ASSOCIATION FOR COMMUNICATION EXCELLENCE

Journal of Applied Communications

Volume 104 | Issue 2 Article 11

Let's Focus In: A Guide to Eye Tracking Technology in Agricultural Communications Research

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Recommended Citation

Stanton, Caitlin Anne and Fischer, Laura Morgan (2020) "Let's Focus In: A Guide to Eye Tracking Technology in Agricultural Communications Research," *Journal of Applied Communications*: Vol. 104: Iss. 2. https://doi.org/10.4148/1051-0834.2320

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Abstract

Communicating with the public about the agricultural industry often presents challenges in learning how to convey messages that are deemed as salient to various types of people. Media is understood through complex cognitive processes that result in varying attitudes throughout interaction with a stimulus, thus requiring methods that go beyond traditional self-report measures. The majority of agricultural communication research has encompassed quantitative and qualitative research, which often does not account for changes throughout media consumption. Eye tracking is an underutilized resource in agricultural communication that can be used to yield further insight into areas of interest that elicit visual attention and can signal further processing of information. This professional development paper examines the contributions of eye tracking research in agricultural communication and provides an overview of strategies for implementation in both research and practice.

Keywords

Eye Tracking, Visual Attention Allocation, Research Methods

Cover Page Footnote/Acknowledgements

This material is based upon work that is supported by the NLGCA Capacity Building Grants [grant no. 2017-70001-25991] from the USDA National Institute of Food and Agriculture.

Let's Focus In:
A Guide to Eye Tracking Technology in Agricultural Communication Research

Introduction

The foundational purpose of agricultural communication strives to determine how to craft salient messages that effectively convey message objectives while portraying the industry in a positive light. The public absorbs information about the agricultural industry through various types of media sources, with many members of the public lacking a grasp of the total impact of agriculture (Lundy, Ruth, Telg, & Irani, 2006). Understanding messages that resonate with agricultural consumers allows for further creation of messaging strategies that are more positively perceived by the public (Goodwin, Chiarelli, & Irani, 2011).

Broadly, communication research has focused on determining what variables interact with media consumption—whether that be individual characteristics, the message, characteristics, or the circumstances surrounding consumption (Harris & Sanborn, 2014). However, historically, this research has only considered evaluating responses to communication after message exposure. There are a multitude of tools that allow researchers to evaluate the dynamic, unfolding nature of message consumption. One emerging technology being employed to assess media messages is eye tracking, which monitors an individuals' eye movements in relation to how they are viewing the message (Cummins, 2017).

The purpose of this paper is to showcase how researchers can gather information relating to visual attention toward messages using eye tracking technologies. Eye tracking research has become a useful instrument for measuring attention allocation to various types of media content, with a diverse set of applications. However, Leggette, Rice, Carraway, Baker, and Conner (2018) found a lack of research within agricultural communication that utilized eye tracking technologies even as it yields valuable insight into salient messaging strategies. This paper will provide an overview of eye tracking methodologies, including potential studies, associated terminology and metrics, data analyses practices, and resources required. It will also discuss theoretical contributions of visual attention research concerning agricultural communication and the broader field of media and communication as well as providing recommendations for practice and research.

Literature Review

Dynamic Message Consumption

The human mind is a powerful system that engages in a multitude of processes in order to comprehend a message (Harris & Sanborn, 2014). Even so, the human mind has a limited capacity to process information and relies on attentional processes to fully understand and direct attention toward inputs (Duchowski, 2017). With numerous processes occurring during message transaction, the evaluation of changing reactions becomes an important consideration in communication research. Traditionally, communication research has focused on measuring response to a stimulus after an interaction, which does not account for changing reactions throughout a dynamic stimulus (Maurer & Reinemann, 2009). As communication messages unfold over time, researchers should be aware of measurement methodologies that account for cognitive shifts throughout media consumption (Maurer & Reinemann, 2009).

Eye tracking allows for a greater understanding of the dynamic processes involved with message consumption as thoughts, perceptions, and attitudes waver throughout (Cummins, 2017). Self-report measures provide insight into an individuals' thoughts toward a stimulus prior to or after viewing, although they do not account for how reactions evolved throughout. As a measurement methodology, "eye tracking permits a more granular assessment of not only attention to a media message or platform over other elements in the environment, but also intra-stimulus selective attention to elements within a message" (Cummins, 2017, p. 1). Eye tracking uncovers salient areas where media consumers are directing their attention and can yield a detailed view of continuously changing areas of interest.

Visual Attention Allocation

One of the aspects that allows researchers to understand the dynamic nature of message consumption is visual attention. Visual attention refers to the movement of the eye to certain regions within the visual field in order to focus concentration on an area of interest (Duchowski, 2017). As media is being consumed, it must capture the viewer's attention and provide motivation for further processing to understand the contents of a message (Gong, 2015; Harris & Sanborn, 2014). Thus, determining areas of a visual or textual message that elicit the most attention may reveal aspects requiring further processing; information which should be used to guide future message creation (Duchowski, 2017; Harris & Sanborn, 2014). For a message to be processed, it must engage a viewer's attention—a process which has several barriers.

As media consumers are continuously exposed to a mass of inputs through various sources, they are capable of allocating attention to only so many elements. The concept of selective attention has been used to explain the "viewer's allocation of attention to specific elements in the visual field to then process" (Fischer, 2017). Selective attention is often mediated by message and individual elements. Attention is first directed to visually appealing aspects, led by stimulus-driven bottom-up processing (Gong, 2015). Attention may also be directed by search behavior, in goal-directed top-down processing (Gong, 2015). Through the measurement of visual attention allocation, insight into selective attention toward specific message and individual elements of a stimulus can be discovered, which contributes to formation of future messages containing salient elements.

The measurement of visual attention lends itself to several theoretical and conceptual spaces. The Limited Capacity Model of Mediated Moderated Message Processing (LC4MP) proposes that exposure to a message results in salient elements receiving further processing and storage (Lang, 2000). This theory elaborates on the encoding, storage, and retrieval stages associated with cognitive processing of media consumption, of which selective attention contributes (Gong, 2015; Lang, 2000). Visual attention can also be incorporated with dual processing theories, such as the Elaboration Likelihood Model (ELM) and the Heuristic-Systematic Model of Processing (HSM). These theories posit two routes of cognitive processing. The central or systematic route suggests processing results from high levels of involvement and comprehensive cognitive assessment, while the peripheral or heuristic route suggests processing takes a surface-level approach, requiring fewer resources and using previously held knowledge (Chaiken, 1980; Petty & Cacioppo, 1986). In addition, visual attention can be applied to other similar frameworks such as the visual salience hypothesis and the biased competition model of attention (Gong, 2015). Applying eye tracking measures to a study requires careful consideration of the framework to justify the use of visual attention measurement.

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DOI: 10.4148/1051-0834.2320

Methods and Procedures

Types of Research

As it has become more accessible, eye tracking has become a common method to incorporate into studies focusing on visual attention (Orquin & Holmqvist, 2017). This method of research provides an understanding of visual attention allocation to a variety of media types as communicators aim to create valuable content. Eye tracking allows for further insight into how certain elements of a media message are consumed when compared to other images, text, and graphic elements (Cummins, 2017). Images, websites, videos, and social media are the most common media types coupled with eye tracking measures, although any visual stimulus has potential for measuring attention allocation. Stimuli can be live or prepared by the researcher, with the potential for both static and dynamic elements to be measured (King, Bol, Cummins, & John, 2019). With an extensive variety of potential uses, eye tracking provides a pathway for future agricultural communication researchers to gain insight into visual attention toward the messages, and also, to gain more insight toward the processing of salient message elements.

Eye tracking lends itself well to experimental designs, although descriptive and usability studies are feasible. This methodology produces a vast extent of data for both experimental and exploratory designs, which appeals to both quantitative and qualitative researchers (King et al., 2019). Typically, these studies occur in a laboratory-based setting with visual elements displayed on a computer screen, as it allows for a greater amount of control (Duchowski, 2017). Eye tracking glasses enable field-based experiments, while integration with virtual reality technology can provide a compromise between field and laboratory settings (King et al., 2019). Experimental designs allow the most potential for eye tracking studies as variables can be controlled to generate expected outcomes (Duchowski, 2017). Integrating eye tracking into media research can produce insight that would be impossible to determine through self-report measures.

Studies examining static images are commonly seen in media research, as they provide a route toward further understanding an individual's attention processes toward imagery. In agricultural communication, static images can range from photography, to advertisements, and food packaging. Fischer (2017) examined selective attention to agricultural advertisements, determining how that attention was mediated by motivational salience, issue involvement, and pre-existing attitudes. Participants viewed a researcher-designed magazine, which included either value-oriented or scientific reasoning message frames (Fischer, 2017). A similar study utilized static images to determine if differences in visual literacy existed between groups of agricultural communication students (Redwine et al., 2018). Participants were instructed to view a group of images that were awarded World Press Photo Prize distinction, assuming that their gaze behavior would signal visual literacy (Redwine et al., 2018). Studies measuring visual attention to static imagery are the most commonly seen in agricultural communication research, although considerable potential exists for studies examining dynamic stimuli as individuals communicates through more than just static images.

Beyond static images, measuring visual attention to videos provides insight into eye movements in regard to distinct elements, production techniques, or content of a video (King et al., 2019). Eye tracking has long been used to determine visual attention to television programs between age groups (e.g. Obrist, Bernhaupt, Beck, & Tscheligi, 2007), with recent endeavors to discern attention to distinct elements of a broadcast (e.g., Cummins, Gong, & Kim, 2016) and product placement within television programs (e.g., Boerman, Van Reijmersdal, & Neijens, 2015). Studies incorporating video stimuli are relatively easy to configure with their fixed-duration facilitating simple comparison (King et al., 2019). Eye tracking research incorporating video content provides understanding of dynamic media consumption, possessing a multitude of applications within agricultural communication.

An emerging area of eye tracking research is the investigation of visual attention to websites, which allows for further insight into how users interact with website elements. A lack of published research exists for website studies within agricultural communication, although the larger discipline of media research has provided a precedent of various examples that could be applied to this subset of communication. This area of research includes potential threats to validity as each individual user may have a different interaction with the content, which should elicit consideration from the researchers (King et al., 2019). Website studies in media research have scrutinized visual attention to news websites to understand viewers' attentive behavior toward site format, salient elements, and navigation (e.g., Chu, Paul, & Ruel, 2009), and comparing news consumption online as opposed to newspapers (e.g. Kruikemeier, Lecheler, & Boyer, 2018). Within the realm of advertising, studies have also use eye tracking to uncover visual attention to digital advertisements such as banner ads. These types of studies could be applied to websites featuring agriculture and natural resources content as a way to improve understanding of individuals' information consumption.

Social media continues to persist as the main channel for today's media consumers to devour information. It exists as an important platform for distribution of information, although communicators must utilize it as a tool rather than a method for dissemination (Josephson & Miller, 2015). Studies have measured how media consumers attend to social media content (e.g. Josephson & Miller, 2015), and it has been used to uncovered viewing patterns between text-only and visual-included social media content. As such, measuring visual attention to social media content allows a more detailed assessment of consumption compared to self-report or qualitative measures.

Eye tracking measures can be implemented within a multitude of communication effects studies, although a lack of visual attention research exists within the agricultural communication discipline. Static images, videos, websites, and social media content represent areas with potential for eye tracking studies that apply to the communication of agriculturally-related topics. Each of these types of visual attention research require distinct configurations, as they vary in their difficulty.

Terminology

As with most research technologies, eye tracking involves its own set of terminology, which must be fully understood prior to developing a study. Eye tracking provides an abundance of metrics which can be applied in various ways. As most communication research is focused on specific elements within a message or stimulus, areas of interest (AOIs) represent the most common metric utilized in eye tracking studies (King et al., 2019). As seen in figure 1, AOIs are developed by the researcher and depict areas of focused visual attention for further comparison (Duchowski, 2017).

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DOI: 10.4148/1051-0834.2320

Figure 1. Example of AOI on food packaging stimulus

Within each AOI, several metrics can be used to determine visual attention to an area; these include *fixation count*, *fixation duration*, and *time to first fixation*. Fixation count represents the number of times an individual's eye paused over an area of the stimuli, while fixation duration is the amount of time that pause occurred (Duchowski, 2017). Additionally, time to first fixation designates the amount of time before an individual paused their visual attention over an AOI (Duchowski, 2017). The distance between fixations is represented through saccades, which can be defined through their amplitude, distance, or velocity (King et al., 2019). Together, fixations and saccades form scanpaths (i.e., gaze paths) which illustrate the complete sequence of an eye as it travels around a stimulus (King et al., 2019). Table 1 displays the metrics that have endured as the most common methods for measuring visual attention, although an extensive review can be obtained from Duchowski (2017).

Table 1
Definitions of Eye Tracking Terminology

Term	Definition
Area of Interest (AOI)	Elements within a message or stimulus that represent areas of focused attention for further comparison (Duchowski, 2017)
Fixation Count	The number of times an individual's eye paused over an area of the stimuli (Duchowski, 2017)
Fixation Duration	The amount of time an individual's eye paused over an area of the stimuli (Duchowski, 2017)
Time to First Fixation	The amount of time before an individual paused their visual attention over an AOI (Duchowski, 2017)
Saccade	The distance between fixations; can be defined through their amplitude, distance, or velocity (Duchowski, 2017)
Scan Path	The combination of fixations and saccades that represents the complete path an eye takes when viewing a stimulus (King, 2019)

Procedure

Developing Eye Tracking Studies. Eye tracking hardware is available through several companies—including Tobii, ISCAN, and Eyetech. The authors have experience with Tobii systems, and they have found that they are the most commonly utilized in media and communication research as they provide several configurations which lend themselves to laboratory and field research. Eye tracking hardware is typically found in two layouts: a screen-based device and glasses, which allow for mobile research and are ideal for field-based studies or those which require increased movement from the participant (Tobii AB, 2016). Tobii glasses also allow for the integration of virtual reality technologies, which can increase the variety of attainable eye tracking studies within communication research (King et al., 2019). While Tobii glasses allow for greater accessibility, they have a lower sampling frequency (50 or 100 times per second) compared to screen-based devices (Tobi AB, 2016). Studies that capture minute eye movements, such as those requiring the participant to read a text passage, necessitate the need for higher sampling rates that can only be found in screen-based devices (Cummins, 2017). Eye tracking glasses are more likely to be used in field based studies. These help communicators to make inferences among natural situations and settings. Although eye tracking research yields an assortment of technological decisions, broad guidelines for developing a study are generally identical.

The majority of communication-based, eye tracking studies abide by experimental design standards as the inclusion of several variables provides insight into visual attention toward the construct under examination. When developing a study, one of the first considerations should be the variables being studied and how they would be best examined. Available equipment will often dictate potential studies, although eye tracking technology continues to advance toward more portable configurations that increase the variety of studies possible. Laboratory studies are often selected due to the increased control that the researcher maintains over the study, although field-based studies may result in increased ecological validity (Duchowski, 2017).

Once variables and research questions or hypotheses have been identified, the researcher should take time to consider the configuration of the study within their chosen software. Tobii hardware comes with the choice of two different programs—Tobii Studio and Tobii Pro. Tobii Studio is a basic program that maintains a straightforward user interface, although it does include limited study design options with a finite selection of stimulus configurations and outputs. This program is best for studies that are entirely focused on visual attention. Tobii Pro includes advanced features, such as innovative website study analysis capabilities and integration with Tobii Glasses, VR 360, and psychophysiology technologies. Both programs include options for studies focused on images or static page designs, video, or websites, with each allowing for the inclusion of on-screen instructions and questionnaires.

Although eye tracking measures provide insight beyond what the traditional self-report measure can provide, a combination between pre- and post-test measures with eye tracking may elicit further understanding of outcomes. Results from eye tracking measures may be coupled with those from self-report measures to help reveal differences between how individuals dynamically process information and their perceptions and attitudes toward the stimulus (Fischer, 2017; Schiessl, Duda, Thölke, & Fischer, 2003). Eye tracking can also be paired with think-aloud measures, where participants verbally describe their thought processes when viewing a stimuli (Duchowski, 2017). This type of research may lend itself to uncovering more details on where and why participants allocate attention. It also allows for researchers to explore participant’s thoughts and perceptions when viewing a stimulus. Thus, visual attention studies can be combined with a variety of additional pre- and post-test measures to achieve the desired outcomes.

Conducting Eye Tracking Studies. To conduct an eye-tracking sessions, individuals should be provided scheduled times for participation in both laboratory and field studies. After agreeing to participation, individuals should be instructed to sit approximately 24” in front of the computer screen and refrain from moving their head or any other part of their body for the

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DOI: 10.4148/1051-0834.2320

duration of the study (see figure 2). At this time, any pre-test measures should be completed. To begin the study, the eye tracking hardware must be calibrated to ensure proper measurement of the eye movements. With the Tobii eye tracking unit, the hardware reflects light off the cornea through a nearly invisible infrared light which reveals where the eye is fixating and can precisely track the eye (Jacob, 1995). Calibrating the eye tracking hardware involves having the participant follow a moving dot on the screen, which aligns with five to nine predetermined points on the screen. Calibration should be completed before each participant to ensure the eye tracker is recording accurate data (Duchowski, 2017).

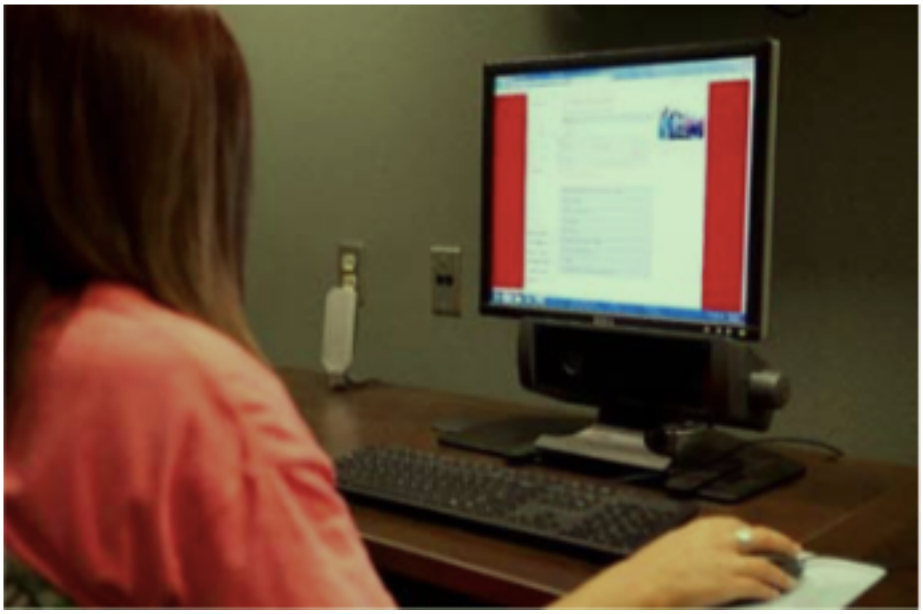

Figure 2. *Participant in an eye-tracking study scenario.*

Following calibration, participants should be instructed to begin viewing the incorporated stimuli. Depending on the study design, their tasks may include clicking through images or videos, or browsing a website. This part of the experiment is reliant on the developed study design; therefore, it may include many variations. The stimuli can be programed to appear for a set amount of time or participants can control how long the view the media. Each option lends itself to different types of studies and the decision to provide a set time or allow free exploration should be considered during the development of the study and data analysis plan. Following their observation of or interaction with the stimuli, any included post-test measures should be completed.

Data Analysis

A major consideration throughout the development of an eye tracking study is the data analysis plan. Eye tracking yields quantitative data which materialize as means for most metrics, including fixation count and duration (Duchowski, 2017). If the study includes AOIs, they should be developed following conclusion of the data collection. For static image studies, the development of AOIs is fairly straightforward—shapes can be drawn to accommodate the outline of any object. In a dynamic video or website study, these shapes should be redrawn for each frame of the stimuli. For example, a study examining visual attention to male and female sports reporters required AOIs to be drawn throughout multiple clips, accounting for production techniques such as cuts and multiple angles (Cummins, Ortiz, & Rankine, 2018).

A t-test can be used to compare two means—whether that be between two AOIs, images, or participant groups. ANOVAs are frequently utilized within eye tracking experiments to facilitate the comparison of multiple group means and reveal where statistically significant differences in visual attention exist (Duchowski, 2017). For studies involving a time variable, repeated-measures ANOVAs may provide an understanding of visual attention over time. Tobii software programs may provide assistance toward the beginning of data analysis, although data should be imported into a program such as SPSS for further analysis.

Depending on the operationalization of data within the experiment, increased time spent on an AOI may signal salient elements of a stimuli or increased cognitive processing (Duchowski, 2017). As such, the design of an eye tracking study is an important consideration when contemplating the desired outcomes from measuring visual attention. When reporting findings of an eye tracking study, all data analysis decisions should be included to justify the conclusions made. This includes reporting issues such as missing data, data quality, and any limitations due to the study design (King et al., 2019). Eye tracking experiments provide insight beyond what can be learned through other measures, although the decision to complete a study comes with its own set of procedures which must be followed for reliable findings.

Eye-tracking data may also be shown descriptively through a variety of visuals and videos. The data may be exported as heatmaps (see figure 3). Heatmaps can be created in a variety of forms by changing the colors and density.

Figure 3. *Example of a heatmap developed from eye-tracking research.*

Researchers may also utilize functions within the eye-tracking technology to showcase scan path as a video and/or a static image (figure 4). These types of data visualizations help researchers and practitioners alike to showcase how visual attention was attended to during media consumption.

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DOI: 10.4148/1051-0834.2320

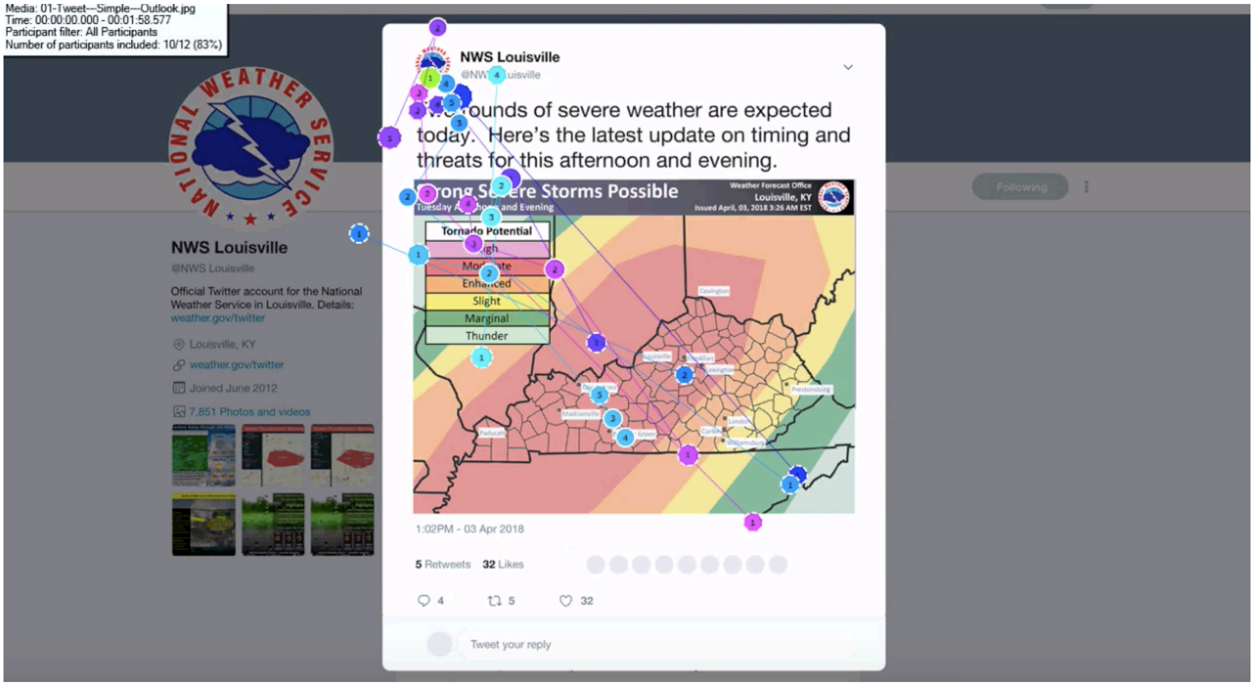

Figure 4. *Representation of scan path recording.*

Cost and Resources Needed

Eye tracking research is a significant investment of money and time and, thus, should not be undertaken without careful consideration of its applicability to the research area. A standard Tobii Pro X3-120 screen-based eye tracker with access to Tobii Pro Lab software is priced at approximately $20,000, although academic discounts are available. In addition to the high cost of equipment, eye tracking research requires considerable time for training, set-up, data collection, and analysis. Unless multiple eye trackers are available, research must be conducted in individual sessions and may last 30 minutes or more, depending upon the nature of the study. Once the study has been constructed within the software program, little set-up is required between participants—mainly resetting the study and recalibrating once the subsequent participant arrives. Another consideration is the number of participants needed and any incentives offered for participation. Approximately 30 participants are needed per condition in an experimental design and eye tracking studies typically have multiple conditions, including a control. With more than 60 participants requiring individual sessions, it quickly becomes a large time and money investment for researchers.

To alleviate some of the resource limitations of eye tracking research, it is recommended to form cross-disciplinary partnerships with other departments engaged in similar research. For example, collaborations between colleges of agriculture, business, and/or communication may elicit access to eye tracking technology as well as further understanding of the potential of visual attention research within these fields. Those with expertise in eye tracking technologies serve as valuable resources for new researchers and may provide different perspectives on research potential (Stanton, Hill, Elliot, & Meyers, 2019). With the considerable amount of monetary and time resources needed for eye tracking research, forming partnerships may allow those without accessible assets to engage in this line of inquiry.

Results to Date and Outcomes

Eye tracking provides a means for measuring visual attention allocation to salient elements of a stimulus, which details the cognitive processing efforts of an individual to fully understand a message. Previous studies using eye tracking in agricultural communication are limited, although they have provided several key findings regarding media consumption within the agricultural industry. Examining static images through eye tracking yields insight into various aspects of media consumption due to the diverse range of stimulus that can be evaluated. Fischer (2017) analyzed selective attention to advertisements, finding significant differences in visual attention between the message frames as well as specific elements within the advertisement. This study has implications within the processing of value-oriented messages, as they elicit more attention and thus, provide a route for information processing and attitude development. Redwine et al. (2018) used eye tracking in the context of students' evaluations of images in a photography class. This study analyzed heat maps generated from the gaze behavior, finding distinct areas where groups of students directed their visual attention and providing support for the use of heat maps as an illustration of visual literacy (Redwine et al., 2018). Although agricultural communication studies utilizing eye tracking are limited to static images, overarching communication research has provided a precedent of relevant studies involving dynamic stimuli which can be applied to agricultural inquiries without difficulty.

Within theoretical spaces, eye tracking yields insight into methods of cognitive processing, which is an important component of successful communication efforts. The amount and type of visual attention allocation affirms the occurrence of cognitive processing, as longer fixations result in increased cognitive processing and, within the dual processing modes, can demonstrate central or systematic processing (Cummins, 2017; Gong, 2015). Incorporating dynamic stimuli increases understanding of the processes associated with consumption of a message that unfolds over time and results in evolving attitudes. As attitudes associated with most media changes throughout interaction and exposure, measurement methodologies should follow the same logic to obtain findings which convey a more complex story than one that can found through self-report procedures.

In practice, eye tracking findings have tangible applications which can be used to build upon present conventions to yield additional return on investment for communication strategies. As evidenced by previously mentioned studies, eye tracking provides an understanding of attention to messaging elements, which identifies salient aspects that should be further implemented in future communication efforts. It can also be applied to educational endeavors to determine areas that capture students' attention and used toward development of improved teaching strategies. Results of eye tracking studies have broad implications for practice as the agricultural industry and its dissemination efforts evolve alongside the ever-changing course of mass communication.

Measurement of visual attention allocation through eye tracking methodology has an abundance of applicable uses within agricultural communication practice and research. Nearly any media stimulus can be evaluated—from static images, to videos, websites, and social media pages. With the variety of approaches toward eye tracking research, agricultural communicators can apply it to further discovery of message elements that resonate with all facets of media consumers, with the distinct purpose of crafting messages that strengthen the grip of their communication efforts.

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Discussion and Conclusion

Visual attention is a straightforward concept with immense significance for exploration of communication effects. Eye movements, and their resulting fixations, illustrate areas of interest that necessitate further cognitive processing. Eye tracking aligns with the construct of selective attention, as well as the frameworks of LC4MP, Elaboration Likelihood Model, and the Heuristic-Systematic Processing Model, and more. Nearly any type of media input can be used with eye tracking, yielding an abundance of insight into the effects of agricultural communication. Procedures involving eye tracking are relatively easy to undertake, provided the proper approach is used. The findings generated from eye tracking studies have implications within agricultural communication research and practice. Further development of messaging strategies can result from areas of interest that elicit increased visual attention, with applications for both visual and textual messages. This paper sought to provide an overview of eye tracking research, outlining theoretical relevancy of the methodology, as well as proper procedures that should be followed to achieve valid results. Eye tracking is a unique methodology for analyzing media messages beyond the limitations of self-report measures.

Recommendations for Research and Practice

The use of eye tracking technology could be useful to both practitioners and researchers alike. In both practice and research, agricultural communicators could leverage this technology to understand what aspects of messages are gaining attention as well as what aspects are driving recall, perceptions, and behaviors. This could be helpful when developing visual messaging surrounding the agricultural industry. The application of eye tracking as a research tool could help researchers to develop more theoretically driven studies in the field of visual communication. Through conversations at conferences and professional development meetings, the agricultural communication field has continuously suggested how we can continue to move our field in a forward-thinking and innovative manner. While eye tracking is not a new technology, it does allow for another toolset in the research box to help us further understand how consumers process messages.

When writing manuscripts and reports using eye tracking data, we recommend a thorough discussion of the methods and findings. First, in the methods, a clear understanding of how the stimuli were selected and organized by the area of interest must be included. Perhaps inclusion of the stimuli and the areas of interest can help make the study more replicable to others. Additionally, the authors must provide details relating to the instructions that were given to the participant. Attention can sometimes be "goal-directed," suggesting that different types of instructions may influence viewing pattern. Thus, instructions must be clear, well-written, and should be vague enough to not influence the eye movement pattern. In the findings section, researchers should first provide the research question. Next, the analysis provided. Finally, a visual description in the form of a figure could be helpful to the reader. The eye tracking unit does allow for heat maps, and visualizations of scan path to be included, and these types of visuals can help the readers understand the material more carefully.

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DOI: 10.4148/1051-0834.2320