

# The proof is in the pupil

## Using eye-tracking to measure the effectiveness of TV commercials

The application of eye-tracking technology to television research is basically a no-brainer. Watching TV relies entirely on eye movements, the measurement of which can only be obtained through eye-tracking. The ability of the television programmer to see exactly what the viewer sees provides insight into the effectiveness of a particular segment on a particular audience. You learn what they look at. You find out what they miss. Most importantly, you discover the root of their visual behavior, which content draws the eye and which content lets it float away.

One of the most fruitful areas of eye-tracking within the television industry has been advertising research. Every facet of a commercial - from the imagery to the logo to the brand name to the contact information - is important in expressing the specific message intended. Through eye-tracking the advertiser can determine how likely it is that the relevant features of an ad will be seen by their particular audience. Take a look at the GazeTrace in Figure 1. This example shows one participant viewing the final frame of a televised advertisement and demonstrates the capabilities of eye-tracking in this context. As you can see, the product shot is quickly seen, followed by the product name and finally the Web address. Notice that the upper branding is never seen by this person. By aggregating this kind of data across large samples, eye-tracking technology can be very effective in identifying trends in how an advertisement is viewed.

### A bit more complex

However, as any advertiser will tell you, success cannot be gauged by simply calculating the visual attention allocated to features of an ad. In reality it is quite a bit more complex than that. Television

commercials, although they reach an extremely large audience, face an uphill battle when it comes to engagement. This is because much of the 21st century television-watching world has developed an acute ability to tune out anything that breaks the continuity of a television program. The viewer senses that the commercial break is coming, identifies the requisite fade-to-black and then effectively turns off all conscious awareness of what is on the screen. Recent research conducted by our firm suggests that TV watchers remember less than a quarter of

### snapshot

The author discusses eye-tracking technology and the Index of Cognitive Activity as a method of obtaining unbiased physiological data to better understand how viewers absorb, and how well they like, various television advertisements.



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Figure 1 - The product shot is quickly seen, followed by the product name and the Web address. The upper branding is never seen.



commercials viewed in a 30-minute segment, even if asked to recall them immediately after the segment ends. It's not that they don't see them; they just don't encode the information into memory, a kind of unintentional inattention. Consumer adaptations such as this, along with technological shortcuts that allow consumers to ignore, avoid or speed past commercials, make it uniquely difficult for a televised advertisement to break through to the audience.

### Still noticed

So what can be done to bolster the swiftly-eroding value of television advertising? Is it a lost cause? Should we all just forget about TV and go viral? Not so fast. The good news is that, even as the audience continually hones its skill at ignoring commercials, many spots are still noticed, remembered and even enjoyed. Some ads effectively use humor to compel people to pay attention; others provide a relevant message that cannot be ignored. The point is that even in this ad-weary culture some commercials still capture and hold viewer attention for long enough to make a successful pitch. So advertisers need not despair. The trick is to determine which ads are the most engaging, which ones hold onto the consciousness of the consumer and which ones really leave their mark on the average viewer despite the impulse to shut it out.

### Extremely telling

Most people don't realize that there is more to eye-tracking than the recording of eye movements. Aside from fluttering about, our eyes have a multitude of other functions, voluntary and involuntary, that can be extremely telling in a research context. Your eyes blink, they diverge, they fixate, they close - each distinct behavior has a distinct origin, one that the trained researcher can meaningfully interpret.

Perhaps the most subtle and most powerful of these engagement-relevant eye functions is pupil dilation. Using advanced eye-tracking equipment, the pattern of pupil reflexes can be isolated and translated into a direct link to the inner workings of the brain. By measuring fluctuations in pupil diameter, we can determine precisely when a person is paying attention and when they have zoned out. Basically, it's a way to read brain activity without attaching electrodes to someone's head or placing them in a giant magnetic tube. This patented pupil-based metric is called the Index of Cognitive Activity (ICA).

When applied to the context of televised advertising, the ICA has been useful in demonstrating which commercials are engaging and which ones tend to be ignored. Take a look at Figure 2. It shows the correlation between subjective responses to questions of engagement (X-axis) and

the ICA (Y-axis) on 10 television commercials (each color representing a different commercial). The correlation coefficient of  $r\text{-sq. } 758$  is very high and suggests that viewers' responses to how engaged they were lined up nicely with the eye-tracking data. In other words, those who reported being interested in the commercials exhibited a higher rate of pupil fluctuation than those who reported not paying attention. Thus, in addition to being validated against other physiological and traditional engagement metrics, the ICA is in agreement with the viewers' own perceptions of their level of engagement.

But this raises an important question: if the ICA is so highly correlated with subjective engagement responses, can't we skip the eye-tracking and just ask people how engaging the commercial was? That would be the simple solution, but sadly not the most accurate one. The primary advantage that the ICA has over subjective responses and other traditional metrics is that it is based on an involuntary physiological reflex. This means that people's prejudices and confabulations are factored out. You don't have to worry about the bias of the Chevy owner who won't admit paying attention to the Ford commercial. You can forget about whether the vegan whom you tested is embarrassed to admit how into the triple-cheeseburger commercial she was. What you are getting with the ICA is the raw physiological engagement data. Which commercials most effectively held the attention of the audience? Which ones, based only on the behavior of the brain, are most likely to leave a lasting impression? The eye-tracker is oblivious to all of the confounding little preconceptions and untruths inherent in subjective research.

### Broad and precise

Another advantage over traditional metrics is that the ICA can be utilized to meet both broad and precise research objectives.

Let's start with the broad. In addition to knowing which commercials are most engaging, it is often important for advertisers to

Figure 2

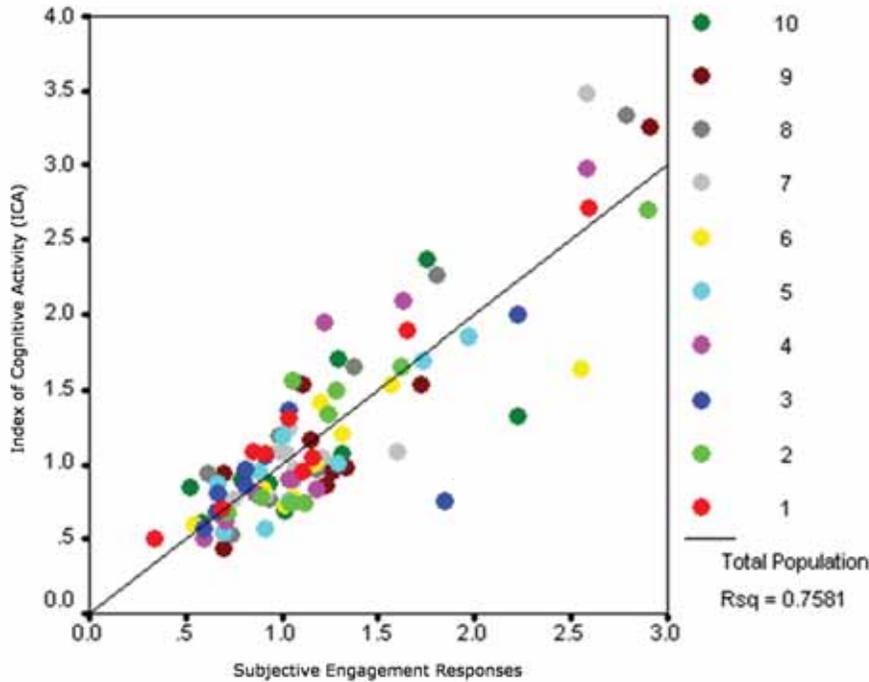
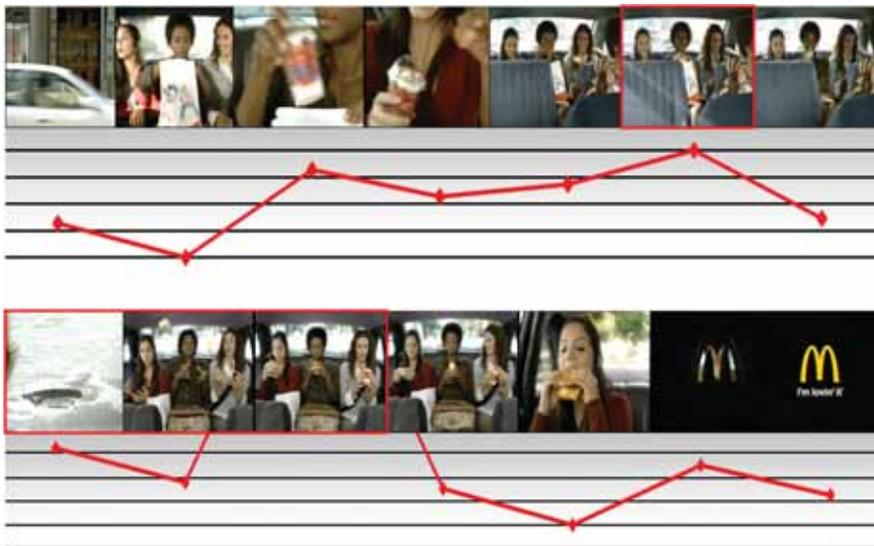


Figure 3 - Still-frames from an ad, at two-second intervals, showing the ICA engagement throughout the commercial.



know in which television programs they should place their commercials. Using the ICA, it is possible to establish which content most successfully engages the audience and holds that engagement through the commercial break.

In a recent study, we presented a set of commercials within television segments from four different channels. The specific ads shown within each channel segment were randomized so that it was not the commercial being tested but rather the programming surrounding it. Free and aided recall of the commercials embedded within each

channel was compared to ICA data. The results were very interesting. Rankings of the four different channels based on ability to recall commercials and based on ICA data were identical (i.e., the channel associated with the most commercials recalled had the highest ICA and so on). In addition, the ICA provided a means of quantifying just how much more engaging one channel was than another. Using this metric, it was possible to determine not only which commercial was most engaging but which general type of programming gave a commercial the greatest chance to succeed.

On the other end of this broad programming research, the ICA is useful at a more precise level. Engagement does not occur in 30-minute chunks or even 30-second chunks. It is a highly dynamic phenomenon that is constantly shifting and refocusing, sometimes on a second-by-second level. For this reason, it is important to examine not only which commercials are most engaging overall but which individual scenes or frames within the commercial are most engaging. It does very little good to have the most amazing intro ever if the viewer has already completely tuned out by the end of the commercial when your company name is shown.

As an example, the image in Figure 3 shows still-frames from an advertisement at two-second intervals with a red line underneath rendering the rises and drops in ICA engagement throughout the commercial. It begins low and steadily increases as the main action occurs before finally settling again when the final branding screen appears. As you can see, even in this brief time interval there is a wide fluctuation of engagement. Certain scenes are highly interesting to viewers while others are less compelling. The important point here is that true engagement in a commercial is always changing, adapting from shot to shot, slipping away and then coming back. To say that it is fleeting and difficult to manage is an understatement. The good news is that now, through eye-tracking, it can at least be accurately measured, and measuring engagement is the first step in learning to harness it.

### Removes guesswork

With the continued refinement of the ICA and other eye metrics, it is possible to accurately examine the specific areas of the screen that people are looking at and whether those screen areas are engaging the audience. In short, you are able to track not only the eye but also the mind of the viewer. As you might imagine, this removes much of the guesswork from research with television commercials and can provide a clearer picture of the effectiveness of the ad overall. | Q

