brand B 44%

4

○ Overall Memory Rank

14

▼ Brand K 22%
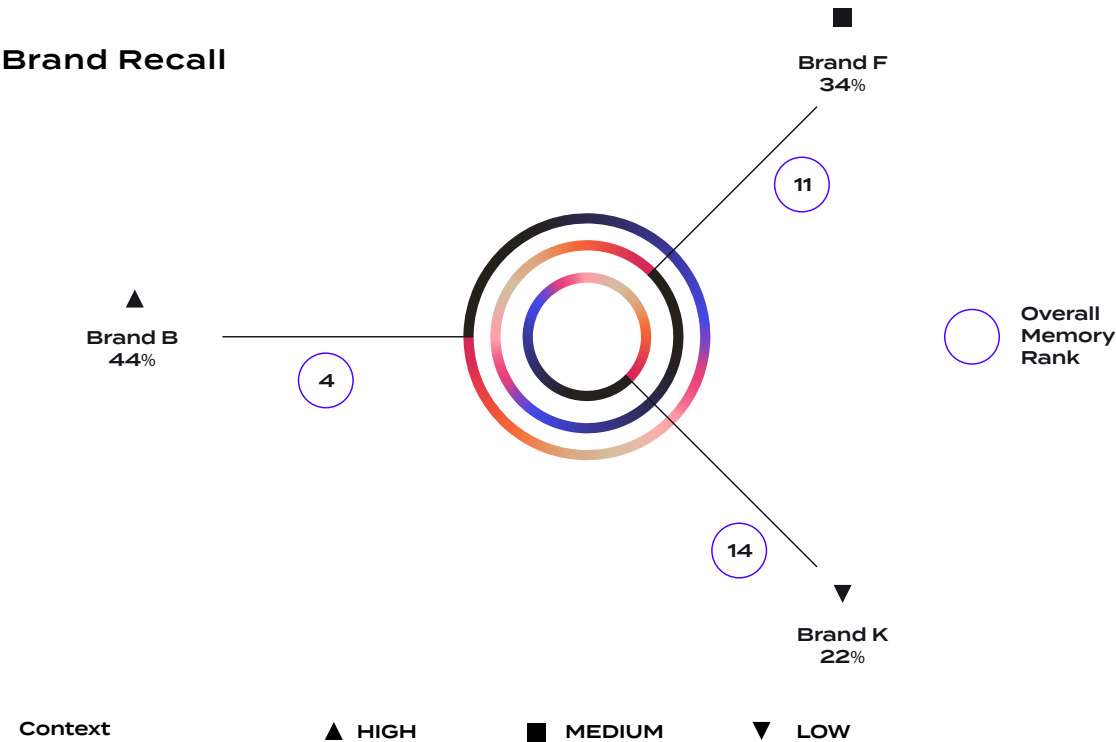
Context   ▲ HIGH   ■ MEDIUM   ▼ LOW

Sports Illustrated
/ Low relevance causes low attention

An In-Screen consumer tech ad was seen by a majority of users, but our neuro data shows that they didn't pay much cognitive attention to it, largely due to its low relevance. A highly relevant sportswear brand generated far better recall.
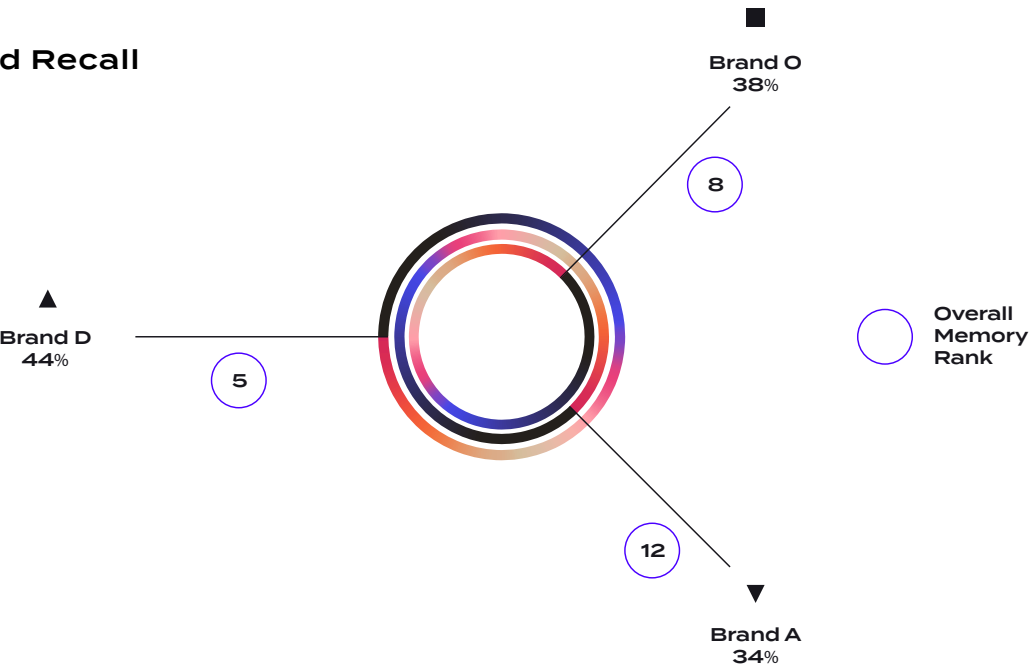
Neural Engagement

▲ 4.15%
Brand D

■ 3.36%
Brand O

▼ 3.89%
Brand A
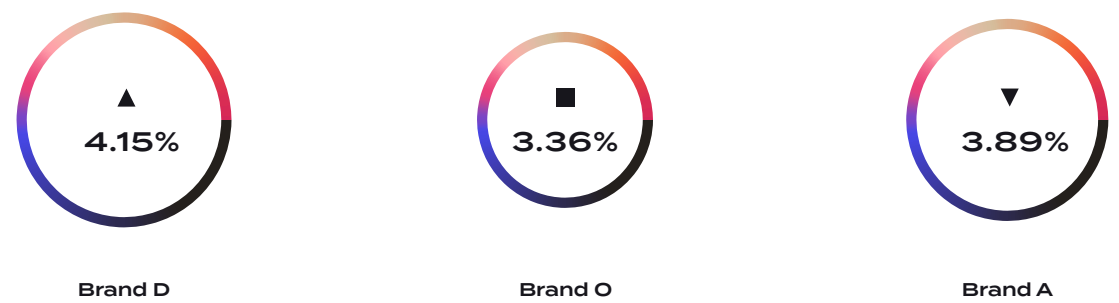
Gaze patterns initially easily spilled over onto the Brand A banner ad after reading the article title, but readers' visual attention failed to return to it as the article was scrolled through. The in-screen Brand O ad also attracted residual attention, mostly as the user reached the end of the page.
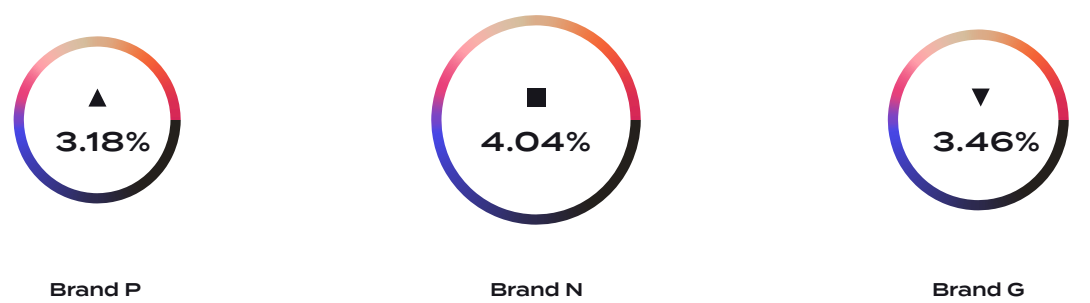
Brand Recall

■
Brand O
38%

8

▲
Brand D
44%

5

12

▼
Brand A
34%

Overall Memory Rank

Context   ▲ HIGH   ■ MEDIUM   ▼ LOW

Time
/ State-of-the-art relevance

A highly relevant retail brand scored big with an In-Image ad on a consumer technology article. Meanwhile, a popular soft drink brand generated decent memory despite low neural engagement, a testament to the strength of its brand.
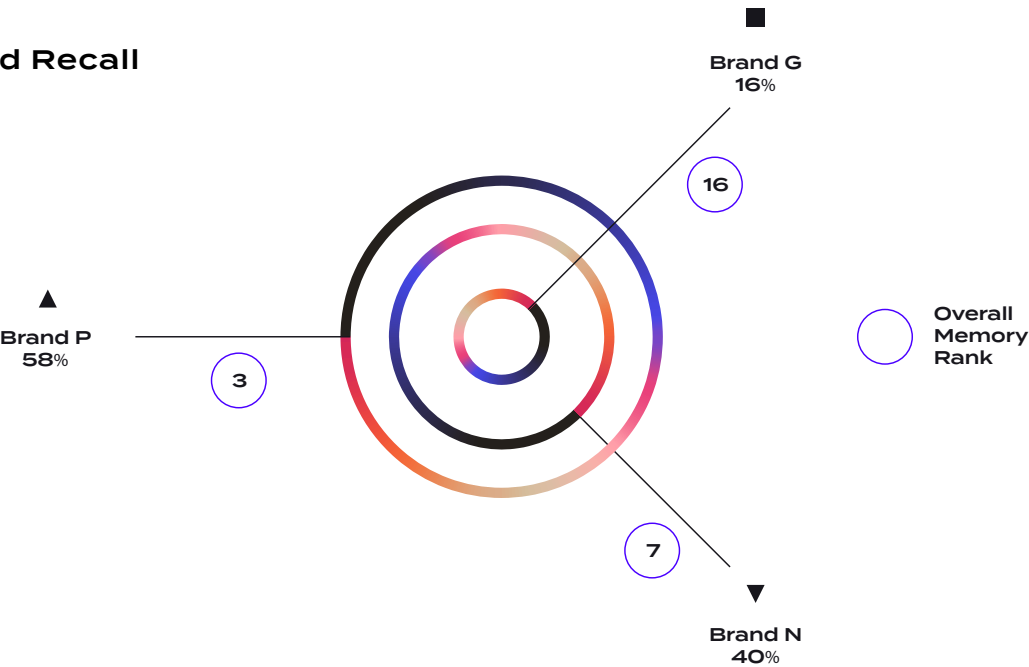

Neural Engagement

▲ 3.18%
Brand P

■ 4.04%
Brand N

▼ 3.46%
Brand G

The eye-tracking patterns reveal a heavily centered pattern of fixations, which suggests that participants may have taken in Brand P's in-screen ad as a part of the article, as opposed to as a targeted advertisement.
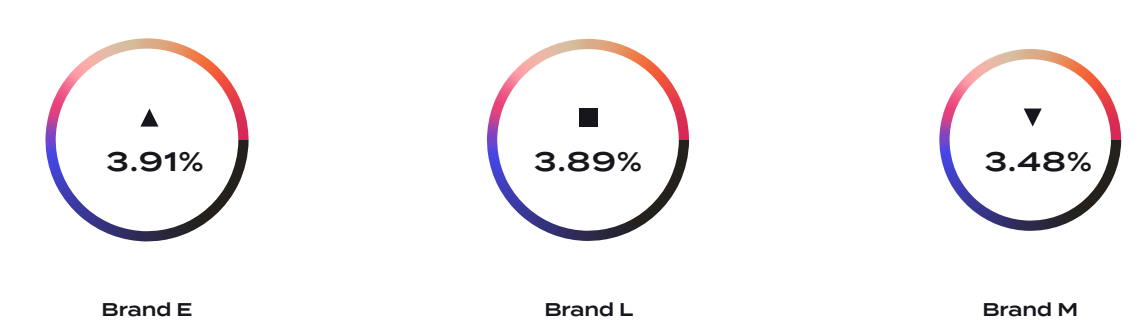
Brand Recall

■
Brand G
16%

16

▲
Brand P
58%

3

7

▼
Brand N
40%

Overall Memory Rank

Context   ▲ HIGH   ■ MEDIUM   ▼ LOW

My Recipes
/ Cooking up advertising success

An In-Screen ad was so relevant that there was little spike in neural engagement, suggesting viewers consumed it as though it were part of the article. Despite this low neural attention, it still posted the third-highest memory of any ad we studied.
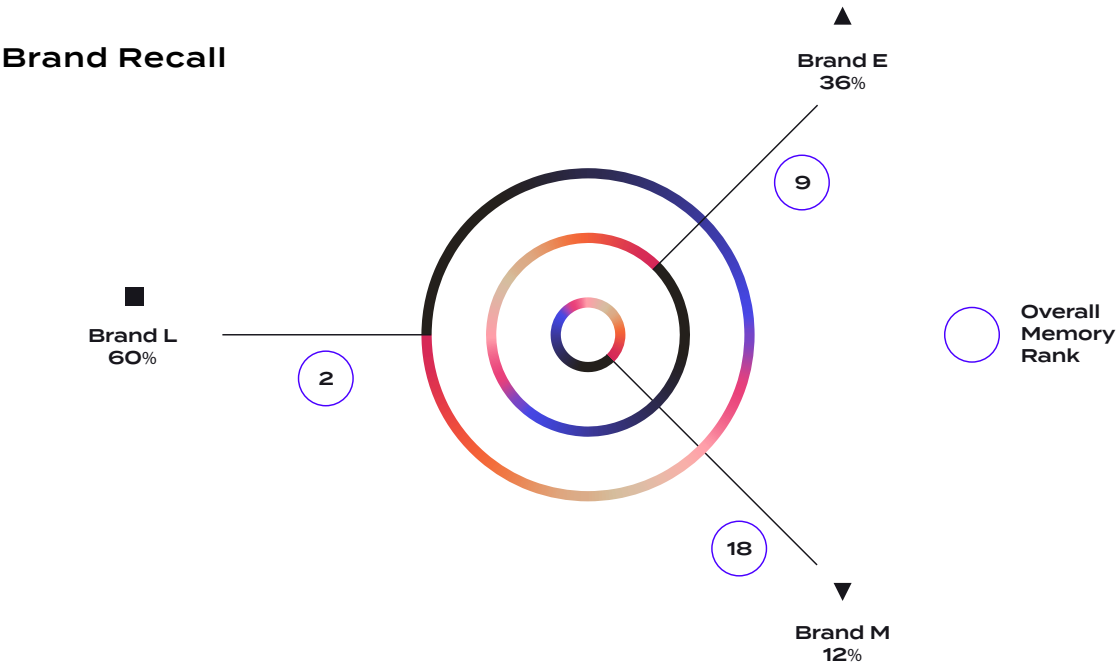
Neural Engagement

▲ 3.91%
Brand E

■ 3.89%
Brand L

▼ 3.48%
Brand M

The eye-tracking patterns reveal a lack of extended fixations on the low-context Brand M banner ad. On the other hand, the in-screen brand L's breakfast sandwich attracted a high amount of visual attention.

Brand Recall

Brand E
36%

9

Brand L
60%

2

Overall Memory Rank

18

Brand M
12%

Context   ▲ HIGH   ■ MEDIUM   ▼ LOW

Health Magazine
/ The exception that proves the rule

In this case, the medium contextually relevant drove higher memory than the highly relevant ad, a sign of the ad's visual appeal, popular brand and highly visible In-Screen placement.
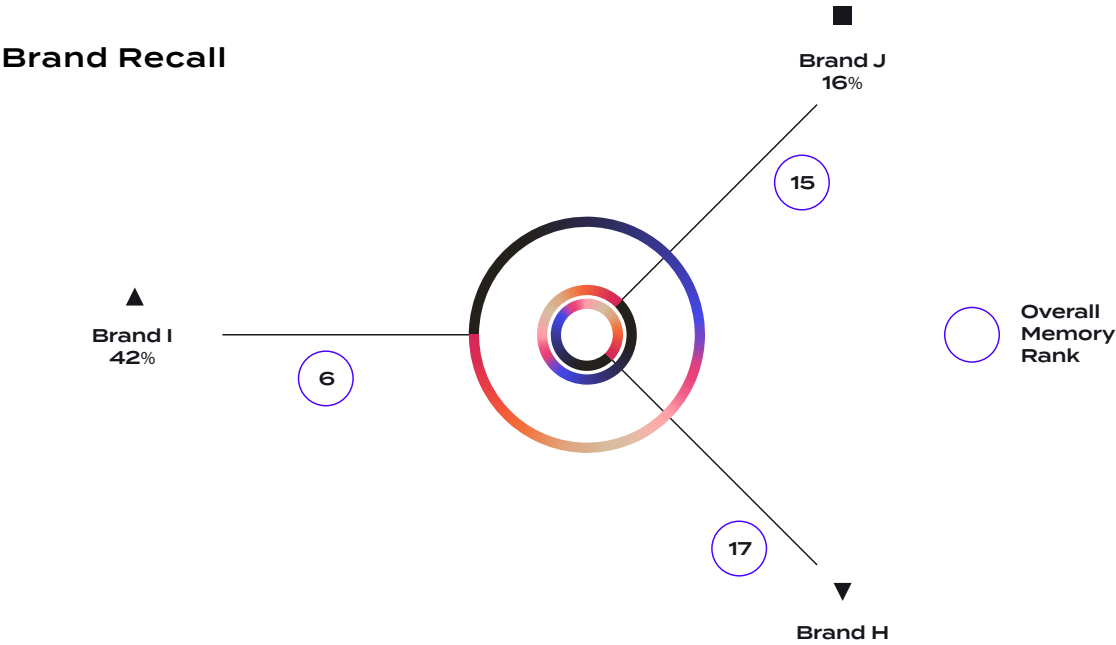
Neural Engagement

▲ 5.25%
Brand I

■ 4.5%
Brand J

▼ --
Brand H
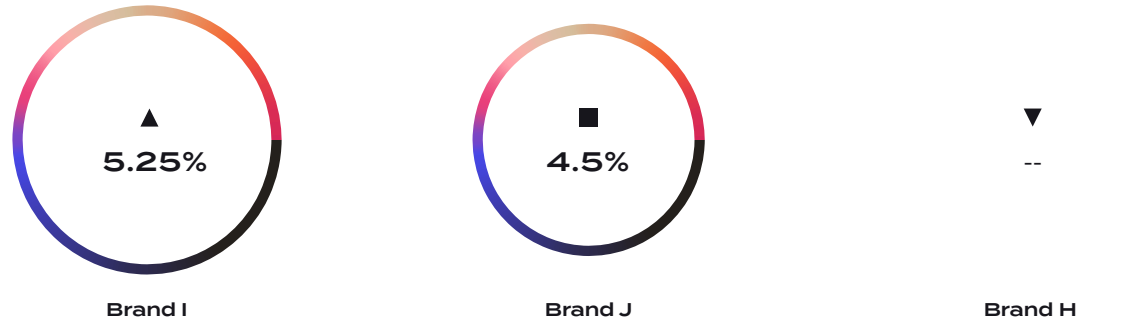
The eye-tracking patterns confirm that Brand I attracted the most visual attention unto itself, whereas Brand H failed to attract any fixations, lowering the sample size and likely skewing the engagement results and hence being removed from analysis.
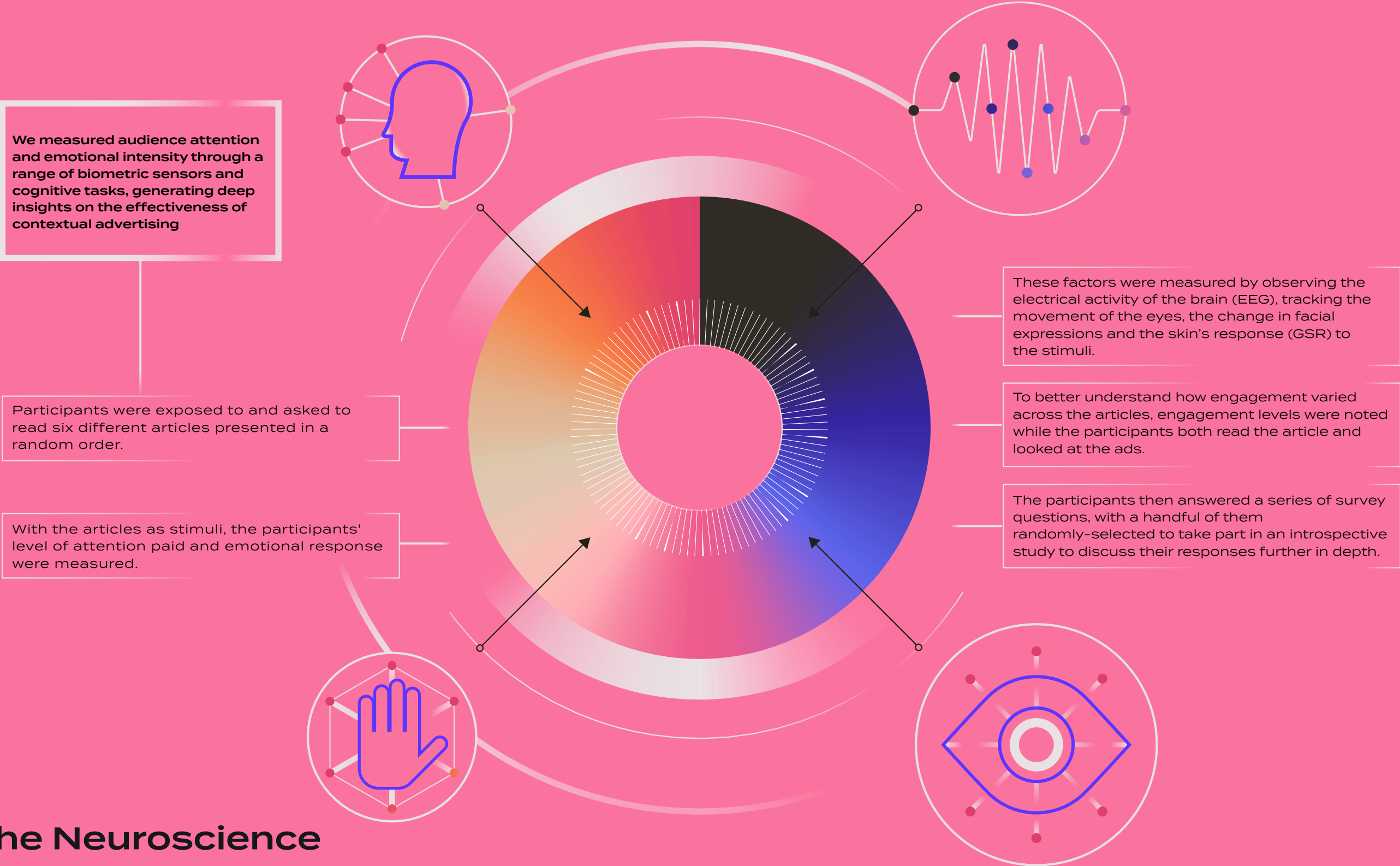
Brand Recall

Brand J
16%

15

Brand I
42%

6

Overall Memory Rank

17

Brand H

Context   ▲ HIGH   ■ MEDIUM   ▼ LOW

CatTime
/ A purr-fectly relevant ad

A cat food brand ran a highly relevant banner ad on an article about choosing the right wet food, generating the best memory and visual attention of any of the three ads on the page.

We measured audience attention and emotional intensity through a range of biometric sensors and cognitive tasks, generating deep insights on the effectiveness of contextual advertising

These factors were measured by observing the electrical activity of the brain (EEG), tracking the movement of the eyes, the change in facial expressions and the skin's response (GSR) to the stimuli.

Participants were exposed to and asked to read six different articles presented in a random order.

To better understand how engagement varied across the articles, engagement levels were noted while the participants both read the article and looked at the ads.

With the articles as stimuli, the participants' level of attention paid and emotional response were measured.

The participants then answered a series of survey questions, with a handful of them randomly-selected to take part in an introspective study to discuss their responses further in depth.

The Neuroscience

TITLE.

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About us.
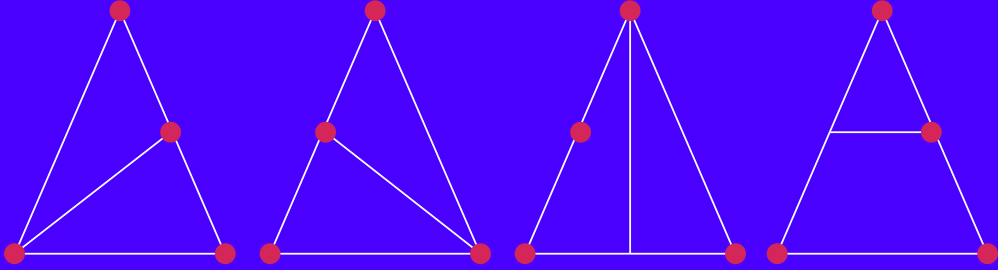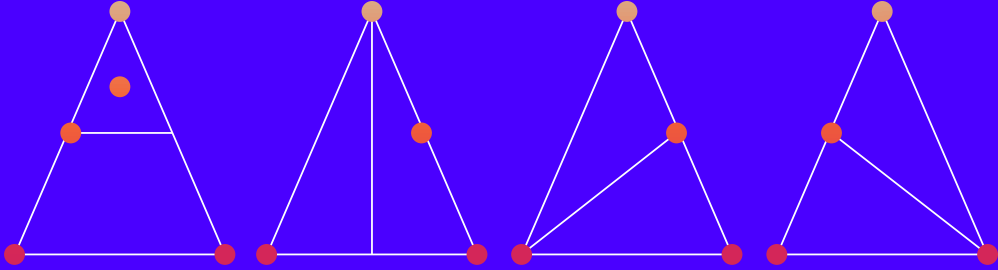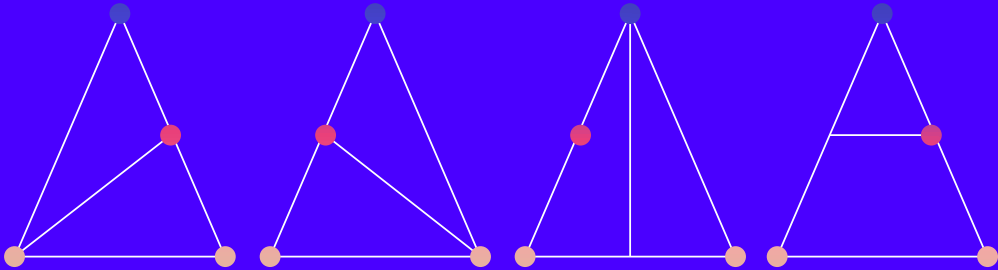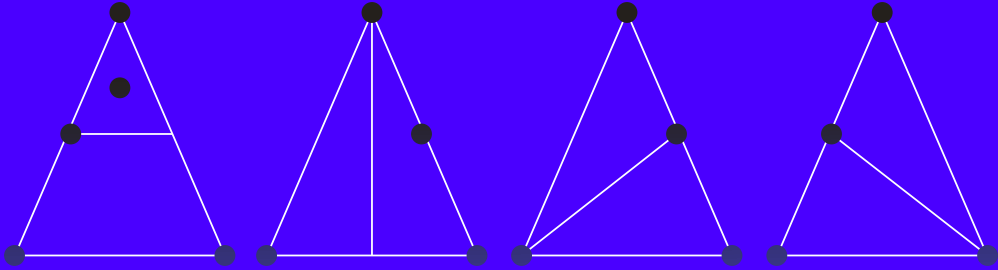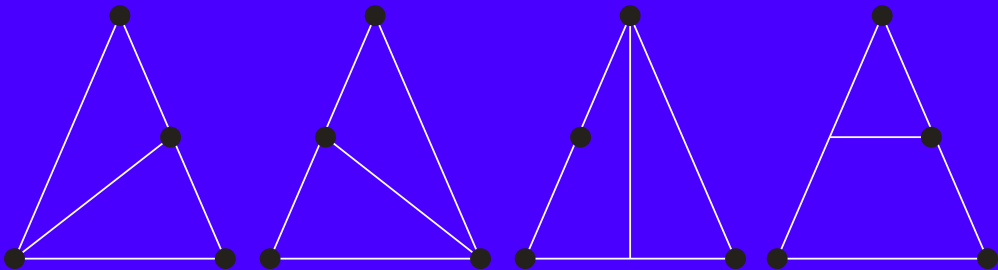
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