Masks, Gender & Perceived Trust

An Experimental Study on the Perceived Trustworthiness of Masked and Unmasked Individuals Amid a Pandemic

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Abstract

Previous research suggests that surgical mask-wearing can change the ways individuals perceive facial perceptions, emotions, and attraction. Since masks have been confirmed to skew facial perception, we wondered if masks might also affect perceived trustworthiness when first encountering a stranger. To add to new body of knowledge of COVID-19 psychology, this experimental study investigated how gender and surgical masks affect the initial formation of trust with a stranger. We hypothesized that unmasked individuals will be perceived as more trustworthy than masked individuals and that men will be judged as less trustworthy than females in both masked and unmasked conditions. We conducted an online study via Qualtrics (N = 144) to test these predictions in the context of the COVID-19-19 global pandemic and found one main effect, that men were perceived as less trustworthy than women in both the masked and unmasked condition, ($p < .001$). We also found the masked vs. unmasked manipulation had no effect on participants' trustworthiness perception of the stimuli ($p < .319$). The results supported our hypothesis on gender and disproved our masked vs. unmasked hypothesis as the perceived compliance with an emerging social norm overrode our belief that unmasked persons would be deemed more trustworthy due to the intrinsic untrustworthiness and limited facial perception of masked faces.

Introduction

The 2020-2021 Coronavirus disease enveloped the world into a global pandemic; changing society, culture, commerce, and, perhaps most importantly, human interaction for the foreseeable future. The public has largely adopted COVID-19-19-19 precautions like the use of face coverings in public places to reduce potential virus transmission and social distancing. As most citizens around the world follow societal and government-imposed mandates, public opinion of the mandates and face coverings has been a point of conversation among many as a majority of the population appears to favor the masks and mandates while others strongly oppose them out of disbelief or disregard for the virus.

Face coverings for the nose and mouth, whether it be a scarf or a surgical mask made of cloth or surgical materials, unquestionably affect facial perception. Although some brow and eye movements can hint at some emotions and intentions, research suggests that contractions of the muscles around the mouth are required to communicate the 7 universal facial expressions and most emotions and intentions. (Patel, et al, 2020) In a recent experiment titled, *Beauty and The Surgical mask*, Patel et al. (2020) notes that the impaired facial perception associated with masks and found novel information about the judgments of attractiveness while wearing surgical masks. Individuals who were thought to be average or unattractive at baseline were judged as more attractive when wearing masks. With this in mind, it is interesting to consider how masks concealing the lower half of the face would affect perceived trustworthiness. If participants perceived the attractiveness of masked people more favorably, could there also be an effect on the perceived trustworthiness of an individual?

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When first encountering new people or a potential partner, the two most important qualities humans look for in a partner are trust and attractiveness. The same behavior can even be seen in most organisms as they seek reliable, healthy, or attractive mates to pass on the best traits of their species. A study conducted by Olivera-La & Chuquichambi in 2020 titled, *Keep Your (Social) Distance* found that in a group of over one thousand participants, a positive relationship between "high sensitivity to pathogen disgust" and low "judgments of trustworthiness and lower social desirability" was found. Furthermore, the study found that surgical mask wearers were perceived as more likely to be ill, more trustworthy, and more socially desirable than the same faces presented to a control group, without the surgical mask superimposed. Perhaps the most interesting result of this experiment is the fact that people trusted masked individuals more than unmasked individuals, a surprising effect as masks are typically culturally associated with hiding one's identity during a crime. The researchers note that the perceived compliance with the social norm of surgical mask-wearing overrides the intrinsic untrustworthiness of masked faces (Olivera-La & Chuquichambi, 2020.)

Building off the novel area of research concerning surgical mask-wearing, the present study is a mixed factorial design experimental study that seeks to extend and build off the past research to assess whether judgments of trustworthiness differ when the lower face is covered by a surgical mask. We anticipated that unmasked individuals will be perceived as more trustworthy than masked individuals and that men will be judged as less trustworthy than females in both masked and unmasked conditions. Our hypothesis differs from the results of Olivera-La Rosa's (2020) study because we believe that for younger individuals, the preconceived negative notions of masks are more powerful than the recent positive COVID-19

precaution notions because of the mask's association to hiding one's identity. Research from Social Psychological Face Perception: *Why Appearance Matters. Social and personality psychology compass*, also supports this conclusion as it suggests that the facial expression one conveys has an important influence on perceived trait impressions (Zebrowitz & Montepare, 2008). With this research in mind, we selected male and female faces with neutral expressions only to limit potential third variables and believed masked faces would be perceived as less trustworthy since the lower half of the face was covered and the expression is more ambiguous, wearing a face surgical mask removes exposure to the facial expressions one typically recognizes to form an impression of another's trustworthiness trait and therefore changes and reduces the general social perception of the trustworthiness trait. We also hypothesized that men will be perceived as less trustworthy than women because statistics show men have a higher tendency for violence and crime and research from, *Jo Are You Lying to Me? Temporal Cues for Deception*, Marilyn G. Boltz, et al (2010), suggests that people generally perceive women to lie less than men, which means they trust women more than men as telling the truth is one of if not the most important aspect of trust.

Methods

Design

This study features a 2x2 mixed factorial design that intends to assess whether judgments of trustworthiness differ when the lower face is covered by a surgical mask. The independent variables of the experiment, are the masked or unmasked condition and the associated gender of the pictures. The dependent variable was the perceived trustworthiness of the masked or unmasked pictures.

Participants

Following the protocols of our University's Psychology Research Department, our study was distributed remotely via email to a randomized selection of 52 students taking Psychology 101, and disrupted to various organizations at Bucknell like sports teams and Greek organizations. Students were rewarded with extra credit for participating in the study. The survey was also distributed to various organizations at Bucknell. In total, 187 students participated in our survey however, 43 responses were excluded for any of the three reasons: not agreeing to the informed consent, indicating that a participant does not want their results included in the results or not completing the survey. The sample population of (n = 144) can be expected to accurately reflect the demographics of the larger population (approximately 3,719 students) in terms of ethnicity, gender, and class year/age.

Materials

The data for our study was collected through a Qualtrics questionnaire that was sent to our sample population via Bucknell email. Our questionnaire consists of the following parts: an informed consent statement; 12 questions that measure the variables of the study. The variables were a racially heterogeneous set of 6 male and 6 female faces with average attraction and trust ratings scored (4.5-5.5) obtained from the OLSO face database. The OLSO Face Database is a set of high-resolution images of subjects' faces aged between 18 and 40 years, which is available to researchers as a free resource by request. The experimental groups' masked faces were altered to simulate the appearance of wearing a surgical surgical mask, using Microsoft Word.

Procedure

Participants performed the experiment online, using Qualtrics survey software (Qualtrics, Provo, UT). Before the experiment, all participants confirmed that they agreed to undergo the study, and provided consent in accordance with ethical procedures approved by Bucknell University. After agreeing to the informed consent, participants were asked basic demographic information like class year, gender and race. After reporting demographics, participants were randomly assigned to the unmasked (control) condition or the masked (experimental) condition where they viewed 6 male and 6 female faces and judged their perceived trustworthiness via an online Qualtrics survey. Examples of the faces for both conditions are shown below in Appendix A, Table 1.

Trust Scale questions were derived and sourced from the Interpersonal Trust Scale by using the 5 most general questions from Johnson-George & Swap 1982. In this measure, participants are asked to indicate how much they agree or disagree with 5 statements e.g., "I could expect this person to tell me the truth." by using a 9-point scale from "strongly disagree" to "strongly agree", higher values indicating higher trust. See Appendix B, Table 2 for complete list of questions.

After the face ratings, participants were presented with a debrief to give the true nature and goal of our survey, as well as the option to opt-out and not have their data included. Participants were also anonymous and confidential and provided contact information for further questions or concerns.

Results

A total of 187 responses were analyzed via a 2x2 repeated measures mixed factorial ANOVA using SPSS software. Two main effects were tested and one significant main effect were found. Most noticeably there was a large gender effect, ($F(1,142) = 86.86$, $p<.001$), females were judged to be more trustworthy than males regardless of the condition (Appendix C.) No main effect for the masked vs. unmasked groups was found, ($F (1,142) = 1.00$, $p = .319$), whether the person was masked did not make a difference on their perception of trustworthiness (Appendix D.) Lastly, there was also no interaction effect in the masked condition by gender, ($F (1,142) = .73$, $p = .40$), there was a difference between genders regardless of whether the faces had a surgical mask or not did not make a difference (Appendix E.) Overall, the main effects indicate that trust scores were higher for both males and females in the masked condition and that males scored lower trust scored lower than females in both conditions. The average trust score for all responses was 4.71, higher than the median of four on Interpersonal Trust Scale, indicating people are more trustworthy than untrustworthy. The masked condition reported a standard error of .167, while the unmasked condition reported a standard error of .158

Discussion

The present study provides novel information about the judgments of trustworthiness of males and females wearing surgical masks. The results concerning the gender and trust condition support our hypothesis as we believed men would be judged as less trustworthy in both conditions. The results found on the gender effect replicate past research on positive gender effects on initial impression formation for females (Friedman & Zebrowitz, 1992.) The

results did not support our hypothesis about the masks & trust condition as the results indicated participants judged the pictures of masked individuals as more trustworthy than the same unmasked individual in the control group. Additionally, the results of our survey did not support previous research of masks increasing or decreasing the initial trustworthiness in others.

Given that our study was conducted in the middle of the COVID-19 global crisis, one possible explanation for these findings is that the social norm of wearing a surgical mask is suppressing any automatic mistrust associated with not seeing the entire face. Accordingly, it might be that people explicitly believe that surgical mask-wearers are more trustworthy as they are in line with social norms, but implicitly still mistrust them because of the criminal implications of hiding one's identity. As mentioned in the results, the masked condition reported a standard error of .167, while the unmasked condition reported a standard error of .158 so it is possible that the higher standard error for the masked group resulted from the mixed political associations with mask wearing. Another possible explanation for these results is that the covering of the mouth nose and chin does not effectively impact judgments of trustworthiness as participants relied on eye perception.

Strachan, Jame's experiment, *How do we decide who to trust* (2015) would support the explanation our participants relied on eye perception ass Strachan's participants were found to primarily use eye perception to make judgments of trust and trusted most when an individual's gaze was directed towards the participant. Strachan found that when an individual's gaze is directed away from participants, it took participants longer to form judgments of trust

and average trust scores were comparatively lower. Since the individuals in our experiment had their gaze directed at the participants and it is known that people make judgments of trust primarily through eye contact, it is reasonable that the combined effects of trusting in an individual's COVID-19 compliance and showing only the eyes resulted in higher than median trustworthy scores and greater trustworthy scores for the masked condition. Despite the higher average mean trustworthiness score, the results were nonsignificant and could have been caused by random variation. "Trusting others is what people think they should do" says David Dunning, a professor of psychology. "Our experiments show that emotions – like anxiety and guilt for not fulfilling a 'social duty' or responsibility – may account for much of the 'excessive trust' observed between strangers every day." University of York, James Schafer, (2015).

Our study also meets standards for internal, construct, and external validity but lacks statistical validity. For internal validity, we used identical stimuli in the two conditions except for the surgical mask third variables would not affect the experiment and took measures to avoid possible third variables like using racially heterogeneous faces with neutral expressions and faces of average attraction since these factors have been shown to affect judgments of trustworthiness. A limitation to our internal validity, however, is that the experiment was administered remotely instead of in a lab setting as we can't control for possible third variables in a participant's remote environment.

The construct validity of this experiment was also exceptional as Johnson-George & Swap (1982) interpersonal trust scale has been validated several times. Within our experiment,

the Cronbach's alpha for males was .999 while Cronbach's alpha for females was .974, indicating the trustworthiness scale has acceptable internal consistency reliability.

The external validity of the experiment was worse than expected as the results of the experiment did not coincide with past research like the result Olivera-La Rosa, A., Chuquichambi, E. G., & Ingram's, G. P. D. (2020) study on masks and trustworthiness. We believe this may have been attributed to factors such as personal and political beliefs in the volatile social climate of the pandemic. Our sample was representative of the general population as it included over 5% of the Bucknell population and was distributed to many organizations and clubs at the university but could have been improved with a larger sample size to better represent the population..

The statistical validity of the experiment was mixed overall but strong for our gender condition($F(1,142) = 1.00$, $p = .319$), whether the person was masked did not make a difference on their perception of trustworthiness There was no main effect in the masked vs. unmasked condition, ($F(1,142) = .73$, $p = .40$. For our main effect regarding gender, the experiment and experimental measures The modified scale used to identify perception of trustworthiness was found to have excellent internal reliability for both genders, as both genders were found to have Cronbach Alphas above .95.

This study has potentially important implications for social discourse and interactions with strangers. As previously mentioned, communication of the 7 universal facial expressions and most emotions involves the entire face. If the lower face is obscured by a surgical mask or

face covering, there is a potential for misinterpretation or mistrust of the information being conveyed in a conversation

In conclusion, our findings shed light on the social judgments of trustworthiness of male and female mask-wearers (and non-mask-wearers) in the context of college campuses experiencing the COVID-19-19 global pandemic. We were able to determine that while the gender of others has a significant impact on our perception of their trustworthiness, the CDC-mandated face-coverings used during the pandemic do not impact the initial trait perception of trustworthiness in strangers. Since past research suggests that eye perception had a considerable influence on trust and face perception, it would be interesting to see how would perceived trust would be affected by wearing a surgical mask and sunglasses vs an unmasked condition. Would the trust associated with following COVID-19 guidelines outweigh the implicit mistrust of a fully covered face? It would also be interesting to target race as potential third variable or experimental condition as we limited our study to a racially heterogeneous group.

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Appendix

Appendix A
Example Masked & Unmasked Male & Female Faces

Table 1:

Unmasked Condition: Male & Female Face 1	Masked Condition: Male & Female Face 1
	

Note. A table showing an example of the faces and masks used in the experiment

Appendix B

Adapted Interpersonal Trust Scale Johnson-George & Swap (1982)

Table 2.

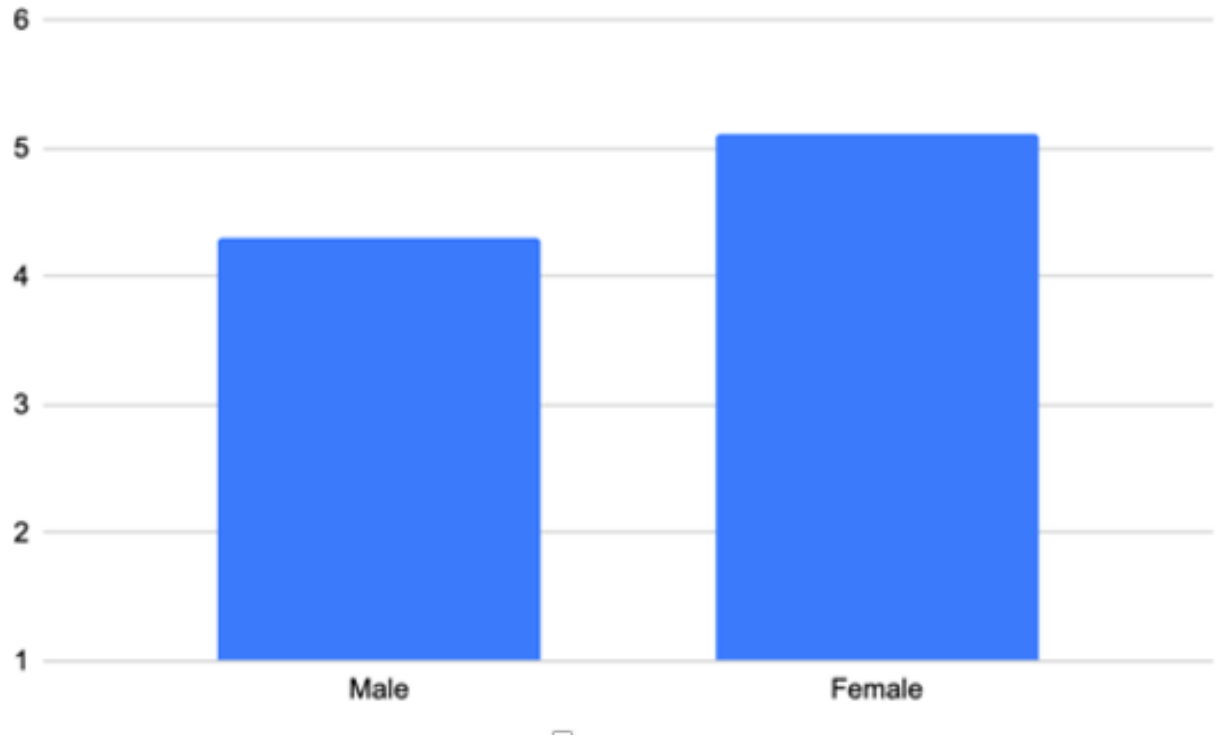
Male and Female Questions
1. I could expect this person to tell me the truth.
2. I could talk freely to this person and know that he/she would want to listen.
3. If this person promised to do me a favor, he/she would follow through.
4. If I were injured or hurt, I could depend on this to do what was best for me.
5. I would be able to confide in this person and know that he/she would not discuss my concerns with others.

Note: Questions asked to gauge trust of masked and unmasked individuals

Appendix C

Mean Scores for Gender

Figure 1.

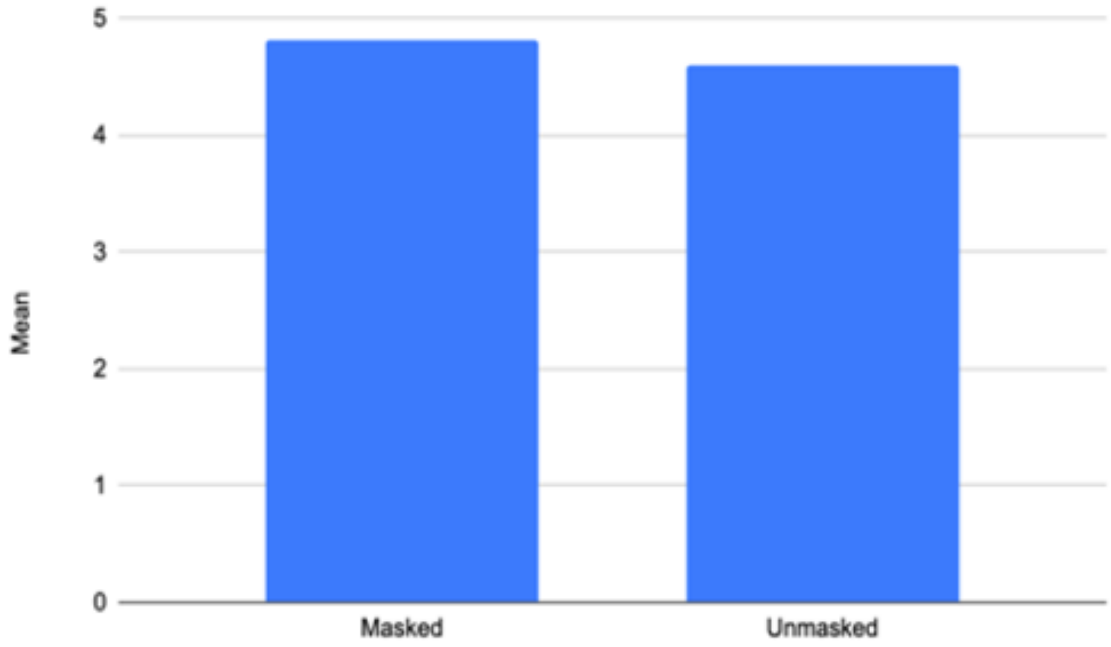


Note. Data Visualization of Experimental Results

Appendix D

Mean Scores for Masked vs. Unmasked Condition

Figure 2.

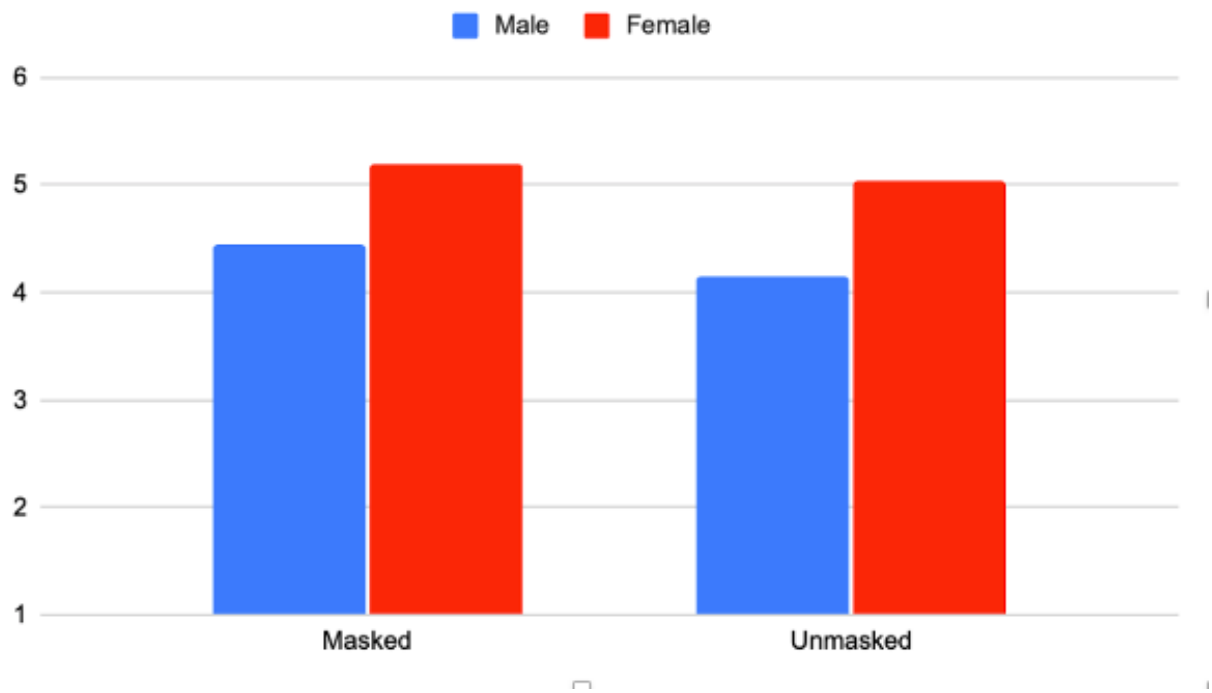


Note. Data Visualization of Experimental Results

Appendix E

Mean Scores for Gender & Masked Vs. Unmasked Conditions

Figure 3.



Note. Data Visualization of Experimental Result