VISUAL PROCESSING ASSOCIATED WITH MAKING JUDGMENTS OF POLITICAL AFFILIATION: AN EYE-TRACKING STUDY

A thesis presented to the faculty of the Graduate School of Western Carolina University in partial fulfillment of the requirements for the degree of Master of Arts in Clinical Psychology

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April 2013

ACKNOWLEDGEMENTS

I would like to thank my thesis chair, Dr. Leonardo Bobadilla. I appreciate the amount of time you have spent working with me, including the many revisions that were passed back and forth between the two of us. I would also like to extend my appreciation to Dr. Chris Cooper and Dr. Erin Myers for their insightful ideas, guidance, and revisions, which helped to make my thesis stronger.

I would also like to thank my cohort. In particular, I recognize Brittany Blanchard, Jerica McIntyre, Jessica Kelliher, and Lisa Vartanian, who were always willing to listen and help. Somehow, deadlines seemed less daunting when we faced them together.

Finally, I would like to thank my family. Specifically, my father and my Aunt Kim provided an early backboard for various ideas, which eventually developed into this thesis. I want show my gratitude to all of my family and friends for their encouragement and support throughout this entire process.

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ABSTRACT

VISUAL PROCESSING ASSOCIATED WITH MAKING JUDGMENTS OF POLITICAL AFFILIATION: AN EYE-TRACKING STUDY

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This study assessed whether differences exist in the way females, males, and people with opposing political partisanships focus their visual attention during evaluations of politicians' facial images. Eye movements were recorded while eighty four participants (34 males, 50 females) viewed ten images of politicians and were asked to determine levels of competence and attractiveness, political party, and the likelihood of voting for the candidate. Their visual attention was measured with the number and duration of fixations to four facial areas of interest (AOIs), including each eye, nose, and mouth. This study indicates groups separated by sex and opposing political partisanships use dissimilar visual processes when cognitively assessing images of politicians. Analysis of the visual scan paths indicate males held fixation durations on noses significantly longer than females ($p < .05$). Females showed a trend in evaluating eyes and took significantly more time to fixate on candidates' noses ($p < .05$). Democratic participants also spent more time evaluating noses ($p < .05$) when compared to Republican participants. Results also indicated that voters' higher ratings of competence and attractiveness correlate with the likelihood of voting for a candidate. This research provides support demonstrating that people use cognitive and visual processing skills to extrapolate nonverbal cues to facilitate in judging images of politicians.

CHAPTER ONE: INTRODUCTION

In our culture, the media plays a massive role in the public's perception of politics and politicians. Thanks in large part to the media, voters have more convenient access to their legislatures and the policies and laws being debated than they have had in the past (Graber, 2001). However, research has shown that the majority of voters do not exert the needed effort to fully research the discourse of politics and awareness of public policies (Boudreau, 2009; Bull & Hawkes, 1982). Much scholarly discussion is in favor of the public collecting factual information, then gauging their political opinions through research of specific candidates' policies by examining and reading about them, and hearing them debate and speak publicly (Converse, 1964; Mattes et al., 2010). Increasingly, Americans are receiving much of their educational messages about politics largely from the contemporary media by watching television or using the Internet (Graber, 2001; Griffin, 2001; Hart, 1999; Lenz & Lawson, 2011; Schill, 2008).

The mass consumption of politics through media includes an increase in viewing many images of politicians. Yet, judgments are generally based on quick inspection of images of politicians, along with nonverbal cues portrayed through their facial expressions (Lenz & Lawson, 2011; Wanke, Samochowiec, & Landwehr, 2012). Previous research has suggested that an ability to make rapid inferences based on brief exposure to photographs of candidates can lead to vote choices (Todorov, Mandisodza, Goren, & Hall, 2005; Wanke et al., 2012). It has also been suggested that social perception abilities have developed over time and can be applied to an individual's choice in a politician based on their image (Samochowiec, Wanke, & Fiedler, 2010; Wanke et al, 2012). As people are increasingly bombarded with images, citizens use

information shortcuts and adaptive perception skills to supplement their abilities to judge candidates' images with less information (Boudreau, 2009). In fact, research shows that individuals are capable of making accurate judgments about a candidate's political affiliation, electoral success, and certain traits (e.g., competence, dominance, threat) from facial images (Lawson, Lenz, Baker, & Myers, 2010; Lenz & Lawson, 2011; Mattes et al., 2010; Olivola & Todorov, 2010; Olivola, Sussman, Testos, Kang, & Todorov, 2012; Samochowiec et al., 2010; Todorov et al., 2005; Wanke et al., 2012; Willis & Todorov, 2006). Notably, some research shows that it is common for individuals to judge political candidates based on their faces as opposed to their policies and opinions (Bull and Hawkins, 1982; Lenz & Lawson, 2001). These evolved abilities help unsophisticated voters discern images and relate to the social nature of politics (Boudreau, 2009; Carney, Jost, Gosling, & Potter, 2008; Samochowiec et al., 2010).

Mutually, the influence visual media has on voters and the research indicating citizens have developed perception abilities to discern information from images create a need for further research. It would be informative to develop a better understanding about how these influential images are being processed by voters. As people are becoming inundated with media images with less exposure to political discourse, understanding a voter's specific visual processing while judging candidates can potentially give insight to a voter's mind when choosing candidates.

Recent technological advances allow researchers to track eye movements as they observe various forms of stimuli, such as emotional faces (Vassallo, Cooper, & Douglas, 2009; Duchowski, 2007). Eye tracking has been a growing tool used in psychological research to determine underlying cognitive perceptions of people by examining their eye

movements and their focus (Duchowski, 2007). In political psychology, eye-tracking technology has only been used to determine perceptions of effectiveness of different types of political advertisements (Geise, 2010). Consequently, this study hopes to understand the visual processing involved with a voter's approach in evaluating photographs of candidates, which remains poorly understood. This study proposes that citizens will be able to accurately judge unknown politicians because underlying cognitive processes have adapted shortcuts allowing for such abilities.

CHAPTER TWO: LITERATURE REVIEW

Visual Communication in Political Psychology

Over the second half of the twentieth century, American citizens' reliance on the mass media has grown, resulting in an increased use of visual media (Graber, 2001; Hart, 1999; Sears, Huddy, & Jervis, 2003). As television and the Internet have developed into the main method for the public's collection of news, dependence on visual images for gathering information has increased. Many voters collect their news information from newspapers, Internet press, and television. Specifically, television is currently regarded as one of the most important channels for communicating political news to the public and influencing their voting behaviors (Hart, 1999; Schill, 2008). Visual communication is useful for unsophisticated voters because it allows access to nonverbal cues, in addition to visual imagery (Druckman, 2003). As a result, visual communication is gaining influence in political communication (Geise, 2010; Lester, 2005; Schill, 2008).

The need for creating an effective political image is not new, as evidenced by the first televised presidential debate in 1960 between Richard Nixon and John F. Kennedy. Following the debate, individuals who watched it on television selected Kennedy as the more visually appealing candidate, while those polled who listened to the radio in the hall preferred Nixon (White, 1961). Druckman (2003) revisited this debate using younger participants who were uninformed about the historical debate. Results indicate that viewers infer about the politician's personality more when viewing the debate. In addition, integrity played a greater part in the perceptions of viewers when compared to listeners. Therefore, using television as an additional medium has the potential to prime

viewers to not just employ, but also depend on their perceptions of candidates' images (Druckman, 2003).

Consequently, the allocation of campaign spending has shifted to television advertising. Television advertising allows for the increase of emotional, visual appeals in elections (Hart, 1999). Such appeals used in television advertising fill the need to create an image for a politician that is widely accepted by the public (Schill, 2008). Considering the increase in public dependence upon television for news (Hart, 1999; Schill, 2008), viewers are susceptible to having their decision-making abilities targeted by developing image-based personalities for each candidate. Such personalities are developed by either the candidate or are an effect of the media (Putnam, 2000; Schill, 2008; Zaller, 1992).

Investigation of political images' effect on voters is lacking because some researchers wonder if we rely on a democratic political system that is merely based on an image (Druckman, 2003). Others argue that visual images are a superficial form of data, lack essential information, and ultimately, are useless in providing important information in the form of empirical research about voting behavior (Geise, 2010; Schrill, 2008). With regard to television as a visual medium, critics argue that this type of visual presentation promotes cognitive laziness and threatens to undermine the political process (Hart, 1999). In addition, it is difficult to measure the influence television has on the public because non-experimental studies do not generate conclusive causal relationships (Putnam, 2000). Putnam (2000) describes the difficulty in establishing causes for candidate and media selection, which may be due to both "selection effects" (people with specific traits decide upon their own news medium) or "media effects" (after contact to the medium, a person's trait is developed). Despite the effect mass media have on

viewers, television, as a medium, largely affects unsophisticated voters' choices in candidates (Druckman, 2003). These arguments against researching visual stimulation have resulted in limited effort to comprehend the effect of political imagery on a voter's mind, despite its clear reported effect on the voter and its prevalent use in campaigning, advertisements, and news reports (Griffin, 2001; Schill, 2008).

Undoubtedly, the preferred way for voters to obtain information about political candidates would be to collect information from all methods of political communication in the form of rational discourses, yet research shows that visual communication has always been a large part of our society. Over time, the use of visual cues has gained importance due to the increased use of television and Internet (Hart, 1999). A large amount of political information, especially during elections, is relayed in heavily image-based advertisements and newsfeeds (Geise, 2011; Sears et al., 2003). In addition, this information supplied to the public is attempting to depict the candidate in a positive light, using television, the Internet, and billboards (Geise, 2011; Hart, 1999). Such advertisements can be used to build up a politician's own image and also slander their competitor by exaggerating their images in a negative portrayal. Research reveals that when politicians are dealing with less informed citizens, merely "looking the part" benefits them in elections (Lenz & Lawson, 2011; Samochowiec et al., 2010; Wanke et al., 2012). Therefore, politicians are aware of the power of images and try to advantageously portray themselves through the manipulation of images given to the public (Schill, 2008).

In short, visual mass media provides a quick and efficient way to translate information to the public. It has become the way many voters receive their news about

politics (Hart, 1999). Therefore, many scholars report a need for empirical research regarding the role of visual communications in the field of political communication (Adams & Schreibman, 1978; Graber, 1996, 2001; Griffin, 2001; Hart, 1999; Schill, 2008).

The Image Bite in Politics

As images are used increasingly in political communication (Graber, 2001; Hart, 1999, Schill, 2008), one common way to portray candidates is through sound bites and image bites (Bucy & Grabe, 2007). A sound bite uses a quotation extracted from an audio speech or interview used to exemplify the full-length piece. Such shortening allows for editing into news and programs (Hallin, 1992). Alternatively, the image bite is used to depict a candidate's apparel and style, conveyed along with emotions and traits demonstrated through facial expressions (Bucy & Grabe, 2007). Unlike sound bites, image bites can be fabricated with various camera angles, lighting, backdrops, and other elements in the visual frame of the picture to portray the politician in the best way possible (Schill, 2008). Examples of these images include a candidate playing sports to appear youthful, a candidate hunting to appeal to certain voter segments, or simply by placing American flag to display patriotism (Schill, 2008; Sears et al., 2003). Previous research has shown that all of these efforts of perfecting image bites affect voters by creating a relatable appeal when viewing candidates (Bucy & Grabe, 2007; Schill, 2008).

Research indicates that individual's snap judgments based on image bites usually shape future attitudes, predominately when influenced by the media (Bucy & Grabe, 2007; Wanke et al., 2012). These initial, appearance based judgments sometimes never change even after more information has been collected about a candidate (Wanke et al.,

2012). Therefore, in the arena of politics, looks are important. As a result, political advisors strategically employ the use of candidate's images to influence prospective voters, even going so far as to hire previous television producers to help display politicians' images in a positive light (Schill, 2008). The amount of effort applied by politicians to create optimum images has grown over the past half-century, and there has been a decrease in sound bites with a steady increase in the amount of image bites that are presented to the public (Bucy & Grabe, 2007; Hallin, 1992). In fact, Bucy & Grabe (2007) analyzed all television news stories for each of the presidential elections from 1992 to 2004 to discover that the viewers were presented with declining amounts of sound bites and increasing amounts of image bites with each election cycle.

These strategic image bites supplement the public's political judgments because it causes them to naturally and implicitly theorize about images, even when doing so under rapid exposure (Haxby, Hoffman, & Gobbini, 2000; Mattes et al., 2010). Image bites on the news display political leaders in a way that allows individuals to systematically process them, resulting in a higher ability for the viewer to remember them. This influences the emotions of the audience and allows them to evaluate and consider the candidate, which could likely guide their voting decisions (Bucy & Grabe, 2007).

Cognitive Mechanisms Underlying Rapid Visual Processing

As previously stated, the public is bombarded by advertisements and media (Geise, 2010; Hart, 1999; Lau & Redlawsk, 2006; Schill, 2008). This overload of stimuli cannot all be processed. Since people generally want to make good decisions, humans have developed simplification mechanisms to arrive at decisions. Although using these simplification mechanisms may not be the superior method for data collection about

politics, it has been argued that these simplifications work more often than not (Boudreau, 2008; Lau & Redlawsk, 2006; Porter, England, Juodis, ten Brinke, & Wilson, 2008).

These simplifications take the form of three mechanisms: decomposition, editing, and heuristics (Lau & Redlawsk, 2006). Decomposition refers to the breaking down of a decision into different parts making evaluation prior to decision easier. Editing refers to a voter's ability to eliminate or ignore aspects of a decision that help to remove possible alternatives, thereby making the decision process easier, yet possibly less effective. Heuristics cause voters to rely on cognitive shortcuts. As it refers to politics and choosing a candidate, these cognitive shortcuts are often broken into affect referral when voting for highly evaluated and known candidates (Wright, 1978), endorsements (Lau & Redlawsk, 2006), familiarity of the candidate (Goldstein & Gigerenzer, 1999), habit and party affiliation (Quadrell, Fischhoff, & Davis, 1993), and viability (Lau & Redlawsk, 2006). Each of these cognitive shortcuts is used in image's portraying a candidate, tapping into a voter's cognitive shortcuts and likely impacting their selections.

Previous research studying the effectiveness of images, has found that the large use and distribution of pictures assist in a person's ability to recognize candidates and easily decipher what is being portrayed in the images. This phenomenon has been called the *Picture Superiority Effect*, and it suggests that people are able to understand images more efficiently when compared to textual forms of communication causing mental anchoring and better memorization of the material presented (Geise, 2010; Nelson, Reed, & Walling, 1976).

Unconscious Evaluation of Faces

Subjects' ability to make these personal assessments based on a rapid exposure to only a facial image of an individual is argued to derive from the same evolutionary cues that help individuals in more general types of social encounters (Haxby et al., 2010). Cues are used in many areas of social perception that have been a natural adaptation. In general, people use facial appearance to form rapid impressions about unknown people to discriminate between friends and foes (Cosmides & Tooby, 1992; Porter et al., 2008; Wanke et al., 2012). Appearance-based cues are usually the first suggestions we get about people, and historically, they have helped to provide insight (Wanke et al., 2012). As a result, accurate trait inferences are often made about others (Penton-Voak, Pound, Little, & Perret, 2006). When judging faces, research suggests two major axes—dominance and trustworthiness—that illustrate the social dimensions of facial evaluation (Oosterhof & Todorov, 2009).

Cues are applicable in the political arena when people are confronted with an abundant amount of information about each candidate (Lau & Redlawsk, 2006). Since most people do not thoroughly research all of the candidates, scholars have researched different ways that people choose the contender (Boudreau, 2009; Bull & Hawkes, 1982; Zaller, 1992). These efforts have resulted in a growing body of research suggesting that a number of voters make decisions merely based on nonverbal cues when electing future politicians (Todorov et al., 2005; Lawson et al., 2010; Olivola & Todorov, 2010), and that people are able to intuitively extrapolate personal attributes even with little information (Ambady, Bernieri, & Richeson, 2000; Funder, 1995; Porter et al., 2006).

As citizens encounter immense amounts of visual media, cues are used to discriminate between candidates. Due to citizens' nature of data collection from facial images, it can be assumed that evolutionary cues are associated with the process involved in an individual's manner for evaluating and ultimately choosing candidates.

Voter Decision Making

There are limitations on both cognition and rationality, and they are especially evident when gathering factual information about political candidates and our government (Campbell, Converse, Stokes, & Miller, 1960; Sears et al, 2003; Mattes et al., 2010). The majority of voters have little political knowledge, which may cause them to be vulnerable to how the media portrays politicians (Bucy & Grabe, 2007; Zaller, 1992).

Previous research reveals that people are also ineffective in providing reasons for actions, even when asked soon after the actions were made (Nisbett & Wilson, 1977; Sears et al, 2003). These findings extend to voting decisions. A large number of people are unable to provide rational reasons as to why they chose a certain candidate, suggesting that it is often an emotional decision that has little to do with political information (Bull & Hawkes, 1982; Groenendyk, 2011; Hart, 1999). One explanation for the inability to provide reasons for decisions is due to a person's approach to making decisions using the aforementioned heuristics to create cognitive shortcuts. When an exhaustive search about each politician is impossible, heuristics are naturally and implicitly integrated to help individuals judge politicians (Lau & Redlawsk, 2006). The theory of *affective intelligence* posits that emotions supplement reason by helping an

individual understand when to rely on heuristics and information shortcuts or when to apply more cognitive effort (Groenendyk, 2011; Marcus, MacKuen, & Neuman 2000).

Previous research has provided four distinct models of voter decision making separating voters into those that vote simply based on rational choice, those that depend on early socialization for their vote, those that vote in a manner that is quick, and last, those that vote with bounded rationality. As the name implies, "rational choice" voters focus on the rational choice and are dispassionate about feelings they may have. This type of person is motivated by self-interest and votes according to active research of all aspects of each candidate. This process can be cognitively taxing (Lau & Redlawsk, 2006) and does not apply to the majority of people who also tend to use their motivating emotions when processing information about candidates (Groenendyk, 2011).

Voters that fall in the early socialization model are usually ambivalent about active political rhetoric, and primarily focus on political party affiliations. Additionally, this model produces voters that are commonly passive and driven by the media. The third "quick" model of voter decision-making is based on gaining information in the most frugal and efficient way possible. This method of decision making is more symbolic than technical in that the vote deals more with policy ends rather than means. The final model (bounded rationality) for voter decision making causes an individual to seek out information, but only enough to accept their quick decision. It is a way to intuitively make decisions about candidates in a simplified manner, requiring less time and effort. These decisions are made with the use of cognitive decisions and political heuristics (Law & Redlawsk, 2006; Sears et al., 2003), and oftentimes integrate the use of appearance as a low-information heuristic (Lenz & Lawson, 2011).

It is apparent that out of the four models for voter decision making, the last three require the voter to be efficient, which most likely lead to use the media and images. While many voters may be unsophisticated citizens with little political knowledge, these information shortcuts provide the voter with adequate decision making skills (Boudreau, 2009).

Previous Studies Focusing on Politician's Images

The models of voting behavior associated with early socialization, quick-mannered voting, and bounded rationality, along with the simplification mechanisms involved in processing politicians, allow images to have a large effect on voters. Recently, studies have investigated the power of a politician's image under the premise that "a single photograph can have a clear impact on voters' judgments regarding a candidate's congressional demeanor, competence, leadership ability, attractiveness, likeableness, and integrity" (Rosenberg, Bohan, McCafferty, & Harris, 1987, p. 123). Several recent studies have concluded that people are well equipped to make politically consistent decisions by merely viewing a candidate's photograph by judging nonverbal cues portrayed through their faces (Boudreau, 2009; Lawson et al., 2010; Lenz & Lawson, 2011; Little, Burriss, Jones, & Roberts, 2007; Mattes et al., 2010; Olivola & Todorov, 2010; Samochowiec et al., 2010; Todorov et al, 2005; Willis & Todorov, 2006).

For example, Samochowiec et al. (2010) developed a study with images of opposing candidates from earlier elections and found that people can identify political party affiliation well above chance level. Participants accomplished this even when certain cues were taken away (e.g., apparel, hairstyles, etc.) leaving only a black-and-

white image of the politician's face. The researchers concluded that political partisanship may be observable on politician's faces.

An additional study found that Republican-looking politicians (based on the participant's assessment of political facial stereotypes) have better electoral success among conservative voters (Olivola et al., 2012). These findings imply that conservative voters may either be more equipped with identifying with their own party affiliation based on facial cues or that they rely more heavily on images.

One explanation for the findings was the ability to perceive dominance—one of the major social dimensions of face evaluation (Olivola et al., 2012; Oosterhof & Todorov, 2009; Porter et al., 2012; Samochowiec et al, 2010). Dominance is an important quality associated with United States leadership. For instance, research indicates observed facial dominance (using photographs) can even be linked with military career promotions (Mazur, Mazur, & Keating, 1984; Mueller & Mazur, 1996). Accordingly, dominance is easily associated with the competitive nature of politics that involve selecting the powerful leaders. Such dominance competition relates directly to a human's evolutionary need to progress hierarchically. Political elections provide a current day reflection of a dominance competition (Stanton et al., 2009).

Dominance is associated with male testosterone, which has proven to affect male facial appearance (Penton-Voak & Chen, 2004), but this relationship is not yet completely understood in relation to politics (Samochowiec et al., 2011). Given evidence indicating that voters are able to rely on personality characteristics when evaluating candidates (Druckman, 2003; Graber, 1990), it is possible that voters are capable of surmising levels of dominance and competence by simply looking at an image bite.

Other studies have proven that voters also use certain traits expressed nonverbally through images to determine electability (Olivola et al., 2012). As mentioned, a candidate's perceived competence leads to higher electability while appearing attractive and/or threatening has been linked to lower electability (Mattes et al., 2010; Todorov et al., 2005). Mattes and colleagues (2010) explained that attractiveness correlated with losing elections because individuals deemed attractive candidates as incompetent.

Competence is the fundamental trait assigned to elected politicians (Mattes et al., 2010). Todorov et al. (2005) used pictures of winners and runners up from previous elections and found that competence ratings predicted 71.6% of Senate races and 66.8% of House races. Additionally, rapid judgments of competence of faces predicted 68.5% of the outcomes of gubernatorial races from 1996 to 2006 (Ballew & Todorov, 2007). Research observing electoral success indicates a relationship with social dominance and perceived competence (Rule et al., 2010), which may be why competence is considered such an important quality (Gosling, Rentfrow, & Swan, 2003; Wanke et al., 2012).

These studies show that conservative and liberal voters are using visual perception to gain relatively consistent insight on nonverbal characteristics from a photograph of a politician's face. It has even been theorized that voters rely on these nonverbal cues and features of a candidate when electing their leaders (Lawson et al., 2010; Mattes et al., 2010; Olivola & Todorov, 2010; Todorov et al., 2005).

Use of Eye-tracking in Research

Previous research has shown that individuals have abilities to initially make rapid, unreflective trait judgments of political candidates. As the call for more empirical research in regards to visual communication is increasing, the need for understanding

visual processing and perception is necessary. Eye-tracking technology is a method for collecting data relating to cognitive processes. Such technology provides a way to measure the processes that people employ when making judgments about visual stimuli, such as a politician's image. Collecting measurements of individuals' eye movements has proven to be an effective supplement to understanding their perception, especially when compared to self-reports, which could potentially produce biased and/or unreliable results (Schiessl, Duda, Tholke, & Fischer, 2003; Zaller, 1992).

The ability to track a person's eyes has been an interest of psychology researchers for over a century. Understanding where individuals choose to focus their gaze allow for various applications (Duchowski, 2007). Such applications include understanding visual processing involved directly with cognitive processing in decision making (Franco-Watkins & Johnson, 2011) and emotion recognition (Perlman et al., 2009; Schmid, Schmid Mast, Bombari, Mast, & Lobmaier, 2011). To date, there is a lack of eye-tracking research in political psychology. Such research could provide important information related to the effectiveness of political advertisement and better understanding of how voters make political choices.

As technology has developed, so have eye-tracking systems, providing excellent precision, accuracy, and free head movement. Prior to eye-tracking devices, the "what" in terms of attention had been of focus, with some research on "where," but now with eye-tracking systems, all points of interest of a viewer can be explicitly traced and measured allowing for interpretation of all aspects of an individual's visual processing (Duchowski, 2007).

Understanding where voters are looking is important when researching individuals' thought processes because before individuals have time to process information at a higher cognitive level, they must first process visual stimuli. Once individuals have an interest in an image, then their cognitive processes begin, allowing for fixations on areas that individuals feel the need place their focus (Duchowski, 2007). The interest leading to fixations and focus affects an individual's cognitive processing, as proposed by the eye-mind assumption. This assumption asserts that the area that is of focus in an individual's visual processing is the center of their cognitive processing while they are fixating on that object (Geise, 2010).

When viewing images of faces, research has investigated the differences in individuals' assessment of emotion recognition. Vassallo and colleagues (2009) found that when observing faces, both males and females look frequently at the eye region of the image; however, males viewed the nose and mouth significantly longer and more frequently than females. Additionally, women were significantly faster in identifying the emotion. Due to the emotional nature of politics (Groenendyk, 2011), this sex-specific visual processing styles may potentially be important when individuals assess images of politicians.

Additional differences in visual processing have been associated with different personalities (Perlman et al., 2009). The trait congruency perspective explains an individual's predisposition to look for and process information corresponds with his/her own specific personality traits. The trait congruency perspective offers an explanation for how social behavior, such as voting, may be impacted by an individual's personality. In regard to political personalities, Carney and colleagues (2008) suggest that liberal voters

tend to appear more open, creative, broad-minded, expressive, and drawn more to diversity. On the other hand, conservative voters appear to be more reserved, inflexible, withdrawn, orderly, and conventional. Due to the implications associated with varying personalities and political affiliation (Carney et al., 2008) and a higher accuracy in conservative voters ability to vote for a Republican-looking candidate (Olivola et al., 2012), there is a possibility that voters associated with different affiliations process images of politicians differently.

To date, eye tracking research has not been employed to account for differences in participants with varying party affiliations. Only one previous study has been found that used eye tracking in correspondence with political research. Geise (2011) used real and constructed political advertisements to discover any differences in first impressions of visual and textual posters. It was concluded that visual posters were evaluated more positively than textual posters, producing better first impressions, transferring content more efficiently to the voter, and leading to deeper memorization of the content. Additionally, it was determined that visual communication is valid, and when used with political communication, it can even provide effects that positively influence politics with a keener ability to transfer information. The political advertising that is most often used includes a candidate's image. Due to voters' ability to extrapolate information from facial images, further eye tracking research regarding this type of visual communication may provide insight into voters' cognitive processes.

Statement of Purpose

As political advertising has become more visual, the ability to understand how voters perceive and judge an individual's facial cues becomes more relevant to politics. There

are various implications for the persuasive effect that viewing images of politician's faces has on voters. For example, given that perceived traits from facial images can be used to predict elections (Ballew & Todorov, 2007; Mattes et al., 2010; Olivola & Todorov, 2010; Olivola et al., 2012; Todorov et al., 2005; Wanke et al., 2012), there is a potential for politicians to manipulate their images, and also make their face more visible to voters during elections.

Additionally, previous research shows a need for understanding the behavior of voters. Many do not have a deep understanding of politics (Sears et al., 2003; Zaller, 1992), but they show an ability to predict party affiliation and election outcomes (Lawson et al., 2010; Lenz & Lawson, 2011; Mattes et al., 2010; Olivola & Todorov, 2010; Samochowiec et al., 2010; Todorov et al, 2005). Such accuracy results in a need to understand the visual processing associated with choosing a candidate. Perhaps if voters were aware of political images direct influence on their cognitive processing of candidates, then they would evaluate candidates more thoroughly before making decisions and rely less on visual forms of media. Consequently, understanding a person's cognitive processes while judging politicians' photographs could potentially provide valuable information regarding voters' visual processes while they extrapolate nonverbal cues and qualities based on politicians' images.

Hypotheses

The current study aims to determine where individuals focus their attention as they process a candidate's image and to examine the relationship to participants' perception of the politicians' traits. Additionally, this study intends to further research

regarding citizens' abilities to accurately predict political partisanship in accordance with inferring traits associated with a politician's image.

Hypothesis 1: Based on the research by Vassallo et al. (2009) indicating that men take longer to recognize universal emotions and direct their attention to the nose and mouth regions when deciding, it is hypothesized that men will focus more on the nose and mouth regions during political decision making.

Hypothesis 2: Based on the differences that Carney et al. (2008) discovered in personality and political ideology (i.e., liberal voters tend to appear more open, creative, and inquisitive, while conservative voters tend to appear more conventional and orderly) and the trait congruency perspective (Perlman et al., 2009), it is likely that individuals with different political partisanships (specifically those who claim to be either Republican or Democratic) will choose to fixate on varied areas when making political decisions.

Hypothesis 3: Based on previous research indicating voters' abilities to accurately predict political partisanship (Olivola et al., 2012; Samochowiec et al., 2011), it is hypothesized that the sample will be able to accurately predict the politicians' partisanship after brief exposure to a candidate's image.

Hypothesis 4: Based on previous research indicating that competence leads to higher electability (Ballew & Todorov, 2007; Mattes et al., 2010; Todorov et al., 2005), it is hypothesized that higher ratings in competence will be associated with electability.

Hypothesis 5: Based on attractiveness leading to lower electability (Mattes et al., 2010), it is hypothesized that higher ratings in attractiveness will not be associated with electability.

CHAPTER THREE: METHOD

Participants

Within the 84 participants, 34 were male (40.5%) and 50 were female (59.5%). The participants ranged in age from 18 and 22, with the majority of participants (59.5%) being 18. The sample was mainly comprised of White individuals (76.2%, *n* =64), while 14.3% were Black (*n* = 12), 2.4% were Hispanic (*n* = 2), 2.4% were East Asian (*n* = 2), 1.2% were American Indian (*n* = 2), 1.2 were a Pacific Islander (*n* = 1), and 2.4% considered themselves as other (*n* = 2). All the participants were undergraduate students from a southeastern university in the United States. They received course credit for participating in the research project. Exclusion criterion included legal blindness (due to the eye-tracking component of this study) and lack of American citizenship (due to the political facial stereotypes that are being examined). Due to an eye tracking equipment malfunction, 23 questionnaires regarding competence and attractiveness ratings and choice to vote for the senators were not recorded. However, all of the participants' eye tracking recordings were included in the analyses.

Material

To measure each participant's eye movements, the Tobii TX300 Eye Tracker was used in a laboratory setting. This non-invasive remote eye tracker allows for natural head movements during viewing of stimuli, as opposed to eye-tracking systems that use unnatural chin rests. Therefore, the TX300 produces more validity in a laboratory setting. The TX300 has a 300 Hz sampling rate, and it measures saccades, fixations, pupil size changes, and blinks, along with various computer-oriented tasks (e.g., mouse clicks). The TX300 produces descriptive statistics for each chosen areas of interest (AOI)

to determine where participants focus their attention in each image. For this study's interest in facial images, the chosen AOIs include the candidates' left eye, right eye, nose, and chin/mouth regions for each image. These four AOIs will also be examined in three media groups: eyes, nose, and chin. AOI media groups provide a method for comprehending participants' tendencies for focusing on specific regions of the face in all stimuli.

This study requires the following specific eye measurements: *time to first fixation*, *fixation duration*, *fixation count*, and *visit duration*. The measurements only include the fixations within the AOIs and allow for insight and predictions on a person's cognitive perceptions. Fixations logically resemble an individual's inclination to keep their gaze on an object or region of interest. Therefore, *time to first fixation* allows measurement of the time it takes for a participant to hold their gaze on an area of the image. Thus, the less time it takes to initially fixate resembles more importance of that area on the image to an individual. *Total fixation duration* will give the extent to which the participant focused on each individual area of interest during the entire experiment, indicating where the participant's attention was focused. *Fixation count* account provides the number of times the participant fixates on an AOI. Finally, *visit duration* measures the sum of all of the time spent on each AOI. All of these measurements account for saccades, which are considered to be demonstrations of an individual's desire to freely change the focus of attention (Duchowski, 2007). Additionally, scan paths and saccades provide evidence for an individual's hierarchy of processes when cognitively perceiving stimuli (Geise, 2010). However, this study will focus on the specific AOI fixations and duration, relying on the ability to interpret longer durations as important focus areas for the participants. So with

these specific measurements, eye movement analysis can be used to interpret the importance of an individual's first fixations, length of fixations, and then the movement to a beginning of a new fixation (Duchowski, 2007).

Measures

Participants' demographic information was obtained. In addition, participants were also required to provide their political partisanship using a Likert-type scale (1 representing "Strong Democrat" and 7 representing "Strong Republican"). Also, a political ideology questionnaire was used to obtain political pre-dispositions and attitudes (Grenier, 1998). The questionnaire consisted of 29 questions with both a six-point and ten-point Likert scale. The questions scoring was arranged to allow for lower scores to represent conservative leanings and higher scores to represent liberal ideology.

Stimuli

Ten senators were randomly chosen from the list located on the United States Senate's official website. Elections involving well-known and prominent candidates were excluded from this study to eliminate the potential recognition of a senator. Each senator's ethnicity, gender, age, and political partisanship was obtained using their biography on their website (See Appendix D). The final stimulus set consisted of ten similar headshots. Official portraits for each senator were attained from their websites and saved as a JPEG. The images were cropped to ensure the participant could only see the politician's face. To avoid potential cues toward political affiliation, ties and background enhancements (e.g., a flag) were cropped out of the image. Finally, each image was uploaded to an online program that resized each picture, so they would all be 600 pixels wide. The chosen images were preferred because they were all similar, due to

the common posture and setting used in official photographing for senators. Also, the selected images' size and quality (i.e., higher resolution) allowed for little to no pixelation once they were standardized in size. As a result, the pictures used were all approximately the same dimensions and resolution. The final stimulus set consists of six Democratic and four Republican senators (two female and eight male). Ten photographs were be used to keep the experiment within an approximate thirty-minute timeline, while still exploring all of the research questions and hypotheses for each candidate.

Procedure

This study was presented to participants in a testing room on campus at Western Carolina University. Prior to beginning the experiment, participants were given an informed consent for their participation (see Appendix E). After signing the consent form and agreeing to participate, data collection began. To protect participant confidentiality, the collected data was de-identified, which allowed the participants to maintain their anonymity.

Initially, the subjects were given a laptop computer using the Qualtrics computer survey program to obtain demographic and political ideology information (See Appendix A and B). Then, they proceeded to the laboratory with the eye-tracking system. The remainder of the experiment occurred in this laboratory and was accomplished entirely through computer interface.

Prior to beginning the eye tracking portion of the experiment, each participant was given a brief description of the eye tracking portion of the experiment and told to remain looking at the computer screen during the entire experiment, even though slight head movement should not interfere with the eye measurements. To ensure valid measurement,

participants' eye movements were calibrated, placing the test subject at specific elevation (depending on their own height) and a recommended distance of approximately 65 cm from the eye tracker. This allowed for precise measuring of their eye movements along the axis of the eye-tracking sensors. Following successful calibration, this system is capable of providing accurate and precise gaze position data that can be examined, including *time to first fixation* and length of fixations.

After the participant successfully calibrated their eye movements, the eye tracking trial began with directions. Then when the participant was ready (determined by a space bar press), the first image appeared for five seconds. Following the image, the participants answered a questionnaire (See Appendix C). This cycle occurred for all ten images. In the questionnaire, the participants were initially asked if they recognized the candidate. Then using a 5-poing Likert scale, the questionnaire solicited the participant's judgment on the politician's attractiveness and competence. Finally, the participant predicted the politician's political affiliation (Republican, Independent, or Democratic) and expressed if they would vote for the politician in the image.

While the participants were viewing the photographs, their gaze patterns were measured using the eye-tracking system. Participants were required to answer all questions. They were given as much time as needed to answer the questions and were allowed to discontinue their participation at any time.

CHAPTER FOUR: RESULTS

Descriptive Statistics about Sample's Political Partisanship and Ideology

Given the inherent difficulty in classifying political ideology, the sample's political leaning tendencies were classified using three categories for analysis. This effort was an attempt to use a multidimensional approach that may better capture and reflect the heterogeneity of political beliefs. The first classification was self-reported political partisanship using a 9-point Likert scale ranging from "Strong Democrat" to "Strong Republican" (Refer to Table 1).

Table 1.

Frequency Distribution of Participants by Self-Reported Political Partisanship

	Frequency	Percent
Strong Democrat	6	7.1
Not so strong Democrat	11	13.1
Independent-leaning Democrat	13	15.5
Independent	17	20.2
Independent-leaning Republican	7	8.3
Not so strong Republican	15	17.9
Strong Republican	13	15.5
Other	2	2.4
	84	100.0

Note. "Strong Democrat" was coded as 1, and "Other" was coded as 9.

The above mixed dimensional-categorical approach likely better captured the spectrum of U.S. political self-identified partisanship. However, it also resulted in small sample sizes in each category, limiting analyses. Thus for the second classification approach, the 9-point Likert scale was condensed into the three traditional U.S party categories: Republican, Independent, and Democratic. Participants indicating Republican or Democratic leanings were placed in the according groups, and those who reported they were Independent or "other" were placed in the Independent group. Using this categorical

approach, the sample was comprised of 35.3% Democratic participants (n = 30), 22.4% Independent participants (n = 19), and 41.2% Republican participants (n = 35).

Finally, the third classification used the political ideology questionnaire (refer to Appendix B) to group participants according to their self-reported conservatism compared to others in this sample. Based on the average score and quartile percentages, the participants were placed into three groups: “Liberal,” “Moderate,” and “Conservative.” The “Liberal” group consisted of 22 participants (26.6%). The “Moderate” group consisted of 40 participants (48.2%). The “Conservative” group consisted of 21 participants (25.3%).

These three classifications were used to determine differences associated with participants’ political leaning. Analyses determined differences in participants’ eye tracking (Hypothesis 2) and political accuracy predictions (Hypotheses 3) based on these separate three classifications.

Eye Tracking Tendencies

Hypothesis 1. It was hypothesized that men would focus more on the nose and mouth regions during political decision making. To initially explore this hypothesis, t-tests were used assess differences in areas of interest in the nose and chin regions as a function of participants’ sex (male versus females). The twenty AOIs (ten nose and ten chin AOIs, one for each candidate) were individually assessed with a series of t-tests. Results indicated that men had significantly higher *fixation counts* and *visit durations* when viewing the images’ noses and chins regions in 70% of the images shown. While not significant, women took longer to fixate on the nose and chin regions—as indicated by *time to first fixations* in three images. Given the large number of t-test comparisons

and to avoid capitalization on chance, additional eye tracking analyses were accomplished by combining data into groups across all nose and chin regions providing a way to explore eye tracking sex differences by facial regions, regardless of the politician.

Independent t-tests were used to assess differences in AOIs in the nose and chin grouped regions of all stimuli as a function of participants' sex (male versus females), using a Bonferroni adjusted alpha level of .025. The eye tracking measurements used in this analysis included *time to first fixation*, *total fixation duration*, *fixation count*, and *total visit duration* of the nose and chin AOI groups. Results show sex differences in the evaluation of candidates' noses, indicating males fixate on noses for an extended period of time while making political decisions. Females took significantly longer than males to initially fixate on candidate's noses. Also, there was a marginal difference in males' *total fixation duration* on the nose region and a significant difference between males and females in their *total visit duration* on the nose media, indicating males overtly orient their visual attention towards the nose of candidates (See Table 2).

Further analyses observing all AOIs (adding in the eye group of all stimuli) indicate a trend for female participants to hold their *total visit duration* on the candidates' eyes (M = 22.70, SD = 9.00) longer than males (M = 19.47, SD = 7.07) when evaluating images, $t(82) = -1.76$, $p = .08$.

Table 2.

Eye Tracking Differences between Male vs. Female Evaluations of the Nose and Chin Regions of All Candidates' Faces

	Males (n = 34)		Females (n = 50)			
Time to First Fixation	*M*	*SD*	*M*	*SD*	*t*	*p*
All Chin	6.92	17.52	7.91	25.77	-.20	.85
All Nose	.60	.74	7.11	18.67	-2.46*	.01
Total Fixation Duration	*M*	*SD*	*M*	*SD*	*t*	*p*
All Chin	7.65	3.27	7.36	4.48	.32	.75
All Nose	7.46	4.69	5.28	3.76	2.35†	.03
Fixation Count	*M*	*SD*	*M*	*SD*	*t*	*p*
All Chin	35.26	25.95	34.04	21.54	.24	.82
All Nose	35.21	17.98	30.06	21.94	1.13	.26
Visit Duration	*M*	*SD*	*M*	*SD*	*t*	*p*
All Chin	8.01	3.49	7.62	4.65	.42	.68
All Nose	7.72	4.78	5.52	3.95	2.30*	.02

*$p < .05/2 = 0.025$
† $p < .05$

Hypothesis 2. To examine potential visual processing differences in individuals with different political partisanships, Republican and Democratic participants' eye movements while making political decisions were compared. Four regions of interest (left eye, right eye, nose, and chin) in each image were pooled into three AOIs groups—eye, nose, and chin groups. The second and third classification of political affiliation classifications were used to determine differences between "Republican" and "Democratic" participants and "Liberal" versus "Conservative."

Independent-sample t-tests were conducted to evaluate differences in eye tracking between varied political partisanships with a Bonferroni adjusted alpha level of .017. When assessing *total visit duration*, there was a marginal difference in the "Democratic" and "Republican" participants' *visit durations* when looking at candidates' nose regions, indicating "Democratic" participants observe noses for a prolonged time period. Furthermore, differences between "Republican" and "Democratic" participants' *total fixation duration* and *fixation count* of the images' nose region approached significance, indicating "Democrats" consistently chose to focus on the nose regions when evaluating politician's faces (Refer to Table 3). Differences in the evaluation of candidates' eyes were found in "Conservative" participants' scores, which approached significance. "Liberal" individuals focused longer on candidate's eyes when compared to "Conservative" individuals (See Table 4).

To determine further discrepancies in participants' with varied political views, individual AOIs were assessed outside of the grouped AOIs. The use of several t-tests decreases significance, yet provides information on participant's inclinations. Self-reported "Democrats" tended to take longer to fixate on senators' chins, and "Conservative" participants fixated for an extended duration on the chin AOIs (represented by 60% of images).

Table 3.

Eye Tracking Differences between "Democratic" vs. "Republican" Participants

	Democrat (n = 30)		Republican (n = 35)			
First Fixation	*M*	*SD*	*M*	*SD*	*t*	*p*
All Eyes	2.19	11.49	.08	.17	1.01	.32
All Chin	9.46	29.78	5.02	16.55	.76	.45
All Nose	3.05	11.44	4.51	15.24	-.43	.67
Total Fixation Duration	*M*	*SD*	*M*	*SD*	*t*	*p*
All Eyes	19.72	7.65	19.35	7.65	.20	.85
All Chin	7.00	3.66	7.95	4.61	-.91	.37
All Nose	7.20	4.43	5.25	4.11	1.83	.07
Fixation Count	*M*	*SD*	*M*	*SD*	*t*	*p*
All Eyes	90.57	37.19	92.94	37.12	-.26	.80
All Chin	34.30	24.33	37.17	24.33	-.46	.65
All Nose	38.57	22.80	28.83	20.04	1.83	.07
Visit Duration	*M*	*SD*	*M*	*SD*	*t*	*p*
All Eyes	21.37	7.98	20.99	8.14	.19	.85
All Chin	7.32	3.77	8.23	4.79	-.84	.40
All Nose	7.56	4.59	5.45	4.21	1.93†	.05

*$p < .05/3 = 0.017$
†$p<.05$

Table 4.

Eye Tracking Differences between "Liberal" vs. "Conservative" Participants

	Liberal (n = 28)		Conservative (n = 27)			
Time to First Fixation	*M*	*SD*	*M*	*SD*	*t*	*p*
All Eyes	.09	.33	.09	.18	-.09	.93
All Chin	8.29	29.40	5.83	17.74	.37	.71
All Nose	5.00	14.59	3.50	15.10	.38	.71
Total Fixation Duration	*M*	*SD*	*M*	*SD*	*t*	*p*
All Eyes	21.91	6.45	17.90	9.02	1.90	.06
All Chin	6.96	3.22	8.08	4.78	-1.02	.32
All Nose	6.20	4.62	6.14	4.48	.05	.96
Fixation Count	*M*	*SD*	*M*	*SD*	*t*	*p*
All Eyes	94.07	31.08	80.30	31.54	1.63	.11
All Chin	31.11	24.95	37.56	25.57	-.95	.35
All Nose	31.75	21.43	30.63	20.76	.20	.85
Visit Duration	*M*	*SD*	*M*	*SD*	*t*	*p*
All Eyes	23.75	7.01	19.41	9.37	1.95	.06
All Chin	7.21	3.35	8.47	5.03	-1.10	.28
All Nose	6.49	4.81	6.36	4.60	.10	.92

*$p < .05/3 = 0.017$
†$p < .05$

Accuracy of Political Partisanship Prediction

Hypothesis 3. To examine Hypothesis 3, participants were asked to predict each of the politician's political partisanship. Three choices were given to represent the United States Senate: Republican, Independent, or Democrat. Each participant's ten responses were assessed, and accuracy percentages were calculated and assigned for a participants' rating of the entire group of ten politicians, four Republican senators, and six Democratic senators. For example, if a participant correctly guessed six out of the ten senators, his/her accuracy percentage for all senators would be 60%. If a participant correctly guessed two out of four Republican senators or three out of six Democratic senators, his/her accuracy percentage would be 50% for both Republican and Democratic senators.

Overall, the participants were 39.18% accurate in their overall ratings of the politicians. When assessing the Republican senators, participants were 40.98% accurate. When assessing the Democratic senators, participants were 38.25% accurate. No differences were found when comparing male accuracy to female accuracy. When evaluating this accuracy based on chance, the overall impression seems as though the participants determined the correct political partisanship higher than probable chance (33% with 3 potential options: Republican, Independent, or Democrat). However, based on the composition of the U.S. Senate by political party, this accuracy should be taken with caution. This will be further explained in the discussion. See Table 5 for information on the means and standard deviations for men and women's accuracy scores.

Table 5.

The Sample Means and Standard Deviations of Political Partisanship Accuracy Ratings

Accuracy Scores	Gender	Mean	Standard Deviation
All Senators	All Participants	.39	.15
	Male	.42	.15
	Female	.37	.15
Democratic Senators	All Participants	.38	.19
	Male	.42	.18
	Female	.43	.39
Republican Senators	All Participants	.41	.19
	Male	.43	.15
	Female	.39	.21

Note. Male $n = 26$; Female $n = 35$

Next, additional assessments regarding accurate predictions of party identification were made to determine potential relationships between the sample's accuracy scores and political partisanship or ideology. Political partisanship differences were assessed using the classifications of political affiliation mentioned earlier in the results. Using the first classification (narrow self-report ranging from "Strong Democrat" to "Strong Republican"), "Strong Democrats" had the highest accuracy ratings for all senators (50%), Republican senators (46%), and Democratic senators (56%). Using the second classification (broad, categorical self-report including "Democrat," "Independent," "Republican"), "Democrat" participants had the highest accuracy scores for all senators (42%) and Republican senators (48%), while "Independent" participants had the highest accuracy scores for Democratic senators (48%). Using the third classification (political ideology questionnaire), "Conservative" participants had the highest accuracy scores for all senators (40%) and Democratic senators (48%), while the "Moderate" group had the highest accuracy scores for the Republican senators. For more information about the accuracy scores for each of these political ideology classifications, refer to Appendix F.

Finally, correlations were conducted to further explore relationships between accuracy scores and political partisanship. For the first classification (narrow self-report ranging from “Strong Democrat” to “Strong Republican) and the second classification (broad, categorical self-report including “Republican,” “Independent,” and “Democratic”), the self-reported political partisanships were numerically coded from either one to nine (first classification) or one to three (second classification), where Democrats were represented by lower scores and Republicans were represented by higher scores. For the questionnaire, lower scores indicated conservatism. Correlations indicated a significant moderate, negative relationship between “Republican” identification and accuracy identification scores of Republican senators (See Table 6). This negative relationship suggests “Democratic” participants are more capable of identifying the political party of Republican candidates.

Table 6.

Summary of Correlations between the Participants' Political Partisanships with Accuracy Scores for All Politicians, Republican Politicians, and Democratic Politicians

	Accuracy Percentages of All Senators	Accuracy Percentages of Democratic Senators	Accuracy Percentages of Republican Senators
First Classification[a]	-.22	-.11	-.31*
Second Classification[b]	-.16	-.02	-.30*
Third Classification[c]	-.07	-.13	.05

Note. [a]The first classification includes narrow self-reported political leanings separating the sample into seven groups, ranging from a "Strong Democrat" (scored as 1) to a "Strong Republican" (scored as 7). [b]The second classification includes broad self-reported political leaning, including "Democrat" (1) "Independent" (2), and "Democrat" (3). [c]The third classification was based on the political ideology questionnaire, where conservatism is a high score.
$n = 61$.
*Correlation is significant at the .05 level (2-tailed).

Additional analyses included independent-sample t-tests, which were conducted to assess differences in accuracy as a function of political partisanship ("Republican" vs. "Democratic"), using a Bonferroni adjusted alpha level of .017. When assessing Republican senators' political party, there was a marginal difference between "Democratic" and "Republican" participants, indicating "Democratic" individuals are more capable of accurately predicting the party identification of Republican senators (See Table 7). This difference supports the correlations (Table 6), which indicated a negative relationship with "Republican" participants' accuracy ratings of Republican senators.

Table 7.

Democratic and Republican Participants Differences in Accuracy Scores for Republican Senators

	Democratic (n = 23)		Republican (n = 21)			
Time to First Fixation	*M*	*SD*	*M*	*SD*	*t*	*p*
Total Accuracy	.42	.16	.36	.14	1.21	.23
Democratic Senators Accuracy	.38	.18	.37	.20	.19	.85
Republican Senators Accuracy	.48	.21	.35	.15	2.39†	.02

*p < .05/3 = 0.017
†p < .05

Correlations Involving Attractiveness, Competence, and Electability

Hypothesis 4. Correlations were examined to test the fourth hypothesis, which pertained to bivariate relationships between rated competence and the possibility of the participant choosing to vote for a candidate. For 80% of the images, competence was related with the participants' choice to vote for a candidate. This was evidenced in two small and six moderate, positive correlations in competence level and electability for the following senators: Bingaman, Brown, Burris, Coats, Lautenberg, Rubio, Snowe, and Tester (See Table 8). Thus, the fourth hypothesis is supported by the relationship between rated competence and preference to vote for a candidate.

Hypothesis 5. Correlations were examined to test the fifth hypothesis, which referred to bivariate relationships between rated attractiveness and the possibility of the participant choosing to vote for a candidate. The correlation matrixes for each candidate

did not support the fifth hypothesis. In fact, quite the opposite was found in 60% of the candidates. Attractiveness ratings produced one small, four moderate, and one strong, positive correlations with the probability of casting a vote for the candidate for the following senators: Bingaman, Brown, Burris, Lautenberg, Rubio, and Tester (See Table 8).

The correlation matrixes also indicated that attractiveness ratings produced three small and four moderate, positive correlations with competence ratings in 70% of the images. While attractiveness did not correlate with likelihood to vote for either of the women senators, competence was positively correlated with attractiveness in for senators Snowe and Gillibrand, (see Table 9).

Table 8.

Summary of Correlations between the Likelihood of the Participant to Vote for the Candidate with Competence and Attractiveness Ratings

Likelihood for Participant to Vote	Competence Rating	Attractiveness Rating
Coats (R)-Vote	.31*	-.04
Lautenberg (D)- Vote	.26*	.45**
Snowe (R)-Vote	.33*	.17
Bingaman (D)-Vote	.30*	.33*
Rubio(R)-Vote	.59**	.38**
Brown (D)-Vote	.37**	.27*
Tester (D)-Vote	.43**	.36**
Burris (D)-Vote	.38**	.31*
Gillibrand (D)-Vote	.21	-.05
Boozman (R)-Vote	.06	.11

**Correlation is significant at the .01 level (2-tailed).
*Correlation is significant at the .05 level (2-tailed).

Table 9.

Summary of Correlations between Attractiveness Ratings with Competence Ratings

	Competence
Coats (R)-Attractiveness	.15
Lautenberg (D)- Attractiveness	.22
Snowe (R)-Attractiveness	.27*
Bingaman (D)-Attractiveness	.27*
Rubio (R)-Attractiveness	.39**
Brown (D)-Attractiveness	.14
Tester (D)-Attractiveness	.37**
Burris (D)-Attractiveness	.40**
Gillibrand (D)-Attractiveness	.42**
Boozman (R)-Attractiveness	.29*

**Correlation is significant at the .01 level (2-tailed)
*Correlation is significant at the .05 level (2-tailed)

CHAPTER FIVE: DISCUSSION

Eye Tracking Tendencies

Sex Differences. In this study, females tended to take more time to initially fixate on the nose regions of the images compared to men, indicating women do not rely on that region of the face to facilitate decision making. Selective attention was also measured by examining the length of fixations. As predicted, men held their fixations longer on nose regions while evaluating politicians. Such consistent differences between sexes suggest males utilize the nose regions of a politician's face to facilitate their rapid decision making.

One explanation regarding the visual processing sex differences relates to and supports research that posits a link between evolutionary cues and social evaluations (Haxby et al., 2000; Mattes et al., 2010). Men were more likely to evaluate areas of the face that exhibit testosterone levels in males, including the nose and jaw (Penton-Voak & Chen, 2004; Samochowiec et al., 2011). This sex-specific assessment relates to research indicating male testosterone levels change in response to winning or losing dominance contests. In similar competitions, testosterone levels do not typically change in females (Stanton, Beehner, Saini, Kuhn, & LaBar, 2009). Stanton and colleagues (2009) examined testosterone levels during the 2008 presidential election and found male voters who supported the losing candidate experienced a drop in testosterone levels. This reaction to the election did not occur in females (Stanton et al., 2009). The association between male voters' testosterone levels and a chosen leader's defeat is noteworthy when male voters are not actually participating in competition. This current study indicates male voters apply attention to the nose, which is a facial region thought to exhibit

testosterone levels in males because it stimulates growth (Penton-Voak & Chen, 2004). Such attention may provide a way to supplement males with information about a politician's testosterone levels. Noticing facial dominance may also provide support for an unknown candidate. Fundamentally, voters should want to choose and support a politician that will win elections, and this study suggests men have developed a visual processing style that allows them to discriminate between winners and losers. The use of this visual processing will also help men differentiate unknown politicians by evaluating prominent features on the lower half of a candidate's face.

Further analyses of facial regions indicate female participants were inclined to fixate on candidates' eyes longer than males while making decisions. These findings align with previous eye tracking research associated with emotion, indicating men fixate on the lower regions of the face and women continually orient attention to eyes (Vassallo et al., 2009). Based on the theory of *affective intelligence*, emotions supplement reason by helping an individual understand when to rely on heuristics and information shortcuts or when to apply more cognitive effort (Groenendyk, 2011; Marcus et al., 2000). For voters, emotions provide a motivating force that benefit them when choosing candidates to support, and men and women's differing attentional visual pathways may relate to their initial emotional processing of candidates.

Political Partisanship Differences. Eye tracking measurements indicate that participants who consider themselves Democratic or liberal generally orient their visual attention to senators' noses. In addition, Republican or conservative individuals showed a predisposition to apply visual attention on senators' chins in almost half of the images.

One explanation for these individual differences may relate to personality (Carney et al., 2008; van Hiel, Kossowska, & Mervielde, 2000). Personality has been suggested to account for the behavioral mechanisms used for social adaptation, including the evaluation of faces (Perlman et al., 2009). However, research indicates that political ideology only relates to two of the five personality domains (i.e., openness to experience and conscientiousness; Carney et al., 2008; van Hiel et al., 2000). Consequently, examining all aspects of one's personality may provide the driving force behind the differences in visual processing preferences of Republican and Democratic individuals and may provide further support for the trait congruency model. Therefore, supplementary research that assesses personality domains in addition to political partisanship may indicate further supportive and stronger conclusions regarding the distinctions in political affiliations' cognitive judgment of unknown candidates by providing more evidence of the trait congruency.

The varied visual differences provide evidence that people associated with opposing partisanships cognitively process candidates differently during perceptual decision making. As a result, politicians may be able to present themselves in a way to attract certain groups of people. Image bites can be manipulated to project prominent, favorable facial characteristics with various camera angles. Also, the created images can be strategically circulated through different media outlets to allow outreach to specific biased parties. Political parties may also choose potential candidates with certain salient features that are cognitively appealing with members of their party.

Accuracy Ratings

Consistent with previous research, individuals are able to surmise political partisanship at an above chance level by only judging a photograph. This indicates that the information shortcuts voters apply during decision making processes are persistently working well when judging politicians, even when more than two political party options are available. It appears that regardless of an individual's chosen visual path of attention and fixation durations, individuals have developed an ability to predict party affiliation at a relatively accurate level when given options. Thus, during times of information overload, men, women, Republicans, and Democrats are all capable of employing heuristics with various visual processing styles and still make reasonably accurate decisions about candidates' political partisanship.

Despite the ability to produce accuracy ratings that are above chance, it is apparent that this sample is unfamiliar with the composition of the U.S. Senate. Generally, a large majority of senators are represented by either the Democratic and Republican party, leaving only a few who claim to be Independent or unaffiliated with a party. However, on average for each of the ten senators, this sample guessed that 20% of the politicians were Independent. Previous research examining accuracy only provided two options, including either right- or left-leaning or Democrat or Republican (Lawson et al., 2010; Lenz & Lawson, 2011; Mattes et al., 2010; Olivola & Todorov, 2010; Samochowiec et al., 2010). Thus, providing three options is an interesting way to gauge how cognizant citizens are about their country's politics.

This study produced one interesting difference indicating that Democrats rate Republican senators with higher accuracy. One explanation suggests Democrats use

partisanship as a form of social identity (Green, Palmquist, & Schickler, 2002). Evolutionary cues in the evaluation of faces may relate to in- and out-group detection. From the perspective of evolutionary psychology, the ability to detect an out-group member was a greater need when compared to recognizing an in-group member because more adverse effects would be associated with the inability to recognize an out-group member (Nesse, 2005; Samochowiec et al., 2010; Schaller, 2008). Therefore, it is possible that Democrats have developed a sensitive ability to recognize Republican politicians. This discrepancy between party followers is not entirely clear and merits further examination.

Competence and Attractiveness

In previous research, attractiveness was associated with lower competence, thereby relating highly rated attractiveness to lower electability (Mattes et al., 2010). However, in this study, attractiveness was related to a general inclination in both levels of competence and the probability of voting for the candidate. Research evaluating elections in other countries—such as the United Kingdom (Banducci, Karp, Thrasher, & Rallings, 2008), Finland (Berggren, Johrdahl, & Poutvaara, 2010), Germany (Rosar, Klein, & Beckers, 2008), Switzerland (Lutz, 2010), and Australia (Leigh & Susilo, 2009)—indicates that attractiveness is often associated with electability. In addition, a meta-analysis evaluating the effects of perceived beauty suggests that attractive people are often considered to be more competent and adjusted (Langlois et al., 2000). Therefore, voters may be applying the “halo effect” because they unconsciously associate attractiveness in politicians with both leadership and other abilities, such as honesty, intelligence, and talent (Chiao, Bowman, & Gill, 2008).

While a politician's face seems to provide informational cues to voters, competence remains to be the significant variable associated with choosing to elect politicians (Ballew & Todorov, 2007; Gosling et al., 2003; Mattes et al., 2010; Todorov et al., 2005; Wanke et al., 2012). Perhaps, perceived competence equates to a higher level of social dominance that can readily be seen on a person's face.

General Limitations

Some notable limitations include a sample that may not be completely representative of the general population because most of the participants were White, 18 years old, and female (Sears, 1986). Moreover, the participants were commonly interested in receiving the course credit while applying as minimal effort and attention as possible. Such indifferent behavior could have affected both the scores regarding their political affiliation and their eye tracking measurements. Also, the political ideology questionnaire used in this study is an outdated instrument that is rarely used in scientific research. While all precautions were taken in scoring and distribution of groups, the results of this political ideology analyses may not accurately represent the general population. Finally, due to an eye tracking equipment malfunction, 23 questionnaires regarding competence and attractiveness ratings and choice to vote for the senators were not recorded. However, the required number of participants was still met.

Implications and Future Directions

This study provides the basis for future research associated with visual processing of politicians. Eye tracking measurements indicate distinct differences between sexes and opposing political partisanships. More research regarding individual personality in

accordance with political ideology may provide more conclusions to explain differences in facial observation.

Despite the benefit these perception skills provide, such efficiency promotes an already lazy, dichotomous nation. When citizens do not seek out further political knowledge, they can easily be influenced and persuaded by visual media. Increased media reliance causes citizens to be both vulnerable to priming and visual framing. Politicians can continue to appeal to certain populations. Perhaps if interested voters were informed about the effect visual media has on their cognitive processes, they would evaluate visual media with more scrutiny. In addition, understanding the effect of images may help voters rely less on image-based assumptions. This may cause citizens to integrate other methods of news collection to supplement the visual-based information shortcuts used to assess politicians.

Additional research should integrate the assessment of automatic subcortical neuronal mechanisms. Specifically, the human superior colliculus and amygdala are involved in the assessment of affective facial expressions (Spezio et al., 2008). These are thought to have evolved to allow for rapid, efficient preconscious facial processing to detect threatening situations (Morris, DeGelder, Weiskrantz, & Dolan, 2001; Morris, Ohman, & Dolan, 1999). Brain imaging research shows higher activation in the insula and ventral anterior cingulate when individuals view candidates that either lost elections or were given negative attributions in trait assessments, including lower attractiveness and competence and higher ratings in deceit and threatening appearance (Chiao et al., 2008). It is possible that future research using brain imaging with eye tracking could provide information about what areas of the face activate these regions of the brain. It is

likely that people differing in sex and political partisanship may produce differences in activation while viewing various regions.

Conclusions

The media provides voters with massive amounts of images, and visual processing allows voters to make rapid inferences about politicians, which likely lead to vote choices. Image-based judgments can be made accurately based on quick inspection of an image using nonverbal facial cues. This study indicates groups separated by sex and opposing political affiliations use dissimilar visual processes when cognitively assessing of images of politicians. Likely, sex differences are associated the use of *affective intelligence*, which relates to the emotional nature of political decisions. Other factors, such as personality and neuronal activity, may play a role in these varied assessments made by those with differing political leanings. Visual processing of images provides a way to evaluate a politician's potential for electability when other objective means are either unavailable or difficult to acquire. Such an ability to discern images may even work to motivate citizens to engage more in the assessment of politicians.

Humans' use of developed social perception skills supports rapid facial evaluation in politics. Regardless of an individual's visual attention, images still provide all voters with the information to accurately detect political party affiliations at an above chance level using cues and observable traits, such as attractiveness and competence. Such abilities promote research positing the usefulness of information shortcuts and heuristics as an aid in helping citizens participate in politics.

Accordingly, images supplemented through the media guide voting assessment and behavior. Politicians will likely succeed if they can "look the part" by exuding

competence, attractiveness, and dominance. Visual processing tendencies vary based on differences in both sex and political affiliations, yet both are still capable of accurately assessing competence and political party affiliations. Despite this ability, citizens should remain cautious about the political news they acquire through visual media.

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APPENDIX A: DEMOGRAPHIC FORM

Participant ID: _____

Email address: _____

Gender: M/F

Age: _____

Years in College: _____

Classification
- Freshman
- Sophomore
- Junior
- Senior
- Graduate student
- Professor
- Staff
- Not seeking a degree
- Other

Ethnicity:
- American Indian/Alaskan Native
- Asian/Pacific Islander
- Black (non-Hispanic)
- Hispanic
- White (non-Hispanic)
- Other (please specify): _____

Are you a U.S. citizen? Y/N

Approximate Cumulative Grade Point Average: _____

Handedness:
- Right
- Left
- Both

Do you have 20/20 vision? (Corrected or uncorrected): Y/N

Do you wear glasses or contact lenses? Y/N

Generally speaking, do you consider yourself to be a(n):

- Strong Democrat
- Not so strong Democrat
- Independent leaning Democrat
- Independent
- Independent leaning Republican
- Not so strong Republican
- Strong Republican
- Other notes:

APPENDIX B: POLITICAL IDEOLOGY QUESTIONNAIRE

ARE YOU FOR OR AGAINST THE FOLLOWING?
Place a check mark on the F O R - O R - AGAINST scale to the right of each item:

1. School prayer FOR ___ ___ ___ ___ ___ ___ AGAINST
2. Pro-choice (abortion) FOR ___ ___ ___ ___ ___ ___ AGAINST
3. Cut welfare programs FOR ___ ___ ___ ___ ___ ___ AGAINST
4. National health care system FOR ___ ___ ___ ___ ___ ___ AGAINST
5. Sex education - children FOR ___ ___ ___ ___ ___ ___ AGAINST
6. Gun control FOR ___ ___ ___ ___ ___ ___ AGAINST
7. Stronger labor unions FOR ___ ___ ___ ___ ___ ___ AGAINST
8. Medicare-Medicaid FOR ___ ___ ___ ___ ___ ___ AGAINST
9. Condoms-elementary grades FOR ___ ___ ___ ___ ___ ___ AGAINST
10. Food stamp program FOR ___ ___ ___ ___ ___ ___ AGAINST
11. Same-sex marriage FOR ___ ___ ___ ___ ___ ___ AGAINST
12. Minimum wages FOR ___ ___ ___ ___ ___ ___ AGAINST
13. Meals on wheels FOR ___ ___ ___ ___ ___ ___ AGAINST
14. Helping the homeless FOR ___ ___ ___ ___ ___ ___ AGAINST
15. Political correctness FOR ___ ___ ___ ___ ___ ___ AGAINST
16. Racial quotas, jobs FOR ___ ___ ___ ___ ___ ___ AGAINST
17. Death penalty for murder FOR ___ ___ ___ ___ ___ ___ AGAINST

AGREE OR DISAGREE? How much do you agree or disagree with the following statements?
Enter a number from 1 to 10, where a 10 means strongly agree, and 1 means strongly disagree.

1. ____ It is better to keep things the way they are.
2. ____ People are essentially selfish; they need to be controlled.
3. ____ Individuals have free will; they are responsible for their own lives and problems.
4. ____ The traditional family (married father and mother, children) must be preserved at all costs.
5. ____ Government regulations are needed to control monopolies.
6. ____ A free market economy (no business regulations) is the best way to ensure prosperity and fulfillment of individual needs.
7. ____ Sometimes revolutions are necessary.
8. ____ This country would be better off if most government programs were eliminated.

9. ____ People are basically good but they can be corrupted.
10. ____ The free market economic system is basically exploitive and inherently unfair to working people.
11. ____ Helping the poor encourages laziness.
12. ____ If the rich continue to get richer and the poor get poorer, I would support a violent revolution to correct the inequality.

APPENDIX C:

QUESTIONS ASKED DURING THE EYE TRACKING EXPERIMENT

This candidate appears:

- Very Competent
- Competent
- Neither Competent nor Incompetent
- Incompetent
- Very Incompetent

This candidate appears:

- Very Attractive
- Attractive
- Neither Attractive nor Unattractive
- Unattractive
- Very Unattractive

Do you consider this candidate to be a(n):

- Democrat
- Independent
- Republican

Would you vote for this candidate in an election?

- Yes
- No

APPENDIX D: SENATOR INFORMATION

Name of Senator	State Represented	Party Identification	Age	Sex	Ethnicity
Jeff Bingaman	New Mexico	Democrat	69	Male	White
John Boozman	Arizona	Republican	62	Male	White
Sherrod Brown	Ohio	Democrat	60	Male	White
Roland Burris	Illinois	Democrat	75	Male	African American
Daniel Coats	Indiana	Republican	69	Male	Caucasian
Kirsten Gillibrand	New York	Democrat	46	Female	White
Frank Lautenberg	New Jersey	Democrat	89	Male	White
Marco Rubio	Florida	Republican	41	Male	Cuban American
Olympia Snowe	Maine	Republican	66	Female	Greek American
Jon Tester	Montana	Democrat	56	Male	White

APPENDIX E: INFORMED CONSENT FORM

Informed Consent Form for Visual Processing and Judgments of Political Affiliation Study

What is the purpose of this research?

The present study will investigate differences in eye movement patterns as people observe pictures of politician's faces. Gender, personality, and political affiliation play a role in the way individuals observe images of faces. These aspects of an individual also affect the way a person judges a politician. Because of this, self-report data about your personality, political affiliation, and demographic information will be obtained from you.

What will be expected of me?

If you are a student and you are 18 years of age or older, you are eligible to participate in this study; however, individuals who are legally blind are not eligible due to the eye-tracking portion of the study. First, you will be introduced to the study, including risks and benefits, and if you want to participate, you will sign an informed consent form prior to filling out the study survey. Participation is completely voluntary and you can decide to withdraw from the study at any time without penalty. If you consent to participation, you may be given research credits (units), extra credit points, or other types of points toward a course grade as determined by your instructor. No other reward (monetary or otherwise) will be provided for participation. Next, you will be asked to fill out a surveys on a computer, and it will take approximately 30 minutes. Some people need more or less time, but we will ask you to please read each question carefully. Please do not put your name on any of the questionnaires – only on the consent forms. When you have completed the questionnaires, you will return the informed consent form to the experimenter. You will then be asked to look at a set of photographs as your eye movements are being recorded by a non-intrusive camera set at the bottom of a monitor. During this time, you will be asked questions about the photograph. Answers to these questions will involve both yes or no answers and ratings.

How long with the research take? The whole study is expected to take between 30 and 45 minutes depending on how fast you can complete the measures.

Will my answers be anonymous? Your answers will be recorded anonymously. Any and all data that is collected and reported from this study will be presented as summary data for a whole group and your individual responses will therefore be unidentifiable.

Can I withdraw from the study if I decide to? Yes. Participation is voluntary. You can withdraw from the study during data collection without penalty. Even if you initially agree to participate, you may stop at any time you want without any negative repercussions to you (e.g., no negative impact on your grades). If you choose to withdraw, your data may be deleted at that time.

Is there any harm that I might experience from taking part in the study? You should not experience any harm from participating in this study.

How will I benefit from taking part in the research? In addition to the direct benefit of earning research credits or extra credit toward a course, the potential benefits to you if you participate in the study will include the following: the opportunity to experience first-hand how researchers conduct surveys and gather information in this type of psychological research. Also, your participation may ultimately inform and benefit clinicians, researchers, consumers, and the community at large regarding the relationships among study variables that are included in the surveys. Finally, the study's main benefit may be to the community at large as the results may give insight into cognitive processes associated with voter's decision making processes.

Who should I contact if I have questions or concerns about the research? If you have any questions, please discuss them with me at this time. However, if you would like to discuss this research at another time, you should contact me at 828-553-7162. You can also contact the faculty supervisor for this project, Dr. Bobadilla, at the Department of Psychology at Western Carolina University, Cullowhee, NC 28723 (Phone: 828-227-3368). If you have concerns about your treatment as a participant in this study, contact the chair of WCU's Institutional Review Board through the office of Research Administration at WCU (828-227-7212).

I understand what is expected of me if I participate in this study. My signature shows that I agree to participate and am at least 18 years old.

Participant Name_____
Date_____

Participant Signature_____

APPENDIX F:

ACCUACY RATINGS SPLIT BY POLITICAL AFFILIATION CLASSIFICATIONS

Means and Standard Deviations of Political Affiliation Accuracy Ratings of Senators (1st Classification)

	Self-Reported Political Affiliation	n	Means	Standard Deviations
Accuracy of All Senators:				
	Strong Democrat	4	.50	.16
	Not So Strong Democrat	8	.41	.16
	Independent Leaning Democrat	11	.39	.17
	Independent	15	.41	.15
	Independent Leaning Republican	4	.28	.13
	Not So Strong Republican	7	.41	.12
	Strong Republican	10	.36	.15
	Other	2	.25	.21
Accuracy of Democratic Senators:				
	Strong Democrat	4	.46	.21
	Not So Strong Democrat	8	.40	.20
	Independent Leaning Democrat	11	.35	.17
	Independent	15	.42	.18
	Independent Leaning Republican	4	.25	.17

	Not So Strong Republican	7	.43	.13
	Strong Republican	10	.38	.24
	Other	2	.17	.24
Accuracy of Republican Senators:				
	Strong Democrat	4	.56	.13
	Not So Strong Democrat	8	.47	.21
	Independent Leaning Democrat	11	.45	.25
	Independent	15	.40	.18
	Independent Leaning Republican	4	.31	.13
	Not So Strong Republican	7	.39	.13
	Strong Republican	10	.33	.17
	Other	2	.38	.18

Means and Standard Deviations of Political Affiliation Accuracy Ratings of Senators (2nd Classification)

	Grouped Self-Reported Political Affiliations	Means	Standard Deviations
Accuracy of All Senators:			
	Republican	.36	.14
	Independent	.39	.16
	Democratic	.42	.16
Accuracy of Democratic Senators:			
	Republican	.37	.20
	Independent	.39	.19
	Democratic	.38	.18
Accuracy of Republican Senators:			
	Republican	.35	.15
	Independent	.40	.18
	Democratic	.48	.21

Note. These groupings are based on self-reported political affiliation, condensed from 8 nominal categories to three.
n= 21 for Republican population; n= 17 for Independent group; n= 23 for Democrat group.

Means and Standard Deviations of Political Affiliation Accuracy Ratings of Senators Using the Political Ideology Questionnaire (3rd Classification)

	Political Ideology Questionnaire	Means	Standard Deviations
Accuracy of All Senators:			
	Conservative	.40	.13
	Moderate	.40	.15
	Liberal	.38	.17
Accuracy of Democratic Senators:			
	Conservative	.42	.17
	Moderate	.39	.19
	Liberal	.35	.20
Accuracy of Republican Senators:			
	Conservative	.38	.15
	Moderate	.43	.18
	Liberal	.42	.22

Note. n= 18 for Conservative group; n= for Moderate group; n= 22 for Liberal group)