


4-2016

# Political Attitudes and the Facial Feedback Hypothesis

Josh Albertson  
*College of William and Mary*

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## Recommended Citation

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## Political Attitudes and the Facial Feedback Hypothesis

A thesis submitted in partial fulfillment of the requirement  
for the degree of Bachelor of Arts in Psychology from  
The College of William and Mary

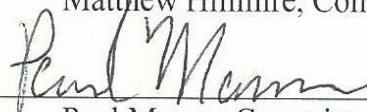
By

Joshua Albertson

Accepted for Honors

  
Joanna Schug, Director

  
Matthew Hilimire, Committee Member

  
Paul Manna, Committee Member

Williamsburg, VA  
4/28/16

## Abstract

Current research has suggested that facial expressions may not only be the result of emotional experiences, but they may also play a role in shaping emotion itself. This idea, known as the Facial Feedback Hypothesis, has been supported in a number of various areas of psychology. The weak version of the hypothesis tested in this study suggests that facial feedback may intensify or inhibit an underlying emotion already present. One area of psychology untouched by the facial feedback hypothesis appears to be political evaluations. We hypothesized that activation of the zygomatic major muscle in the face (normally present when expressing happiness) when evaluating moderate political statements would correlate with higher levels of support and be viewed as more partisan congruent to a person's political identity. Similarly, we hypothesized that activating the *anguli oris* muscle in the face (usually present when expressing anger) when evaluating bi-partisan statements would correlate with higher levels of disagreement and be viewed as less congruent to a participant's partisan identity when judging these statements. Results indicated that opposite to our predictions, moderate statements are evaluated more favorably and more congruently to political identity in the frowning condition compared to the smiling condition, relative to pretests. Implications are discussed.

Keywords: *Facial Feedback, Politics, Bipartisan, Attitude change*

## **Political Attitudes and the Facial Feedback Hypothesis**

Despite the numerous studies designed to attribute political attitudes and behavior to a single rational model, the role of emotions in political psychology has been largely ignored. Yet there is no question that political thought and political attitudes are inherently intertwined with emotional affect (Redlawsk, 2006). When people make judgements about what policies and politicians they support, the reasons they use to support those judgements often incorporate emotions rather than purely objective analysis (Marcus, 2000). Emotion allows past and contemporary political circumstances to be evaluated and quickly related to an individual's political attitudes that they hold. If emotions influence political evaluations, then influencing emotions may be a major factor in garnering political support, or even inspiring bipartisanship. One way emotions are shaped could be through cognitive feedback from facial expressions. By studying how facial expressions influence political attitudes, we have the opportunity to see how malleable or non-malleable these attitudes may be and, more importantly, investigate if facial expression offers any insight into bipartisan efforts moving forward.

### **An Overview of the Facial Feedback Hypothesis**

Over the last several decades, psychology has looked to facial expressions and facial feedback as possible explanations for an individual's' emotions, attitudes, and behaviors. Simply put, the modern Facial Feedback Hypothesis (Buck, 1980) is the theory that muscle feedback from facial expressions plays a causal role in regulating emotional experience and behavior. However, the origin of the facial feedback hypothesis dates back to the 1800s, when Charles Darwin (1872) first proposed the idea in his book, *The Expression of the Emotions in Man and Animals*, that the “free expression by outward signs of an emotion intensifies it, and that repression of these emotions softens it” (p. 365). This idea laid the foundation for what is

considered the weak version of the Facial Feedback hypothesis. This weak version states that facial expressions can intensify or reduce an emotion that is already present. For example, a smile might intensify a happy feeling, while a frown might stifle happiness. Similarly, a frown might exaggerate anger or sadness, while smiling could mediate these effects. In contrast, the strong version of the hypothesis suggests that a facial expression may be able to create an emotion independently.

The strong version of the facial feedback hypothesis, which states that facial expression informs emotion has been effectively discredited. In 2002, research showed that emotions were intact and unchanged among those with facial paralysis compared to those without paralysis (Keillor, Barrett, Crucian, Kortenkamp, & Heilman, 2002). This indicated that while facial expression may still have a role in emotional intensity, it has no part in completely forming the emotions on its own.

The weak version of the hypothesis has been repeatedly tested since the 1970s. The first major test of facial feedback effects arrived in 1976, when research concluded that subjective pain was changed based on facial expression during administration (Lanzetta, Cartwright-Smith, & Elick 1976). Even stronger evidence comes from Strack, Martin and Stepper (1988) who completed the first non-obtrusive test of the hypothesis using cartoons as stimuli. Strack and colleagues developed a methodology for testing facial feedback that asked participants to hold a pen either between their teeth or between their lips. Participants holding a pen between their teeth were activating the zygomatic major muscle used in a smile, while lip condition participants were activating the anguli oris muscle used in frowning. They then observed that participants found cartoons funnier when placed in a condition that facilitated a smile, compared to a condition that facilitated a frown. Since this study, many others have replicated these facial feedback effects, finding that stimuli are evaluated more positively while smiling, and more

negatively when frowning (Dimberg & Söderkvist, 2011; Mori & Mori, 2010; Soussignan, 2002). Additionally, observing oneself smiling or frowning in a mirror has also been found to exacerbate an existing emotion (Kleinke, Peterson, & Rutledge, 1998).

One other methodology sometimes used to test facial feedback is the Voluntary Facial Action (VFA) technique (Dimburg & Söderkvist, 2011). This method requires that participants actively smile or frown as opposed to having those muscles activated via holding a pen in their teeth. One benefit of this method is that participants do not have to perform strenuous pen-holding tasks when experiments take a long period of time. One downside, however, is that it leaves experiments vulnerable to potential demand characteristics; when participants are instructed to contract facial muscles in a certain way, it may lead them to respond in a way that reflects their understanding of what the experiment is about. In this case, VFA may lead to exaggerated effects if participants think the experiment is about emotion.

Other studies have examined physiological implications of facial feedback. One such study found that heart rate may be lower during stress recovery when smiling is facilitated, while neutral conditions experience higher heart rates (Kraft & Pressman, 2015). Still others have found that facial feedback modulates neural activity within the amygdala during intentional imitation of facial expressions (Hennenlotter, Dresel, Castrop, Baumann, Wohlschlager, & Haslinger 2009). These findings support the idea that changes in physiology occur as a result of facial expressions, rather than facial expressions being a simple manifestation of emotion and changes in physiology.

While many studies have examined the effects of facial feedback on emotion and physiology, few have studied its effect on attitudes. Previous research has shown that facial expressions can express the valence of a bias in responding to ambiguous picture stimuli (Neta, Norris, & Whalen, 2009). Going one step further, one way to study attitudes is by having

participants evaluate ambiguous verbal statements, and study whether or not those evaluations change based on facial condition. There is some research that has employed this method: In one study (Meeten et. al., 2015) participants evaluated unambiguously positive, unambiguously negative, and ambiguous neutral statements regarding normal daily occurrences. Researchers compared responses in conditions where smiling was facilitated to conditions where frowning was facilitated. In examining the impact of facial feedback on attitudes, results showed that participants in smiling conditions were more likely to evaluate ambiguous statements more favorably than participants in frowning conditions. One limitation of this study however was that Meeten and colleagues used the Voluntary Facial Action method, rather than the pen between the teeth or lips methodology used by Strack, Martin and Stepper, leaving the study prone to demand characteristics.

### **Facial Feedback and Political Attitudes**

The following studies were conducted as a test of the weak version of the facial feedback hypothesis on evaluations regarding political statements. We measured changes in agreement with political statements, as well as changes in how partisan the statements were viewed as. Study 1 was used to collect statements for use in Study 2. Study 2 then had participants evaluate selected statements in a neutral pretest condition, followed by one of two separate conditions in a laboratory setting.

## Study 1

The purpose of Study 1 was to gather a list of political statements to be used for participant evaluations in Study 2. We sought to gather liberal, conservative, and neutral “bipartisan” statements that were ambiguous and would serve as the main focus of Study 2. Neutral statements may be particularly susceptible to facial feedback effects compared to more polarizing liberal or conservative statements, so it was important to identify what these statements would be. Study 1 used partisanship ratings to determine the neutrality of given political stances. We then coded the gathered statements as liberal, conservative or neutral based on these evaluations.

## Method

### Participants

88 participants completed the survey on political attitudes. Among the sample were self-identified liberals, conservatives, and independents. Participants’ ages ranged from 18-67 (34 men, 40 women and 18 participants who did not identify their gender, Mean age= 36.72, SD= 18.06). Of the participants, 34 identified themselves as Liberal, 10 as Conservatives, and 44 as independent or who did not select a political identity.

### Materials and Procedure

*Item generation.* To gather political statements to be used in this study, a committee of three researchers gathered statements given from politicians on their websites. Many of these statements were from state and local government officials, because their platforms were more moderate. After acquiring a list of 35 statements, which our committee believed included liberal, moderate and conservative undertones, we surveyed participants across the political spectrum, and asked them to rate on a 9-point scale how partisan they thought each statement was.



After collecting the data, we computed the average rating for each statement for self-identified liberal, independent, and conservative respondents. If, on average, each of the three types of respondents evaluated statements as between a 1 (extremely liberal) and a 3 (moderately liberal), we coded the statement as liberal. If the average for each respondent group was between a 4 (slightly liberal) and a 7 (moderately conservative), we coded the statement as moderate. If the average for each group was between a 7 (moderately conservative) and a 9 (extremely conservative), we coded the statement as conservative. Statements in which liberal, independent, and conservative respondents clearly disagreed on how partisan the statement was were eliminated. This resulted in four liberal statements, four conservative statements and ten neutral bipartisan statements. The statements compiled, as well as the mean partisan ratings and standard deviations, are presented in Table 1. The left column shows coded labels for each statement, while the mean columns show the averages used to code the statements.

As shown in Table 1, Study 1 resulted in 18 statements being selected. Of the 18 statements, 4 were coded as liberal, 4 as conservative and 10 as moderate. The average partisanship ratings for liberals, conservatives, and independents are also listed, along with the standard deviations for each group. These statements were then used in Study 2.

Table 1. Selected statements and descriptive statistics (Study 1).

	<u>Liberals</u>	<u>Conservatives</u>	<u>Independents</u>
<u>Conservative Statements:</u>	Mean (SD)	Mean (SD)	Mean (SD)
C1. We should respect that our Nation was founded on Christian ideals	8.56 (.75)	7.89 (1.20)	7.33 (1.13)
C2. The United States is the greatest country in the world	7.00 (1.67)	6.58 (1.57)	6.67 (1.96)
C3. Capital punishment is an important and effective deterrent of crime	7.85 (1.09)	7.42 (1.02)	7.11 (1.02)
C4. Everyone is better off when businesses and corporations are making more money	7.91 (1.29)	6.79 (1.93)	8.00 (1.36)
<u>Liberal Statements:</u>			
L1. Use of Marijuana should be decriminalized	2.76 (1.66)	2.68 (1.45)	2.78 (1.35)
L2. Abortion should continue to be legal in the United States.	2.24 (1.56)	2.74 (1.19)	1.89 (1.65)
L3. The Affordable Care Act is a step forward in Health Care Reform.	2.44 (1.16)	2.79 (1.08)	2.00 (1.51)
L4. There should be no restrictions on who can be married.	2.00 (1.10)	2.95 (1.39)	2.00 (1.26)
<u>Neutral Statements:</u>			
N1. We need to encourage schools to provide strong work training programs to ensure that all Americans benefit from our 21st century economy.	4.56 (1.56)	4.37 (1.30)	5.44 (1.25)
N2. Senators and Representatives in the U.S. Congress should have term limits.	4.79 (1.70)	4.74 (1.48)	5.78 (1.36)
N3. America should rely less on foreign oil and invest in domestic energy.	4.91 (2.09)	5.21 (1.08)	5.67 (2.20)
N4. We can improve education by increasing parental involvement in schools.	4.88 (1.49)	4.95 (1.35)	5.33 (1.59)
N5. Immigration reform is much needed in our country.	5.24 (2.34)	4.95 (1.39)	4.67 (1.24)
N6. Politicians' work emails should be open to public scrutiny.	5.38 (1.58)	4.84 (1.77)	5.89 (1.94)
N7. To strengthen our economy, we need to encourage job growth and promote small businesses	4.88 (2.01)	5.16 (1.17)	6.89 (2.39)
N8. Extradition treaties between the United States and other countries should be expanded.	5.56 (1.52)	4.89 (1.37)	6.89 (1.23)
N9. Tax reform must be enacted so that there is a simpler, fairer system that encourages savings, investment and economic growth.	5.00 (1.67)	5.21 (1.51)	5.89 (1.04)
N10. Teachers who do not perform well should not be allowed to continue teaching.	6.15 (1.18)	5.21 (1.44)	5.67 (1.32)

## Study 2

Given prior research suggesting that facial expressions can influence emotions and attitudes (Strack et al., 1988; Dimberg & Söderkvist, 2011; Meeten et al., 2015) we designed a study to examine whether this influence extended to political statements. If they do, this would fundamentally change the way we understand political decision making and attitudes. Currently, political attitudes tend to be seen as polarized, stagnant beliefs that go relatively unchanged over time (Campbell, Converse, & Stokes, 1960). However, if political attitudes could be influenced by facial expressions then we may begin to see attitudes and perhaps ideology as a more fluid construct than previously thought. Additionally, more focus on the role of emotion in political decision making may occur.

In Study 2, we investigate whether evaluations of political statements differ in smiling or frowning conditions relative to neutral pre-test conditions. Differences between pretest and posttest evaluations of partisanship and agreement were compared in order to evaluate within-subject changes from neutral conditions to lab conditions, based on the type of facial musculature activated.

## **Method**

### **Participants**

All participants were students at the College of William and Mary in Virginia who completed a survey early in the semester to fulfill course requirements in a general introductory psychology course. As part of this survey participants report their citizenship, gender, and political affiliation. Based on responses to this initial survey, we selected approximately 300 individuals and invited them to participate in a study on political attitudes. As the proportion of students who identify as “liberal” is much larger than the proportion of students who identify as “conservative,” we oversampled for conservative participants. Participants were required to complete a pre-experiment survey prior to taking part in the laboratory portion of the study. In

total, 100 participants successfully completed both parts of the study. Participants ranged in age from 18-22 (mean =18.92, SD=.863). Participants included 61 liberals and 39 conservative students. The gender distribution of the sample was 64 women and 36 men.

### **Materials and Procedure**

Participants were contacted via email and asked to complete a pre-test survey before attending a lab session. The survey consisted of the 18 political statements (four conservative, four liberal, and ten neutral) collected in Study 1, a scale to measure emotions (PANAS X: David & Clark, 1994), and questions about political involvement and interest. After completing the survey, participants signed up for a lab time and came into a computer lab to complete the second portion of the study.

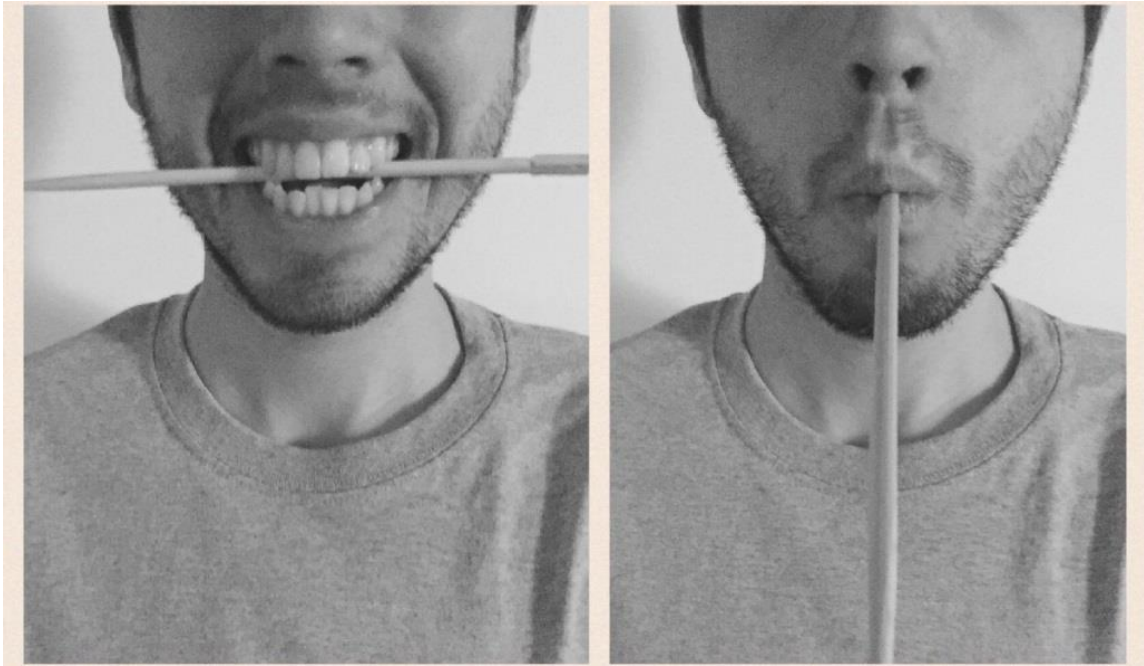
Participants completed the lab portion of the study in groups of up to nine other participants. Upon arrival, a researcher asked participants to complete the same online questionnaire (displayed on the computer screen in front of them), but this time they were assigned to one of two facial feedback conditions. Adopting a similar technique used by Strack, Martin and Stepper (1988), who used a pen to activate facial muscles present in a smile for some participants and those present in a frown for other participants, we asked participants to hold a chopstick between their teeth or clenched between their lips. The only difference between the use of chopsticks and the use of a pen is that chopsticks are disposable (and originally intended to be inserted into the mouth) and therefore easier to distribute and dispose of sanitarily. When the instructions were given, participants were told that the study was examining the effects of distraction on attitudes. This cover story was provided in an attempt to avoid demand characteristics.

The participants in each session were randomly assigned to one of 2 conditions: the smiling (teeth) condition (n=51) and the anger (lips) condition (n=49). In the Smiling/Teeth

condition, participants were instructed to hold a chopstick between their teeth horizontally, stretching their lips back so that their lip corners did not rest on the chopstick. The experimenter also demonstrated the exact way to hold the chopstick between the teeth at the start of each of trial for Condition 1. This “teeth condition” allowed the facial muscles present during a smile to also be activated while participants in condition 1 completed the lab survey. An example of this condition is on the left in Figure 1. Condition 2 was given the same overall instructions for completing the survey, except they were instructed to complete the survey while holding the chopstick vertically between their lips. They were told to hold the chopstick in their mouths tightly, and away from their teeth. A demonstration was also given by the investigator for this group. An example of this condition is on the right in Figure 1. This “lip condition” activates proper facial muscles present during frowning, theoretically eliciting anger while taking the survey.

The lab survey administered was identical to the pretest survey regardless of condition. Within the survey, participants were asked to evaluate the selected 18 statements from Study 1. First participants were asked to evaluate on a 9-point scale how partisan they thought the statements were. Then, in a second block they were asked to rate on a 9-point scale how much they agreed or disagreed with the given statements. After evaluating the statements for partisanship and agreeableness, participants again completed the PANAS X scale and completed information on political activity and interest. Upon completing the study, participants received either 5 dollars or class credit as payment.

Figure 1. Teeth Condition (left) and Lip Condition (Right)



## Predictions

Overall, we predicted that facial feedback effects would be observed when evaluating neutral political statements, but not liberal or conservative statements. Our specific predictions were as follows:

1. Participants should report experiencing more hostility in the lip condition, and less hostility in the teeth condition, relative to their state in the pretest. Similarly, participants should report experiencing more positive emotion in the teeth condition and less positive emotion in the lip condition, relative to their state in the pretest.

The above prediction is made to examine whether the manipulations used in the study were able to produce the intended effects as indicated in previous research. Our prediction was that facial feedback effects on positive emotion would be replicated.

2. Evaluations of partisanship for neutral statements in the teeth condition should be significantly more aligned with party identity relative to pretest neutral conditions, and evaluations of partisanship for neutral statements in the lip condition should be significantly less aligned with party identity relative to pretest neutral conditions.

This reflects one core hypothesis of Study 2. This prediction reflects that if participants found statements more agreeable when smiling, they would also view statements as more congruent to their own ideology. This is because they should identify as a supporter of the statement and as a member of a given political party, so agreeing more with the statement would also mean viewing the statement as more partisan in favor of one's own political views.

3. Evaluations of partisanship for liberal and conservative statements should be unchanged from pretest results regardless of condition.

This hypothesis reflects that we do not expect changes among evaluations for statements on either end of the spectrum, because these elicit attitudes that are more sedentary. Evaluations of these statements should be relatively unchanged from pretest to posttest, because preconceived agreement or disagreement is likely too strong to observe these effects. Therefore, more extreme statements should not be subject to facial feedback.

4. Evaluations of agreement for neutral statements to be higher in the teeth condition relative to pretest neutral conditions, and relatively lower in the lip condition.

This prediction represents another core hypothesis of Study 2. We predicted that the teeth condition would cause an increase in positive emotion as found in previous research, and that that increase would influence participants to evaluate neutral statements as more agreeable. Similarly, the lip condition would cause a decrease in positive emotion which would influence participants to evaluate neutral statements as less agreeable.

5. Evaluations of agreement for liberal and conservative statements to be unchanged from pretest results regardless of condition.

Similar to Prediction 2, Prediction 5 states that we expect no changes for the more polarizing statements, which should not be subject to significant facial feedback effects. These stronger statements should have relatively little change from pretest to posttest because of their strong political orientation.

Overall, the purpose of the study was to examine whether individuals evaluated statements differently when placed in a teeth or lip condition compared to a pre-test. Therefore in order to analyze the differences in pretest and posttest evaluations for each participant, we used ANOVA to examine within-participant changes in ratings of political statements. This within-participant design allows us to evaluate within person change, by condition, in order to examine effects of the teeth condition to the lip condition facial feedback, while holding individual differences constant.

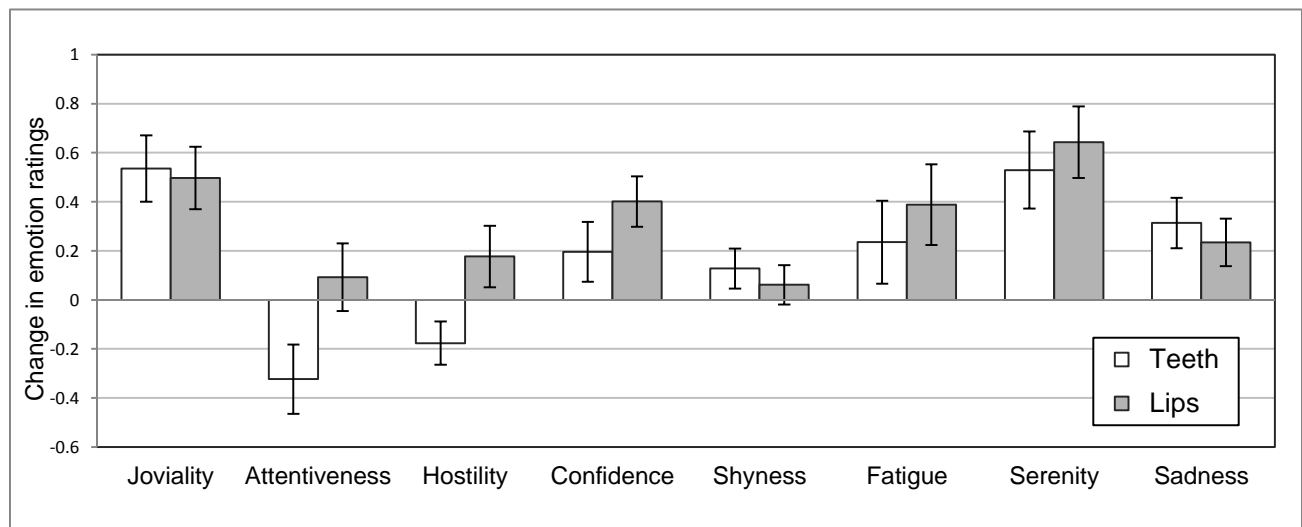
## **Results and Discussion**

*Manipulation check.* To examine whether the facial feedback manipulations were influencing participants' emotional states, we compared the change in the means for items on the



PANAS X scale assessing participants' emotional states. Based on criteria for scoring the PANAS X scale (David & Clark, 1994), we computed subscales representing joviality, hostility, attentiveness, confidence, shyness, fatigue, and serenity. As these emotion terms were collected both in the pretest as well as in the posttest, we examined differences across conditions in each subscale, and then computed the within-person difference score in ratings of each emotional category between the pre-test (taken prior to the laboratory portion of the study) and the in-person experiment. The within-person change in reported emotion, by condition, is shown in Figure 2.

Figure 2. Within-person changes in reported emotion, by condition.



In particular, as outlined above, we had predicted that participants would experience increased Joviality and decreased Hostility in the teeth condition, and decreased Joviality and increased Hostility in the lips condition. The results of the manipulation check partially supported these predictions: while we did observe the predicted increase in hostility in the lips condition relative to the increase in hostility observed in the teeth condition  $t(98)=2.32, p=.023$ , there was no significant effect for Joviality  $t(98)=.21, p=.83$ . With the exception of

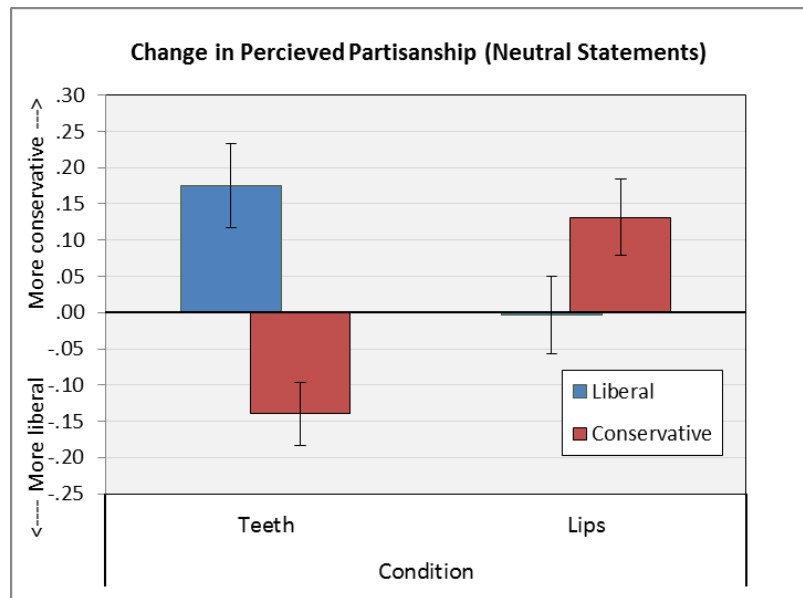
Attentiveness, which significantly decreased in the teeth condition vs. the lips condition  $t(98)=2.10, p=.038$ , no other significant effects were observed.

These results suggest that while the lip condition successfully increased feelings of anger and hostility, supporting Prediction 1, the manipulation in the teeth condition intended to increase positive emotion may not have been successful.

*Ratings of partisanship for neutral statements.* To examine whether or not evaluations of how partisan statements were changed, we compared the average change in responses between pretest and posttest on the 9-point scale for partisanship between treatment conditions (Means and Standard Deviations are listed in Appendix 1). We conducted a 2 (Condition: Lips vs. Teeth) x 2 (Political Identity: Liberal vs. Conservative) ANOVA, with the difference in perceived partisanship (calculated as the within-person difference between ratings from the pre-experimental survey and the in-person component of the study) as the dependent variable. The results indicated a significant effect interaction between Condition and Political Identity  $F(1,99)=4.13, p=.0449, \eta^2=.04$  while the main effects of Condition  $F(1,99)=.17, p=.423$  and Political Identity  $F(1,99)=.65, p=.683$  were not significant.

As shown in Figure 3, the significant interaction between condition and political identity indicates that in the teeth (smiling) condition, liberal participants viewed ambiguous political statements as more conservative, while conservative participants evaluated the same statements as more liberal. In the lip condition, however, liberals evaluated the partisanship of bipartisan statements similarly to pre-test evaluations, with almost no change. Conservatives viewed the neutral statements as slightly more conservative compared to pretest results, but the results were not significant.

Figure 3. Changes in Perceived Partisanship for Neutral Statements. Error bars represent standard errors.



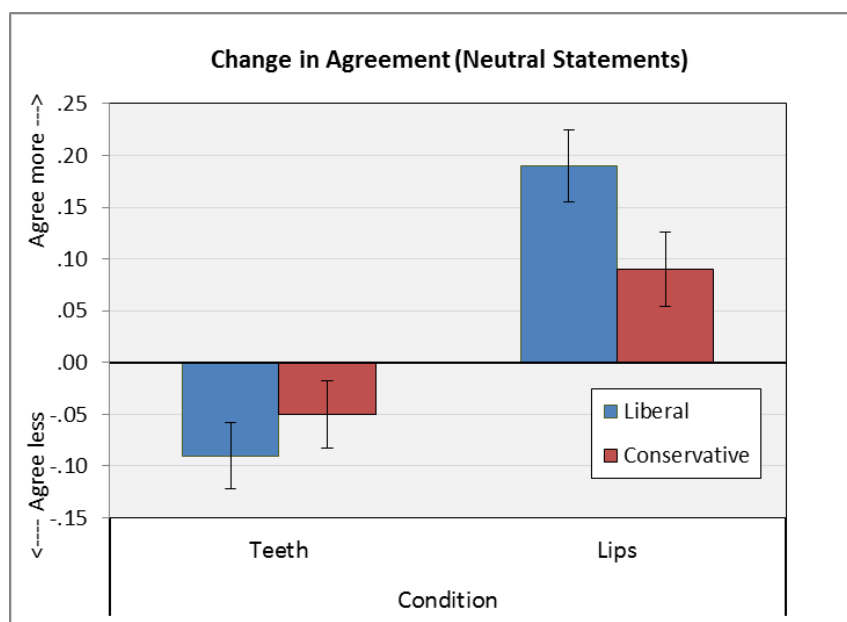
*Ratings of partisanship for conservative and liberal statements.* In evaluating the partisanship of liberal statements, we observed no significant facial feedback effects for neither Condition  $F(1,99)=1.175, p=.281$  nor Party Identity  $F(1,99)=.998, p=.320$ . For liberal statements, teeth condition results differed insignificantly from pretest results for both liberal and conservative participants. In the lip condition, liberals rated statements as more liberal while conservatives had no change, but this interaction trend between Condition and Party Identity was not significant  $F(1,99)=.527, p=.47$ . For conservative statements, no changes in partisanship were observed for Condition  $F(1,99)=.891, p=.348$ , or Party Identity  $F(1,99)=.014, p=.907$ . Teeth condition responses differed insignificantly from pretest results for conservative statements for both liberals and conservatives. Similarly to liberals evaluating liberal statements, conservatives seemed to evaluate conservative statements as more in line with their ideology in the lip condition relative to the teeth condition, but again this interaction was insignificant

$F(1,99)= 1.39, p=.242$ . Overall these results showed no evidence for facial feedback effects when evaluating the partisanship of strongly partisan statements.

*Agreement with neutral political statements.* Next, we examined whether, as predicted, facial feedback would influence agreement with neutral political statements. As with the evaluations of partisanship, we conducted a 2 (Condition: Lips vs. Teeth) x 2 (Political Identity: Liberal vs. Conservative) ANOVA. This time, the dependent variable was the change in agreement (calculated as the within-person difference between ratings from the pre-experimental survey and the in person component of the study). The results indicated a significant effect of Condition  $F(1,99)=9.11, p=.003, \eta^2=.09$ , but no significant effect of Political Identity  $F(1,99)=.17, p=.681$ , or interaction between the two variables  $F(1,99)=.988, p=.323$ . Evaluations in the teeth condition were less favorable, and evaluations in the lip condition were more favorable, regardless of party identity.

Figure 4 displays the significant effect of condition, indicating that overall participants in the lips condition (intended to elicit anger) viewed the neutral statements used in this study significantly more favorably than participants in the smiling condition, relative to pretests.

Figure 4. Changes in agreement for neutral statements.



*Agreement with partisan political statements.* Examining agreement and disagreement among liberal and conservative statements, no significant results were found. In evaluating liberal statements, little change occurred across conditions for conservative respondents. Liberal respondents tended to agree slightly more in the lip condition relative to the teeth condition, though variations between conditions  $F(1,99)=.259, p=.612$ , political identity  $F(1,99)=.259, p=.612$ , and the interaction effects  $F(1,99)=.176, p=.351$  were all insignificant. In judging conservative statements, liberal responses were similarly unchanged between conditions  $F(1,99)=.797, p=.374$ , while conservatives agreed slightly more in lip conditions than teeth conditions, though again to an insignificant degree  $F(1,99)=.007, p=.933$ , and no interaction was observed  $F(1,99)=.093, p=.473$ . These results indicated no changes from pretest to posttest in agreement with liberal and conservative statements, showing no evidence of facial feedback.

## General Discussion

Overall, results were significant for neutral statements, though in the opposite direction than predicted. Liberal and conservative statements saw insignificant changes relative to pretests, as predicted. The manipulation check for facial feedback effects on emotion was replicated for Hostility as expected, but not for Joviality, contrary to predictions.

Results of the manipulation check showed an increase in hostility for the lip condition, as well as confidence and attentiveness. Increased joviality was expected for the teeth condition but that outcome was unobserved. Overall, the manipulation check validated part of our hypothesis that lip conditions increased anger-related emotion, but did not support teeth conditions being associated with positive emotions as found in prior research.

Results also indicated a significant interaction between condition and ideology for evaluating the partisanship of neutral statements. However, these results were in opposition to our original prediction. We hypothesized that in the teeth condition partisanship evaluations would be more aligned with political identity, and in the lip condition evaluations would be less aligned with political identity. Contrarily, teeth condition results showed significantly more liberal evaluations from conservatives, and more conservative estimations from liberals. In the lip condition there was no change from pretests for liberals, and conservatives evaluated partisanship as more in line with their political identity. Overall, this finding was opposite to our prediction.

In evaluating changes on partisanship evaluations for liberal and conservative statements, no significant changes from pretest to posttest were observed, regardless of test condition. This supported our hypothesis that strong polarizing statements would be immune to facial feedback effects. Polarizing statements likely elicit more sedentary political views that are uninfluenced by facial feedback effects.

Results for neutral statement agreement showed that significantly more agreement occurred when statements were evaluated in the lip condition compared to the smiling condition, relative to pretests. Again, this result was opposite to our original hypothesis. The smiling condition appeared to elicit disagreement, whereas the frowning condition appeared to elicit more agreement.

Lastly, agreement for liberal and conservative statements was unchanged relative to pretest results regardless of condition. Additionally, liberals evaluated liberal statements more favorably in the lip condition compared to the teeth condition, and conservatives evaluated conservative statements more favorably in the lip condition as well. However, these results were also statistically insignificant. Again this supported our hypothesis that strongly partisan statements would hold firm regardless of condition.

### **The Debate over the Robustness of Facial Feedback Effects**

One explanation for opposite results is that facial feedback effects are either erratic or nonexistent. Despite the multitude of studies supporting facial feedback phenomena, the past decade of research has put the validity of feedback effects in doubt. Some studies have failed to replicate facial feedback despite rigorous efforts to copy previous research having demonstrated the effects (e.g. Reisenzein & Studtmann, 2007). Additionally, some investigators have concluded that facial feedback effects are either small or nonexistent, in contrast to claims of its large impact on emotions states (Matsumoto, 1987).

Other skeptics of the facial feedback hypothesis claim that facial expressions may not be valid analogs of emotional expression. One problem may be that eliciting facial expressions in experiments might not be as distinctive as originally intended. That is, activating muscles present in anger, sadness, or happiness may not be sufficiently correlated with the subjective emotions themselves in research environments (Ekman & Friesen, 1975). Secondly, in order to meet

criteria for an emotional expression, facial muscles must be activated to a certain intensity threshold. Unfortunately, much of the existing literature cannot show that in testing facial feedback, the appropriate facial muscles are being activated to a sufficient extent (Matsumoto, 1987). Thirdly, some suggest that emotional expressions have a time envelope of .5 to 4 seconds (Ekman, 1984). However, most existing literature has participants hold facial expressions substantially longer than these time envelopes. This may cause emotional effects produced from facial expressions to diminish throughout the course of an experiment. Lastly, expressions of emotion have been known to change over time. If participants are instructed to hold a facial expression for several minutes, it is possible that the appropriate facial expression will not be appropriately expressed during an entire trial block (Matsumoto, 1987).

Another problem that skeptics have posed is that stimuli used to test facial feedback in certain scenarios may elicit different emotions between participants. For example, many studies examined facial feedback by using small electric shocks (e.g. Kopel & Arkowitz, 1974; Lanzetta et al., 1976) and it is debatable whether or not the same emotion is elicited in each of these studies between participants. While one person may become fearful of a shock, others might feel sad, and still others might feel angry. Because of this difficulty to categorically isolate one emotion when any given stimuli is presented, claims as to the huge impact of facial feedback on an emotional state may be unwarranted.

### **Stability of Political Statements**

Another possible explanation for some of the nonsignificant effects in our study is that these statements represent sedentary beliefs that are immune to facial feedback effects in the same way that emotions are. The stability of political beliefs has been well studied and documented (e.g., Campbell, Converse, & Stokes, 1960). Typically by college most people have firm, unwavering political beliefs. This easily explains why liberal and conservative statements



did not differ significantly, as predicted. So, it would be easy to conclude that this stability simply extends to moderate political statements as well. However, for moderate statements, what we saw was a significant effect opposite to our predictions rather than no effect at all. This implies that facial feedback may have effects on evaluation of politically neutral statements, and that lip conditions eliciting anger might make people evaluate statements more favorably than smiling conditions intended to elicit happiness. Additionally, the smiling condition appeared to make evaluations of partisanship more incongruent with party identity for neutral statements, whereas the lip condition had both ideologies evaluate statements more congruently or the same relative to pretest results. This also implies facial feedback does have some effects on political attitudes.

### **Potential Role of Anger in Political Evaluations**

One explanation for increased agreement in the lip condition is that anger may be more critical to favorable evaluations than happiness. The teeth condition meant to elicit happiness in this study showed greater spreading for partisanship ratings, and less agreement than the frowning condition meant to elicit anger. It may be the case that for evaluating political statements, anger actually elicits higher level cognitive processing than happiness. One study showed that experiencing anger led to deeper information processing compared to other emotions (Nabi, 2002). This means that individuals experiencing anger would evaluate statements more carefully and form opinions more thoughtfully. Happiness on the other hand, may not lead to the same level of careful evaluation. In our study, anger conditions may have led participants to carefully evaluate each political statement and, when evaluating neutral statements, find nothing they disagreed with because of the bipartisan nature of the statement. This would lead to both increased support of these neutral statements and increased alignment for statements with party identification.

## **Potential Role of Smiling in Political Evaluations**

If anger produced deeper cognitive processing, this may be an explanation for why support of neutral statements increases in the lip condition. However, an explanation for why teeth conditions saw disagreement is also needed. The main explanation for this is likely the failed manipulation check in our study. According to the facial feedback hypothesis, in order for smiling to produce more favorable evaluations it needs to evoke happiness. Our analysis showed no significant increase in Joviality for the teeth condition, implying no more favorable evaluations should be expected.

Another such explanation may be that smiling does not always lead to happiness. This is supported by our manipulation check which did not produce significantly increased Joviality in teeth conditions compared to lip conditions. Instead, smiling may actually decrease well-being if the smile produced is not genuine. One study found that frequent smiling among individuals who view smiling as a proactive tool to increase happiness actually makes them feel worse when they smile (Labroo, Mukhopadhyay & Dong, 2014). Therefore, if someone doesn't believe that smiling reflects an increase in happiness but instead just a way to achieve happiness, they may actually be less happy when smiling compared to not smiling at all. In this study, if participants viewed smiling as a proactive tool rather than a physiological response to an emotion, it may have caused them to become unhappy or sad when smiling facial musculature was activated. This displeasure then may have altered their evaluations of neutral statements, making them less favorable and less aligned with an individual's personal political identity.

## **Limitations and Future Studies**

One limitation of this study is that we used all psychology students as participants. While this provided an easily accessible participant pool to use, it hinders the study in two ways. First, our findings cannot be made generalizable to other age groups or geographical areas. Second,

psychology students have some experience in introductory psychology courses, some of which discuss facial feedback effects on emotion. While the chopstick in the mouth technique combined with a cover story about studying distraction significantly eliminated demand characteristics, some participants were still aware as to the true purpose of Study 2. Participants even inquired as to whether or not we were investigating facial feedback. This is a severe limitation to using psychology students as participants. Future research should focus efforts on recruiting a more diverse set of individuals for testing.

One other limitation to this study, and to using unobtrusive facial manipulation generally, is that facial feedback effects are supposedly short but surveys are long. For this reason, having someone hold something between their teeth or in their lips for several minutes may fail to capture the feedback effects that might occur if participants were told to make a face for each item they were evaluating statements. Future research can use separate conditions of unobtrusive design and voluntary facial feedback design for both teeth and lip conditions to determine whether one method has a significantly greater effect size.

Overall, more testing of the facial feedback hypothesis is necessary to confirm this phenomenon. Additionally, further research can benefit from analyzing the differences in political evaluations and continue to work towards solutions that enhance prospects of bipartisanship. Continuing the study of facial expression in political psychology is important in understanding the interactions of emotion and political attitudes in the 21st century.



### **Acknowledgements**

The preparation of this manuscript was funded in part by the Charles Center and individual donations from: Jerry Albertson, Lena Davis, Sharon Albertson, Ray Yacouby, Christine Kennedy, Panteha Vaghedi, Lesly Ger, Suresh Rajan, Conner Geery, Doreen Albertson, Jennifer Manning, Gazelle Hashemian, Richard Stolz, Ruth Vitarelli, Francis Guyette, and the Mill Street Gang. Research made possible by team members including Dr. Joanna Schug, Lauren Dybel, Aiden Fielding and Sadie Meadows. Many thanks to my mother, Doreen Albertson, for her continuous support and encouragement.

## References

- Buck, R. (1980). Nonverbal behavior and the theory of emotion: The facial feedback hypothesis. *Journal of Personality and Social Psychology*, 38(5), 811-824. doi:10.1037/0022-3514.38.5.811
- Campbell, A., Converse, P. E., Miller, W. E., & Stokes, D. E. (1960). *The American voter*. New York: Wiley.
- Darwin, C., Cummings, M. M., Duchenne, G.-B., & John Murray (Firm),. (1872). *The expression of the emotions in man and animals*. London: John Murray.
- David, W., & Clark, L. A. (1994). Positive and negative affect schedule--expanded version (PANAS-X) [measurement tool]. *10.1037/t04754-000*,
- Dimberg, U., & Söderkvist, S. (2011). The voluntary facial action technique: A method to test the facial feedback hypothesis. *Journal of Nonverbal Behavior*, 35(1), 17-33. doi:10.1007/s10919-010-0098-6
- Ekman, P. (1984). expression and the nature of emotion. in K. Scherer & P. Ekman (eds.), *Approaches to emotion* (pp. 319-343). Hillsdale, NJ: Erlbaum.
- Ekman, P., & Friesen, W. V. (1975). *Unmasking the face: A guide to recognizing emotions from facial clues*. Oxford, England: Prentice-Hall.
- Fridlund, A. J. (1994). *Human facial expression: An evolutionary view*. San Diego, CA, US: Academic Press.
- Hennenlotter, A., Dresel, C., Castrop, F., Baumann, A. O. C., Wohlschläger, A. M., & Haslinger, B. (2009). The link between facial feedback and neural activity within central circuitries of emotion—New insights from botulinum toxin-induced denervation of frown muscles. *Cerebral Cortex*, 19(3), 537-542. doi:10.1093/cercor/bhn104

- Keillor, J. M., Barrett, A. M., Crucian, G. P., Kortenkamp, S., & Heilman, K. M. (2002). Emotional experience and perception in the absence of facial feedback. *Journal of the International Neuropsychological Society*, 8(1), 130-135. doi:10.1017/S1355617702811134
- Kraft, T. L., & Pressman, S. D. (2012). Grin and bear it: The influence of manipulated facial expression on the stress response. *Psychological Science*, 23(11), 1372-1378. doi:10.1177/0956797612445312
- Labroo, A. A., Mukhopadhyay, A., & Dong, P. (2014). Not always the best medicine: Why frequent smiling can reduce wellbeing. *Journal of Experimental Social Psychology*, 53, 156-162. doi:10.1016/j.jesp.2014.03.001
- Lanzetta, J. T., Cartwright-Smith, J., & Eleck, R. E. (1976). Effects of nonverbal dissimulation on emotional experience and autonomic arousal. *Journal of Personality and Social Psychology*, 33(3), 354-370. doi:10.1037/0022-3514.33.3.354
- Lanzetta, J. T., Cartwright-Smith, J., & Eleck, R. E. (1976). Effects of nonverbal dissimulation on emotional experience and autonomic arousal. *Journal of Personality and Social Psychology*, 33(3), 354-370. doi:10.1037/0022-3514.33.3.354
- Matsumoto, D. (1987). The role of facial response in the experience of emotion: More methodological problems and a meta-analysis. *Journal of Personality and Social Psychology*, 52(4), 769-774. doi:10.1037/0022-3514.52.4.769
- Meeten, F., Ivak, P., Dash, S. R., Knowles, S., Duka, T., Scott, R., . . . Davey, G. C. L. (2015). The effect of facial expressions on the evaluation of ambiguous statements. *Journal of Experimental Psychopathology*, 6(3), 253-263. doi:10.5127/jep.039613
- Mori, K., & Mori, H. (2010). Examination of the passive facial feedback hypothesis using an implicit measure: With a furrowed brow, neutral objects with pleasant primes look less appealing. *Perceptual and Motor Skills*, 111(3), 785-789.

- Nabi, R. L. (2002). Anger, fear, uncertainty, and attitudes: A test of the cognitive-functional model. *Communication Monographs*, 69(3), 204-216. doi:10.1080/03637750216541
- Neta, M., Norris, C. J., & Whalen, P. J. (2009). Corrugator muscle responses are associated with individual differences in positivity-negativity bias. *Emotion*, 9(5), 640-648. doi:10.1037/a0016819
- Neumann, R., Seibt, B., & Strack, F. (2001). The influence of mood on the intensity of emotional responses: Disentangling feeling and knowing. *Cognition and Emotion*, 15(6), 725-747. doi:10.1080/02699930143000266
- Reisenzein, R., & Studtmann, M. (2007). On the expression and experience of surprise: No evidence for facial feedback, but evidence for a reverse self-inference effect, 1-58. doi:March 30, 2007
- Rutledge, L. L., & Hupka, R. B. (1985). The facial feedback hypothesis: Methodological concerns and new supporting evidence. *Motivation and Emotion*, 9(3), 219-240.
- Soussignan, R. (2002). Duchenne smile, emotional experience, and autonomic reactivity: A test of the facial feedback hypothesis. *Emotion*, 2(1), 52.
- Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, 54(5), 768-777. doi:10.1037/0022-3514.54.5.768

## Appendix 1



<b>Ratings of Partisanship</b>				<b>Pretest</b>		<b>Post-test</b>	
Condition	Party Identity	N	Variable	Mean	(SD)	Mean	(SD)
Teeth	Conservative	20	Liberal statements	2.63	(.68)	2.55	(1.03)
			Conservative Statements	7.00	(1.29)	7.05	(1.33)
			Neutral Statements	5.43	(.72)	5.47	(.60)
Teeth	Liberal	36	Liberal statements	2.42	(.99)	2.37	(1.01)
			Conservative Statements	6.95	(1.49)	7.27	(1.36)
			Neutral Statements	4.94	(.87)	4.80	(.69)
Lips	Conservative	20	Liberal statements	2.81	(1.31)	2.89	(1.33)
			Conservative Statements	6.80	(.86)	6.88	(.87)
			Neutral Statements	5.20	(.75)	5.04	(.72)
Lips	Liberal	31	Liberal statements	2.33	(.75)	2.63	(.86)
			Conservative Statements	7.22	(.86)	7.10	(.78)
			Neutral Statements	4.64	(.68)	4.69	(.37)

<b>Ratings of Agreement</b>				<b>Pretest</b>		<b>Post-test</b>	
Condition	Party Identity	N	Variable	Mean	(SD)	Mean	(SD)
Teeth	Conservative	20	Liberal statements	4.40	(1.49)	4.32	(1.50)
			Conservative Statements	4.91	(1.11)	4.87	(1.00)
			Neutral Statements	5.43	(.54)	5.45	(.47)
Teeth	Liberal	36	Liberal statements	5.82	(.81)	5.85	(.83)
			Conservative Statements	3.97	(.83)	3.99	(.80)
			Neutral Statements	4.97	(.47)	5.01	(.41)
Lips	Conservative	20	Liberal statements	4.79	(1.16)	4.79	(1.00)
			Conservative Statements	4.81	(1.08)	4.66	(1.15)
			Neutral Statements	4.94	(.57)	4.85	(.62)
Lips	Liberal	31	Liberal statements	6.23	(.61)	6.10	(.69)
			Conservative Statements	3.84	(.75)	3.74	(.65)
			Neutral Statements	5.15	(.44)	4.96	(.45)