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Motivation determines Facebook viewing strategy: An eye movement analysis

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ABSTRACT

Individuals' Social Networking Site (SNS) profiles are central to online impression formation. Distinct profile elements (e.g., Profile Picture) experimentally manipulated in isolation can alter perception of profile owners, but it is not known which elements are focused on and attributed most importance when profiles are viewed naturally. The current study recorded the eye movement behaviour of 70 participants who viewed experimenter-generated Facebook timelines of male and female targets carefully controlled for content. Participants were instructed to process the targets either as potential *friends* or as potential *employees*. Target timelines were delineated into Regions of Interest (RoIs) prior to data collection. We found pronounced effects of target gender, viewer motivation and interactions between these factors on processing. Global processing patterns differed based on whether a 'social' or a 'professional' viewing motivation was used. Both patterns were distinct to the 'F'-shaped patterns observed in previous research. When viewing potential employees viewers focused on the text content of timelines and when viewing potential friends image content was more important. Viewing patterns provide insight into the characteristics and abilities of targets most valued by viewers with distinct motivations. These results can inform future research, and allow new perspectives on previous findings.

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1. Introduction

Social media, and in particular Social Networking Sites (SNSs), form an integral part of online identity (Pempek, Yermolayeva, & Calvert, 2009). Impressions formed of individuals via their SNS profiles can be influenced by changing just one single aspect of an online profile (e.g., Tong, Van Der Heide, Langwell, & Walther, 2008). Online SNS use can have positive offline effects (e.g., Valenzuela, Park, & Kee, 2009), but can also have potentially negative consequences on the profile owner's employability (Bohnert & Ross, 2010). It is unclear which aspects of SNS profiles viewers attribute most weight to when forming impressions, or if processing behaviour is influenced by viewer motivation (e.g., viewing the profile owner as a prospective friend vs. prospective employee). In order to investigate these issues we measured the eye movements of participants as they viewed Facebook timelines to determine which timeline regions they fixated first, for longest,

and most frequently. Participants viewed both male and female timelines either to evaluate the owner as a potential friend or a potential employee to assess the importance placed on different aspects of timelines on based motivation and gender.

1.1. Social networking sites

SNS use is becoming increasingly prevalent in many facets of modern life. While its uses are mainly social (Tosun, 2012) specific sites are also utilized to other ends such as career networking (e.g., Garst, 2013), improving education (e.g., Towner & Muñoz, 2011) and product marketing (e.g., Tucker, 2014). Dominance among the hugely variable social networking sites is constantly shifting — pioneering sites such as MySpace and Friendster have diminished in popularity and today the range of popular SNSs available include: Facebook, Twitter, Linkedin, Google+, Instagram, Pintrest, and Tumblr. Each of these has its own specific niche (e.g., Instagram and Pintrest are primarily for the sharing of photographs) and promote different forms of communication (e.g., the principal communiqué on Twitter is a one-to-many 'tweet' using a limited number of characters). By far the most popular is Facebook, a site founded in

2004 for the use of Harvard University graduates, but which quickly expanded to allow all American students, then eventually any individual over the age of 13 to set up an account. In 2015 Facebook had over 1.49 billion active users (Facebook Newsroom, 2015), making it the world's largest SNS. While users of most SNSs are represented via a profile, Facebook users have a 'timeline' which is an amalgamation of the original Facebook 'profile' and 'wall' features. The default timeline screen presented to a viewer contains a limited amount of personal, friend, and photo information, and a reverse chronological record of their activity on the site (minus anything they have opted to hide from public view). For the remainder of this article we will use the term *profile* when referring to SNS profiles generally, and *timeline* when referring specifically to Facebook.

The almost universal use of Facebook (certainly amongst student populations; Arrington, 2005) as well as its comparatively uniform layout has made it ideal for research into social networking use, and particularly *experimental* investigation into how information presented on SNSs is interpreted by users. This is important as how individuals use and are portrayed on Facebook has significant offline effects. SNS use has been associated with life satisfaction and social trust (Valenzuela et al., 2009), wellbeing (Apaolaza, Hartmann, Medina, Barrutia, & Echebarria, 2013), self-perception (Hayes, van Stolk-Cookem & Muench, 2015), and academic attainment (Frein, Jones, & Gerow, 2013; Rouis, 2012). The consequences of online social networking can also impact individuals' careers. While the main motivations for using SNSs such as Facebook are social (e.g., maintaining and establishing relationships, sharing photos, organising social activities; Tosun, 2012), employers are increasingly using SNSs as sources of information about employees and job candidates (Bohnert & Ross, 2010).

The manipulation of single or multiple elements of SNS profiles can influence perceptions formed of profile owners (e.g., *profile picture*: Wang, Moon, Kwon, Evans, & Stefanone, 2010; *number of friends*: Tong et al., 2008; Utz, 2010; *popularity*: Scott, 2014; *friends' attractiveness*: Walther, Van Der Heide, Hamel, & Shulman, 2009; *language*: Fullwood, Quinn, Chen-Wilson, Chadwick, & Reynolds, 2015; Scott, Sinclair, Short, & Bruce, 2014). Many of these specifically impact the perceived employability of the profile owner (e.g., Scott et al., 2014). The choice of which aspects of profiles to experimentally manipulate has typically come from experimenter intuition or from qualitative findings (e.g., Zywica & Danowski, 2008). Thus far, no study has empirically examined which areas of social networking profiles attract the most attention. By measuring the attention viewers allocate to individual components of profiles we can determine which components attract attention under different conditions, and therefore which profile material may bear most weight in impression formation.

1.2. Eye movements as a measure of attention

An accurate way of determining attention is by measuring gaze. When humans read text or view a scene, a series of eye movements occur, the principal among these being saccades and fixations. Saccades are ballistic movements of the eyes from one location to another, and are bookended by short periods known as fixations (typically 180–250 msec; Rayner, 1998) where the eyes are almost stationary. Our gaze typically fixates on objects about which we wish to acquire information and therefore become the focus of our overt attention (Jarodzka, van Gog, Dorr, Scheiter, & Gerjets, 2013). Eye movements therefore represent online, spatially accurate, and temporally-sensitive measures of visual attention (Etcheverry, Baccino, Terrier, Marquié, & Mojahid, 2012; Rayner, 2009).

The attention received by an object is indicative of the cognitive load required to process it, with more complex and more important components requiring and receiving more attention. Both the duration and number of fixations are indicative of information processing and therefore cognitive load. The frequency of fixations within a region in a scene is traditionally interpreted as representing the level of importance of the information it contains, whereas a region's fixation duration represents processing difficulty (Fitts, Jones, & Milton, 1950; Rayner, 1998). Increased cognitive load in cyberpsychology has been associated with interest, surprise, or difficulty in comprehension (Hughes, Wilkens, Wildemuth, & Marchionini, 2003).

By measuring gaze as SNS profiles are viewed we can determine which components of a profile are fixated longest and most often by viewers, and therefore which are considered most complex and most important. Although little is known about visual attention when viewing social media, eye movement measures are becoming increasingly utilized in other areas of cyberpsychology (e.g., viewing of web pages: Shrestha, Lenz, Chaparro, & Owens, 2007; viewing internet search results: Balatsoukas & Ruthven, 2012; Lorigo et al., 2008). In Section 1.3, we discuss the research and principal findings to date, with particular focus on the viewing of web pages which comprise a combination of text and pictures (similar to SNSs such as Facebook) and differences in gaze under different viewing motivations. This is important in the context of the current study, which will examine viewing patterns when Facebook timeline owners are evaluated as either potential friends or potential employees.

1.3. Eye movements in cyberpsychology

When measuring eye movements to investigate web page viewing, researchers typically assess either the pattern of fixations produced by participants or divide the screen into Regions of Interest (RoIs) to measure how often and for how long viewers focus on individual web page components. RoIs are subjectively defined areas of a page in which eye movement data can be individually quantified, therefore specific regions will vary between different types of web pages and from study to study.

There appears to be a relationship between gaze and traditional measures of website usability. Russell (2005) compared traditional usability data including task success and completion time, number of pages visited, perceived task difficulty, and overall satisfaction with measures of eye movement including number of fixations, dwell time, average fixation duration, and time to first fixation per RoI. Measures of usability and gaze were highly correlated, and differences between tasks were reported in measures of dwell time and number of fixations.

According to the visual hierarchy model (Faraday, 2000), gaze patterns are guided by two cognitive processes: initial searching (when the viewer looks for a 'point of entry' into the page) and subsequent scanning (where the viewer extracts information based round the entry point). These phases occur sequentially when viewing a web page for the first time. However, the focus of attention is guided not only by the composition of features on a web page but also by the mindset and motivation of the viewer. This is often referred to in the literature as the individual's 'mental set' and can act as a top-down factor to influence attention mechanisms (Pashler & Harris, 2001; Pravettoni, Leotta, & Lucchiari, 2008). People from most Western cultures, for example, will tend to begin viewing a page at the top-left corner, as their conventional reading style goes from left-to-right and from top-to-bottom. A viewer might not be consciously aware of their mental set, but be influenced by it to avoid focussing on irrelevant stimuli. Web page viewers also typically exhibit a preference for information towards the top of a page, and particularly information which appears 'above the fold' – on the section of the page visible on screen upon