Eye Tracking to Establish a Hierarchy of Attention with an Online Fashion Video

Author: Ryan Payne

Abstract

Engaging customers online is fast becoming a focus for entrepreneurs, researchers and marketers as it offers a platform with a lower barrier of entry and is heavily utilized among the tech savvy millennial generation (aged 18-24) through social applications currently such as Facebook, Twitter, Instagram and Snapchat. Often, using it as an entertainment source to replace television shows, online videos for today's millennial generation have become the new and socially acceptable way to interact with peers as well as with various brands.

This research explores how fashion videos have risen in prominence and how they are perceived by the millennial generation. It explores attitude formation and online image processing to generate a hierarchical list of traits which participants focused upon when viewing a fashion video. The result is an established order to engage, direct and hold the attention of audiences for the longest time possible; eyes of the people in videos, lips, motion, size, images, colour, text style and, lastly, position. Using optometric or eye gaze tracking technology to capture where participants directed their focus, a comparison of what participants believed they valued to what they actually focused upon was demonstrated, with 30 semi-structured interviews and pre/post questionnaires to measure perceptions of the portrayed brand. This article articulates how the hierarchy generated is based upon a social referencing scheme for the viewer, followed by an attribute information search, to the situation and branded objects portrayed.

Additionally this study, unsurprisingly, found that participants did not fully remember the full videos that they were exposed to, nor the content upon which they had directly focused. However, it is important to note that participants could recall considerably more amounts of information when their eye pupils dilated, presenting an opportunity for additional research.

Keywords: online engagement, fashion, videos, viewing hierarchy, eye tracking, consumer behaviour

Introduction

As consumers become more and more technologically savvy with mobile communications, being online is no longer enough for companies to create a digital experience. Today, they must compete for their consumers' time and attention against other mobile savvy websites and environmental distractions also offering engaging interactive experiences. Mobile cell phones have become extensions of the body (Payne & Rahman, 2013, p. 491) leading to the average consumer spending 22.2 minutes on social media daily from a mobile device out of the total 37 minutes spent daily on a social media platform (Adler, 2014) and online shopping progressing into mobile based shopping experiences.

Further, as there continues to be an increase of shared engaging content, it has resulted in online branded communities and tribe outposts (Brogi, Calabrese, Campisi, Capece, Costa, & Di Pillo, 2013) which segment the market further and reduce the number of central points from which advertisers can mass sell. This translates into content, if viewed by the "correct" audience, needing to be highly engaging and memorable to achieve affecting the viewer amongst competing advertisements. Further, it has been found that people avoid fixating their eyes upon online advertisements and if they do look upon what has been identified as an advertisement, they almost instantaneously forget its content (Burke, Hornof, Nilsen, & Gorman, 2005). Therefore, engaging consumers online in a mobile capacity, not perceived as an advertisement, provides an opportunity and a challenge for online businesses.

One trend used to capture fashion consumers' attention online is through artistic fashion films. Entertaining and captivating imagery has long been known to be effective in influencing consumer perceptions in an advertising setting (Teixeira, Wedel & Pieters, 2012) and, through the Internet producing mega video sites such as Youtube, Vimeo and VFiles which mass distribute videos, and provide an easily accessible platform for

the distribution of branded content; much more so than in the past with television and prearranged/limited time slots.

One way that films have been deemed more effective is through the identification of videos creating a dual encoding process of both audio and visual communications (Paivio, 1986), providing two different ways for the brain to remember the experience. These verbal and nonverbal codes, corresponding to the same object, have an additive effect on recall (Paivio, 1986; Paivio, Clark & Lambert, 1988) creating more ways for the brain to remember what it has come into contact with and recall (Chen, Griffith, & Shen, 2005) when making a purchasing decision, or multiple ways for the user to process and understand a product/brand. Products with a strong image categorization have also been found to enhance a consumer's long-term memory for that product (Del Rio, Vazquez, & Iglesias, 2001) and increase the likelihood of the product's purchase when a need for that product arises (Wilkie, 1994).

Further, a product's imagery has been established as especially important when the product is intangible (Porter, 1979), as imagery can communicate an intangible idea by transforming a physical object into a representation of the idea being conveyed, a semiotic communication, such as a garment or apparel piece of clothing into an item of "luxury" or "fashion." These intangible ideas such as the notion of luxury or fashion, compared to simply apparel, affect the consumer's brand evaluation and therefore the worth a consumer is willing to pay for the product or service (Keller, 1993). Further, these image categorizations alter the perceptions the consumer holds of the fashion piece as well as the consumer's purchasing behaviour and decisions upon interacting with the product (Everard & Galletta, 2003).

A high brand equity value assigned by a consumer can remove the cognitive dissonance a consumer feels upon making a purchase (Keller, 1993). Typically fashion goods are highly expensive with the designs easily comparable to similar goods at a cheaper price point. This means there is a chance for participants to judge their

purchase based upon comparable design attributes and then have remorse about the purchase made at a higher financial cost to them. To combat this dissonance and focus consumers to the ideas of craftsmanship, which are not as easily compared or copied, Hermes has created a series of videos showing how a Hermes bag is constructed in Paris, taking the show on the road literally with a travelling exposition in which a bag is handmade as an art form in museums and for exhibitions (Karmali, 2013). Through these videos and live events the brand strengthens its image by building a story around its name for craftsmanship (Li , Li, & Kambele, 2012) as well as providing a way for consumers to rationalize the price paid for the goods or services received. This differentiates the company from being compared on design attributes and price alone (Porter & Millar, 1985) or comparable versions (Aaker, 1982). Therefore, consumers can be affirmed in their choice based upon their knowledge of the bag's craftsmanship and status as a high quality product to rationalize the purchase (Aaker, 1982; Keller, 1993).

Another adaption by the fashion industry to be perceived as "on top" is to heavily integrate technology into publicity efforts, showcasing the latest and greatest in digital inventions and integrations with clothing and the fashion viewing experience. Current efforts have included Diana Von Furstenburg with Google Glasses and Fendi with Google Drones above their 2014 show. Burberry, further, has created a mass customizing website, Burberry World, which showcases videos, music and photographs based upon a user's past interactions with the website and linking pages that are adaptable to a tablet or mobile device (Graham, 2014). These technology "upgrades" propel these fashion houses into leaders of culture, or the zeitgeist of society, by providing services unobtainable by mainstream culture. Therefore, both the technology introduced and the fashion "power house" introducing these new technologies for adoption become a perceived social elite with access to an exclusive connection which can then trickle down for mass consumption and integration into society (Simmel, 1950).

Another main concern for fashion brands, apart from being compared upon design attributes, has been that online experiences are highly similar due to the nature and

standardized way users experience online content; such as watching through a laptop, cellphone, desktop, or from another two dimensional technology based environment. Therefore, figuring out how to create something that is unique and luxurious beyond simply being another online video, which competitors can also mimic, is of particular interest to brands attempting to engage their consumers online with an intangible brand.

Growth of online fashion videos

To avoid being simply dependent upon technology progressions and travelling road shows to engage consumers, fashion houses have begun creating imagery which is engaging, mobile and technology peaking, with the introduction of short fashion videos for mass consumption (Burgess & Green, 2013). This route of online videos is similar to the progression from newspapers to televisions with the internet evolving from a text based entity to a motion video based one (Kuisma, Simola, Uusitalo, & Öörni, 2010). A quick look at companies such as twitter changing from 140 text characters to offering Vines, six second video clips, or Instagram, the photo application, now offering 15 second clips, personifies this trend. With a photograph the viewer is able to control how long they look and interact with or consider the image; with a video the interaction happens for a preset time before the viewer must cognitively select to restart the video process over again.

This growth in online videos is easily apparent. In 2012 online videos were predicted to grow to 1.5 billion by 2013; however, they grew to 2.1 billion (Cisco, 2013), and by 2017 the video on demand traffic is expected to triple to roughly 6 billion DVDs of content a month, with online fashion video content expected to be a large component of this growth (Burgess & Green, 2013; Lee, 2013; Cheng, Liu & Dale, 2013).

Measuring of online engagement

The measurement of these efforts, however, is speculative with no definitive way to demonstrate the return on investments made in producing this content. With social media and most online platforms, only the number of impressions made by advertising efforts can be tracked, not the perception formed by the user engaging in the experience. Therefore, companies have begun measuring what consumers are

experiencing and remembering to increase the effectiveness of their marketing and advertising campaigns. One of the new ways utilized to see what attributes participants are focusing on is through eye tracking technologies (Cyr, Head, Larios &Pan, 2009; Grier, Kortum & Miller, 2007) while comparing this with memory recall exercises. It is perceived there is a higher involvement when remembering in free recall, stimulating a higher memory free recall ability when at a store or purchase situation.

Eye tracking has been shown to reduce common spillover effects associated with other moment-to-moment measures such as over correcting or over reporting (Baumgartner, Sujan & Padgett, 1997). Further, this growth in eye gaze tracking has emerged as a solution to the inconsistency in determining what participants were exposed to and what they focused on, compared to what they remembered or self-reported looking upon (Grier et al., 2007). For it has been proven that participants do not accurately remember what they have viewed and can even create false memories which did not take place (Wade, Garry, Read & Lindsay, 2002).

Use of eye tracking technology to date
Current research from eye tracking text based website design studies shows large and bright objects are more attractive on websites than small-scaled dark coloured objects and simple lined texts (Faraday, 2000). This mirrors research showing images have been found to capture attention and help guide the reader in examining newsprint showing the presence of an icon making a warning or announcement stand out from its surrounding text, therefore becoming more noticeable (Bzostek & Wogalter, 1999). Likewise, Faraday's pioneering eye tracking study (2000) has also shown that the motion and position of the object plays an important role in the design of a website, with the centre and slightly lower right side grabbing the most attention for a web browsing experience (Djamasbi, Siegel & Tullis, 2010). The full ranking that Faraday unfolded is: motion, size, images, colour, text style, and position (Faraday, 2000). However, studies measuring what people focus on online typically has stemmed from online website design research and traditionally how people interact and "read" a website with people-less images (Djamasbi et al., 2010; Cyr et al., 2009; Grier et al., 2007; Faraday, 2000).

Therefore, online engagement research demands focusing on how participants interact with content online with and without text to see if a new hierarchy of attributes exists when creating online video content.

Eye movement recording
There are predominantly three different types of pupil movement which eye tracking has been able to capture; vergence, smooth and saccadic movements. Vergence movements are thought of as general refocusing by the pupil to atmosphere, where smooth movements are the tracking from one stimuli to another, keeping objects in the foveal, or foreground of vision (Dember & Warm, 1979). Saccades are very rapid and abrupt movements which show refocusing and active changing to interest points by the pupil. These are of interest as it is these movements which demonstrate the bringing of stimuli to the fovea, or main focus of the pupil (Young & Sheena, 1975). Saccade movements happen from three to five and a half times per second (Fischer & Weber, 1993) taking place both voluntarily (Zingale & Knowler, 1987) and involuntarily (Schiffman, 2000). Long saccade movements are the focusing or gazing upon objects (Grier et al.; 2007; Young & Sheena, 1975) which are of particular interest for understanding what participants actively focus on (Noton & Stark, 1971), and what will be focused upon in this study.

Methodology

Subjects for this study were collected from a convenient sample of female students at one university, aged 18-24 years old, living in Toronto, Canada. Female students were used to remove gender bias, and this age range has been shown to be highly brand conscious and to shop more frequently than other demographics (Brogi et al., 2013). Half of the sample were students in a fashion design programme, the other half were in non-design related faculty disciplines. This was consciously done in case all fashion students had already been exposed to the brand recently inside a classroom study or discussion, due to this study being conducted during regular school hours. Likewise, to see if experience impacted on how participants interacted with online videos.

Research design

The procedure for this experiment, utilizing an optometric device, is portrayed in the diagrams below (Figures 1-3).

Attribute	Measurement
Distance	45-76 cm
Angle	43 – 47 ° degrees
Rate	60 Frames per second
Lens	25mm
Tracking Search Size	15.4 "

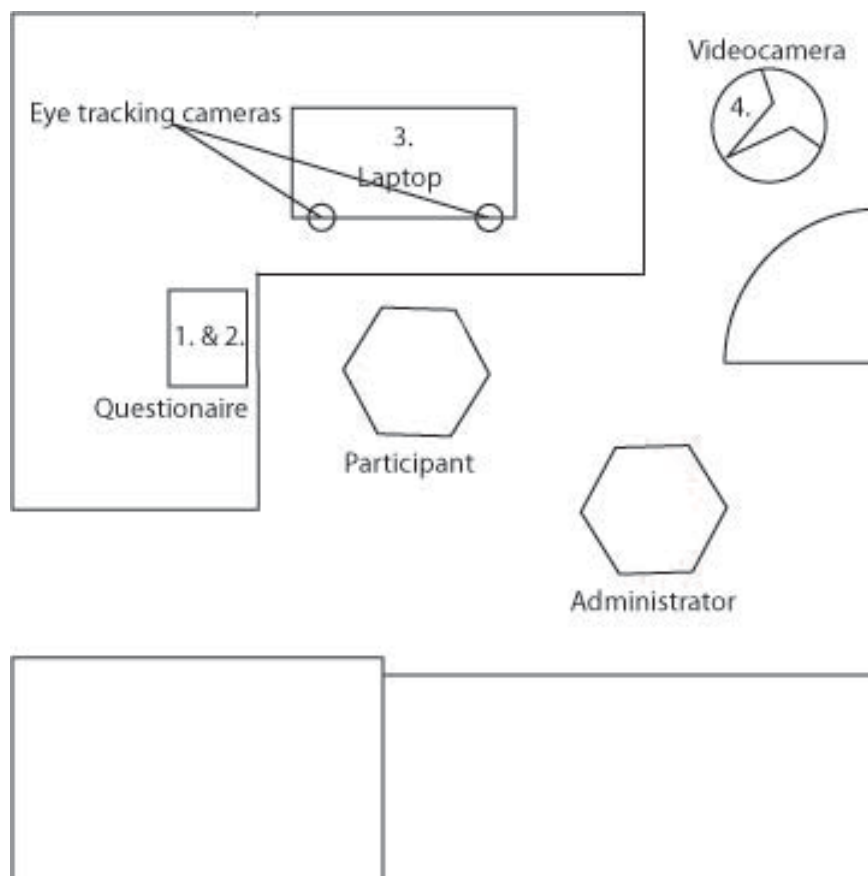Figure 1. Specifications of eye tracking technology

Figure 2. Experiment setup diagram

Figure 3. Eye tracking setup

Procedure

The order of the experiment followed the pathway of introduction to the study, followed by a signing of ethics research forms, then questionnaire administration. This entailed participants circling from a list of 50 brands all those they knew or had heard of to create a baseline of the participants' fashion knowledge. Following this participants were asked to write a few words to describe ten preselected brands to create a baseline to how participants associate brands. If participants themselves were unfamiliar with a brand they were asked to guess what the brand reflected simply by the name. A questionnaire about defining fashion videos and models in a written format was then administered to gauge technology acceptance and perceptions regarding the way models are displayed, in case this would affect the way participants viewed the video (actively looking for a bias.) Participants then were directed to face the laptop and watch the short fashion video (42 seconds in length). Upon completion of this viewing participants were interviewed (approximately 30 to 45 minutes) with a video recording of the interview taking place to capture any body signals and provide clarifications if needed.

Video selection of stimulus

In selecting videos, a criterion was established (Kuncel & Grill, 2004); a current video that had just been or would be unveiled in the following year to avoid participants seeing it prior and therefore not approaching the video with a "fresh viewing." This video needed:

1. to be shown online from a company's website, to mimic a real life setting
2. to not reveal or display a brand name, recognizable brand feature or logo/icon (for example, Burberry Plaid, Abercrombie Moose, Chanel interlocking Cs)
3. to be short so participants were engaged the entire time of the video
4. for this introductory experience, for non lyrical music to be utilized, abstract such as is common with instrumental music, so participants focused upon the imagery portrayed rather than preconceived notions towards the music presented.

A film by Issey Miyake, available through the website of the magazine Dazed & Confused, was ultimately selected and shown to participants in this experiment.

Eye tracking device

Participants, as shown in the diagram above, were able to move and did not require wearing or physically interacting with any technology. Through a nine point calibration system all 30 participants' facial features could be recognized and tracked without error. It is believed these specifications allow for an accurate measuring of the gaze and focuses participants' performances (Vertegaal & Ding, 2002).

Results

Pupil Change

Participants did not display significant changes in behaviour patterns during or after exposure to the video stimulus, as predicted. Participants held a comfortable pupil range from 36mm to 56 mm, dilating when exposed to a new video scene. One participant displayed an outlier measurement of 57mm to the mean average of 47mm, standard deviation of 3.3mm and average change in pupil size of 6.42mm (simple average of different participant's eye widths against the % of change in size). A pupil is thought to be dilated if changing by more than .375mm or roughly a 7% change once

the eyes have focused and adjusted due to new stimuli (Partala & Surakka, 2003). Twenty participants, with dilated pupils, were able to recall attributes of the film displayed. Twenty six of the 30 participants (87%) omitted scenes and incorrectly identified the order when their pupils were not dilated during the short video.

Hierarchy of viewing

A counting of what garnered focus by participants was created through developing finite points in the film, at the introduction of each new segment inside the video, and tracking the eye path participants created, then averaged to create solar mapping (Figure 5 and Figure 6). Four gaze fixation points took place inside this video in which participants free recalled. The four attributes participants focused upon inside this video were:

1. inside an opening scene showing the face of a model, her eyes and eye area
2. flowers blooming beside the panning up of a girl
3. an umbrella spinning behind a model
4. flowers upon the dress of a model when showing the full body of the model.

Figure 4. Focus areas of participants

Ranking	Attribute	Process of Gaze
1	Eyes	Context Detection
2	Lips	
3	Motion	
4	Size	Object Detection
5	Image	Scene Classification
6	Colour	
7	Text	
8	Position	Object Detection

Figure 5. Hierarchy of attributes focused on

Discussion

In predicting the sequence of fixations upon a web based platform video, the Faraday model (Faraday, 2000) proposes the hierarchy in a text based website design of motion, size, images, colour, and text style. However, is not complete in that it does not address how participants view people in a digital capacity or how different types of motion (for example, flickering versus continuous) may effect scan paths (Grier et al., 2007). Therefore, perhaps a reference to studies by Janik and collaborators (1982) (Djamasbi et al., 2010; Tullis et al., 2009) building upon Argyles' (1970) belief that the eyes are the predominant focus of all participants when viewing a human face, is needed to create a model for how consumers view a fashion video that includes both people and text.

Breaking down the fixation points, when addressing the first gaze:

1. A focus upon the eyes of the model when only shown a face becomes predictable under these theories showing that facial viewing tendencies are dominant over object based hierarchies online
2. Flowers blooming while next to a moving image of a woman demonstrates this viewing ranking by how participants focused upon the flowers blooming, a form of movement within two moving screens. However, once the eyes of a model were

shown, participants struggled with where to focus and juggled between the model's eyes on the left and finding new movements in the flowers on the right, as shown in the gaze path diagram below (Figure 7)

3. This ranking system of facial referencing for context then object based for interest and context holds true in how, when a model with a spinning umbrella was shown, participants glanced briefly at the model's eyes before being drawn to and focusing on the spinning umbrella. This is different to the above in how the model was static so once referenced by the participants, and did not move so was therefore not consulted or perpetually referenced for social context by the participants

4. Faraday's hierarchy holds true in how the participants glanced but did not focus on the largest object (the model's face), before focusing and gazing upon the different colours on the model's dress compared to the background. This reinforces the idea that facial expressions are first evaluated for context, with the eyes taking priority before the rest of the face (Burton, 2009), then is followed by an object based hierarchy (Figures 5-7).
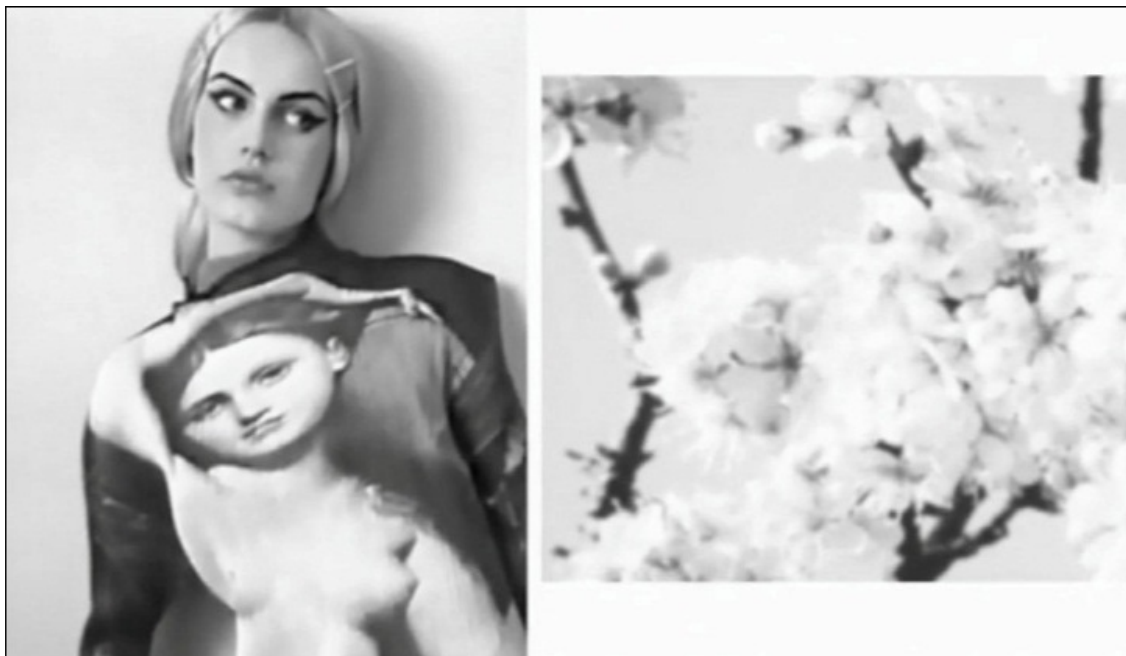

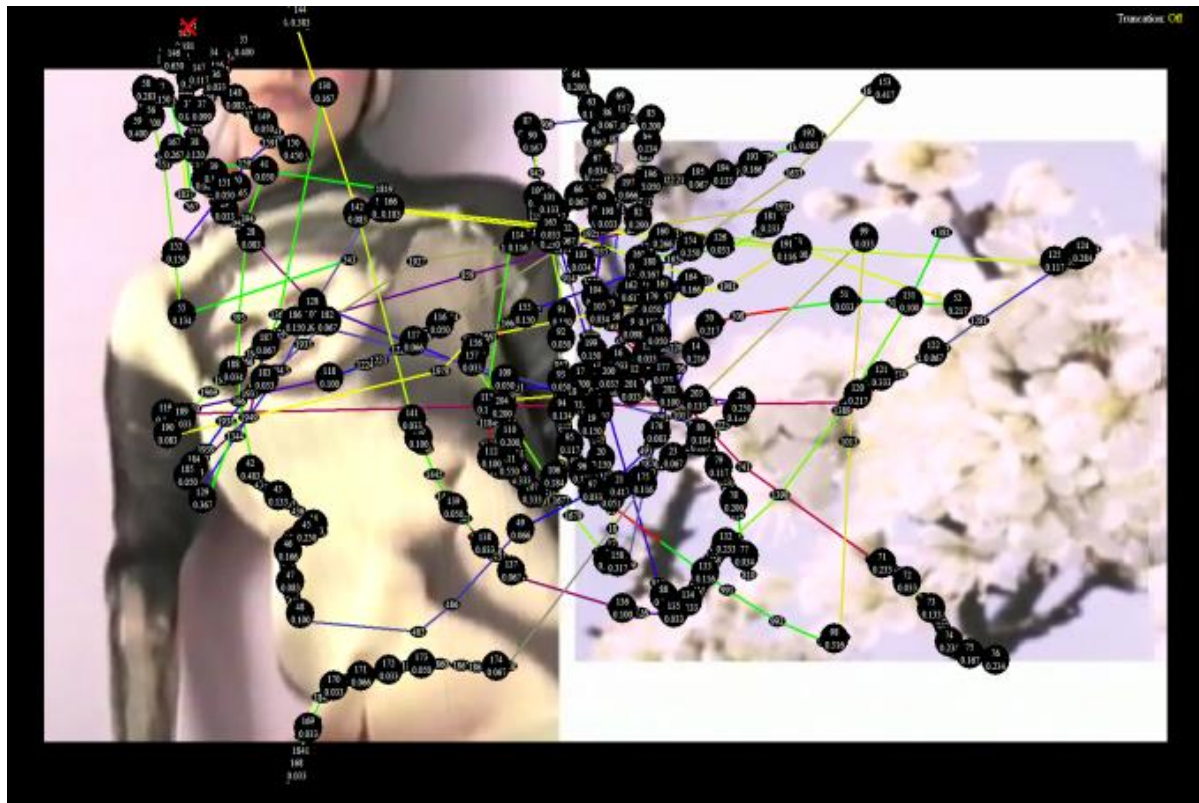Figure 6. Video passage participants struggled with focusing

Figure 7. Image with tracking.

Conclusion

While it is determined that videos are effective in establishing attributes for association through providing multiples ways for participants to encode and remember these attributes, it is evident that a clear brand labelling is needed to hold and create the necessary associations if it is to be recalled at the time of purchase consideration.

It was found that viewing hierarchies towards web design content do apply, however, with online video involving people, it is a guiding principle that facial recognition schemes take prominence for context over object viewing ranking systems. Therefore, fashion brands looking to produce online video content should focus on displaying faces early in their segments to create context, then show attributes for sale utilizing the above established hierarchy for object viewing in order to keep consumers engaged for the longest time possible.

Limitations

This study held limitations in the length of study being roughly one to two hours per participant, therefore a longitudinal study to explore how participants change their perceptions over a period of time might unfold a better understanding of the mental gaps formed and associations needed to be changed/ created. This study was conducted with people aged 18-24. Therefore the results could be deemed skewed towards a younger demographic. Likewise, participants were aware this was a research project, which might create an attitude change from an entertainment based to information/ task performance mentality.

Further Research

In this study, participants were not able to stop, start or change videos if they found the content boring, therefore future research will need to look at how control elements affect participants interacting with a video and how the order of events shown can be altered to engage participants over a longer period of time. Further, additional research to specific product attributes by participants might uncover new ways for attracting attention towards a product or brand online and in physical stores.

References

Aaker, D.A. (1982). Positioning your product. *Business Horizons, 25*(3), 56-62.

Adler, A. (2014). Social media engagement: The surprising facts about how much time people spend on the major social networks. Retrieved March 14, 2014, from http://www.businessinsider.com/social-media-engagement-statistics-2013-12

Argyle, M. (1970). Eye-contact and distance: A reply to Stephenson and Rutter. *British Journal of Psychology,* 61, 395-396.

Baumgartner, H., Sujan, M., & Padgett. D. (1997). Patterns of affective reactions to advertisements: The integration of MTM responses into overall judgments. *Journal of Marketing Research, 34*(2), 219-232.

Brogi, S., Calabrese, A., Campisi, D., Capece, G., Costa, R., & Di Pillo, F. (2013). Effects of online brand communities on brand equity in luxury fashion industry. *International Journal of Engineering Business Management, 5*(1), 1-9.

Burgess, J., & Green, J. (2013). *YouTube: Online video and participatory culture.* New York, NY: John Wiley & Sons.

Burke, M., Hornof, A., Nilsen, E., & Gorman, N. (2005). High-cost banner blindness: Ads increase perceived workload, hinder visual search, and are forgotten transactions on computer. *Human Interaction*, *12*(4), 423–445.

Bzostek, J. A., & Wogalter, M. S. (1999). Measuring visual search time for a product warning label as a function of icon, color, column and vertical placement. *Human Factors and Ergonomics Society Annual Meeting*, *43*(16), 888-892.

Chen, Q., Griffith, D. A., & Shen, F. (2005). The effects of interactivity on cross-channel communication effectiveness. *Journal of Interactive Advertising, 5*(2), 30-44.

Cheng, X,. Liu, J., & Dale, C. (2013). Understanding the characteristics of internet short video sharing: A YouTube-based measurement study. *Multimedia, IEEE Transactions*, *15*(5), 1184-1194.

Cisco. (2013). Cisco visual networking index: Forecast and methodology. Retrieved March 23, 2014, from
 http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white_paper_c11-481360.html

Cyr, D., Head, M., Larios, H., & Pan, B. (2009). Exploring human images in website design: A multi-method approach. *MIS quarterly*, *33*(3), 539-566.

Del Rio, A. B., Vazquez, R., & Iglesias, V. (2001). The effects of brand associations on consumer response. *Journal of Consumer Marketing*, *18*(5), 410-425.

Dember, W. N., & Warm, J. S. (1979). *Psychology of Perception* (2nd ed.). New York, NY: Holt, Rinehart, and Winston.

Djamasbi, S., Siegel, M., & Tullis, T. (2010). Generation Y, web design, and eye tracking. *International Journal of Human-Computer Studies*, *68*(5), 307-323.

Everard, A., & Galletta, D. F. (2003). *Effect of presentation flaws on users' perception of quality of on-line stores' web sites: Is it perception that really counts?* PhD. Thesis, University of Pittsburgh.

Faraday, P. (2000). Visually critiquing web pages. *Multimedia'99,* (pp. 155-166). Springer Vienna.

Fischer, B., & Weber, H. (1993). Express saccades and visual attention. *Behavioral and Brain Sciences*, *16*(03), 553-567.

Graham, M. (2014). Burberry designer's digital world. *China Daily Newspaper.* Retrieved March 23, 2014, from http://www.chinadaily.com.cn/sunday/2014-02/23/content_17299646.htm

Grier, R., Kortum, P., & Miller, J. T. (2007). How users view web pages: An exploration of cognitive and perceptual mechanisms. *Human Computer Interaction Research in Web Design and Evaluation*, 2, 22-41.

Karmali, S. (2013). Hermès takes on London. *British Vogue Online.* Retrieved March 23, 2014, from http://www.vogue.co.uk/news/2013/05/09/hermes-exhibition-comes-to-london---saatchi-gallery

Keller, K. L. (1993, January). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of Marketing,* 57, 1-22.

Kuisma, J., Simola, J., Uusitalo, L., & Öörni, A. (2010). The effects of animation and format on the perception and memory of online advertising. *Journal of Interactive Marketing*, *24*(4), 269-282.

Lee, C. C. (2013). Why videos go viral: Understanding how self-enhancement affect sharing of online media. PhD. thesis, Tsinghua University Services.

Li, G., Li, G., & Kambele, Z. (2012). Luxury fashion brand consumers in China: perceived value, fashion lifestyle, and willingness to pay. *Journal of Business Research*, *65*(10), 1516-1522.

Noton, D., & Stark, L. (1971). Scanpaths in saccadic eye movements while viewing and recognizing patterns. *Vision research*, *11*(9), 929-948.

Paivio, A. (1986). *Mental representations: A dual-coding approach.* New York, NY: Oxford University Press.

Paivio, A., Clark, J. M., & Lambert, W. E. (1988). Bilingual dual-coding theory and semantic repetition effects on recall. *Journal of Experimental Psychology: Learning,*

Memory, and Cognition, *14*(1), 163.

Partala, T., & Surakka, V. (2003). Pupil size variation as an indication of affective processing. *International Journal of Human-Computer Studies,* 59(1), 185-198*.*

Payne, R., & Rahman, O. (2013). How online fashion videos affect consumers' perception of brands- eye tracking exploratory study. In *Proceedings from the International Consumer Behaviour Conference,* 16-18 May Porto, Portugal. ISBN 978-989-98442-4-7 http://www.rpm.pt/UserFiles/File/Conference%20Proceedings%20-%20ICMC%202013.pdf Accessed 14 March 2014.

Porter, M. E. (1979). How competitive forces shape strategy. *Strategic Planning: Readings*, Harvard Business Press. (pp. 102-117).

Porter, M. E., & Millar, V. E. (1985). *How information gives you competitive advantage.* Cambridge, MA: Free Press.

Schiffman, H.R. (2000). *Sensation and perception: An integrated approach.* New York, NY: John Wiley & Sons.

Simmel, G. (1950). *The sociology of Georg Simmel.* New York, NY: Simon and Schuster.

Teixeira, T., Wedel, M., & Pieters, R. (2012). Emotion-induced engagement in internet video advertisements. *Journal of Marketing Research*, *49*(2), 144-159.

Tullis, T., Siegel, M., & Sun, E. (2009). Are people drawn to faces on webpages? In *Proceedings from the 27th International Conference Extended Abstracts on Human Factors in Computing Systems.* (pp. 4207-4212).

Vertegaal, R., & Ding, Y. (2002). Explaining effects of eye gaze on mediated group conversations: Amount or synchronization? In *Proceedings from the 2002 ACM Conference on Computer Supported Cooperative Work.* (pp. 41-48).

Wade, K. A., Garry, M., Read, J. D., & Lindsay, D. S. (2002). A picture is worth a thousand lies: Using false photographs to create false childhood memories. *Psychonomic Bulletin & Review*, *9*(3), 597-603.

Wilkie, W. L. (1994). *Consumer Behaviour* (3rd ed). New York, NY: John Wiley & Sons.

Young, L. R., & Sheena, D. (1975). Survey of eye movement recording methods. *Behavior Research Methods & Instrumentation*, 7(5), 397-429.

Zingale, C.M., & Knowler, E. (1987). Planning sequence of saccades. *Vision Research*, 27, 1327- 1341.