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**First Impressions: The Effect of Perceived Micro-Expressions on the Attitudes of
Others**

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**First Impressions: The Effect of Perceived Micro-Expressions
On the Attitudes of Others**

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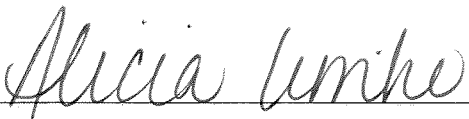
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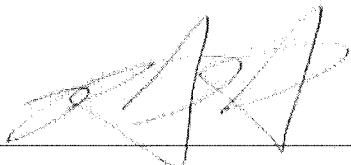
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Table of Contents

Section	Page Number
Abstract	1
Introduction	2
Experiment	7
Method	7
Results	11
Discussion	15
Limitations	17
Future Directions	18
References	20
Appendix A	23
Appendix B	25
Appendix C	32
Appendix D	36

Abstract

Research concerning facial expressions indicates that humans are capable of detecting and interpreting subtle and fleeting expressions, even without conscious effort. In this proposed study, the researchers examined whether or not preconsciously perceived micro-expressions have an effect on the attitudes and/or mood of the observer towards the individual exhibiting the micro-expressions. Participants watched a televised presidential speech given in 1991 by Former President George H.W. Bush. One half of the participants were shown the full speech without any edits made to the video and the second half watched the video with seven micro-expressions edited out of the video. Prior to and immediately following viewing the clip, participants were given the PANAS and BMIS inventory scales in order to determine their attitudes and emotions at that particular moment in time. The subjects were also given the Big Five Inventory and the Self-Monitoring Inventory scales after viewing the clip, in order to assess characteristics that may influence such attitudes and perceptions of the speaker and self-monitoring abilities of the participants. Participants who were shown the full speech without any edits exhibited a greater difference in mood between pre and post testing on the BMIS than participants who were shown the speech with micro-expressions edited out of the video.

First Impressions: The Effect of Perceived Micro-Expressions on the Attitudes of Others

Darwin asserted in 1872 that emotions are involuntary, inherited manifestations of an individual's inner state and that the face was the "chief" channel in which these emotions were expressed. He proposed that these expressions allowed for the individual exhibiting the emotion to better process and respond to the situation at hand, and thus allowing for better survivability. As a result, individuals viewing the expressions have also had the ability to learn these signals so that they may better understand the true emotions of the person they are observing for purposes of social communication, reproduction, and to assist in survival (Schmidt & Cohn, 2001).

According to Ekman (2009), micro-expressions can be defined as "full-face emotional expressions that are compressed in time, lasting on a fraction of their usual duration, so quick they are usually not seen." Previous research regarding micro-expressions has determined that these fleeting expressions are present in any interaction between humans, signaling the target what the other person is really feeling, even if that individual does not know that he/she actually feels that way (Ekman, 2009). The basis of Ekman's research is that facial cues and movements can give away the true attitudes of the person exhibiting these cues, potentially revealing deception. When you are alone, most likely, you do not smile or frown as much in reaction to stimuli, as you do not need to communicate those emotions to other individuals (Tassinari & Cacioppo, 2000; Fridlund, 1997; Fridlund, 1994). But when other individuals are present, you are likely to smile more when you are happy and frown more when you are not. Although the muscle activity in your face will be more pronounced in the presence of others or if you feel that

others are watching you, the activity within your facial muscle will still occur when you are alone, but it will be much less pronounced.

Ekman and Friesen (1969) posited that the face is simultaneously the best and worst deceiver on the human body because it has the quickest reaction and response time from the brain (allowing easier leakage of true emotion) and is the first location on the body to attempt to mask those emotions. This means that facial expressions can often be confusing to interpret by those viewing them, when the individual exhibiting the expressions is attempting to mask specific emotions. Ekman, Friesen, and O'Sullivan (1988) conducted studies where participants were asked to lie and smile about their felt emotions after watching a video that was either very pleasant or very unpleasant. The participants who exhibited smiles during lying about feeling happy lacked certain facial markers indicating true, or felt happiness, such as movement of the muscle that orbits the eye.

Even though some facial muscle movements are so slight that other individuals may not consciously perceive them, those movements may elicit different emotional and attitudinal responses from those individuals viewing them. Often individuals will have an emotive reason for disliking or distrusting (or vice-versa, trusting and liking) other individuals, stating something along the lines of "I just do not like him for some reason. He gives me a bad vibe." From an evolutionary perspective, it is imperative that humans are able to make extremely quick snap judgments about people and situations in order to survive. Malcolm Gladwell (2005) discusses this concept, referring to it as "thin-slicing," and states that we make rapid decisions about individuals and situations, often without conscious awareness that we are doing so, because very specific details can tell

us a lot about that person or situation. Communication through micro-expression may be one reason for this, especially if the person being observed presents conflicting micro-expression and the attitudes that are elicited as a result may help in furthering our knowledge of non-verbal communication.

Most perceptual activity is automatic and not under conscious control and the perceptions of another person's behavior can influence the behavior of the individual perceiving it (Bargh & Chartrand, 1999). For instance, Chartrand and Bargh (1999a) had subjects work with a confederate on a task that involved teamwork in two different sessions with two different confederates. In the first session the confederate rubbed his face several times and in the second session the confederate shook his foot in the presence of the subject. In both sessions, the subject mimicked the confederate by shaking their foot or rubbing their face. None of the participants had any awareness that they were engaging in these behaviors, but did so automatically in response to the confederates. This shows that individuals can have unconscious automatic perceptions of others and others' behavior, allowing them to respond without conscious awareness. Although this can be explained as either being a mirroring or social contagion phenomenon, it allows us to see that unconscious perceptions play a major role in our interactions (both verbally and nonverbally) with other individuals.

Murphy and Zajonc (1993) conducted a study where individuals were presented with Chinese ideographs and were asked to judge and rate the symbols on their likability and pleasantness. Prior to seeing the symbols, the participants were shown a happy or angry face at suboptimal or optimal levels of awareness. The participants who were shown the target faces at suboptimal levels rated the ideographs more positively or

negatively than the participants who had been aware that they had seen the faces. And subsequently, the positive faces were rated more strongly than the negative ones at the suboptimal level. This means that the individuals were more likely to make stronger judgments about the symbols without being aware that they were being primed than if they had been aware of the target faces. In his 1980 article, Zajonc posits that affect is greatly impacted by cognition and in fact, cognition precedes emotion in first impressions whether we realize it or not. However, most often we do not realize that we have had some sort of quick cognition regarding the individual or situation that we are assessing. It is at the subconscious level that we are making quick, snap judgments about the situation.

In a study conducted by Monohan (1998), participants were either nonconsciously primed with a picture of a happy person (two separate happy individuals were shown to two different groups) or they were not primed at all. The participants that were primed with a picture of a smiling person were more likely to judge that same person as more likable and more attractive than if they had viewed the picture of the other smiling person or if they had not been primed at all. The participants were more likely to rate that person more positively because they had been primed with those expressions without knowing that they had been.

Although there are many factors that play roles in attitudes between individuals, it may also be helpful in determining whether facial expressions or micro-expressions assist in determining one's attitudes towards other individuals. These fleeting expressions may not always be consciously perceptible, but humans' minds may be registering them on a subconscious level. The information gained from this study could also impact the study

of behavioral confirmation. Behavioral confirmation occurs when an individual (perceiver) holds certain expectations about another person (target) and elicits behaviors from that other person (target) that are consistent with the perceiver's expectations (Snyder & Klein, 2005). By studying the attitudes elicited from micro-expressions, we may be able to further study how the attitudes of an individual exhibiting a micro-expression influence the reactions of those observing the micro-expressions, which could possibly confirm the sender's expectations.

Stewart, Waller, and Schubert (2009) asked participants to view a video clip of former President of the United States, George H.W. Bush giving a speech concerning the U.S. military response to the Iraq invasion of Kuwait in 1990. Half of the participants watched the clip with seven micro-expressions exhibited by the former president removed from the video and the other half of the participants watched the video with those seven micro-expressions included. The seven micro-expressions that were removed had some component of smiling sometimes with or without other facial movements (that are also occasionally associated with disgust and/or anger). Participants who viewed the micro-expressions expressed that they felt less angry and less threatened than those who did not see the micro-expressions. As a result, we can see that micro-expressions can have a significant impact on the emotions of those viewing them.

Based on the above research, it is hypothesized that the detection of micro-expression elicits specific attitudes towards the individual exhibiting those micro-expressions. There has been a lack of research regarding the effect and unconscious processing of micro-expressions on the individuals exposed to them. Examining these effects can provide further evolutionary insight into why micro-expressions persist and

provide a greater understanding of how quickly opinions are formed about other people. It is proposed that cognition and emotion are separate processes that are interlinked in the judgment process, and that preconscious processing of the micro-expressions perceived play a role in assisting the subject in determining what his/her first judgments are.

The goal of the proposed study is to examine whether presence or absence of micro-expressions would change the attitude of an observer towards the person exhibiting the micro-expression. I also examined the relationship between the attitude of the observer before and after viewing the video, either with or without micro-expressions removed. We aim to understand whether undetected micro-expressions significantly change the attitudes of the observer and whether unspecific micro-expressions change the attitudes of the observer or not.

Method

Participants

In this study, a total of 82 participants were recruited through the University of Central Oklahoma's SONA participant recruitment system and completed the study in exchange for course credit in general psychology courses. The participants came from both classroom and web-based courses, with approximately 65% of the participants classifying themselves as female ($n = 56$) and 35% male ($n = 26$). The majority (69.5%) of the participants in the study described themselves as White ($n = 57$), with 9.80% describing themselves as Black or African-American ($n = 8$), 7.30% classifying themselves as Hispanic or Latino/a ($n = 6$), 4.90% as Asian ($n = 4$), 4.9 % as American Indian or Alaskan Native ($n = 4$), and 3.7% as other/bi-racial ($n = 3$). The ages of the participants ranged from age 17 to age 59, with 91.50% of the participants falling

between the ages of 17 and 25. The question regarding political affiliation showed that approximately 40.20% of the participants identified themselves as Republican, 30.50% as Independent, 25.60% as Democrat, and 2.40% as other/none. Although only 4.90% of the participants in the study had ever been in the military, 35.40% of the participants had one or more family members or friends that were deployed in the most recent U.S. war with Iraq. There were 40 participants in the first condition (no micro-expressions removed) and 42 participants in the second condition (micro-expressions removed).

Materials

The stimulus material in the study was a video of President George H.W. Bush's nationally televised speech from August 8, 1990, in which he announced the U.S. force's commitment to the Persian Gulf during the invasion of Kuwait by Iraq. In this clip, President Bush responded to an emotionally stimulating topic with discrepant micro-expressions and display behavior, meaning that he was very expressive in both facial and body communication. The entire video lasts 11 minutes and 11 seconds with micro-expressions left in, and without the micro-expressions the video lasts 10 minutes and 52 seconds. Stewart, Waller, and Schubert (2009) identified the seven micro-expressions edited out of the video, which is reproduced in Appendix D.

Both immediately before and immediately after viewing the speech, participants were asked to rate themselves on how they felt at that particular moment in time using the Positive and Negative Affect Scale (PANAS) (Watson, Clark, & Tellegen, 1988) and the Brief Mood Introspection Scale (BMIS) (Mayer & Gaschke, 1988). The subjects were also asked to complete the Big Five Inventory (John, Naumann, & Soto, 2008), the Self-Monitoring Scale (Snyder, 1974), and the Belief in a Just World scale (Lipkus, Dalbert,

& Siegler, 1996) before watching the video. The PANAS is a scale that is used to measure mood and affect at a given point in time. The Big Five scale has been determined to be a highly consistent and reliable measure of affect (Watson, Clark, & Tellegen, 1998). The Self-Monitoring scale is effective in determining the level of self-monitoring (self-control and self-observation) that the individual has. The Belief in a Just World scale measures how stable and orderly individuals perceive the world to be. Individuals who have a high score on the BJW often are more likely to support conservative political values along with having a greater internal sense of control (Kaiser, Vick, & Major, 2004). The BMIS is a scale that consists of 16 adjectives describing eight mood states with two adjectives for each mood state. The eight mood states with adjectives are as follows: happy (happy, lively), loving (loving, caring), calm (calm, content), energetic (active, peppy), fearful/anxious (jittery, nervous), angry (grouchy, fed up), tired (tired, drowsy), and sad (gloomy, sad). The participants are to choose one response out of four possible choices: definitely do not feel, do not feel, slightly feel, and definitely feel. The BMIS scale tells what type of mood each subject is in at that particular moment in time and whether that mood affects the outcome of the study. The Big Five Scale provides further information about the type of person that the participant is and whether it relates to the types of responses that he/she provided after the video.

Procedure

After agreeing to participate in the online study, participants went to the survey, which was located on the website: www.surveymonkey.com. The subjects were asked to complete a short demographic and political questionnaire, along with the BMIS scale, the PANAS scale, the Belief in a Just World scale, the Self-Monitoring Scale and the Big

Five Inventory (see Appendices for complete surveys). The political questionnaire included questions pertaining to the subject's political affiliation, whether the participant has ever been in the military or had family in the military, and their interest in national news. These questions provided more information regarding the formation of the participant's opinions and also examines whether the participant has a prior bias towards or against the former president. The PANAS and BMIS scales were administered both before and after viewing the video to determine how the participant felt at that particular moment in time. The Belief in a Just World scale provides further information on how the participants viewed the reasons for going to war given by the President. Their beliefs also can influence their attitudes/emotions towards the President, as a result of the speech.

The participants were asked to view the designated video clip of President Bush's speech by clicking the link that would take them to the website www.YouTube.com where the videos were located. Following viewing the video, the subjects were asked to complete the PANAS and the BMIS Inventory, once again. The dependent variables were change in attitude and mood in response to micro-expressions or a lack of micro-expressions elicited by the former president along with emotional reaction to the video. The independent variable was specific micro-expressions included in the video or not included, as exhibited by the former President. The micro-expressions that were removed have already been identified in the study conducted by Stewart, Waller, and Schubert (2009). A total of approximately 20 seconds were deleted from the video without the micro-expressions. That is, the videos do not differ significantly on time. Once the

participants were finished with the BMIS and PANAS surveys following the video, the study was completed.

Results

A one-way multivariate analysis of variance was used to determine change in mood (i.e., emotion at a specific point in time) from before and after watching the video. The independent variable was the video (micro-expressions removed versus micro-expressions intact) and the attitudes of the participants along with the difference in mood as the dependent variables. There was not a significant effect of the change in mood between difference scores and attitudes, Wilks' Lambda = .89, $F(1, 80) = 1.22$, $p = .30$, partial $\eta^2 = .10$, observed power = .48. There was, however, a significant effect between subjects on the BMIS scale, $F(1, 80) = 6.47$, $p = .01$, partial $\eta^2 = .07$, observed power = .71. In the first group (micro-expressions intact), there was a greater difference in pre-post BMIS scores ($M = 3.22$, $SD = 6.17$) than in the group with the seven micro-expressions removed ($M = 0.19$, $SD = 4.54$). This indicated that the group with the micro-expressions removed from the video experienced less of a difference in change in mood after the video than the group who watched the video completely unaltered. Levene's test for equality of variances was found not be violated for the BMIS differences scores, $F(1, 80) = 2.03$, $p = .15$. However, there was no significant change between groups on the PANAS scale difference scores of positive and negative affect, $F(1, 80) = 1.62$, $p = .20$, partial $\eta^2 = .02$, observed power = .24 and $F(1, 80) = 0.51$, $p = .47$, partial $\eta^2 = .00$, observed power = .11, respectively. There were no significant differences between groups on attitude measures, as well.

A one-way MANOVA including only post-test scores for the BMIS and PANAS scales to examine the differences between the groups after viewing the video, with no significant differences found, Wilks' Lambda = .95, $F(1, 80) = .46$, $p = .85$, partial $\eta^2 = .04$, observed power = .19. Levene's test for equality of variances was found to be significant for both of the positive and negative post-scores, $F(1, 80) = 5.80$, $p = .01$ and $F(1, 80) = 8.36$, $p = .00$, respectively. However, Levene's test was not found to be significant for the BMIS post-test scores, $F(1, 80) = .12$, $p = .72$. No significant interactions were shown on the BMIS post-scores ($F(1, 80) = 0.99$, $p = .32$, partial $\eta^2 = .01$, observed power = .16), the positive post-scores ($F(1, 80) = 1.45$, $p = .23$, partial $\eta^2 = .01$, observed power = .22), or the negative post-scores ($F(1, 80) = .33$, $p = .33$, partial $\eta^2 = .01$, observed power = .15).

Tests of between the groups on individual BMIS questions (difference scores) showed significant differences between groups only on these moods: Tired ($F(1, 80) = 4.89$, $p = .03$, partial $\eta^2 = .05$, observed power = .58), Content ($F(1, 80) = 4.12$, $p = .04$, partial $\eta^2 = .05$, observed power = .51), Gloomy ($F(1, 80) = 6.84$, $p = .01$, partial $\eta^2 = .08$, observed power = .73), and Overall mood ($F(1, 80) = 10.76$, $p = .00$, partial $\eta^2 = .12$, observed power = .90). The first group showed a greater difference in these emotions from pre to post tests than the second group (see Table 1).

Table 1 BMIS Significant Means and SD

	Group 1		Group 2	
	M	SD	M	SD
Tired	-.20	.80	.14	.60
Content	.25	.67	-.02	.56
Gloomy	-.12	.80	.33	.78
Overall Mood	1.30	1.62	.14	1.57

On the PANAS difference scores, the groups did not differ significantly on any of the individual mood questions. No significant differences were found on the post-test analysis of the individual mood questions between the groups, either. Because the PANAS and BMIS measured similar but mostly different mood adjectives, it is interesting to note that the moods that showed significance in the results of the BMIS analysis do not overlap with any of the moods listed in the PANAS. However, as shown in Table 2, there was a significant difference between genders with group on the mood described as enthusiastic ($F(1, 80) = 5.09, p = .02, \text{partial } \eta^2 = .06, \text{observed power} = .60$). There also was a significant difference between genders on the moods described as alert ($F(1, 80) = 7.48, p = .00, \text{partial } \eta^2 = .08, \text{observed power} = .77$) and determined ($F(1, 80) = 6.82, p = .01, \text{partial } \eta^2 = .08, \text{observed power} = .73$).

	Group 1		Group 2	
	M	SD	M	SD
<u>Enthusiastic</u>				
Male	.87	1.12	.00	1.02
Female	.50	1.10	.83	1.00
<u>Determined</u>				
Male	.50	1.19	.11	.91
Female	1.18	1.22	.91	1.13
<u>Alert</u>				
Male	.00	.92	.05	.80
Female	.71	.95	.66	1.09

Results of a *t*-test on the Self-Monitoring Scale, which was administered prior to watching the video for both groups, showed no significant differences between the scores of the two groups, $t(80) = -.09, p = .38$. Levene's test showed no significant variance differences between the groups on the SMS scores, $F(1, 80) = .75, p = .38$. On the SM

Scale, a higher score indicates higher self-monitoring abilities while a lower score indicates a lesser ability at self-monitoring. Approximately 35.40% of participants scored above a 12 on the scale and 64.60% scored a 12 or lower on the scale. Results of a *t*-test run between groups on participants' beliefs in a just world (BJW Scale) (done prior to watching the video), also showed no significant differences, $t(80) = .18, p = .81$, indicating that the BJW did not affect their emotions after watching the President give a speech about going to war.

In testing specific characteristics of the participants in the Big Five Scale prior to watching the speech, a significance was shown between groups on the measure of agreeableness, $F(1, 80) = 5.58, p = .01$. There was a significant effect of group, Wilks' Lambda = .86, $F(1, 80) = 2.35, p = .04$, partial $\eta^2 = .13$, observed power = .72. The first group (micro-expressions left in) reported a higher average of agreeableness ($M = 36.15, SD = 4.85$) than the second group ($M = 33.40, SD = 5.61$). None of the other four personality characteristics showed significance between group scores.

Because agreeableness is a trait that can influence mood and attitude towards an individual, a one-way MANOVA was performed again with the same attitude measures as before, but with agreeableness as a covariate. After adjusting for agreeableness, the BMIS difference scores still differed between groups, $F(1, 80) = 6.52, p = .01$, partial $\eta^2 = .76$, observed power = .71. The post-scores for the BMIS and the positive scale on the PANAS post-test showed significance on group differences after adjusting for agreeableness, $F(1, 80) = 4.45, p = .03$, partial $\eta^2 = .05$, observed power = .55 and $F(1, 80) = 4.59, p = .03$, partial $\eta^2 = .05$, observed power = .56, respectively. Levene's test showed no significant differences between group variances on neither the BMIS

difference score ($F(1, 80) = 2.03, p = .15$) nor the BMIS post-scores ($F(1, 80) = 2.16, p = .14$). Levene's test did show significance on the PANAS measure of positive post-test, $F(1, 80) = 4.78, p = .03$. There was not a significant effect of group, Wilk's Lambda = .83, $F(10, 70) = 1.38, p = .20$. Agreeableness also showed significance with scores on the Belief in a Just World scale, $F(1, 80) = 4.24, p = .04$, partial $\eta^2 = .06$, observed power = .52. This indicates that there is a relationship between an individual's belief in a just world and his or her level of agreeableness.

Upon closer inspection of the responses, BMIS difference scores showed significance when it related to political party affiliation, $F(1, 80) = 5.51, p = .02$, partial $\eta^2 = .08$, observed power = .09. On the SMS scores, gender and group had a combined significant result, $F(1, 80) = 4.57, p = .03$, partial $\eta^2 = .07$, observed power = .55. Group and ethnic background together showed significance in approval on former President George H.W. Bush's economic policy, $F(1, 80) = 2.88, p = .04$, partial $\eta^2 = .12$, observed power = .66.

Discussion

The present study examined the role that micro-expressions have in changing mood, emotion, and attitudes towards the person exhibiting the micro-expressions. As expected, there was a significant difference between groups in total mood change on the BMIS from before to after watching the speech given by the President. The group that was shown the speech in full reported a greater change in mood than the group that was shown the speech with micro-expressions edited from the video. This indicates that the participants viewing the full speech were affected more emotionally by having the micro-expressions present than the participants who were missing some of the micro-

expressions. It can be determined from these results that individuals respond greatly to micro-expressions even if they are not consciously aware of the presence of those micro-expressions.

Although the attitudes were not affected significantly between groups, understanding the emotion and mood is affected by the presence or absence of micro-expressions allows for further research into how those micro-expressions affect other aspects of human cognition. However, there was no significant difference in attitude or scores on the PANAS scales between the groups. This indicates that although the presence of micro-expressions can elicit more of an emotional response than without, it may take more to adjust an attitude towards an individual or a positive/negative outlook.

From the above results, it can be seen that micro-expressions have permeated through human evolution to assist in the non-verbal communication that is vital for social relationships. Being accurate about the interpretation of non-verbal communication is not always dangerous, but there are times when it could be, such as in the presence of a deceptive killer (ten Brinke, Porter, & Baker, 2012). At the initial point of meeting and/or communicating, it would be imperative for an individual to be able to make a quick and accurate judgment about an individual, especially a dangerous one. Understanding non-verbal cues is something that human ancestors would have needed to survive in groups, by knowing who they could trust and be friendly with and knowing who they could not. Using Darwin's theory that emotional expressions are inherited and involuntary exhibitions of an individual's true inner state, it can be assumed that the micro-expressions elicited by individuals can allow the observers to understand the full (or true) emotion that the individual is experiencing.

However, deception detection is an area where humans typically have poor abilities. Critical thinking errors can influence decision-making on truthfulness of an individual, along with stereotypes, and previously created schemas (Porter & ten Brinke, 2010). Although the presence or absence of micro-expressions have been shown to have an influence on an observer's emotions, it is interesting to note that individuals' accuracy for detecting deception is usually worse than chance (with chance being 50% accuracy) and very rarely exceeds 60% accuracy for many groups (Ekman & O'Sullivan, 1991).

Agreeableness, as a trait, can be an influential precursor to persuasion and mood change in an individual. In this study, participants in the first group tested higher on scores of agreeableness than participants in the second group. The individuals in the first group tested higher in scores of agreeableness, and thus potentially causing a greater effect on mood change (from pre to post tests) than those individuals in the second group. When we included agreeableness as a covariate in the MANOVA, it showed a very slight increase in variability accounted for. Again, there was significance between groups on the BMIS difference scores, indicating that agreeableness, as a trait, had an influence on participants' mood change from before to after watching the speech.

Limitations

There were some limitations to the study that may have had an effect on the results. One of these limitations was the fact that the study was completed entirely online. Participants completed the surveys on the internet link provided (located at www.surveymonkey.com) and had the ability to be distracted at times, and even leave the survey open while they were not present and return to complete it at a later time. A link to the video was provided in the survey and the participants were taken to the site

YouTube (www.youtube.com) to view the appropriate video. Although participants were instructed to maximize the video so that it covered the entire computer screen, there is no way of confirming that they actually did this. They were also instructed not to multi-task or do anything else but watch the video while it was playing and not to fast-forward or skip around through different parts of the video. Again, there is no way to guarantee that the participants were actually compliant with the instructions, potentially interfering with their responses and the results of the study. Distance from the screen and angle of the screen in relation to the participant is also something to take into consideration when evaluating caveats to this study. Even if the participants had the video maximized to fill the entire screen, if they were not close to the screen or let the video play while they engaged in some other activity (such as texting or exercising), then their attitudes and emotions could have been altered.

It is also possible that since the study was conducted via the internet, that there could have been some technological malfunctions during the study. A participant could have had trouble with a connection to the internet or technological issues with the computer that they were using. If the video was not adequately buffered or the connection to the internet was unstable, then the effect of the micro-expressions being present/not present may have been severely affected.

Future Directions

In examining attitudes towards an individual, future research should address the issue of involving an individual who is less well known to the general public to more accurately understand how micro-expressions influence initial attitudes and emotions towards unknown individuals. By using a speech given by a former president who was in

office when the majority of the participants were very young, the researchers attempted to minimize the familiarity of the individual being observed. However, because the main individual was a former president, it is possible that this had an effect on the attitudes of the participants towards President Bush as a result of previously formed attitudes or opinions towards him or even if the participants associated the elder President Bush with the younger President Bush, who was in office more recently in the participants' lifetimes.

Future research should also attempt to have participants watch the same video on the same equipment in order to examine the differences more thoroughly. Also, with the researcher present throughout the duration of the study, it could minimize the chances of participants multi-tasking or dividing their attention with other issues because the researcher would be able to monitor the participants' actions during the time that they are present.

Current research focuses mostly on lie detection and micro-expression detection in participants, which is often used in the forensics field. Future research should not only look at detecting lies or manipulation, but at which facial expressions (and micro-expressions) cause different types of emotional reactions or how those expressions aid in the processing of emotions for the individual who is exhibiting these expressions. To attempt to mask certain emotions or facial expressions is not only used in manipulation and lying, but is also used in many other ways to communicate and for the cognitive processing of emotions, situations, and people. In examining deception detection research, it is interesting to note that most people are no better than chance at accurately detecting lies (Ekman & O'Sullivan, 1991) and future directions should examine why

humans are so poor at detecting lies (which require faking facial expressions and body language) but are also influenced by the presence or absence of micro-expressions in face to face communication. It seems that micro-expressions (along with full fledged facial expressions) are evolving throughout human life in ways that seem contradictory but have specific functions.

References

- Bargh, J. & Chartrand, T. (1999). The unbearable automaticity of being. *American Psychologist*, 54, 462-479.
- Chartrand, T. & Bargh, J. (1999). The chameleon effect: The perception-behavior link and social interaction. *Journal of Personality and Social Psychology*, 76, 893-910.
- Darwin, C. (1872/2009). *The expression of emotion in man and animals*. U.S.A.: Penguin Group, Inc.
- Ekman, P. (2009). *Telling lies: Clues to deceit in the marketplace, politics, and marriage*. New York, NY: W.W. Norton.
- Ekman, P. & Friesen, W. (1969). Nonverbal leakage and clues to deception. *Psychiatry Journal for the Study of Interpersonal Processes*, 32, 88-106.
- Ekman, P., Friesen, W., & O'Sullivan, M. (1988). Smiles when lying. *Journal of Personality and Social Psychology*, 54, 414-420.
- Fridlund, A. (1994). *Human facial expression: An evolutionary view*. San Diego, CA: Cambridge University Press.
- Fridlund, A. (1997). The new ethology of human facial expressions. In J. A. Russell & J. Fernandez-Dols (Eds.), *The psychology of facial expression* (pp. 103-129). Cambridge, MA: Cambridge University Press.
- Gladwell, M. (2005). *Blink: The power of thinking without thinking*. New York, NY: Little, Brown, and Co.
- John, O., Naumann, L., & Soto, C. (2008). Paradigm shift to the integrative big-five trait taxonomy: History, measurement, and conceptual issues. In O. John, R. Robins, & L. Pervin (Eds.), *Handbook of personality: Theory and*

- research* (pp. 114-158). New York, NY: Guilford Press.
- Kaiser, C., Vick, S., & Major, B. (2004). A prospective investigation of the relationship between just-world beliefs and the desire for revenge after September 11, 2001. *Psychological Science, 15*, 503-506.
- Lipkus, I., Dalbert, C., & Siegler, I. (1996). The importance of distinguishing the belief in a just world for self versus for others: Implications for psychological well-being. *Personality and Social Psychology Bulletin, 22*, 666-677.
- Mayer, J. & Gaschke, Y. (1988). The experience and meta-experience of mood. *Journal of Personality and Social Psychology, 55*, 102-111.
- Monohan, J. (1998). I don't know it but I like you: The influence of nonconscious affect on person perception. *Human Communication Research, 24*, 480-500.
- Murphy, S. & Zajonc, R. (1993). Affect, cognition, and awareness: Affective priming with optimal and suboptimal stimulus exposures. *Journal of Personality and Social Psychology, 64*, 723-739.
- Porter, S. & ten Brinke, L. (2010). The truth about lies: What works in detecting high-stakes deception? *Legal and Criminological Psychology, 15*, 57-75.
- Schmidt, K. & Cohn, J. (2001). Human facial expressions as adaptations: evolutionary questions in facial expressions research. *Yearbook of Physical Anthropology, 44*, 3-24.
- Snyder, M. (1974). Self-monitoring of expressive behavior. *Journal of Personality and Social Psychology, 30*, 526-537.
- Snyder, M. & Klein, O. (2005). Construing and constructing others: On the reality and

the generality of the behavioral confirmation scenario. *Interaction Studies*, 6, 53-67.

Stewart, P., Waller, B., & Schubert, J. (2009). Presidential speechmaking style: Emotional response to micro-expressions of facial affect. *Motivation & Emotion*, 33, 125-135.

Tassinary, L., & Cacioppo, J. (2000). The skeletomotor system: Surface electromyography. In J. Cacioppo, L. Tassinary, & G. Bertson (Eds.), *Handbook of Psychophysiology* (2nd ed., pp. 163-199). Cambridge, England: Cambridge University Press.

ten Brinke, L., Porter, S., & Baker, A. (2012, in press). Darwin the detective: Observable facial muscle contractions reveal emotional high-stakes lies. *Evolution and Human Behavior*.

Watson, D., Clark, L., & Tellegan, A. (1998). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.

Zajonc, R. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, 35, 151-175.

APPENDIX A

University of Central Oklahoma Informed Consent Form for Participation

First Impressions: The Effect of Perceived Micro-Expressions

This is to certify that I agree to participate in research as part of an authorized research program of the University of Central Oklahoma, conducted by Savannah Brand under the supervision of Dr. Robert Mather. The purpose of this study is to examine the link between attitudes, facial expressions, and personality characteristics. I understand that I will answer a variety of questions toward this goal following viewing a video clip, including describing my feelings and opinions and providing demographic information.

If I have any questions about this study, I may contact Savannah Brand by phone, at (405) 641-5013, or by email, at soliver4@uco.edu, Dr. Robert Mather by phone, at (405) 974-5474, or by e-mail, at rmather@uco.edu. If I have any questions about my rights as a research participant, I may contact the Chair of the UCO Institutional Review Board by email at irb@uco.edu or by phone, at (405) 974-5479 or (405) 974-5497.

- For this study, I will complete a variety of questionnaires that will be presented online, which should take approximately 30 minutes.
- I understand that there is minimal risk associated with my participation in this study. That is, I understand that I will be answering questions about items that may be personal in nature. Some of these items may make some participants slightly uncomfortable. However, I also understand that participants in this study may gain insight into their own psychological state by answering the items during the study. In addition, they will be exposed to the research process by participating in the study (which is a benefit to the participants as well as the researchers in this study). If any concerns arise from this study, I am encouraged to contact the UCO Counseling Center at (405) 974-2215.
- This study is voluntary – I do not have to participate if I choose not to, and I may withdraw from the study at any time without penalty. However, if I am participating in this study to obtain course credit and I withdraw from participating, I might not get the full credit toward my research requirement that is associated with the study. I understand that I may refuse to answer any question at any time without penalty or loss of benefits.
- I understand that this study is anonymous – any information collected from me will only be used in an analysis as part of a larger group of participants. In addition, the information stored electronically will never be linked to my name. To this end, I understand that the researchers cannot refer me to anyone on the basis of my answers to the materials, but if I would like to visit with someone regarding sensitive or

special concerns, I may contact the researchers at the contact information listed above.

- I understand that I must be 18 years of age or older to participate.

I understand that by agreeing to participate in this research, I do not waive any of my legal rights. I understand that the research investigator named above will answer any of my questions about the research procedure and my rights as a participant. I understand that the research investigator is also available and willing to answer any questions I may have about the nature, importance, or contribution of the results of this study. I understand all of the above information and understand that I will not be deceived during the course of the study. **I hereby agree to participate in the above-described research. I understand my participation is voluntary and that I may withdraw at any time without penalty. By continuing, I affirm that I am at least 18 years of age.**

If I would like a copy of this form, I need to print a copy for my records before continuing to the next page.

APPENDIX B

Self-Monitoring Scale

Directions: The statements that follow concern your personal reactions to a number of different situations. No two statements are exactly alike, so consider each statement carefully before answering. If a statement is *TRUE* or *MOSTLY TRUE* as it applies to you, click on the answer marking *T*. If a statement is *FALSE* or *NOT USUALLY TRUE* as it applies to you, click on the answer marking *F*. It is important that you answer as frankly and as honestly as you can. Your answers will be kept in the strictest confidence.

- | | | | |
|-----|---|---|---|
| 1. | I find it hard to imitate the behavior of other people. | T | F |
| 2. | My behavior is usually an expression of my true inner feelings, attitudes, and beliefs. | T | F |
| 3. | At parties and social gatherings, I do not attempt to do or say things that others will like. | T | F |
| 4. | I can only argue for ideas, which I already believe. | T | F |
| 5. | I can make impromptu speeches even on topics about which I have almost no information. | T | F |
| 6. | I guess I put on a show to impress or entertain people. | T | F |
| 7. | When I am uncertain how to act in a social situation, I look to the behavior of others for cues. | T | F |
| 8. | I would probably make a good actor. | T | F |
| 9. | I rarely need the advice of my friends to choose movies, books, or music. | T | F |
| 10. | I sometimes appear to others to be experiencing deeper emotions than I actually am. | T | F |
| 11. | I laugh more when I watch a comedy with others than when alone. | T | F |
| 12. | In a group of people I am rarely the center of attention. | T | F |
| 13. | In different situations and with different people, I often act like very different persons. | T | F |
| 14. | I am not particularly good at making other people like me. | T | F |
| 15. | Even if I am not enjoying myself, I often pretend to be having a good time. | T | F |
| 16. | I'm not always the person I appear to be. | T | F |
| 17. | I would not change my opinions (or the way I do things) in order to please someone else or win their favor. | T | F |
| 18. | I have considered being an entertainer. | T | F |
| 19. | In order to get along and be liked, I tend to be what people expect me to be rather than anything else. | T | F |
| 20. | I have never been good at games like charades or improvisational acting. | T | F |
| 21. | I have trouble changing my behavior to suit different people and different situations. | T | F |
| 22. | At a party I let others keep the jokes and stories going. | T | F |

- | | | | |
|-----|---|---|---|
| 23. | I feel a bit awkward in company and do not show up quite so well as I should. | T | F |
| 24. | I can look anyone in the eye and tell a lie with a straight face. | T | F |
| 25. | I may deceive people by being friendly when I really dislike them. | T | F |

Citation: Snyder, M. (1974). Self-Monitoring of Expressive Behavior. *Journal of Personality and Social Psychology*, 30(4), 526-537.

Positive and Negative Affect Scale (PANAS)

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way at the present moment. Use the following scale to record your answers:

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely
____ Interested				____ Irritable
____ Distressed				____ Alert
____ Excited				____ Ashamed
____ Upset				____ Inspired
____ Strong				____ Nervous
____ Guilty				____ Determined
____ Scared				____ Attentive
____ Hostile				____ Jittery
____ Enthusiastic				____ Active
____ Proud				____ Afraid

Big Five Inventory (BFI)

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which you agree or disagree with each statement.

	1	2	3	4
5 Disagree Agree Strongly strongly	Disagree a little	Disagree a little	Neither agree nor disagree	Agree a little
_____ 1. Is talkative				_____ 20. Has an active imagination
_____ 2. Tends to find fault with others				_____ 21. Tends to be quiet
_____ 3. Does a thorough job				_____ 22. Is generally trusted
_____ 4. Is depressed, blue				_____ 23. Tends to be lazy
_____ 5. Is original, comes up with new ideas				_____ 24. Is emotionally stable, not easily upset
_____ 6. Is reserved				_____ 25. Is inventive
_____ 7. Is helpful and unselfish with others				_____ 26. Has an assertive personality
_____ 8. Can be somewhat careless				_____ 27. Can be cold and aloof
_____ 9. Is relaxed, handles stress well				_____ 28. Perseveres until the task is finished
_____ 10. Is curious about many different things				_____ 29. Can be moody
_____ 11. Is full of energy				_____ 30. Values artistic, aesthetic experiences
_____ 12. Starts quarrels with others				_____ 31. Is sometimes shy, inhibited
_____ 13. Is a reliable worker				_____ 32. Is considerate and kind to almost everyone
_____ 14. Can be tense				_____ 33. Does things efficiently
_____ 15. Is ingenious, a deep thinker				_____ 34. Remains calm in tense situations
_____ 16. Generates a lot of enthusiasm				_____ 35. Prefers work that is routine
_____ 17. Has a forgiving nature				_____ 36. Is outgoing, sociable
_____ 18. Tends to be disorganized				_____ 37. Is sometimes rude to others
_____ 19. Worries a lot				_____ 38. Makes plans and follows through with

them

- _____ 39. Gets nervous easily
- _____ 40. Likes to reflect, play with ideas
- _____ 41. Has few artistic interests
- _____ 42. Likes to cooperate with others
- _____ 43. Is easily distracted
- _____ 44. Is sophisticated in art, music, or
literature

Brief Mood Introspection Scale (BMIS)

Instructions: Click the response on the scale below that indicates how well each adjective or phrase describes your present mood.

	Definitely do not feel 1	Do not feel 2	Slightly feel 3	Definitely feel 4
Lively	1	2	3	4
Happy	1	2	3	4
Sad	1	2	3	4
Tired	1	2	3	4
Caring	1	2	3	4
Content	1	2	3	4
Gloomy	1	2	3	4
Jittery	1	2	3	4
Drowsy	1	2	3	4
Grouchy	1	2	3	4
Peppy	1	2	3	4
Nervous	1	2	3	4
Calm	1	2	3	4
Loving	1	2	3	4
Fed up	1	2	3	4
Active	1	2	3	4

Overall, my mood is:

Very Unpleasant Very Pleasant
 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Original Citation: Mayer, J. D., & Gaschke, Y. N. (1988). The experience and meta-experience of mood. *Journal of Personality and Social Psychology*, 55, 102-111.

Belief in a Just World

Please indicate which response you agree with the most.

1	2	3	4	5	6
Strongly disagree					
	Strongly agree				

Just world scale for self

I feel that the world treats me fairly.	1	2	3	4	5	6
I feel that I get what I deserve.	1	2	3	4	5	6
I feel that people treat me fairly in life.	1	2	3	4	5	6
I feel that I earn the rewards and punishments I get.	1	2	3	4	5	6
I feel that people treat me with the respect I deserve.	1	2	3	4	5	6
I feel that I get what I am entitled to have.	1	2	3	4	5	6
I feel that my efforts are noticed and rewarded.	1	2	3	4	5	6
I feel that when I meet with misfortune, I have brought it upon myself.	1	2	3	4	5	6

Just world scale for others

I feel that the world treats people fairly.	1	2	3	4	5	6
I feel that people get what they deserve.	1	2	3	4	5	6
I feel that people treat each other fairly in life.	1	2	3	4	5	6
I feel that people earn the rewards and punishments they get.	1	2	3	4	5	6
I feel that people treat each other with the respect they deserve.	1	2	3	4	5	6
I feel that people get what they are entitled to have.	1	2	3	4	5	6
I feel that a person's efforts are noticed and rewarded.	1	2	3	4	5	6
I feel that when people meet with misfortune, they have brought it upon themselves.	1	2	3	4	5	6

Appendix C

Demographic Questions

1. How old are you (in years)? _____
2. Which of these best describes your gender?
 - a. Male
 - b. Female
 - c. Other/neither
3. Which of these best describes your ethnic background? If you are multi-racial, please indicate the group with whom you identify the most.
 - a. White, non Hispanic
 - b. Black or African-American
 - c. American Indian or Alaska Native
 - d. Native Hawaiian or Pacific Islander
 - e. Asian
 - f. Hispanic or Latino/a
 - g. Other
4. What is your most recent marital status?
 - a. Single, never been married, not living with significant other
 - b. Single, never been married, living with significant other
 - c. Divorced
 - d. Separated
 - e. Widowed
 - f. Married
5. What is your current classification by credit hours?
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
 - e. Graduate Student
 - f. Other
6. What is your preferred method of obtaining national news information?
 - a. Televised news
 - b. Newspaper
 - c. Online news source (i.e., CNN.com or mobile news application)
 - d. I do not stay informed of the news
7. How often would you say that you watch the televised national news? (i.e., CBS, NBC, ABC, CNN, FOX News)
 - a. Never
 - b. Rarely (1-2 times per month or less)
 - c. Weekly
 - d. Daily

Political Questions

8. What political party do you identify with?
 - a. Democrat
 - b. Republican
 - c. Independent
 - d. Other, please specify _____
9. Who did you vote for in the last presidential election?
 - a. Barack Obama/Joe Biden
 - b. John McCain/Sarah Palin
 - c. Ralph Nader/Matt Gonzales
 - d. Other, please specify _____
10. How often would you say that you follow current affairs in politics and the government?
 - a. Very often
 - b. Fairly often
 - c. A moderate amount
 - d. Not often
 - e. Not at all
11. Are you or have you ever been in the military?
 - a. Yes
 - b. No
12. If you are or have ever been in the military, were you deployed?
 - a. Yes- Please specify when: _____
 - b. No
 - c. I am not/have not ever been in the military
13. Do you have any family members or friends that were deployed in the most recent U.S. war in Iraq?
 - a. Yes- if so, please specify who: _____
 - b. No

Please mark the number indicating your best answer.

- | | | | | | | | | | | |
|------------|---|---|---|---|---|---|---|---|----|-------|
| Not at all | | | | | | | | | | A Lot |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
-
- | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|----|
| 12. How much do you like President Barack Obama? | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
-
- | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|----|
| 13. Do you trust President Barack Obama? | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
-
- | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|----|
| 14. How much do you like President George W. Bush? | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
-
- | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|
| 15. Do you trust President George W. Bush? | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|

- | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 16. How much do you like President Bill Clinton? | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 17. Do you trust President Bill Clinton? | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Attitude Questions

Evaluation

1. What is your overall evaluation of the speech?

1	2	3	4	5	6	7	8	9	10
(strong)									(weak)
2. What is your impression of the president's appearance in the performance of the speech?

1	2	3	4	5	6	7	8	9	10
(Nervous)									(confident)
3. What do you feel was the quality of the argument?

1	2	3	4	5	6	7	8	9	10
(convincing)									(unconvincing)
4. What do you feel about his explanation for the reasons for the decision to commit forces?

1	2	3	4	5	6	7	8	9	10
(confusing)									(clear)

Evaluation of the President

5. How do you feel about President's Bush's job overall performance?

1	2	3	4	5	6	7	8	9	10
(strongly disapprove)									(strongly approve)
6. How enthusiastic does President Bush make you feel?

1	2	3	4	5	6	7	8	9	10
(not at all)									(extremely)
7. How angry does President Bush make you feel?

1	2	3	4	5	6	7	8	9	10
(not at all)									(extremely)
8. How determined does President Bush make you feel?

1	2	3	4	5	6	7	8	9	10
(not at all)									(extremely)
9. How disgusted does President Bush make you feel?

1	2	3	4	5	6	7	8	9	10
(not at all)									(extremely)
10. How inspired does President Bush make you feel?

1	2	3	4	5	6	7	8	9	10
(not at all)									(extremely)
11. How hopeful does President Bush make you feel?

1	2	3	4	5	6	7	8	9	10
(not at all)									(extremely)
12. How uneasy does President Bush make you feel?

1	2	3	4	5	6	7	8	9	10
(not at all)									(extremely)
13. How do you feel about President Bush's job performance on economic policy?									
1	2	3	4	5	6	7	8	9	10
(strongly disapprove)									(strongly approve)

Appendix D

Excerpt	FACS code (AUs)	Onset	Associated emotion
1	10 (upper lip raiser)	Frame 6	Anger and disgust
	12 (lip corner puller)	Frame 7	Happiness
	25 (lips parted)	Frame 1	X
	26 (jaw drop)	Frame 3	X
2	12 (lip corner puller)	Frame 6	Happiness
3	10 (upper lip raiser)	Frame 4	Anger and disgust
	12 (lip corner puller)	Frame 4	Happiness
	25 (lips parted)	Frame 3	X
	26 (jaw drop)	Frame 3	X
4	24 (lip press)	Frame 1	Anger
	12 (lip corner puller)	Frame 2	Happiness
5	R12 (right lip corner puller)	Frame 12	Happiness
6	12 (lip corner puller)	Frame 11	Happiness
	25 (lips parted)	Frame 1	X
	26 (jaw drop)	Frame 1	X
7	10 (upper lip raiser)	Frame 2	Anger and disgust
	12 (lip corner puller)	Frame 6	Happiness

Facial movements that occurred during the excerpts coded using the Facial Action Coding System (FACS: Ekman et al. 2002a)

Citation: Stewart, P., Waller, B. & Schubert, J. (2009). Presidential speechmaking style: Emotional response to micro-expressions of facial affect. *Motivation & Emotion*, 33, 125-135.