**APPENDICES FOR: “The influence of President Trump’s micro-expressions during his COVID-19 National Address on viewers’ emotional response”**

**APPENDIX A: Statistical Power and Participants**

With this study, we took into account sample sizes from prior studies regarding micro-expressions with particular attention paid to the President George H.W. Bush 1991 Iraq rally speech study that found emotional response was affected by these brief displays (Stewart et al., 2009). This experimental micro-expression study utilizing President GHW Bush’s rally speech had two hundred and six participants with two conditions of roughly one hundred apiece (see Table 1); this thus provided our reference point, especially as it was successfully replicated (Brand, 2012). However, due to there being seven total micro-expressions over this ten-minute address, the power for our Trump-COVID-19 study may potentially have underestimated the treatment effect when considering the appropriate sample size.

A further confounding factor may be seen in contextual effects on emotional response, and attentiveness to political figures. We consider Stewart and Svetieva’s study which focused on the effect of then candidate Donald Trump’s 2016 Republican National Convention address, in which with two micro-expressions occurred during a one-minute span, on perceptions of his leadership traits (Stewart & Svetieva, 2021). While this one-minute clip from was shorter in duration than the GHW Bush Iraq rally speech, and there were two coherent micro-expressions, in both experimental studies, the effect size was small. However, this project found that the first study, carried out one month prior to the election, had greater participant response than the second study carried out one week prior to the election. This was likely due to individuals’ minds being made up concerning both candidates in the immediate lead up to the study. Regardless, any power analysis is contingent upon not just the strength of the micro-expression(s) effects, but also the context in which they are seen.

Appendix A Table 1: President George H.W. Bush’s 1991 Iraq War rally speech and micro-expression treatment effects

|  |  |  |
| --- | --- | --- |
| Self-reported emotion | Rally speech effect: Within-subject change (direction) partial η2 | Micro-expression effect: Between-subject interaction w/change (direction) partial η2 |
| Threatened | (+) 0.107\*\*\* | (-) 0.029\* |
| Angry | (+) 0.126\*\*\* | (-) 0.023\* |
| Anxious | (-) 0.063\*\*\* | (-) 0.014@ |
| Determined | (-) 0.016@ | (-) 0.013@ |
| Inspired | (+) 0.118\*\*\* | (~) 0.000ns |
| Reassured | (~) 0.001ns | (~) 0.007ns |

N = 206 (micro-expression in = 100; removed = 106). Significance: ns = Non-significant; @ <.10; \* <.05; \*\* <.01; \*\*\* <.001.

Power analysis was thus run based upon the President George H. W. Bush 1991 Iraq rally speech study (see Appendix A Table 1) between-subject interaction with change partial η2 statistics of 0.013 (for anxious) and 0.029 (threatened) providing baseline standards. G\*Power 3.1 was run based upon an effect size of 0.115-0.173, α error probability of 0.05, power (1-β error probability) of 0.95, with number of groups = 2, number of measurements = 2, correlation of 0.5 and non-sphericity correction ε = 1. The resulting ANOVA: Repeated measures, within-between interaction sample size was estimated as between 112 – 250 participants.

Due this study considering the effect of only one micro-expression, albeit during a contemporaneous event of high salience we expected greater attention to President Trump’s statement and nonverbal behavior. We also expected greater reliance on pre-held opinions regarding Donald Trump, which could potentially be seen in our analysis obscuring any effect of the micro-expression for participants who were not supporters, and thus not as emotionally effected by the video.

Furthermore, contextual factors, including contemporaneous threat that was not extant in the baseline studies (either the GHW Bush rally speech or the Trump RNC acceptance speech), as well as the extensive polarization regarding Donald Trump rendered these parameters as solely guidelines. Finally, due to the data collection method, which utilizes an opportunity sample, we were limited in the sample that was collected.

**Participants**

The study participants were recruited using a snowball sampling approach to better ensure geographic and age variation. Specifically, students received course credit for taking part in the study and recruited two participants for each of the age groups of 30-50 and 51-70; extra credit was given on the basis of recruiting more participants; a total of 263 participants entered the Qualtrics study.

Four participants were removed for not being able to vote; two more were removed for not being of voting age. An additional five participants did not meet the open-ended manipulation check requirements, leaving a total sample of 252 participants. With these participants, distribution to treatment conditions was nearly equal with 127 in the micro-expression out condition (50.39%), and 125 in the control/unaltered condition, with the micro-expression left in.

The average age of participants 42.6 years old (SD = 17.66) and ranged from 19-82 years old; of the sample, only 25.7% were 24 and under, and half the sample was 43 years old or older. There was no significant difference in assignment to conditions (F = 0.002, p = .965) on the basis of age. Of the participants, the majority were female with sixty-five percent of those taking part (163); however, Chi-square tests found no statistical bias in assignment to treatment conditions (c2 = 1.319, p = .517).

Over three-quarters of the participants (77%) self-identified as White, twenty-six identified as Latino, fifteen as African American, eleven as Asian, one as First Peoples, and the remainder as “other”. Again, chi-square tests found no statistical bias in assignment to treatment conditions (c2 = 6.654, p = .248).

When participants indicated their voting intention, we found 97 intended to vote for Donald Trump (38.5%), 120 for Joe Biden (47.6%), and 35 for another candidate (13.9%). chi-square tests did not find a statistically significant bias in assignment to treatment conditions (c2 = 3.167, p = .205).

Upon consideration of self-reported home zip codes, the great majority of participants came from Arkansas and Texas, with seven coming from West Coast states, six from Colorado, three from New Mexico, six from the Missouri/Kansas border, four from Illinois, two from Tennessee, and one apiece from Georgia and Florida. In summary, due to the majority of the study participants being relatively unaffected by COVID-19, we do not expect there to be much tangible effect on participants in terms of direct contact with Coronavirus.

This is borne out by the questions probing whether participants had or thought they had coronavirus/COVID-19, with 82.1 percent saying no, 7.9 percent unsure, 8 percent thinking they might have had it, and four (1.6%) testing for it. That is not to say that participants were not affected, just that the effects were not substantially of the life-threatening nature, and were not biased in their distribution (c2 = 2.353, p = .799). Specifically, when asked to rate on seven point scales from “not at all affected” (1) to “very much affected” (7), participants were on average moderately affected in terms of financial difficulties (M = .302, SD = 2.02), social difficulties (M = 4.42, SD = 2.03), and in terms of mental health issues, such as increased anxiety (M = 3.38, SD = 2.1). However, in terms of effects from having friends or family who had tested positive or died from the virus, the effects were minimal (M = 2.08, SD = 1.88). Checks for potential biased assignment found that there was only a statistically significant bias in assignment based upon increased anxiety (F = 4.593, p = .033), with those in the Micro-expression removed treatment having slightly more self-reported anxiety (M = 3.66, SD = 2.15) compared with those in the original, Control condition (M = 3.10, SD = 2.01).

**APPENDIX B: Emotion measures**

Appendix B Table 1: Pre-/Post-Treatment emotion measures (N = 252)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Self-reported emotion | Pre-Treatment | | Post-Treatment | |
|  | Cronbach’s alpha | Mean (Std Dev.) | Cronbach’s alpha | Mean (Std Dev.) |
| Affinity (proud + interested) | .37 | 9.65 (4.48) | .58 | 7.74 (5.21) |
| Reassurance (reassured + comforted) | .75 | 6.51 (4.77) | .92 | 5.85 (5.33) |
| Anger (irritated + anger) | .82 | 8.20 (5.94) | .90 | 8.54 (6.60) |
| Distressed (fearful + worried) | .84 | 8.78 (5.69) | .90 | 8.53 (6.08) |
| Sadness (discouraged + depressed) | .74 | 7.16 (5.34) | .77 | 7.18 (5.77) |

Appendix B Table 2: Correlation Matrix for Emotion Change Measures

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | 1 | 2 | 3 | 4 | 5 |
| 1 | Affinity Change | 1.00 |  |  |  |  |
| 2 | Reassure Change | 0.46 | 1.00 |  |  |  |
| 3 | Angry Change | -0.23 | -0.24 | 1.00 |  |  |
| 4 | Distress Change | -0.06 | -0.23 | 0.40 | 1.00 |  |
| 5 | Sadness Change | -0.26 | -0.14 | 0.40 | 0.41 | 1.00 |

Note. All correlations > 0.12 are significant at p < .05; N = 252.

**APPENDIX C: Repeated measures ANOVA Results**

Appendix C Table 1: Repeated Measures ANOVA (F-test, significance, partial η2)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Change | Change\*Voting Intent | Change\*Micro-expression | Change\*Voting Intent\*Micro-expression |
| Affinity | *F* = 39.369  *p* = .000  ηp2 = .138 | *F* = 12.244  *p* = .000  ηp2 = .091 | *F* = 1.480  *p* = .225  ηp2 = .006 | *F* = 0.143  *p* = .867  ηp2 = .001 |
| Reassurance | *F* = 5.143  *p* = .024  ηp2 = .020 | *F* = 8.317  *p* = .000  ηp2 = .063 | *F* = 0.020  *p* = .886  ηp2 = .000 | *F* = 0.051  *p* = .950  ηp2 = .000 |
| Anger | *F* = 0.812  *p* = .368  ηp2 = .003 | *F* = 16.592  *p* = .000  ηp2 = .119 | *F* = 1.047  *p* = .307  ηp2 = .004 | *F* = 0.539  *p* = .584  ηp2 = .004 |
| Distress | *F* = 0.653  *p* = .420  ηp2 = .003 | *F* = 5.610  *p* = .004  ηp2 = .044 | *F* = 0.982  *p* = .323  ηp2 = .004 | *F* = 0.231  *p* = .794  ηp2 = .002 |
| Sadness | *F* = 0.029  *p* = .865  ηp2 = .000 | *F* = 9.609  *p* = .000  ηp2 = .072 | *F* = 2.987  *p* = .085  ηp2 = .012 | *F* = 2.026  *p* = .134  ηp2 = .016 |

***Post Hoc Comparisons: Self-reported emotion measures***

We use Scheffe post hoc comparisons of differences as a conservative ANOVA corrective.

Appendix C Table 2: Multiple comparisons in change in felt affinity

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| (I) Presidential vote | (J) Presidential vote | Mean Difference (I-J) | Std. Error | Sig. | 95% CI Lower Bound | 95% CI Upper Bound |
| Donald Trump | Joe Biden | 3.1093\* | .57261 | .000 | 1.6991 | 4.5195 |
|  | Other candidate | 2.3480\* | .82694 | .019 | .3115 | 4.3845 |
| Joe Biden | Donald Trump | -3.1093\* | .57261 | .000 | -4.5195 | -1.6991 |
|  | Other candidate | -.7613 | .80565 | .640 | -2.7454 | 1.2228 |
| Other candidate | Donald Trump | -2.3480\* | .82694 | .019 | -4.3845 | -.3115 |
|  | Joe Biden | .7613 | .80565 | .640 | -1.2228 | 2.7454 |

Based on observed means. The error term is Mean Square(Error) = 17.588. \* The mean difference is significant at the .05 level.

Appendix C Table 3: Multiple Comparisons in change in felt reassurance

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| (I) Presidential vote | (J) Presidential vote | Mean Difference (I-J) | Std. Error | Sig. | 95% CI Lower Bound | 95% CI Upper Bound |
| Donald Trump | Joe Biden | 5.0860\* | .53512 | .000 | 3.7681 | 6.4039 |
|  | Other candidate | 3.9015\* | .77280 | .000 | 1.9983 | 5.8047 |
| Joe Biden | Donald Trump | -5.0860\* | .53512 | .000 | -6.4039 | -3.7681 |
|  | Other candidate | -1.1845 | .75291 | .292 | -3.0387 | .6697 |
| Other candidate | Donald Trump | -3.9015\* | .77280 | .000 | -5.8047 | -1.9983 |
|  | Joe Biden | 1.1845 | .75291 | .292 | -.6697 | 3.0387 |

Based on observed means. The error term is Mean Square(Error) = 15.360. \* The mean difference is significant at the .05 level.

Appendix C Table 4: Multiple Comparisons change in felt anger

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| (I) Presidential vote | (J) Presidential vote | Mean Difference (I-J) | Std. Error | Sig. | 95% CI Lower Bound | 95% CI Upper Bound |
| Donald Trump | Joe Biden | -5.6127\* | .69152 | .000 | -7.3157 | -3.9097 |
|  | Other candidate | -3.4835\* | .99866 | .003 | -5.9429 | -1.0241 |
| Joe Biden | Donald Trump | 5.6127\* | .69152 | .000 | 3.9097 | 7.3157 |
|  | Other candidate | 2.1292 | .97295 | .093 | -.2669 | 4.5253 |
| Other candidate | Donald Trump | 3.4835\* | .99866 | .003 | 1.0241 | 5.9429 |
|  | Joe Biden | -2.1292 | .97295 | .093 | -4.5253 | .2669 |

Based on observed means. The error term is Mean Square(Error) = 25.651. \* The mean difference is significant at the .05 level.

Appendix C Table 5: Multiple comparisons change in felt distress

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| (I) Presidential vote | (J) Presidential vote | Mean Difference (I-J) | Std. Error | Sig. | 95% CI Lower Bound | 95% CI Upper Bound |
| Donald Trump | Joe Biden | -5.626\* | .693 | .000 | -6.992 | -4.261 |
|  | Other candidate | -3.448\* | 1.025 | .001 | -5.468 | -1.429 |
| Joe Biden | Donald Trump | 5.626\* | .693 | .000 | 4.261 | 6.992 |
|  | Other candidate | 2.178\* | .999 | .030 | .210 | 4.146 |
| Other candidate | Donald Trump | 3.448\* | 1.025 | .001 | 1.429 | 5.468 |
|  | Joe Biden | -2.178\* | .999 | .030 | -4.146 | -.210 |

Based on observed means. The error term is Mean Square(Error) = 23.771. \* The mean difference is significant at the .05 level.

Appendix C Table 6: Multiple Comparisons change in felt sadness

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| (I) Presidential vote | (J) Presidential vote | Mean Difference (I-J) | Std. Error | Sig. | 95% CI Lower Bound | 95% CI Upper Bound |
| Donald Trump | Joe Biden | -5.1480\* | .63119 | .000 | -6.7024 | -3.5935 |
|  | Other candidate | -3.6795\* | .91154 | .000 | -5.9244 | -1.4347 |
| Joe Biden | Donald Trump | 5.1480\* | .63119 | .000 | 3.5935 | 6.7024 |
|  | Other candidate | 1.4685 | .88807 | .257 | -.7186 | 3.6555 |
| Other candidate | Donald Trump | 3.6795\* | .91154 | .000 | 1.4347 | 5.9244 |
|  | Joe Biden | -1.4685 | .88807 | .257 | -3.6555 | .7186 |

Based on observed means. The error term is Mean Square(Error) = 21.371. \* The mean difference is significant at the .05 level.

**APPENDIX D: Exploratory textual analysis**

Appendix D Table 1: LIWC repeated-measures ANOVA (F-test, significance, partial η2)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Voting Intent | Micro-expression | Voting Intent\*Micro-expression |
| Positive Emotion | *F* = 18.91  *p* = .000  ηp2 = .135 | *F* = 1.44  *p* = .231  ηp2 = .006 | *F* = 0.37  *p* = .691  ηp2 = .003 |
| Negative Emotion | *F* = 4.25  *p* = .015  ηp2 = .033 | *F* = 0.31  *p* = .576  ηp2 = .001 | *F* = 0.47  *p* = .628  ηp2 = .004 |
| Anger | *F* = 4.54  *p* = .012  ηp2 = .036 | *F* = 0.33  *p* = .567  ηp2 = .001 | *F* = 0.61  *p* = .546  ηp2 = .005 |
| Anxious | *F* =0.30  *p* = .744  ηp2 = .002 | *F* = 5.76  *p* = .017  ηp2 = .023 | *F* = 0.98  *p* = .376  ηp2 = .008 |
| Sad | *F* = 0.78  *p* = .461  ηp2 = .006 | *F* = 0.04  *p* = .848  ηp2 = .000 | *F* = 0.50  *p* = .604  ηp2 = .004 |

***Post Hoc Comparisons: LIWC Analysis***

Scheffe post hoc comparisons of differences were used based upon it being a conservative corrective for ANOVA consideration of the LIWC (Linguistic Inquiry and Word Count (Pennebaker et al., 2015; Tausczik & Pennebaker, 2010); see also <https://liwc.wpengine.com/compare-dictionaries/>) analysis of the narrative prompt through the open-ended manipulation check question (“Please list some of the thoughts you had while watching the video clip:”).

Appendix D Table 2: Multiple comparisons of LIWC-indentified positive emotion thoughts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Contrast | Std. Error | 95% CI Lower Bound | 95% CI Upper Bound |
| ME-Control vs. ME-Out | -2.575 | 2.146 | -6.802 | 1.652 |
| Joe Biden vs. Donald Trump | -11.601 | 1.961 | -16.431 | -6.772 |
| Other candidate vs. Donald Trump | -11.099 | 2.945 | -18.353 | -3.845 |
| Other candidate vs. Joe Biden | 0.502 | 2.864 | -6.551 | 7.556 |

Appendix D Table 3: Multiple comparisons of LIWC-identified negative emotion thoughts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Contrast | Std. Error | 95% CI Lower Bound | 95% CI Upper Bound |
| ME-Control vs. ME-Out | -1.345 | 2.402 | -6.077 | 3.387 |
| Joe Biden vs. Donald Trump | 6.343 | 2.195 | 0.936 | 11.750 |
| Other candidate vs. Donald Trump | 4.725 | 3.297 | -3.395 | 12.846 |
| Other candidate vs. Joe Biden | -1.617 | 3.206 | -9.514 | 6.279 |

Appendix D Table 4: Multiple comparisons of LIWC-identified anger-related thoughts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Contrast | Std. Error | 95% CI Lower Bound | 95% CI Upper Bound |
| ME-Control vs. ME-Out | 0.617 | 1.076 | -1.502 | 2.737 |
| Joe Biden vs. Donald Trump | 2.782 | 0.983 | 0.360 | 5.204 |
| Other candidate vs. Donald Trump | 0.137 | 1.477 | -3.500 | 3.774 |
| Other candidate vs. Joe Biden | -2.645 | 1.436 | -6.182 | 0.892 |

Appendix D Table 5: Multiple comparisons of LIWC-identified anxiety-related thoughts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Contrast | Std. Error | 95% CI Lower Bound | 95% CI Upper Bound |
| ME-Control vs. ME-Out | -3.416 | 1.423 | -6.220 | -0.613 |
| Joe Biden vs. Donald Trump | 0.599 | 1.301 | -2.604 | 3.803 |
| Other candidate vs. Donald Trump | 1.455 | 1.953 | -3.356 | 6.265 |
| Other candidate vs. Joe Biden | 0.855 | 1.899 | -3.823 | 5.533 |

Appendix D Table 6: Multiple comparisons of LIWC-identified sadness-related thoughts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Contrast | Std. Error | 95% CI Lower Bound | 95% CI Upper Bound |
| ME-Control vs. ME-Out | 0.189 | 0.985 | -1.752 | 2.130 |
| Joe Biden vs. Donald Trump | 1.107 | 0.901 | -1.111 | 3.325 |
| Other candidate vs. Donald Trump | 0.355 | 1.352 | -2.976 | 3.686 |
| Other candidate vs. Joe Biden | -0.751 | 1.315 | -3.991 | 2.488 |

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