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UNMASKING SOCIAL ATTITUDES: PROBING THE PANDEMIC'S EFFECTS ON INDIVIDUAL AND GROUP PERCEPTION

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DECLARATION

No portion of this work has been submitted in support of any other application for degree or qualification at this or any other University or institute of learning.

However, part of the present research has been included in published or submitted papers. Specifically, Studies 2 and 3 (Chapter 3) are retrieved from Castelli, L., Tumino, M. & Carraro, L. (2022) Face mask use as a categorical dimension in social perception. Scientific Report, 12, 17860. https://doi.org/10.1038/s41598-022-22772-2.

Studies 4 and 5 (Chapter 5) are retrieved from Tumino, M., Carraro, L., & Castelli, L. (under review). The social factors behind the mask: Contextual effects on traits inferences about faces wearing a face mask.

The systematic review (Chapter 6) is retrieved from Tumino, M. et al. (in preparation). The Global Impact of COVID-19 Pandemic on Ethnic Minorities Stigmatization and Hate Crimes.

Studies 6 – 8 (Chapter 7) are retrieved from Tumino, M., Carraro, L., & Castelli, L. (in preparation). Unmasking Prejudice: Examining the Impact of COVID-19 Prevention Norm Compliance on Intergroup Attitudes.

Most importantly, the data and the material of all the studies are available on the OSF: https://osf.io/hcvd3/?view_only=ca1039f4cf9440d8b883867d682fcbe0.

Finally, the following analyses were run with Jamovi (version 2.3), and the normality assumption was always tested, therefore the results were confirmed also with non-parametric tests.

Abstract

The thesis investigates the profound impact of face masks on social perception and intergroup attitudes during the COVID-19 pandemic, a time when face masks evolved from a medical tool to a globally recognized symbol of safety, compliance, and social responsibility. The research spans 2021 to 2023, capturing different phases of the pandemic and corresponding public health policies in Italy.

Chapters 2 to 5 delve into the effects of face masks on individual perception and the role of contextual factors, like setting and temporal context, in shaping how people perceive others who are masked or unmasked. This section was conducted both when mask-wearing was a legal requirement in Italy (Study 1 – Study 4) and when it was not mandatory anymore (Study 5). The studies aimed to explore the changes in the perception of masked individuals, particularly focusing on the potential negative attitudes and the impairment of non-verbal communication and social trust. A significant aspect of this research is the exploration of both explicit and implicit attitudes, Study 1, toward individuals wearing face masks to unravel the underlying biases and perceptions. The aim of Study 1 was to determine if mask-wearing became a moral and social norm, internalized by individuals beyond mere compliance. Furthermore, in Studies 2 and 3, a memory confusion paradigm was used to examine the role of face masks in social categorization, highlighting that face masks became a crucial cue in the spontaneous categorization of individuals. This approach offered insights into the automatic processes involved in social perception during the pandemic.

Chapters 6 and 7 shift the focus to how COVID-19 influenced group perception and intergroup attitudes, investigating the societal implications of mask-wearing norms, both when they were legally enforced (Studies 6 & 7) and after their mandate was lifted (Study 8). This part of the research is particularly insightful, as it analyzes the attitudes when the positivity rate of COVID-19 was still significant in Italy (March 2022 – May 2022), offering a unique perspective on societal norms and behaviors during a health crisis.

The dissertation also addresses the inconsistency in previous research regarding the perception of masked vs. unmasked individuals, exploring overarching factors like the impact of the social context on inference processes. It hypothesizes that facial impressions towards masked individuals vary depending on the setting (indoor vs. outdoor) and the normative context over time.

In summary, this thesis aims to provide a comprehensive understanding of how face masks, as a new social norm, influenced person perception and intergroup attitudes during the COVID-19 pandemic. It explores the shift in perception due to face masks, the implicit and explicit attitudes towards mask-wearing, and the role of contextual factors, offering valuable insights into the dynamics of social perception in the face of global crises.

CHAPTER I

GENERAL INTRODUCTION

1.1 THE CONTEXT OF THE PANDEMIC

During the peak of COVID-19 (2020 – 2021), several preventive behaviors became mandatory such as stay-at-home policy, social distancing, mask-wearing, and vaccines were required to be admitted in public spaces to avoid the virus spread. However, face masks were the first mandatory requirement available to drastically reduce the virus spread in public places. Therefore, the present thesis took into account how this new norm was changing social perception, and how social perception and mask-wearing shifted again when the pandemic was finally distant from people's daily lives (Study 5, Chapter 5).

At the time that the present research took place was not possible to look around without seeing people wearing face masks in public spaces, nor it was possible to think about daily life without being aware of the preventive behaviors to engage in during the COVID-19 pandemic. When this research started, the pandemic was establishing new norms to live safely through one lockdown into another. This thesis gathered data from different pandemic waves since the data collection happened between 2021 and 2023. Therefore, the present research examined what was happening during the pandemic, and how things changed right after it.

In the first two sections of the studies (from Chapter 2 to Chapter 5) the focus was on how face masks, which were a visible cue in every social interaction, had an impact on individual's perception and how contextual factors, such as the setting and the temporal context, changed the way people made inferences of masked and unmasked targets. The first four studies presented were implemented when mask-wearing was mandatory and the number of positive cases for COVID-19 was between 10-12% (January 2021 – February 2022, Lab24.ilsole24ore.com) in Italy.

At the beginning of the pandemic, face masks were indicated as an essential protective tool for contrasting the virus (Adjodah et al., 2021; Eikenberry et al., 2020), hence in most countries of the world, their use became mandatory to mitigate the pandemic. However, not only some individuals have negative attitudes toward face masks (see Mallinals et al., 2021), but face masks impaired intergroup attitudes too.

Indeed, face masks had a negative impact on non-verbal communication and social trust (Marler & Ditton, 2021). Additionally, face masks triggered the perception of a potential threat of contagion that aroused hostility between groups. Therefore, the last section of this work (Chapters 6 and 7) focused on how COVID-19 impaired group perception and how the outgroup descriptive social norm related to mask-wearing might affected intergroup attitudes. The empirical studies presented in Chapter 7 were implemented both when mask-wearing was mandatory (Studies 6 and 7) and when mask-wearing was not mandatory anymore (Study 8). However, the number of cases positive for COVID-19 was between 14-15% (March 2022 – May 2022, Lab24.ilsole24ore.com) in Italy.

Overall, the present research aimed to assess the effect of a newly-established norm, namely the face mask, on person perception and intergroup attitudes. However, before getting more specifically into these processes, it might be useful to look at the role of faces in shaping impression and judgements, hence, to move into individual attitudes toward wearing face masks, the individual differences in person perception and mask-wearing, and the role played by social norms during the pandemic.

1.2 The role of faces in shaping impressions and judgments

During the last decades, several studies (e.g., Bar et al., 2006; Rule et al., 2013; Todorov et al., 2015, 2009, 2008) have underlined how social judgments, in terms of trustworthiness, competence, attractiveness, and even aggressiveness, of social targets are prompted merely by their visual appearance of faces. When deciding to approach or avoid another individual in the

same social context, people usually use some cues that are automatically processed after minimal time exposure (e.g., Willis & Todorov, 2006). Therefore, facial appearance is fundamental to individuals for perceiving and extracting social information such as inferences regarding personality dimensions (Todorov & Duchaine, 2008).

People rapidly make inferences about individuals' personality traits based solely on their faces (e.g., Todorov et al., 2015), and these inferences, in turn, are associated with relevant behavioral consequences (e.g., Todorov et al., 2005 for electoral outcomes). The research about trait impressions has typically assessed evaluations along the distinct dimensions that characterize prevalent models of social perception (Brambilla et al., 2021; Fiske et al., 2007; see also Oosterhof & Todorov, 2008), namely competence, sociability, and morality. On one hand, competence mainly refers to the possession of intellectual and practical skills; on the other, sociability and morality (e.g., trustworthiness, altruism) are more related to the functioning of social relationships. Even if facial impression fails to be accurate, thus posing a problematic challenge in their everyday application (Foo et al., 2021), they wield significant social consequences in various contexts. One such example is the ability of perceived facial trustworthiness to serve as a predictive factor in consumer choices (Ert et al., 2016), and even in the determination of death penalty verdicts (Wilson & Rule, 2015). Furthermore, these impressions tend to be resistant to change, as evidenced by research (Chang et al., 2010).

Across various research studies, the primary dimension, which consistently accounts for a substantial amount of variance, typically ranging from approximately 30% to 60%, consistently appears to be associated with traits that pertain to the evaluation of an individual's positive or negative intentions (Sutherland et al., 2022). Therefore, the dimensions that informs about an individual's intention are trustworthiness (as indicated by Jones et al., 2021; Oh et al., 2020; Oosterhof & Todorov, 2008), warmth (as demonstrated by Lin et al., 2021; Walker & Vetter, 2016), niceness (as studied by Collova et al., 2019), and approachability (as explored by Sutherland et al., 2013; Wang et al., 2019). Notably, certain facial cues have been identified as

influential in shaping impressions of good intentionality, for instance: older age, smiling, and femininity (Oosterhof & Todorov, 2008). Most studies have also found that there exists a distinct dimension in the realm of facial features that correspond to traits associated with one's capability to carry out their intentions. This dimension includes traits such as dominance, competence, agency, or status. Researchers such as Jones et al. (2021), Oh et al. (2020), Oosterhof and Todorov (2008), and Sutherland et al. (2013) have all observed this face-based dimension. Furthermore, Lin et al. (2021), Sutherland et al. (2018), and Wang et al. (2019) have also reported the presence of facial cues related to competence. In the realm of capability, facial cues that are typically considered include age, masculinity, attractiveness, and a confident expression (Oh et al., 2020; Vernon et al., 2014).

Beside these traits' inferences from faces, from a face it is possible to capture several other information that can either be unchanging or modifiable. Indeed, relatively unchanging visual cues consist of the individual's distinctive facial identity, as well as data about societal categorization, such as ethnicity, gender, and age, which are conveyed through a combination of physical appearance and skin color (see Oosterhof & Todorov, 2008; Sutherland et al., 2022). Conversely, modifiable visual cues encompass transitory characteristics such as emotional expression, head orientation, and gaze direction (for example, Hehman et al., 2013; Sutherland, Young, et al., 2016; Torrance et al., 2020). Overall, impression formation from faces can be driven by both perceptual cues and conceptual information (Sutherland et al., 2022). Ultimately, the impressions formed by individuals may be influenced by fluctuating environmental cues that have the potential to alter the perception of facial features, such as the use of face masks during the pandemic. Additionally, they can influence social behavior even in the presence of more reliable cues (Ert et al., 2016). Thus, the complex dynamics between facial impressions and their impact on social interactions warrant further investigation and exploration: In relation to face masks, a modifiable cue, different individual characteristics influenced the meaning of this element in person perception and trait inferences.

1.3 Attitudes toward mask-wearing: The weight of individual differences

Several individual characteristics influenced the meaning of face masks on social perception. Specifically on processes such as social judgments and inferences from faces, the meaning of face masks was not uniform across all individuals. An early study by Howard (2020) conducted at the onset of the pandemic shed light on the gender-related differences in how individuals perceived face masks. Howard (2020) highlighted that males were more inclined to view face masks as impairment and reported greater resistance to mask-wearing as compared to females. While Howard's (2020) study did not reveal a significant interaction between gender and the frequency of mask usage, likely because it was conducted during a period when many countries had legally mandated mask-wearing, the author did highlight a gender divide in terms of the utility and comfort associated with face masks. In situations where face mask use was not legally enforced, Palmer and Peterson (2020) observed that compliance with mask-wearing was strongly influenced by compliance with gender norms. Men who identified more strongly with traditional masculinity norms were less likely to adopt these protective measures, and this effect was particularly pronounced among younger men. Palmer and Peterson (2020) also found that conformity to masculine norms was associated with negative attitudes toward face masks, possibly because mask-wearing might be seen as a departure from these norms, hinting at vulnerability by acknowledging the risk of viral exposure.

When considering personality traits, like the Big Five (McCrae & Costa, 1987), several studies have identified a negative relationship between conscientiousness and face mask-wearing, although this trait is typically associated with greater adherence to other preventive behaviors (Mallinals et al., 2021; Carbon, 2021). However, Howard (2023) did not replicate this pattern, indicating that the link between personality traits and mask-wearing is more complex than it was perceived to be at the beginning of the pandemic. Nevertheless, Howard (2023) found that traits such as Openness, Agreeableness, and the Dark Triad had direct effects on face mask perceptions, while agreeableness consistently demonstrated both direct and indirect effects more intention of mask-wearing.

Another critical variable of individual differences toward face mask use was found to be fear of COVID-19 and avoidance of pathogenic infection. Krishna and colleagues (2021) focused on the avoidance bias of individuals with higher COVID-19 anxiety. They found that self-reported mask-related worrying was associated with reduced avoidance tendencies towards unmasked individuals when COVID-19 anxiety was low (vs. high). This relationship was specific to avoidance (vs. approaching) tendencies and it was not observed for explicit or implicit preference of masked targets. Similarly, an unpublished paper by Ingram and colleagues (2021) that implemented the approach-avoidance task, namely the VAAST (Aubé et al., 2018; see Chapter 4). In this task, they found that participants showed faster reaction times in approaching masked targets, thus showing an approaching bias, and this effect was a mirror of the explicit positive evaluation of masked targets (Ingram et al., 2021).

The last strong main predictor in attitudes toward mask-wearing was political ideology. Mask-wearing became deeply politicized, with more conservative individuals generally holding more negative views regarding their use (Mallinas et al., 2021; Gadarian et al., 2021).

These findings on personal attitudes toward mask-wearing align with studies focusing on general compliance with COVID-19 preventive measures, such as social distancing and stay-at-home orders. Compliance in these areas was significantly influenced by trust, contextual social norms, the type of government restrictions, and broader personality traits, indicating the intricate interplay of various factors in shaping individuals' responses to pandemic-related measures (Pagliaro et al., 2021; Ludeke et al., 2021; Götz et al., 2021).

The present research aims to contribute to our understanding of the complexity of person perception at the time of the pandemic when face masks profoundly affect social interactions and the perception of others. Hence, Chapters 2 and 3 will provide empirical support for the social meaning of face masks in person perception. Then, Chapters 4 and 5 will focus on the effect of the social environment and social norms on trait inferences of masked targets.

1.4 THE COMPLEXITIES OF FACE MASK EFFECTS ON INDIVIDUAL PERCEPTION

The first two parts of the present dissertation (from Chapter 2 to Chapter 6) will focus on face inferences and possible variance due to individual predisposition and contextual factors. Inferences from faces exhibit a degree of variability, as demonstrated by several research findings (Bennetts et al., 2022; Marini et al., 2021). The present section will delve into several key factors that the existing body of literature has identified as highly significant in understanding and assessing this variability arising from individual differences. These factors shed light on the intricate interplay between personal characteristics and the effects of face masks on how individuals perceive and interact with others.

When it comes to face recognition, the pandemic prompted a series of studies to examine the effects of face masks on identity (Wong & Estudillo, 2022; Carbon, 2020; Freud et al., 2020) and emotion recognition (Pavlova & Sokolov, 2022). Furthermore, Howard (2020) underlined a link between how individuals perceive face masks and their likelihood to wear them. Consequently, individual differences, such as gender, attitudes toward face masks, and personal abilities in recognition tasks, can significantly influence how face masks have an impact on social perception (Howard, 2020). The extent to which individuals succeed in face recognition tasks varies widely within the general population (Bowles et al., 2009; Germine et al., 2011). At one end of this spectrum, some individuals struggle with face recognition despite having normal cognitive abilities and basic visual perception skills, a condition known as developmental prosopagnosia (DP). On the opposite end, there are individuals with exceptional face recognition abilities, often referred to as "super-recognizers" (SR; Bate et al., 2018; Bennetts et al., 2017; Bobak et al., 2017; Ramon, 2021). Interestingly, Noyes and colleagues (2021) found that SRs encountered difficulties when matching unfamiliar faces covered by masks or sunglasses compared to uncovered faces. Their performance patterns differed from those of typical perceivers, as SRs performed equally well when matching faces with sunglasses or face coverings, whereas typical perceivers showed slightly better performance with faces sporting sunglasses than those with masks. Moreover, the impact of face

masks on the perception and interpretation of social cues appears to be influenced by gender and age, both in the perceivers and those being perceived. Reading faces concealed by masks presents more challenges for males and older individuals and the same trend is observed in males and older face posers (Carbon, 2020; Calbi et al., 2021; Grundmann et al., 2021). Indeed, those findings are also in line with Wong and Estudillo's findings (2022) highlighted in the previous section: Female participants outperformed male participants in identity, gender, age estimation, and emotion recognition tasks for both masked and unmasked faces.

Another significant aspect when studying the effects of face masks on social perception is the cultural context. The cultural context plays a significant role in one's ability to read faces concealed by masks. Regions with prior experiences related to covered faces, such as East Asian countries that faced the SARS outbreak in the early 2000s, which led to mandatory mask-wearing, and Middle-Eastern cultures accustomed to veiling for religious or protective purposes, exhibit different degrees of expertise in reading partly concealed faces (Pavlova and Sokolov, 2022). Skills for interpreting masked faces were influenced by the interplay with cultural backgrounds, resulting in varying degrees of impairment. For example, Kret and Fischer (2018) already underlined that the recognition of briefly presented happiness resulted in more accuracy when faces were covered by Western-style headdresses compared to Islamic headdresses like the niqab or turban (Kret & Fischer, 2018). These intricate dynamics highlight the multi-faceted nature of how individuals from diverse backgrounds and with varying abilities perceive and interact with faces, particularly when masks are involved.

Shifting the focus from face mask perception to individuals' attitudes toward them, these protective items were traditionally linked with medical environments and the control of infectious diseases (Taylor & Asmundson, 2021). However, the advent of the COVID-19 pandemic led to a significant transformation in how people perceived face masks. This shift was primarily driven by the widespread adoption of face masks among the general population as a crucial preventive measure against the virus. Face masks, once exclusively associated with healthcare professionals

and individuals with contagious illnesses, acquired new symbolic significance as emblems of a global effort to combat the spread of a potentially lethal virus (Biermann et al., 2021). This mass adoption of face masks introduced a strong connection with disease prevention in the collective consciousness. Those who rigorously adhered to mask-wearing began to view masks not merely as protective gear but also as visible representations of communal responsibility and a heightened awareness of public health: face masks were internalized as moral values (Mejova et al., 2023). Faces covered by masks began to serve as signals, introducing perceptual biases or prejudices such as the belief that "mask wearers are socially responsible and desirable". These symbolic meanings attached to masks, along with deeply ingrained attitudes and beliefs regarding their use, significantly influenced social behavior on a broader scale (Davis et al., 2021; Timpka & Nyce 2021; Prosser et al., 2020). Individuals with strong pro-mask attitudes associated mask-wearing with the collective protection of their community members and adherence to social norms (Kamatani et al., 2021). On the other hand, those who were opposed to mask-wearing and perceived masks as offering limited protection experienced a greater burden when wearing them. Consequently, they wore masks infrequently and often reported higher levels of psychological distress (Biermann et al., 2021). This transition in the perception and use of face masks exemplifies how public health measures can become powerful symbols of responsibility, social awareness, and even division within society (Van Bavel et al., 2020).

1.4 Group perception and mask-wearing

The third and last part of the present dissertation will move from face inferences, hence individual perception, to group perception (see Chapters 6 and 7). Pioneering works, such as the one by Jetten and colleagues (1996), underlined how norms are important in activating stereotypes and prejudice related to social groups. Individuals form inferences about a person by observing their

behavior, however, when forming inferences about a group, people usually tend to use information already available in memory (e.g., stereotypes, see Hamilton & Gifford, 1976).

In specific circumstances, (e.g., potentially threatening events such as the pandemic) social norms become particularly relevant in activating specific group stereotypes, to the point of influencing outcomes such as intergroup attitudes and beliefs.

Intergroup attitudes represent the generalized valence attributions to social groups (e.g., white-good/African American-bad; Kurdi et al., 2019) and they are shaped by the cognitive representation of individual group members (Brewer & Kramer, 1985).

Whereas group beliefs are specific traits attributed to social groups (Kurdi et al., 2019). Indeed, group perception involves a different process than person perception because the latter leads to online inference about a target that elicits positive or negative responses (e.g., emotional reaction, moral evaluation) once exposed to the target's behavior, whereas the former is based on previous information available about the members of the group, namely stereotypes (Hamilton & Sherman, 1989). Earlier studies on group perception (Sanbonmatsu et al., 1987; McConnell et al., 1994; Sherman et al., 2002) underlined how group inferences displayed memory-based judgment, meaning that the judgment about the group was made after recalling specific information (e.g., stereotypes) that individuals already knew about the group. Hence, when individuals activate in their memory a specific belief about the group, the subsequent outcomes (e.g., judgments, attitudes, behaviors) toward the target group are mostly shaped by the use of stereotypes and prejudice.

During the pandemic outbreak, COVID-19 prevention norms had an impact on social judgments (Betsch et al., 2020; Olivera-La Rosa et al., 2020; Prosser et al., 2020). Specifically, compliance with these norms provided individuals with information about the other social actors in the same social context. For instance, during the pandemic peak, individuals who did not comply with social distancing and/or face masking policy were immediately perceived as norm violators. On the contrary, complying with these norms was a signal that they were aware of the pandemic situation and took it seriously (Schönweitz et al., 2022). Furthermore, interpersonal differences in

compliance with COVID-19 prevention norms were perceived to arise from differences in moral values (Ellemers et al., 2019; Prosser et al. 2020) and to impact differently between members from stigmatized social groups (Christiani et al., 2021; Utych et al., 2021, see Chapter 6).

Regarding the impact of the pandemic on marginalized communities, early in the pandemic, Christiani et al. (2021) and Utych et al. (2021) highlighted the adverse effects of the face-masking policy on Black individuals in the United States. Christiani et al. (2021) demonstrated that, likely due to this association, Black individuals were evaluated more negatively when presented with a surgical face mask, as opposed to a White target. Similarly, Utych et al. (2021) found that face masks had a humanizing effect only when the subjects were White, not Black people.

In the Italian context, Pacilli et al. (2022) found that COVID-19 anxiety contributed to more negative attitudes toward stigmatized social groups (e.g., immigrants and sexual minorities).

A possible explanation for the increase in negative intergroup attitudes might be related to the fact that the outgroup is usually perceived to lack in the moral domain, specifically when he/she is a member of a stigmatized outgroup and is more likely to be perceived as an ingroup norm violator, hence a possible threat (Gawronski & Payne, 2010). As the contribution by Payne & Cameron showed, there are two kinds of morality: "One for our fellow group members, and one for everyone else" (Gawronski & Payne, 2010, pp. 445-460). For this reason, it was important to understand the possible backlash of COVID-19 prevention norms not only on intergroup attitudes but also on moral inferences about the outgroup.

Since individuals organize the social environment both as a function of the ingroup (vs. outgroup) and norm-conforming and norm-deviating people (Van Assche et al., 2020), this might lead individuals to search for positive distinctiveness from outgroups (Van Assche et al., 2020), and increase their level of outgroup derogation (Green et al., 2010), specifically when an outgroup member is perceived to not conform with the norms. However, this aspect is still under investigation specifically in the case of the pandemic. In this scenario, the outgroup derogation

would manifest not only with harsher punishment for the norm-deviation outgroup member but also by increasing negative moral inferences of the outgroups.

Moving from this theoretical background, Chapter 6 will focus on moral inferences and intergroup attitudes toward specific outgroups (i.e., Chinese, North African, and Romanian) when social norms are activated, namely COVID-19 prevention norms. The data collection of the studies both happened during the pandemic peak (Study 6 and 7) and when the legal mandates were lifted (Study 8). In Studies 6 and 7, the COVID-19 norms (e.g., face-masking, social distancing) were legally enforced. Whereas, in Study 5, there was no more the legal mandate, but using these preventive measures (i.e., face masks) was still perceived as an injunctive norm (Cialdini et al., 1990), meaning that compliance with these preventive measures an individual should do to avoid being infected with the virus.

Therefore, the present research synthesizes evidence from diverse research lines and methodologies, revealing that the pandemic has amplified prejudiced attitudes toward stigmatized social groups.

CHAPTER II

MASK-WEARING AND INDIVIDUAL PERCEPTION

2.1 INDIVIDUAL PERCEPTION AND FACE MASKS BEFORE AND DURING COVID-19

During the COVID-19 outbreak, face masks became a crucial protection in contrast to the pandemic (Wang et al., 2020). However, before COVID-19 the effect of face masks on individual perception was often associated with several impairments regarding for example the recognition of emotions and identity of other social actors (Carbon, 2020; Carragher & Hancock, 2020; Grundmann et al., 2021; Marini et al., 2021). Indeed, before COVID-19, studies on the effect of face masks on individual perception underlined how face masks jeopardized communication between individuals since they posed a further obstruction to visual cues important for mimicry (Marler & Ditton, 2021). As a result, the perceiver evaluated the social target as more distant and less trustworthy (Biermann et al., 2021). Furthermore, face masks were often associated with sickness and disease, thus eliciting emotions such as disgust in individuals. Face masks affected the domain of social judgment since mask wearers were perceived as 'sick' since surgical face masks were used as behavioral immune system heuristics used to detect possible diseases and health threats that lead perceivers to respond with behavioral avoidance (Schaller & Duncan, 2011). In terms of eliciting emotions such as disgust, the detection of disease has been found by scholars to have a potential 'co-adapted' functioning in the course of biological and cultural evolution (Rozin et al., 2018; 1987) because perceivers tend to respond as a disposition characteristic that could also reveal negative moral features.

With the pandemic's outbreak, face masks have been one of the leading preventive measures adopted worldwide since April 2020, and studies on impression formation of targets with surgical face masks reported that even if mask wearers were usually more likely to be associated with the concept of illness and perceived threat, they were considered more trustworthy and socially desirable than individuals without face masks (Oliver-La Rosa, 2020; Scheid et al., 2020).

At the outset of the pandemic, an early study conducted by Olivera-La Rosa (2020) underlined how social targets presented with a face mask were still more likely to be associated with disgust emotion, higher perceptions of illness, and higher association with disease and sickness, especially for individuals with higher disease sensitivity. However, when these targets were compared to individuals without a face mask, mask wearers were evaluated as more trustworthy and approachable than targets without it. This shift towards a more positive evaluation of mask wearers was subsequently confirmed by multiple studies conducted during the COVID-19 pandemic (e.g., Olivera-La Rosa et al., 2020; Christiani et al., 2021; Marini et al., 2021; Guo et al., 2022). Several studies (Kemmelmeier & Jami, 2021; Carbon 2021; Schönweitz et al., 2022) found that this shift in face mask perception was attributed to the normalization of mask-wearing as a preventive measure. Indeed, compliance with the COVID-19 preventive measures was already a powerful social cue in making social inferences (e.g., Graso et al., 2021; Haischer et al., 2020; Howard, 2020; Kemmelmeier & Jami, 2021): individuals who complied more were more likely to form a positive impression about other social targets who complied with these behaviors. Therefore, for those individuals face masks shifted from being a cue of sickness and disease, into being a cue of trustworthiness and safety. Malik and colleagues (2021) underlined that the impact of this change was most pronounced among individuals who rigorously followed the face mask mandate throughout the pandemic, as opposed to those with lower compliance. Those who complied closely with preventive measures tended to quickly form impressions of individuals without face masks, often perceiving them as risk-takers, pandemic deniers, and less empathic (Miguel et al., 2021). Whereas individuals with more negative attitudes toward COVID-19 preventive behaviors (e.g., conservatives, anti-masks, anti-vax) were more likely to form a negative first impression about individuals with higher compliance. Attitudes toward the use of face masks were also strongly politicized, and more conservative individuals typically hold more negative views concerning the use of these protective measures (Mallinas et al., 2021; Gadarian et al., 2021).

Thus, the same social cue, that is the face mask, was perceived in two different ways by individuals with different attitudes: as a symbol of prevention or as a symbol of oppression (Ike et al., 2020). As a result, behaviors aimed at contrasting the dramatic consequences of COVID-19 became extremely moralized (Prosser et al., 2020; Graso et al., 2021; Rosenfeld & Tomiyama, 2021), thus affecting the moral evaluation of people who either comply or deviate from the prescribed normative behaviors (Van Assche et al., 2020; Schönweitz et al., 2022). Given that individuals often stigmatize those who deviate from their moral mandates (Skitka et al., 2021; Skitka et al., 2005), the mere presence or absence of face masks leads to inferences that foster more positive or negative first impressions.

2.2 Mask-wearing and Identity Recognition

Face masks had a large effect on identity recognition and matching performances (Kollenda & Haas, 2022). For instance, several studies underlined how sunglasses, that covered the upper region of the face, impaired identity recognition and that the accuracy of identity matching was lower when targets were wearing sunglasses than when their lower region of the face was covered by bandanas or face masks (Bennetts et al., 2022; Graham and Ritchie, 2019; Nguyen et al., 2017). Other studies underlined how the lower region of faces was important for face recognition (see Manley et al., 2019; Mileva & Burton, 2018). Specifically, when faces were partly occluded by masks (e.g., ski masks, see Manley et al., 2019) during the encoding stage, individuals remembered those faces less accurately in the recognition test. Overall, Bennetts and colleagues (2022) reported that in most of the studies in which individuals were presented with unfamiliar faces and some kind of occlusions (e.g., sunglasses, spectacles) the accuracy rates were between 80-90% even when the images were presented side by side. Face covering during the pandemic, specifically face masking, had a large detrimental effect leading to a lessening in face matching for both familiar and unfamiliar faces (Carragher and Hancock 2020; Noyes et al. 2021). This indicates difficulties in face learning and re-identification (Marini et al., 2021; Freud et al., 2020). Freud and colleagues

(2020) found that mask-wearing was an impairment for holistic face processing. The same conclusion was also confirmed by the study by Hsiao and colleagues (2022), in which they found that when individuals were presented with masked faces during the learning phase and then with unmasked faces during the recognition one, they were more likely to show an impairment in their performance. However, participants' eye movements during the learning faces of masked and unmasked targets did not significantly change. Indeed, eye movement did not differ in the learning phase but only in the recognition one. The match between the eye movement pattern adopted in face learning and recognition did not predict recognition performance. Interestingly, the authors suggested that the total amount of eye movement could be a predictor of performance in memory recognition: People tend to use more cues focused on the eye region for retrieving diagnostic features that are salient for inferring the correct identity of a target. However, during the pandemic, Kollenda and de Haas (2022) found that the ability to remember if a target was wearing a face mask or not was mostly influenced by participants' familiarity with the presented target. Even with the face masks, the authors were able to confirm the findings that participants remember familiar faces better than unfamiliar ones (see Johnston & Edmonds, 2009). Nonetheless, in the same studies, there was a main effect of the face masks too. Indeed, face masks had a detrimental effect on recognizing faces, regardless of familiarity: Participants had worse memory performance when the target was presented with a face mask than without it. When participants were asked to recall whether the target was wearing the face masks, both familiarity and identity memory were important predictors for remembering this factor (Kollenda and de Haas, 2022).

In face recognition tasks, as well as in emotion recognition ones, it is also noteworthy to highlight the striking gender disparities in identity recognition and memory recall. Wong and Estudillo's recent findings in 2022 underscored that female participant outperformed their male counterparts in tasks related to identity, gender, age estimation, and emotion recognition for both masked and unmasked faces. Notably, when women were tasked with deducing the age of individuals, their performance improved when categorizing individuals of their gender, a

phenomenon known as the "own-gender effect." Interestingly, this effect did not manifest in male participants.

2.3 Mask-wearing and Emotion Recognition

In literature, the term ‘emotion recognition’ has been used to describe a biological skill enhanced by evolution, assisting with the dual purpose of detecting potential threats in a given context and enhancing positive social interactions by rendering these interactions more predictable and manageable (Elfenbein et al., 2017). During their interaction, individuals receive feedback through verbal and non-verbal signals that they can process very quickly (Tracy & Robins, 2008). Generally, individuals deduce emotions through non-verbal cues, primarily by examining facial expressions. Indeed, people do not just rely on faces to discern identity, gender, and age; they also employ faces to infer emotional status (Mayer et al., 2001; Carton et al., 1999; Nowicki & Duke, 1994). For instance, happiness and disgust are largely inferred by observing the lower region of the face, particularly the mouth, while the upper region is instrumental in recognizing anger and fear. Both regions are vital for discerning surprise and sadness (Pavlova and Sokolov, 2022). Emotion recognition is a basic evolutionary skill developed to facilitate survival and security (Darwin, 1872; Öhman, 1999). The recognition of the “basic emotions” (Ekman, 1992), such as anger, disgust, fear, happiness, surprise, and sadness, is an automatic process (Tracy & Robins, 2008) that happens also when targets present some level of facial occlusion.

Before the pandemic, studies reported that another key aspect that impaired emotion recognition was mask-wearing (Kirouac & Dore, 1984; Matsumoto & Ekman, 2004; Whalen et al., 1998). In situations where faces are concealed by masks, the recognition of positive emotions tends to be impaired, while negative emotions are believed to be accentuated (Spitzer, 2020). However, some studies have noted that masked facial expressions, whether positive or negative, are often misperceived as neutral (Carbon, 2020; Cartaud et al., 2020; Marini et al., 2021). Carbon (2020), in an experimental study with German participants, found that face masks notably reduced the

recognition of facial expressions, particularly happiness, and disgust, although neutral and fearful expressions remained more interpretable. Interestingly, disgusted faces were often misinterpreted as anger, and other emotions were sometimes confused with neutral expressions. However, it is worth noting that despite the challenges posed by masks, people could still make accurate inferences about emotions, despite their decreased confidence in their assessments (Carbon, 2020).

Masks not only diminished the ability to accurately perceive negative facial expressions, but they also mitigated the impact of negative emotions on judgments of trustworthiness, likability, and interpersonal closeness (Grundmann et al., 2021). In a sample of German perceivers, mask-wearing resulted in lower ratings of trustworthiness and happiness compared to the same unmasked calm facial expressions with direct gazes (Grundmann et al., 2021). Additionally, experimental studies on emotion recognition conducted with UK participants revealed that face masks posed a more significant obstacle compared to wearing sunglasses. In particular, the identification of emotions like anger, fear, disgust, happiness, and surprise (although not sadness and neutral expressions) was substantially less accurate on faces concealed by masks, whereas wearing sunglasses primarily affected the recognition of anger and fear (Noyes et al., 2021).

An experimental study conducted by Wong & Estudillo (2022), interestingly, found a main effect of gender in emotion recognition and mask-wearing. Women showed greater abilities to recognize facial emotions on an automatic level, even when asked to recognize emotions based solely on cues from the lower facial region (Abbruzzese et al., 2019). Women also displayed heightened perceptual sensitivity to subtle social and emotional cues, which can be attributed to their scanning behavior during information processing and their traditional role as primary caregivers who must accurately recognize and respond to the emotions of their offspring to provide care and support (Babchuck et al., 1985; Donges et al., 2012; Heisz et al., 2013; Wong & Estudillo, 2022). This gender disparity in emotion recognition sheds light on the fact that emotion recognition is an automatic and fundamental aspect of individual social perception developed throughout evolution.

2.4 Mask-wearing And Trustworthiness Judgments

In the context in which the present project developed, the COVID-19 pandemic, the purpose of the studies carried out in the first part of the present research project was to understand the impact of face masks on automatic categorization processes and to investigate whether impression formation was affected by these preventive measures. In face perception, several studies (see for instance Todorov et al., 2015, 2009, 2008) have underlined how social judgments, in terms of trustworthiness, competence, attractiveness, and even aggressiveness, of a target are prompted by their visual appearance. When deciding to approach or avoid another individual in the same social context, people usually use some cues that are automatically processed after minimal time exposure (e.g., Willis & Todorov, 2006). Indeed, as Todorov and Duchaine (2008) have underlined, facial appearance is fundamental to individuals for perceiving and extracting social information.

According to these authors, the areas involved in trustworthiness and competence judgments are the ones of the mouth and the eyes because they involve more non-verbal cues. Interestingly, trustworthiness judgments seem influenced by other visual cues such as age, with older faces often being perceived as more trustworthy (see Palumbo et al., 2017).

However, little attention was paid to the effects of possible elements of occlusion (e.g., sunglasses, religious veils, face masks) on social inferences. For instance, some studies underlined how sunglasses reduced judgments of trustworthiness but did not affect the target's competence and attractiveness (Graham & Ritchie, 2019). As for mask-wearing, covering the area of the mouth, information about the target's emotions is not completely inferred. In part, for this reason, studies on trustworthiness and competence inferences underlined different aspects. For instance, Marini and colleagues (2021) found that transparent face masks did not decrease the positive trustworthiness impression of a target, whereas standard face masks did affect, for some targets, the judgment of trustworthiness. But when mask wearers were compared to unmasked ones, they were considered more trustworthy and socially desirable than individuals without face masks. At the same time,

mask wearers were more likely to be associated with the concept of illness and perceived threat (Olivera-La Rosa, 2020; Scheid et al., 2020).

The same positive evaluation in terms of the trustworthiness of masked targets compared to unmasked ones was underlined by Di Crosta and colleagues (2023). In their study, they aimed to assess the age-related differences in trait impression before and during COVID-19. In doing so, the authors presented their participants with a between-participants experimental design with masked and unmasked targets to evaluate. Their results showed that perceived trustworthiness was lower when participants were exposed to the condition of unmasked targets for both younger and older adults compared to the trustworthiness evaluation of the condition of masked targets and the scores before COVID-19. Additionally, during the pandemic, they found that the fear of contracting COVID-19 influenced trustworthiness ratings. Thus, face masks and the fear of contagion during the pandemic seem to lower the perceived trustworthiness of unmasked targets, regardless of their age.

Conversely, Bylianto & Chan (2022) showed that while masks have health benefits, they obscure critical facial regions that signal approach/avoidance intent and social trust, leading to a lower inference of approachability and trustworthiness. In their eye-tracking experiment, they found that because visual attention is automatically diverted away from the mouth and towards the eye region when the mouth is obscured by the mask, the attention directed towards the eye region mediated the effect on approachability but not on trustworthiness. However, they found this decreased facial inference of trustworthiness and approachability specifically on masked happy faces.

Evidence in support of the reduction of perceived trustworthiness was provided by Malik and colleagues (2021). In their experimental design, they found that respondents were less inclined to rely on trust advice provided by an individual presented with a face mask compared to advice provided by a target without the face mask. Additionally, the impact of masks on trust was significantly pronounced among individuals whose households were exposed to economic risks due to COVID-19 and those with more negative attitudes toward mask-wearing.

In conclusion, when taking into account contextual and individual variables (e.g., attitudes to the use of face masks, fear of the contagion) the use of face masks seems to have a meaning not entirely related only to health, with different effects on person perception.

2.5 Mask-wearing and attractiveness judgments

Another dimension that was affected by the masks wearing was attractiveness. This dimension is primarily influenced by facial symmetry, especially in the eye region (Rhodes, 2006). Face masks had both positive and negative effects on perceptions of attractiveness. On one hand, masks draw attention to the eye area, which is often considered one of the most attractive features on a person's face. When the lower half of the face is covered, people may focus more on eye contact and expression, potentially enhancing the perceived attractiveness of a person's gaze (Saegusa & Watanabe, 2016). Moreover, some studies (Sadr & Krowicki, 2019) found that masks evoke a sort of intrigue, as they hide part of the face, leaving some details to the imagination, which can be appealing (see Hies & Lewis, 2022; Miyazaki and Kawahara, 2016). However, on the other hand, masks obscure' many facial features, including the mouth and the lower half of the face, which are essential for conveying emotions and engaging in non-verbal communication (see Saunders et al., 2020). As a result, individuals may struggle to convey their personalities or emotions fully, potentially diminishing the perceived attractiveness associated with their expressions. Additionally, masks can hide features such as smiles, which are often associated with warmth and approachability, potentially reducing the perceived attractiveness of a person's demeanor and thus leading individuals to perceive mask wearers as less close to them (Groundmann et al., 2021).

Takehara and colleagues (2023) examined the effects of mask-wearing and perceived attractiveness in two time points: The first one in September 2020 (T1), and the second one in April 2022 (T2) in Japan. In doing so, their study employed a three-factorial mixed-design, with time point (T1 & T2) as a between-participants factor, and attractiveness of facial stimuli (higher vs. lower attractivity) and type of occlusion (no occlusion, face mask, sunglasses, and combination of

face mask and sunglasses) as within-participants factors. Their results indicated that the temporal effects on attractiveness and familiarity were only observed in faces of lower attractiveness when wearing face masks, while no temporal effects were observed on social traits in faces of higher attractiveness. Faces without obstructions were perceived to possess the highest levels of all social traits, and faces wearing face masks were rated at the same level of attractiveness and familiarity as unobstructed faces. Trustworthiness perception was highest for unobstructed faces. Notably, faces with both sunglasses and face masks were associated with the lowest perceived levels of all social traits. These findings suggested that in Japan, the positive and temporal effects of wearing face masks were constrained, indicating a more pronounced positive impact of unobstructed faces.

Opposite results regarding face masks and attractiveness were found by Hies and Lewis (2022), who explored the effect of different types of face coverings on facial attractiveness, specifically focusing on medical masks and cloth masks. Medical masks were mostly associated with disease and thus perceived as less attractive (Miyazaki & Kawahara, 2016; Kamatani et al., 2021). In doing so, they exposed their female participants to male faces (high vs. low in attractiveness) and they manipulated on three levels the type of occlusion on the male faces (medical mask, cloth mask, books). Their results showed that faces were considered more attractive when covered by medical masks than when occluded with cloth masks or not occluded. Furthermore, the attractiveness enhancement was not solely due to the occlusion of negative features, since the authors did not find a significant interaction with the base attractiveness of the faces. Hence, Hies and Lewis' (2022) study underlined the positive effects of the face mask: During the pandemic peak medical face masks were more likely to prompt more positive social evaluations that were underlined by the possible association of medical masks with caregiver professions (Hies & Lewis, 2022).

2.6 Mask-wearing and moral Judgments

Wearing or not the surgical face mask provided individuals with possible inferences about the other social actors. Mask-wearing was the normative behavior to comply with (Kemmelmeier &

Jami, 2021) during the pandemic. This presence vs. absence of the face mask was not only related to perceived trustworthiness or competence from the face but also related to perceived norm compliance. During the pandemic, wearing the face masks was a mandatory measure almost worldwide. In the case a social target was not wearing a face mask, he/she could be perceived as a norm violator. However, if he/she was wearing a face mask, this was a signal that the wearer was aware of the pandemic situation and took it seriously (Schönweitz et al., 2022).

According to van Leeuwen and colleagues (2012), people often engage in spontaneous categorization and judgment of others based on their observed concrete behaviors (e.g., helping, cheating, stealing) indicative of moral character (e.g., kindness, honesty, fairness), drawing inferences regarding whether the actor is generally "moral" or "immoral" and encoding this inference in memory may facilitate adaptive choices of social interaction partners. Van Leeuwen and colleagues' studies (2012) found that individuals spontaneously categorize other social actors along the morality dimension. This categorization can lead to various social and cognitive processes, such as stereotyping, attribution, moral judgments, and ingroup-outgroup dynamics. Specifically, individuals may form stereotypes about those they perceive as upholding or violating moral norms. Thus, the stereotype that might form about individuals who consistently act ethically might lead to more positive moral judgments; on the contrary, those who frequently transgress moral norms might be perceived as less moral (Brambilla et al., 2021). As for attribution, people tend to attribute the behavior of others to their underlying moral character (Brambilla & Leach, 2014). Inferences about a person's moral behavior are also used to predict future moral behavior (White et al., 2020). However, the relevance of some information used to make inferences changes according to the context (Crockett et al., 2021). For instance, personal moral values, particularly individualism, have been associated with lower adherence to preventive measures, whereas higher compliance with mask-wearing was associated with care about others, compliance with authority, and fairness (Mejova et al., 2023). Experimental studies on social perception and face masks did not focus specifically on the inference regarding moral judgments: Someone who was wearing face

masks might have been perceived as morally virtuous, especially because on an individual level mask wearing was internalized as a personal value. While someone who was not wearing face masks during the pandemic might have been perceived as morally questionable. For this lack of contribution in this field, the present dissertation assesses implicit and explicit moral inferences based on mask-wearing and personal attitudes toward the masking policy (see Study 1).

Individuals often make moral judgments about others based on their perceived moral behaviors. These judgments can influence social interactions, trust, and even legal decisions (Reeder et al., 2002). Moreover, inferences regarding morality might foster specific ingroup-outgroup dynamics: The categorization of individuals based on moral norms can lead to the formation of ingroups (those who share similar moral values) and outgroups (those who do not). This can impact intergroup dynamics, including prejudice and discrimination (see Brambilla et al., 2012). These processes are part of the complex interplay between social categorization, moral judgments, and human behavior. Although there exists some contention regarding the precise configuration of social judgments, such as the debate on the distinctiveness of morality from warmth (Brambilla et al., 2021), and the application of these dimensions in stereotypical perceptions of social groups (Koch et al., 2020), it is possible to remark that the initial focus in our perception of others typically revolves around discerning whether their intentions are oriented toward harm or goodwill. While specific findings and theories may vary across different studies and researchers, the general understanding in social psychology is that people tend to categorize and judge others based on their perception of moral behavior (Brambilla et al., 2018; van Leeuwen et al., 2012), and these categorizations can have significant social and psychological consequences. This perspective clarifies why different social groups (e.g., political or religious) sometimes disagree on what is moral (Greene, 2013; Haidt & Graham, 2007). Thus, this may lead to interpersonal intolerance, whereby individuals punish and ostracize those with whom their moral mandates differ (Skitka et al., 2021; Skitka et al., 2005).

2.7 Mask-wearing and Spontaneous Categorization Processes

People rely on facial cues to make rapid group membership assessments by categorizing individuals based on distinguishing social categories. Some social categories (i.e., gender, ethnicity) are so frequent in our environment that they are activated without the individual's awareness.

For instance, individuals tend to encode facial information that is characteristic of their gender. Consequently, individuals can automatically categorize someone as male or female by assessing the presence or absence of specific features, such as mustaches, beards, and eyelid characteristics (Wong & Estudillo, 2022). However, this spontaneous categorization process can be disrupted when facial elements are obscured, for example, by religious veils, scarves, or sunglasses. In fact, in cases where the lower half of the face is obscured, individuals are more likely to struggle with gender classification tasks (Chen, 2018; Zhao & Hayward, 2010). Studies conducted during the pandemic focused on gender classification tasks that required individuals to determine a person's gender solely based on the top half of their face. Wong & Estudillo (2022) discovered that, on average, there was a nearly 5% reduction in participants' accuracy when estimating the gender of mask-wearers. Furthermore, the level of accuracy was influenced by the gender of the face in question: Female faces were less accurately recognized when presented with a face mask than when unmasked. The researchers suggested that the chin, cheek, and lips (the lower facial region) might provide more comprehensive information for accurately categorizing women. In contrast, when it came to men, participants tended to rely more on information obtained from the top half of the face, particularly the region around the eyes. Furthermore, face masks had an impact on age estimation specifically for female' faces: Both male and female participants had worse age estimation performance when they were asked to recognize female faces (Wong & Estudillo, 2022). Again, for female faces, the bottom region is demonstrated to be strongly informative for identity recognition, therefore the presence of a face mask disrupts this process because restricts the use of this region as a perceptual cue.

However, in the studies mentioned so far, face masks have been assessed as a perceptual cue that disrupted individuals' ability to correctly categorize other social targets and recognize their

emotions and identity since the pandemic made face masks salient in everyday interaction, Studies 2 and 3 aim to assess the possible impact of face masks in spontaneous categorization processes.

CHAPTER III[1]

THE SOCIAL MEANING OF MASK-WEARING

3.1 STUDY 1 – OVERVIEW

The present research project started in the middle of the pandemic; therefore, the general aim of the following study was to assess whether face masks underwent a significant shift in individual perception with the onset of the COVID-19 pandemic. Specifically, if social actors wearing vs. not wearing a face mask elicited different attitudes not only in terms of valence (positive vs. negative) but more specifically in terms of morality (moral vs. immoral).

The main theoretical background was the studies by Olivera-La Rosa and colleagues (2020) on the impact of surgical face masks on trait inferences. However, they administered only explicit measures, thus leaving an open research question on the effects of face masks on an implicit level.

Therefore, Study 1 is to address this gap in the literature by measuring both implicit and explicit attitudes toward masked and unmasked targets. For implicit attitudes, the IAT (Greenwald et al., 1998) was implemented to measure the spontaneous association prompted by mask wearers. By doing so it was possible to better understand how the norm of mask-wearing was internalized by individuals. Implicit measures allow researchers to deeply explore the socio-cognitive aspects of the categorization of specific concepts.

Overall, the aim of Study 1 was to investigate both explicit and implicit attitudes toward individuals presented with and without face masks, and to explore possible relationship between behavioral intentions toward mask wearing and attitudes (both implicit and explicit) toward masked and unmasked targets. One of the strengths of Study 1 was the assessment of both explicit and

[1] Studies 2 & 3 were retrieved by the published article by Castelli, L., Tumino, M. & Carraro, L. (2022) Face mask use as a categorical dimension in social perception. Sci Rep 12, 17860. https://doi.org/10.1038/s41598-022-22772-2

implicit measures in order to overcome the likely impact of social desirability concerns in a very sensitive domain, such as COVID-19 preventive measures. The data collection happened between January 2021 – June 2021 when mask-wearing was mandatory in Italy.

3.2 Hypotheses

For explicit measures, the hypothesis was to replicate Olivera-La Rosa and colleagues' (2020) findings about the overall positive first impression of masked targets and unmasked ones. Therefore, the expected results were that masked targets on an explicit level would have been evaluated as more trustworthy, moral, altruistic, sociable, and competent than unmasked ones.

As for implicit attitudes, it was overall expected that individuals would associate the masked (vs. unmasked) targets with moral (vs. immoral) words significantly faster than with positive (vs. negative) words. By doing so, a between-participants design was implemented by manipulating the words (positive vs. negative) presented alongside pictures of masked and unmasked targets.

Indeed, as Olivera-La Rosa and colleagues' (2020) study revealed, masked targets were explicitly evaluated as sicker, however, they were perceived as more trustworthy due to the presence of face masks that diminished their chance of being infectious. Thus, surgical face masks might still implicitly be categorized with a negative valence, even though it was the right thing to do.

3.4 Participants

Study 1 had a between-participant design and it was mostly a novel contribution regarding implicit attitudes. Therefore, a sample size estimation was run with the WebPower R package (Zhang & Yuan, 2018) using the formula for the t-test. Indeed, approximately 113 participants per group would be needed to achieve a power of 0.95 for a medium effect size ($d = 0.50$)[2] at a significance level of 0.05. Hence, two hundred and fifty-four participants were recruited through

[2] Generally, effect sizes for IATs are often considered to be in the small to moderate range (for example see Greenwald et al., 2009; Lai et al., 2014).

snowball sampling between January and June 2021 (face masks were mandatory). Participants (F = 166) aged 18 to 70 years (M = 26.60, SD = 10.50) took part in the study that was administered online on two different platforms: Inquisit Millisecond Web and Qualtrics.com. In doing so, participants' data were merged according to a personal identification code given after agreeing to the initial consent form. All participants were Italian native speakers and most of them (N = 72%) had a high school diploma. The study was conducted according to the Declaration of Helsinki and was approved by the local ethics committee.

3.5 Procedure

First of all, participants were asked to perform an Implicit Association Test (IAT; Greenwald et al., 1998) to assess their automatic associations between two target concepts, specifically words and images. As for words, in one experimental condition, participants were presented with positive (i.e., good, beauty, haven, joy, pleasant, love) and negative words i.e., (hate, crime, catastrophe, disgust, fear, awful). Whereas, in the other experimental condition moral (i.e., moral, just, honest, selfless, good, righteous) and immoral words were presented (i.e., immoral, unjust, dishonest, selfish, bad, unrighteous).

As for the other target concept, the images, participants were presented with twelve photographs (six males and six females; half of them masked, and the other half unmasked) retrieved from the Chicago Face Database (Ma et al., 2015) with neutral emotion. Which specific face was wearing a face mask was counterbalanced between participants (see Figure 1 for an example). The surgical face mask was added to the pictures using Adobe Photoshop.

Figure 1Masked and unmasked targets balanced between participants

The IAT consisted of five different blocks. The first block was the learning block with twenty trials in which participants were asked to categorize either positive vs. negative or moral vs. immoral words according to the experimental condition. Throughout the trials, participants had to press “D” on the keyboard for positive (or moral) words, and “K” for negative (or immoral) ones. The second learning block had twenty trials as well, however, this time participants were asked to categorize masked vs unmasked targets. Again, participants had to press “D” on the keyboard for masked targets, and “K” for unmasked targets. The third block included forty trials. Participants were asked to categorize positive vs. negative words (or moral vs. immoral according to the condition) with masked and unmasked targets. This critical block was defined as “compatible” because participants were asked to press the same key on the keyboard to associate positive or moral words with masked targets, and negative or immoral words with unmasked targets.

Therefore, participants had to press “D” on the keyboard for positive (or moral) words and masked targets; and “K” for negative (or immoral) ones and unmasked targets. Then, in the fourth block, another learning block, participants were asked to reverse the keyboard buttons (i.e., “D” and “K”) that they used in the second learning block to categorize masked and unmasked targets; hence, they had to learn a new combination: “D” for negative (vs. immoral) words and unmasked targets; “K” for positive (vs. moral) and masked targets. Therefore, in the fifth block (40 trials), another “critical block”, participants were asked to perform the same task as the third block with reverse key buttons for forty. This critical block was defined as “incompatible” because participants were asked to associate positive or moral words with unmasked targets, and negative or immoral words

with masked targets. The order of the presentation of the two critical blocks (i.e., the third one and fifth), and the order of the second and the fourth block, were counterbalanced across participants.

At the end of the IAT, participants were automatically directed to the Qualtrics platform to assess their explicit attitudes toward the masked and unmasked targets presented in the IAT. Participants were asked to evaluate each target according to five social dimensions (Cuddy et al., 2008; Fiske et al., 2006; Judd et al., 2005). Indeed, they were asked to evaluate how much they perceived each target as trustworthy, altruistic, sociable, competent, and moral (range: 0-100). Furthermore, participants were asked to evaluate on a slider (range from 0 to 100) how comfortable they felt interacting with a target with (vs without) a surgical face mask.

Then, participants were asked to indicate their gender, age, nationality, willingness to get the COVID-19 vaccination, and if they were/someone close to them was infected with the COVID-19 disease. These latter items were asked with 'yes', 'no', and 'not applicable' answers. At the time, 66% of the participants reported being willing to get COVID-19 vaccination. Furthermore, 13% of the participants reported that they knew at least one person who was infected by the COVID-19 virus. Furthermore, participants were asked about their socioeconomic status (SES; range: 0 "lower status" to 100 "higher status"; M_{ses} = 55.80, SD_{age} = 12.80) and their political orientation. As for political orientation, participants were presented with 3 different items related to their general political affiliation, and economic and social-political beliefs (range: 0 "left-wing" – 100 "right-wing"). Since there was a good internal validity (α =.91), a general score was then composed (M_{pol} = 36.50, SD_{pol} = 21.40).

Finally, participants were asked to indicate how much they estimate that individuals were complying with COVID-19 mitigating practices (i.e., wearing a surgical mask, washing their hands, using social distancing, staying home) on a slider from 0 ('never') to 100 ('always'). Again, since there was a good internal validity (α =.87), a general score was composed ($M_{Behavior}$ = 56.20, $SD_{Behavior}$ = 15.80). In conclusion, participants were asked about their future behavioral intention

toward the same COVID-19 mitigation practices (α = .81; $M_{FutureBehavior}$ = 81.10, $SD_{FutureBehavior}$ = 15.30).

3.6 Results

3.6.1 Implicit Attitudes

As for the IAT and thus the implicit attitudes, a D score was calculated for each participant following the indications provided by Greenwald and colleagues (2003). Therefore, three participants were excluded due to the number of errors or response times too slow (< 300 ms) or too fast (> 10.000). A D score above zero indicated a stronger association between positive/moral vs. negative/immoral words with masked targets (vs. unmasked), whereas a negative score indicated the opposite.

An independent t-test was run on this score to investigate differences between the two conditions: valence vs. morality. However, results showed no significant difference between the means of the two conditions (p = .124).

To better explore these data, a single t-test for each condition was run. Results showed that for the valence IAT (i.e., positive-negative words), the score was not different from the chance (i.e., 0), t(114) = -.501, p = .61, as well as for the morality IAT (i.e., moral vs. immoral words), t(135) = 1.72, p =.088.

3.6.2 Explicit Attitudes

Regarding explicit attitudes, first of all, because of the high internal reliability, two mean indexes were computed masked targets (α = .92) and unmasked ones (α = .92) that included the evaluation on the five social dimensions mentioned before. Hence, a single t-test was run between the masked and unmasked general evaluation, t(250) = 8.30, p <.001, d = .52. As Figure 2 reported, the general evaluation of masked targets was more positive than the one of unmasked targets.

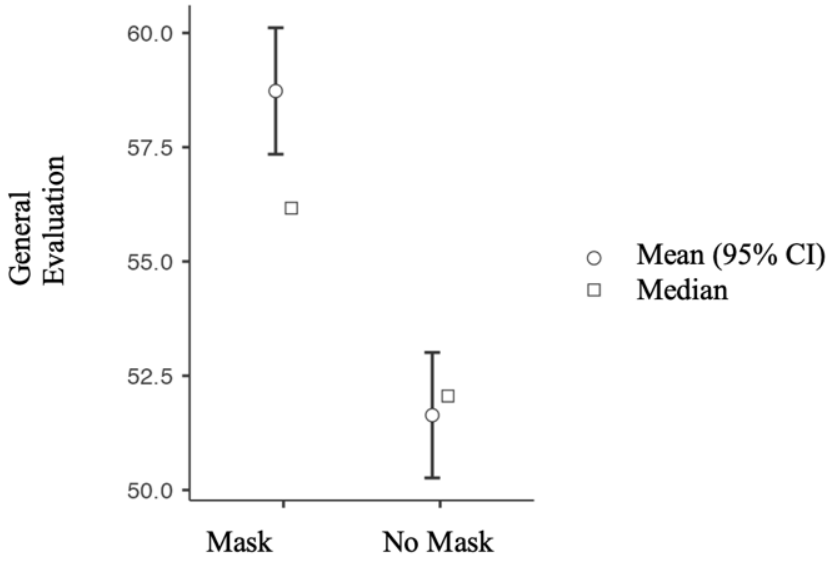


Figure 2 Independent t-test on the general evaluation of masked and unmasked targets.

Moreover, a 2 (face mask: present vs. absent) × 5 (trait: trustworthiness, morality, sociability, competence, and altruism) ANOVA with all the factors within participants.

Results showed a main effect of the face mask factor, $F_{(1, 250)} = 68.86$, $p < 0.001$, $\eta^2_p = 0.21$, and a main effect of the trait, $F_{(4, 250)} = 17.16$, $p < 0.001$, $\eta^2_p = 0.06$. Additionally, the two-way interaction between the face mask and trait factors emerged, $F_{(4, 252)} = 8.05$, $p < 0.001$, $\eta^2_p = 0.03$. As reported in Table 1, masked targets elicited more positive impressions than unmasked ones in terms of trustworthiness, morality, competence, sociability, and altruism. This tendency was confirmed also in the post-hoc comparison between masked and unmasked targets, t(250) = 8.30, $p_{turkey} < .001$ ($M_{diff} = 7.09$; $SE = .85$).

Finally, a paired t-test was run on willingness to interact with the targets presented to participants. Results showed that respondents were more likely to prefer interacting with the masked target than with the unmasked one, t(250) = 8.25, $p < .001$, d = .52.

				95% CI	
Trait	**Target**	**M**	**SE**		
Trustworthiness	Mask	60.3	0.793	58.7	61.9

				95% CI	
Trait	**Target**	**M**	**SE**		
	No Mask	54.6	0.792	53.1	56.2
Morality	Mask	56.8	0.812	55.2	58.4
	No Mask	51.0	0.744	49.5	52.4
Sociability	Mask	57.9	0.753	56.5	59.4
	No Mask	51.7	0.802	50.1	53.3
Competence	Mask	59.6	0.826	58.0	61.2
	No Mask	50.6	0.813	49.0	52.2
Altruism	Mask	59.0	0.844	57.3	60.7
	No Mask	50.3	0.841	48.6	52.0

Table 1 Explicit Trait Evaluation.

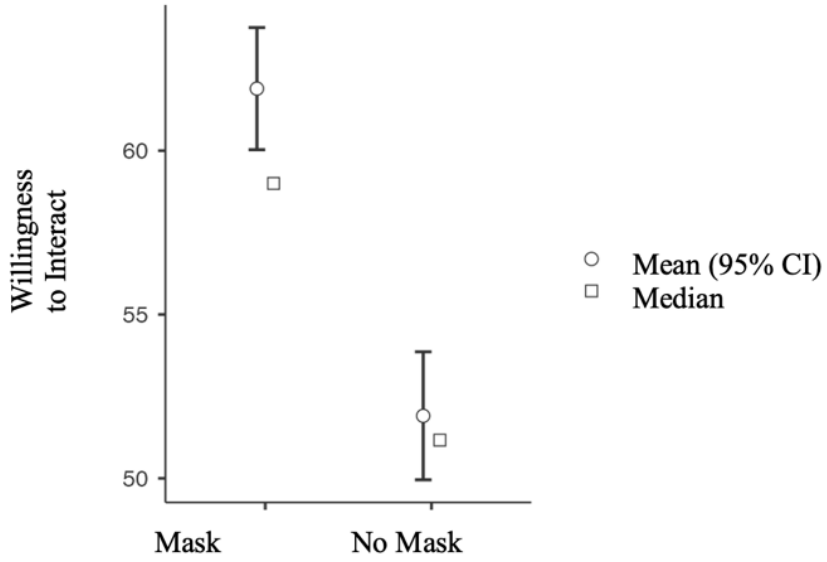


Figure 3 Explicit willingness to interact with a masked and unmasked target.

3.6.3 Relationship between the measures[3]

In the moral IAT, the D.IAT scores negatively correlated with the trustworthiness, morality, competence, and altruism evaluation of unmasked targets. This means that, overall, the more negatively participants explicitly evaluated unmasked targets on these social dimensions, the less

[3] The following Tables (2 & 3) shows only the significant correlations between the D.IAT and explicit evaluations separately for moral and valence IATs.

they implicitly associated these targets with moral words during the IAT (see Table 2). As for explicit attitudes, a negative correlation emerged between explicit evaluation of unmasked targets and attitudes toward COVID-19 preventive behaviors (see Table 3). Unmasked targets were evaluated as less altruistic, moral, trustworthy, and competent. Furthermore, attitudes toward COVID-19 preventive behaviors and political ideology emerged, $r(70) = -.27$, $p = .043$[4]. Overall, right-wing political ideology was more likely to be associated with negative attitudes toward COVID-19 preventive behaviors.

As for the positive-negative (valence) IAT, there was only a positive correlation between the D.IAT score and the explicit altruistic evaluation of masked targets, $r(115) = .253$, $p = .006$. Meaning that, the stronger participants associated masked targets with positive words, the more on an explicit level they evaluated them as altruistic. As for explicit attitudes, a positive correlation emerged between explicit evaluation of masked targets and attitudes toward COVID-19 preventive behaviors (see Table 4). The more positive were attitudes toward COVID-19 behaviors, the less unmasked targets were evaluated as moral. Moreover, the more positive the attitudes toward these behaviors were, the more likely participants expressed positive future intentions of compliance with COVID-19 preventive behaviors. Furthermore, attitudes toward COVID-19 preventive behaviors and political ideology emerged, $r(58) = -.24$, $p = .011$. Overall, right-wing political ideology was more likely to display negative attitudes toward COVID-19 preventive behaviors.

[4] For some of the explicit measures, such as political ideology, the answer was not forced. Therefore, there was a different sample size due to the compliance with this measure.

*Table 2 Correlation between implicit and explicit attitudes in the Moral IAT (*** p < .001, ** p < .01, * p < .05).*

	Moral D.IAT
Moral D.IAT	—
No Mask Altruistic	-0.262 **
No Mask Competent	-0.225 **
No Mask Sociable	-0.081
No Mask Moral	-0.196 *
No Mask Trustworthy	-0.242 **

*Table 3 Correlation between the explicit measures in the Moral IAT experimental condition (*** p < .001, ** p < .01, * p < .05).*

	Attitudes toward COVID-19 behaviors
Future Intentions	0.097
Mask Trustwothy	0.625***
Mask Moral	0.429***
Mask Sociable	0.486***
Mask Competent	0.519***
Mask Altruistic	0.471***

*Table 4 Valence IAT and Explicit Evaluations (*** p < .001, ** p < .01, * p < .05).*

	Attitudes toward COVID-19 behaviors
Future Intentions	0.355**
Mask Trustworthy	0.802***
Mask Moral	0.650***
Mask Sociable	0.748***
Mask Competent	0.730***
Altruistic Mask	0.659***
No Mask Trustworthy	0.284*
Moral No Mask	0.406**

3.7 Study 1 – Discussion

In line with Olivera-La Rosa and colleagues' (2020) findings, on an explicit level, participants expressed more positive attitudes toward masked targets than unmasked ones. Specifically, mask wearers (vs. unmasked targets) were evaluated as more trustworthy, moral, altruistic, competent, and sociable. Thus, wearing face masks seems to highlight a sort of halo effect (Lachman & Bass, 1985). Before COVID-19 face masks were spontaneously associated with illness and diseases, however, Study 1 found support for the hypothesis that during COVID-19 there was a shift in individual perception and face masks. Indeed, mask-wearing increased impressions of trustworthiness and social desirability (Olivera-La Rosa et al., 2020) as compared to previous the pandemic (e.g., "the sanitary-mask effect", Miyazaki & Kawahara, 2016). Nonetheless, Olivera-La Rosa and colleagues (2020) tried to frame this effect of increased positive impression of face masks to the pandemic. Indeed, they discussed the possibility that on an explicit level, individuals reported more positive impressions of masked targets due to the internalized social norm of wearing masks, but – on an implicit level – individuals might still mistrust face masks. Study 1 tried to assess this open issue in the field of individual perception, however, results from implicit attitudes were not statistically significant, nor for the valence or the morality dimensions. The strength of Study 1 was to combine both explicit and implicit measures to overcome possible biases in measuring explicit attitudes, such as social desirability or induvial preferences for one target over another. However, in the evaluative IAT a possible limitation might be related to the specific negative words used (e.g., "catastrophe" or "fear"). These words might have a direct influence in the association process by enhancing the association with negative words (vs. positive) for both masked and unmasked targets, albeit for different reasons related to the fear of contagion.

Although IAT scores were not different by chance, it was possible to assess the relationship between the explicit and implicit attitudes toward unmasked targets. In the moral IAT condition, D.IAT scores and evaluation of unmasked targets were negatively correlated in terms of trustworthiness, morality, competence, and altruism. This means that participants with faster

response times in associating moral (vs. immoral) words to masked (vs. unmasked) targets, were also more likely to evaluate less trustworthy, moral, competent, and altruistic unmasked targets. As for explicit attitudes, in the moral IAT condition, participants with more positive attitudes toward COVID-19 preventive behaviors were more likely to positively evaluate masked targets in all five dimensions. Interestingly, participants with more positive attitudes toward COVID-19 preventive behaviors were more likely to identify themselves as more left-wing oriented, as reported by the negative correlation between attitudes toward COVID-19 and political ideology.

Building upon these findings, Studies 2 and 3 aimed to further investigate how people spontaneously use this categorical information in order to organize information about social targets in their environment.

3.8 Studies 2 and 3 overviews

The following studies implemented a memory confusion paradigm to assess whether the face mask played a role in a socio-cognitive level. Specifically, whether face masks became a meaningful social cue that was used to spontaneously categorize individuals. Studies 2 (December 2021) and 3 (February 2022) data collection happened between two different times. In Study 2 mask-wearing was mandatory. Whereas, in Study 3 mask-wearing was not mandatory or salient anymore. Both of the studies' aim was overall to inquire about whether people organize information in memory as a function of the mask-related behaviors of the person perceived, throughout the pandemic and after it.

3.9 Study 2 – Hypotheses

The aim of the subsequent study (Study 2) was to assess whether people spontaneously make use of this information (wearing vs. not wearing a face mask) while processing and encoding social information in memory. Overall, the expected result was that participants rely on the presence vs. absence of face masks to recall the correct identity of a speaker, and thus as a cue in automatic

categorization processes. Usually, this task measured the type of errors in recalling the correct identity of the speaker. The errors could be either within the same category (i.e., within-category errors; a sentence is erroneously attributed to an individual belonging to the same category as the original speaker) or between-category errors (i.e., a sentence is erroneously attributed to an individual belonging to a category the original speaker is not a member of).

Hence, Study 2 hypothesis is that within-category errors would exceed the number of between-category errors thereby substantiating the assumption that participants automatically distinguish individuals between two distinct groups: those wearing a face mask and those not wearing a face mask. Beyond this main effect, Study 2 was meant to explore whether this automatic categorization process was affected by modulation when the salience of the face mask issue is either emphasized or de-emphasized. To this end, half of the participants were asked to think and report their attitudes toward the use of face masks before performing the who-said-what task (Taylor et al., 1978). The other half of the participants went directly to the who-said-what task, and only afterward reported their attitudes. The reason was to ascertain whether people spontaneously use the cue about the presence vs. absence of the face mask even when the issue is not made salient. Furthermore, as for the explicit evaluation of the targets, the expected results were to replicate Olivera-La Rosa and colleagues' (2020) findings about the overall positive first impression of masked targets vs. unmasked ones, which was also found in Study 1 of the present research project. Therefore, the hypothesis was that masked targets on an explicit level were evaluated as more trustworthy, moral, altruistic, sociable, and competent than unmasked ones.

3.10 Participants

A power analysis indicated that 171 participants would be required to detect a relatively small effect ($d = 0.025$)[5] for the comparison between within- and between-category errors, with alpha set at 0.05 and power = 0.90. The decision was to recruit 200 participants to account for exclusions.

[5] Study 2 and 3 are based on the small to medium effect size reported in the reanalysis by Pietraszewski (2018).

The study was run in December 2021, when face masks were mandatory. Participants (96 females, 101 males, 3 others) had a mean age of 27.04 years (SD = 8.20), ranging from 18 to 63 years. The experiment was run on Qualtrics and the data were collected through the crowdsourcing platform Prolific. All participants were Italian native speakers and they all provided informed consent before starting the experiment. The study was approved by the Psychology Ethics Committee at the University of Padova. All methods were carried out following relevant guidelines and regulations.

3.11 PROCEDURE

As mentioned in the previous paragraph, the study manipulated between participants the presentation order of a measure to assess individual attitudes toward the face mask. Half of the participants completed this measure before the who-said-what task, and the other half only after. The measure to assess individual attitudes toward the face mask was a 9-item scale aimed at evaluating the general appraisal of individuals who wear a surgical face mask (e.g., "When I see a person who does not wear a face mask, I immediately think that he/she is selfish"; "Using the face mask is a sign of respect for others"). Responses were provided by indicating the level of agreement/disagreement with each sentence along a continuum ranging from 0 (= totally disagree) to 100 (= totally agree). Reliability was good ($\alpha = .89$) and a summary score was computed ($M = 68.27$, $SD = 19.72$).

As for the who-said-what task required participants to go through a presentation phase in which they were shown a sequence of twenty-four sentences allegedly pronounced by eight different White male speakers (see Figure 4). During the initial instruction, there was a disclaimer for participants in which it was explicitly said that they had to carefully attend the presentation because they would be later asked to perform a memory task. The sentences referred to neutral common behaviors (e.g., "I had breakfast with a cup of milk and a croissant"). Participants were presented with the image of the speaker appearing at the center of the screen and the statement was written right below the image. The speaker's photograph and the sentence remained visible for 7 seconds,

according to Taylor and colleagues' methodology. Importantly, half of the speakers had a surgical face mask, and the other half was unmasked. Face masks were added using Adobe Photoshop, and the pictures of the speakers were retrieved from the Chicago Face Database (Ma et al., 2015). All the speakers had a neutral expression. Only males (and not females) were selected as stimuli to limit the number of social categories displayed to participants, avoiding gender and race categories which are already known to strongly influence the Who Said What paradigm (e.g., Taylor et al., 1978). Our aim was to highlight the presence or or the absence of a face mask as a distinguishing cue for speaker categorization.

Moreover, whether a specific speaker wore the face mask or not was counterbalanced across participants, and the order of presentation of the speaker-sentence pairings was randomized.

Figure 4 Examples of targets presented in the WSW task.

After this presentation phase, participants were presented with each of the twenty-four sentences, and required to select the picture of the speaker who expressed it. The sentences were presented one at a time in random order, whereas the pictures of the speakers were all shown on the screen next to each other in a 2 (horizontal) x 4 (vertical axis) matrix (see Figure 5). The specific location of each speaker within the 2 x 4 matrix randomly changed on each trial so that to encourage careful inspection. Accuracy was stressed and there was no time constraint while performing the task.

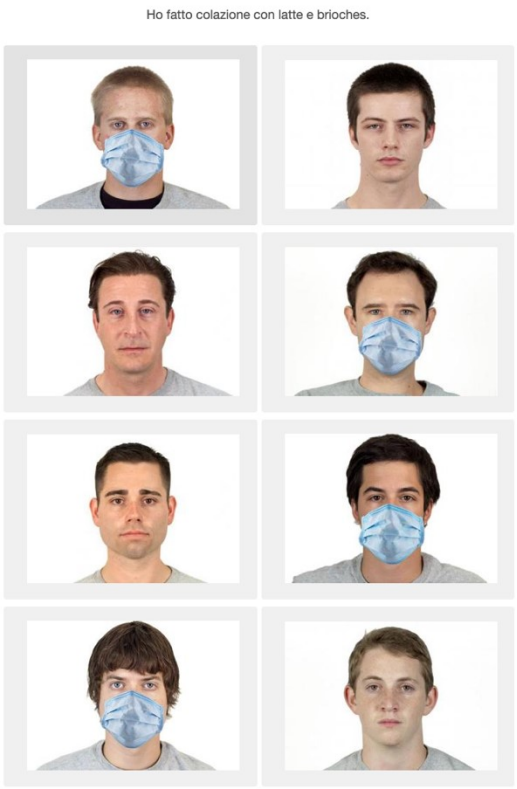


Figure 5 Example of the recalling part of the WSW task.

Afterward the recalling tasks, the same eight speakers presented in the who-said-what task were shown again in a random order, and for each of them, participants were required to report their perceived trustworthiness, morality, sociability, competence, and altruism. Responses were provided along a continuum ranging from 0 (= not at all) to 100 (= very much). After this, participants were asked to report their political orientation on a continuum from 0 (= left-wing) to 100 (= right-wing). The same continuum was used in two additional questions (see also Study 1) aimed at assessing participants' political orientation about social and economic issues, respectively. Responses to the three questions were highly consistent and a summary score was computed (α = .87; M = 31.58, SD = 20.24). Then, some demographic information (such as gender, age, education, and nationality) was asked.

3.12 Results

3.12.1 Who-said-what

The data from 7 participants were excluded from the analyses because they provided random responses in the memory task (i.e., 3 or fewer correct answers) indicating that they did not pay adequate attention during the presentation phase. First, the focus was on the errors committed during the who-said-what task. The number of within-category and between-category errors was calculated, as in the standard memory confusion protocol (Taylor et al., 1978). A within-category error occurred when the original speaker wore the mask and the sentence was erroneously attributed to another speaker with the mask, or when both the original speaker and the speaker to whom the sentence was erroneously attributed did not wear the mask. Between-category errors, in contrast, occurred when the original speaker and the speaker to whom the sentence was erroneously attributed differed in relation to the presence vs. absence of the face mask. To correct the baseline probabilities, in line with Taylor and colleagues (1978), between-category errors were multiplied by 3/4. Indeed, only 3 targets could be associated with a within-category error being the fourth target the correct answer.

These two indexes were submitted to a 2 (type of error: within- vs. between-category) × 2 (condition: scale about face mask use administered before vs. after the memory confusion task) ANOVA with the first factor varying within participants and the second between participants. A main effect of the type of error emerged, $F_{(1, 191)} = 16.33$, $p < .001$, $\eta^2_p = .079$. Indeed, within-category errors ($M = 6.13$, $SE = .19$) were significantly more likely than between-category errors ($M = 5.17$, $SE = .16$). Neither the main effect of condition, $F_{(1, 191)} = 1.46$, $p = .228$, $\eta^2_p = .008$, nor the interaction effect, $F_{(1, 191)} = 0.017$, $p = 0.895$, $\eta^2_p = 0.000$ were significant. This strongly suggests that participants encoded information as a function of the presence vs. absence of the face mask to the same extent in both conditions. Because there was relevant interindividual variability in the overall number of errors - thus making the responses of some participants potentially more

impactful in the analyses – data analysis followed a different strategy. More specifically, the proportion of within-category errors out of the overall number of errors was separately calculated for each participant. The observed value was then compared to the expected value in case responses would have been unaffected by the presence vs. absence of the face mask (i.e., 3/7 = .4285). A one-sample t-test confirmed that within-category errors (M = .47, SD = 0.16) were indeed more likely than chance, $t_{(191)} = 3.84$, $p < .001$, $d = .28$.

Next, the focus was on the correct responses to ascertain whether the correct pairing between a speaker and the sentence he had conveyed was somehow impaired when the speaker was wearing a face mask. To this end, an ANOVA 2 × (speaker: with vs. without the mask) × 2 (condition: scale about face mask use administered before vs. after the memory confusion task) on correct responses was run, with the first factor varying within participants and the second between participants. The presence vs. absence of the mask yielded a significant main effect, $F_{(1, 191)} = 16.33$, $p < .001$, $\eta^2_p = .08$. Indeed, correct responses were more likely when the original speaker had no face mask (M = 5.80, SE = .17) as compared to when a face mask was present (M = 5.17, SE = .17). No other effect was significant (ps > .23).

3.12.2 Explicit Attitudes

Moving forward for testing the explicit evaluation of the speakers, data were submitted to a 2 (face mask: present vs. absent) × 5 (trait: trustworthiness, morality, sociability, competence, and altruism) ANOVA with all factors manipulated within participants. A significant main effect of the face mask emerged, $F_{(1, 191)} = 140.37$, $p < .001$, $\eta^2_p = .42$, indicating more positive evaluations towards targets using the mask. The effect of the trait, $F_{(4, 188)} = 4.97$, $p < .001$, $\eta^2_p = .10$, and the interaction effect between face mask and trait, $F_{(4, 188)} = 11.21$, $p < .001$, $\eta^2_p = 0.193$, were also significant. Separate analyses as a function of the specific trait showed that the preference for mask wearers was significant for all dimensions (4.89 < ts < 11.63; ps < .001), although it was slightly weaker for sociability (d = .35) as compared to the other traits (.72 < ds < .84). Therefore, in

general, was possible to confirm both Olivera-La Rosa and colleagues (2020) findings and the explicit targets evaluation in Study 1, which was previously presented.

	M	SD	SE
Trustworthy Mask	61.9	13.8	0.999
Trustworthy No Mask	48.6	14.5	1.049
Moral Mask	62.6	13.9	1.004
Moral NoMask	47.3	13.5	0.975
Sociable Mask	56.4	13.3	0.963
Sociable NoMask	50.5	13.3	0.961
Competent Mask	61.1	12.4	0.896
Competent NoMask	51.0	12.5	0.899
Altruistic Mask	61.2	13.6	0.982
Altruistic No Mask	47.7	15.2	1.100
Overall Evaluation Mask	60.6	11.4	0.824
Overall Evaluation No Mask	49.0	11.9	0.857

Table 5 Explicit Evaluation for each dimension and for the general evaluation.

3.12.3 Relationship between measures

The correlation was explored between the index based on the proportion of within-category errors and the attitude towards face mask use, political orientation, and the overall explicit evaluation of the speakers wearing the mask (α = 0.90) or not wearing it (α = .91). No significant correlation emerged (see Table 6). The composite index about political orientation was negatively correlated with the attitude towards face mask use, $r_{(200)} = -0.22$, $p = 0.002$ (i.e., conservatives reported less positive attitudes). A regression analysis in which the responses to the economic and social conservatism items were simultaneously entered as predictors showed a significant effect of the economic conservatism, $\beta = -.172$, $p = .035$, 95% CI [-279, -.01], whereas social conservatism was not a significant predictor of the attitude towards face mask use ($p = .35$). In no case political orientation correlated with the explicit evaluation of the speakers with either the mask or not. The responses in the scale aimed at measuring the attitudes towards face mask use were positively correlated with the evaluation of mask wearers, $r_{(199)} = .49$, $p < .001$, but they were substantially

unrelated to the perception of targets who did not wear the mask, $r_{(199)} = .06$, $p = .39$.

	Proportion WithIn	Attitudes COVID-19 Behaviors	Political Ideology	Explicit Evaluation Masks	Explicit Evaluation No Masks
Proportion WithIn	—				
Attitudes COVID-19 Behaviors	-0.049	—			
Political Ideology	0.061	-0.220**	—		
Explicit Evaluation Masks	0.025	0.490***	-0.106	—	
Explicit Evaluation No Masks	-0.080	0.064	0.005	0.319***	—

*Table 6 Relationship between the proportion of within-category errors and individual differences, * p < .05, ** p < .01, *** p < .001.*

3.13 Study 2 – Discussion

Results strongly supported the hypothesis that participants encoded information in memory with a tag related to the presence vs. absence of a mask on the speaker's face. It thus appears that there was a spontaneous use of this information as an organizing principle in memory, and the effect was not influenced by the manipulation aimed at focusing participants' attention on the issue of face masks. In addition, findings further confirmed that the presence of face masks might also impact memory processes that involve the identification of social actors. In particular, participants were far less likely to correctly identify the speaker conveying a specific sentence when he was wearing a face mask (Oldmeadow & Koch, 2021; Freud et al., 2020). This suggests that source monitoring processes can thus be impaired when social actors are wearing a face mask. Despite this negative outcome associated with the use of face masks, mask wearers were pervasively explicitly evaluated more positively as compared to individuals not wearing the mask.

The study could not rule out an alternative explanation based on the mere perceptual difference between the two sets of pictures (i.e., the faces with the mask and those without it). For instance, two images of speakers wearing the mask are perceptually more similar to each other as

compared to the image of a speaker wearing a mask and one who does not wear it, because both images display the same-colored object (i.e., the light blue mask). Importantly, Stangor and colleagues (1992) employed a memory confusion paradigm and demonstrated that a meaningless perceptual dimension (i.e., the color of the clothing) was not used to categorize targets when another relevant social dimension was present (i.e., race; see also Pietraszewski et al., 2014).

3.14 Study 3 – Overview

Study 2 could not demonstrate alone the relevance of the face mask since the presence vs. absence of the mask was the only available cue for categorization. Therefore, Study 3 was aimed at ruling out possible explanations by manipulating between-participants the face covers although replicating Study 2 overall procedure.

3.15 Study 3 – Hypothesis

The aim of Study 3 was to tease apart the "social" and the "perceptual" explanations and provide stringent support for Study 2's findings. To find support for the social meaning of wearing the face mask, Study 3 replicated Study 2, however half of the presented faces were covered by a face mask and the other half without face masks. In the other condition, faces did not wear face masks, but half of them had their lower part covered by a large spot of about the same size and color as the masks that were employed in the other condition. In this way, in both conditions, half of the faces had the same area occluded by a superimposed stimulus, but only in one condition, it was a meaningful social object (i.e., the protective face mask). In this way, the hypothesis was that only in the condition with face masks the number of within-category errors was statistically different from the chance.

3.16 Participants

The study was run in February 2022. Two hundred participants (82 females, 115 males, 3 others; age = 27.33 years, SD = 7.80, from 18 to 65 years) were recruited, since another two-level manipulation was planned with the same parameters. The experiment was run on Qualtrics and the data were collected through Prolific. All participants were Italian native speakers and they all provided informed consent before starting the experiment. The study was approved by the local Psychology Ethics Committee. All methods were carried out in accordance with relevant guidelines and regulations.

3.17 Procedure

All participants were initially presented with the memory confusion task. The task was identical to the one employed in Study 2, with the only exception that for half of the participants four faces were covered by a face mask, whereas for the other half of the participants, four faces were covered by a large spot of about the same size and color of the masks employed in the other condition (see Figure 6). The presence of either masks or spots was manipulated between participants in order to prevent possible carry-over effects. Afterward, participants reported their political orientation and demographic information as in Study 2.

Figure 6 Examples of the target presented in the two experimental conditions (masked vs. unmasked; blue spot vs. unmasked).

3.18 Results

3.18.1 Who-said-what

In the who-said-what task, data from 10 participants were excluded from the analyses because they provided random responses in the memory task (i.e., 3 or fewer correct answers) indicating

that they did not pay adequate attention during the presentation phase. All the reported analyses were two-tailed and the alpha level was set at .05. Scores based on errors were computed as in Study 2, namely by multiplying between-category errors by 3/4. A 2 (type of error: within- vs. between-category) × 2 (condition: mask vs. spot) analysis of variance was carried out with the first factor varying within participants and the second between participants. A main effect of the type of error emerged, $F(1, 188) = 4.09$, $p = .045$, $\eta^2_p = .02$. Indeed, within-category errors (M = 5.81, SE = .20) were significantly more likely than between-category errors (M = 5.35, SE = .17). Although the main effect of condition was not significant, $F(1, 188) = 3.71$, $p = .055$, $\eta^2_p = .02$, participants tended to make more errors in the spot (M = 5.86, SE = .20) rather than face mask condition (M = 5.303, SE = .21). The interaction effect was not significant, $F(1, 188) = 2.71$, $p = .101$, $\eta^2_p = .01$. However, given the specific hypothesis of the study, within- and between-category errors were explored separately in the two conditions. In the face mask condition, within-category errors were significantly more likely than between-category errors, $F(1, 93) = 6.53$, $p = .012$, $\eta^2_p = .07$, whereas no significant effect emerged in the spot condition, $F(1, 95) = .073$, $p = .788$, $\eta^2_p = .00$.

As in Study 2, because there was relevant interindividual variability in the overall memory performance, the proportion of within-category errors was analyzed out of the overall number of errors. An independent sample t-test showed a significant effect of the condition, $t(187) = 2.09$, $p = .038$. Indeed, the observed value was higher in the face mask condition (M = .47, SD = .15) than in the spot condition (M = .42, SD = .13). Corroborating previous analyses, the proportion of within-category errors was higher than chance in the face mask condition, $t(92) = 2.55$, $p = .012$, but it was not different from chance in the spot condition, $t(95) = -.239$, $p = .811$.

As for correct responses, a 2 (speaker: with vs. without the mask/spot) × 2 (condition: mask vs. spot) analysis of variance was carried out, with the first factor varying within participants and the second between participants. The main effect of the first factor (i.e., whether the speaker had something on the face or not) was significant, $F(1, 188) = 10.37$, $p = .002$, $\eta^2_p = .05$. Indeed, correct responses were more likely when nothing covered the lower part of the original speaker's face (M =

5.80, SE = .17) as compared to when either a face mask or a spot was present (M = 5.25, SE = .20). There was also a significant main effect of the condition due to a better memory performance for participants in the mask (M = 5.88, SE = .23) rather than in the spot condition (M = 5.16, SE = .23), $F(1, 188) = 4.60$, $p = .033$, $\eta^2_p = .02$. However, no significant interaction effect between the speaker and condition factors emerged, $F(1, 188) = 1.61$, $p = .207$, $\eta^2_p = .01$, suggesting that both the mask and the spot impaired correct recognition to a similar extent.

As in Study 2, a single score about political orientation was computed ($\alpha = .89$; M = 30.70, SD = 19.82). however, political orientation was not significantly correlated with the proportion of within-category errors in the memory confusion task, $r(189) = .11$, $p = .129$.

3.19 Study 3 – Discussion

The present findings demonstrate that people make use of the presence (vs. absence) of a protective face mask as a cue to encode information in memory. Indeed, verbal information provided by an individual appeared to be tagged as a function of whether the speaker was wearing or not a face mask, as indicated by the higher number of within-category errors in the memory confusion task. This effect was evident both in Study 2 and in the face mask condition of Study 3. Findings from Study 3 also suggest that the observed pattern can hardly be explained in terms of the perceptual difference between faces with either a mask or not. When the lower part of the speaker's face was occluded by a superimposed colored spot, there was no evidence that participants organized information in memory as a function of this manipulated factor (Stangor et al., 1992). In contrast, data are more consistent with the view that protective face masks are spontaneously processed because they represent meaningful social objects. After the outbreak of the COVID-19 pandemic, mask-wearing has become a normative behavior at both the injunctive (i.e., what should be done) and descriptive (i.e., what most people do) levels (Neville et al., 2021). Hence, conformity to or deviance from the norm can elicit moral emotions and judgments (Rosenfeld & Tomiyama, 2021). Previous work using a memory confusion paradigm has established that social categorization

might be sensitive to behaviors that either violate or uphold moral norms (Goyal et al., 2020; van Leeuwen et al., 2012). People not only categorize others along well-explored group dimensions such as sex, age, or race, but they also cluster individuals as a function of their level of compliance with normative behaviors. Similarly, adaptive categorization processes, as assessed in a memory confusion paradigm, arise to group other individuals as a function of their cooperative vs. competitive behavior, thus suggesting that similar dynamics may come into play when perceiving mask wearers and mask non-wearers.

Importantly, the observed social categorization appears to be a rather spontaneous process that is set in place even when the dimension is irrelevant to the task at hand. In turn, this spontaneous categorization can lead to relevant consequences as it has been shown that typical group biases (i.e., ingroup favoritism) emerge among both mask and non-mask wearers (Powdthavee et al., 2021), suggesting that the appraisal of individual behaviors concerning the use of masks affects both cognitive and social processes.

3.20 General Discussion

When deciding to approach or avoid another individual in the same social context, people usually use some cues that are automatically processed after minimal time exposure (Willis & Todorov, 2006). Indeed, as Todorov and Duchaine (2008) have underlined, facial appearance is fundamental to individuals for perceiving and extracting social information. During the COVID-19 outbreak, surgical face masks became part of everyone's daily life as a crucial protection in preventing the pandemic (Fisher et al., 2020). However, the effect of surgical face masks on social perception was still an open research question, especially in the implicit attitudes research field. Therefore, to better inquire about this specific phenomenon, Study 1 assessed individual differences in explicit attitudes (e.g., the evaluation of masked vs. unmasked social) and implicit associations to mask-wearing. As Olivera-La Rosa and colleagues (2020) suggested in their first attempt to assess the shift in perception of targets with face masks, it was important to assess how this new norm

(i.e., face masking) was affecting the individuals' perception of social reality and how this norm could have an impact on the social categorization of the actors within the same context.

So far, several studies on surgical face masks during the pandemic have underlined that even if mask wearers were usually more likely to be associated with the concept of illness and perceived threat, they are also considered more trustworthy and socially desirable than individuals without face masks (Oliver- La Rosa, 2020; Scheid et al., 2020). Additionally, the "sanitary-mask effect" (Miyazaki & Kawahara, 2016) during the pandemic appeared to decrease with masked targets being evaluated as more attractive than unmasked ones (Hies & Lewis, 2022).

Overall, the studies presented in the present dissertation confirmed, at least on an explicit level, the more positive evaluation of masked targets over unmasked ones. In fact, both in Study 1 and in Study 2, participants were evaluated as more trustworthy, moral, competent, altruistic, and sociable masked targets (vs. unmasked). Thus, leading to a general halo effect of masked targets. However, the more positive impression of masked targets was confirmed only on an explicit level, indeed Study 1 did not find support for the hypothesis that this new norm was morally internalized as "the right thing to do" (Prosser et al., 2020; Van Bavel et al., 2020).

Studies 2 and 3 tried to address specifically the critical role of face masks during the pandemic in a specific automatic process. Indeed, when face masks were mandatory in Italy (between March 2020 and February 2022), wearing face masks was a signal of compliance with a legally reinforced norm. Therefore, the presence vs. absence of the face masks immediately conveyed the compliance vs. violation of normative behavior. Therefore, reading visible facial cues spontaneously activated an interpretation of social categories (norm violator vs. supporter). When facial cues provide individuals with information about social categories, observers tend to improve their facial recognition abilities within their own group (e.g., those belonging to the same gender category). In contrast, their ability to recognize the identity of individuals from other social groups (e.g., individuals from a different gender category) tends to be less accurate (Freeman & Johnson, 2016). This tendency was confirmed by the memory confusion paradigm implemented in Studies 2

and 3, with participants scoring more within-category errors than between-category errors only in the condition in which the face mask (vs. blue spot) was presented. These two studies underlined how face masks were a significant social cue to activate spontaneous categorization processes. An important limitation of Studies 2 and 3, that should be implemented, was that only male faces were selected as stimuli. As it was mentioned in the introduction of this chapter, it was not possible to add another social category due to the influence that the gender category might play on the memory confusion task. Nonetheless, future studies should balance this gap by implementing the same methodology but with females faces instead.

However, the results of the studies presented so far needed to address also the social context in which the data were collected (between 2021 and 2022, within the face masking mandate). Indeed, the research about trait inferences from faces, either wearing face masks or not, has typically assessed the perception of several distinct dimensions such as trustworthiness, competence, and approachability. Critically, results appeared to be often inconsistent across studies. Several studies found an increased positive perception of faces wearing a face mask as compared to faces without the mask (Di Crosta et al., 2023; Guo et al., 2022; Oldmeadow & Koch, 2021; Olivera-La Rosa et al., 2020). Other studies, however, reported no significant effect, mixed findings, or even an opposite pattern (i.e., more positive ratings for faces without the mask; Bennetts et al., 2022; Biermann et al., 2020; Grundmann et al., 2021; Takehara et al., 2023; Twele et al., 2022). This makes it important to highlight some overarching factors that might shape the strength, and, possibly, the direction of the effects, such as the impact of the social context in inference processes. Indeed, not only did the norms (descriptive vs. injunctive, Cialdini et al., 1990) change across the different pandemic waves, with mandatory mask-wearing policy vs. voluntary, but most importantly the contextual factor (e.g., the scenario was masked and unmasked targets were presented) might have had an impact on trait inferences. The following studies explored the profound impact of face masks on trait inferences from faces, highlighting the critical role of some contextual factors that might help explain the variability in the facial impressions involving

individuals wearing face masks. The first contextual factor addressed will be the background scenario in which masked and unmasked targets were presented. In doing so, Study 4 hypothesis was that facial impressions towards masked targets were more positive when targets were presented in indoor rather than outdoor settings. Conversely, unmasked faces elicited more positive impressions in outdoor rather than indoor settings.

The second contextual factor is related to changes in the normative context. In a longitudinal study, Study 5, the hypothesis was that the trait inferences triggered by faces wearing the mask became less positive in a time in which mask-wearing was less common and rules relaxed (T2), as compared to those observed in a period in which mask-wearing was a widespread behavior also supported by law requirements (T1).

Overall, the next chapter will try to provide insights into how the perceptions of individuals wearing face masks can fluctuate over time and space, shedding light on the complexity of facial impressions in the midst of a global pandemic. The general aim will be to understand the impact of face masks but also for broader considerations on the influence of contextual factors on social perception.

CHAPTER IV

THE EFFECT OF CONTEXTUAL FACTORS ON TRAIT INFERENCES

4.1 TRAIT INFERENCES DURING THE PANDEMIC: MIXED FINDINGS IN THE LITERATURE

The research about trait inferences from faces either wearing face masks or not has typically assessed the perception of several distinct dimensions such as trustworthiness, competence, and approachability. Critically, results appeared to be often inconsistent across studies. Several studies (Di Crosta et al., 2023; Guo et al., 2022; Oldmeadow & Koch, 2021; Olivera-La Rosa et al., 2020) found an increased positive perception of faces wearing a face mask as compared to faces without the mask (see also Studies 1 and 2). Other studies, however, reported no significant effect, mixed findings, or even an opposite pattern (i.e., more positive ratings for faces without the mask; Bennetts et al., 2022; Biermann et al., 2020; Grundmann et al., 2021; Takehara et al., 2023; Twele et al., 2022). This makes it important to highlight some overarching factors that might shape the strength, and, possibly, the direction of the effects.

One factor that might explain negative inferences drawn from masked targets, might be related to the fact that face masks inevitably hinder relevant parts of the face and therefore the perceptual information available for making any inference is reduced (i.e., the area around the mouth, see also Chapter 1). This way, face masks cover the region of emotion recognition which is important to foster positive interactions since it is a skill developed through evolution to recognize possible allies or threats (Elfenbein et al., 2007; Ohman, 2000; Tracy & Robins, 2008). Since emotion recognition was impaired by mask-wearing, individuals who were forming an overall inference about masked targets might have preferred unmasked partners (Marini et al., 2020). Malik and colleagues (2021) found support for the overall preference of unmasked targets over masked ones. Indeed, in their experimental study on interpersonal trust, they found that their respondents reported to trust more an unmasked target (vs. masked ones). In addition, this result was not affected by individual perception of health-related risks. However, Grundmann and colleagues (2020) confirmed that face

masks made the target person appear less close, thus affecting social judgments. Nonetheless, at the same time, face masks shield the negative effect of negative emotional expressions on perceptions of trustworthiness, likability, and closeness. Differently from Malik and colleagues' (2021) findings, Grundmann and colleagues (2020) underlined that the effect of individual perception of health-related risks had a positive impact on the overall impression of masked targets, with non-significant results for unmasked targets. Therefore, another aspect that might have shaped the direction of the effects in literature could likely have been personal attitudes toward COVID-19 (e.g., fear of contagion) and the protective measures to avoid the spread of this virus (e.g., attitudes toward face masks).

Another aspect that might affect the direction of the inferences toward masked and unmasked faces might have been the identity of the target. For instance, when individuals were presented with older (vs. younger) targets they reported a relatively low level of COVID-19 ageism among older people but a significantly higher level of COVID-19 ageism among younger people (Werner et al., 2022). Additionally, there was a difference between identity inferences of male (vs. female) targets and mask-wearing. In fact, in gender classification tasks in which individuals were required to determine gender solely based on the top half of their face, Wong & Estudillo (2022) found that there was a reduction in participants' accuracy when estimating the gender of mask-wearers. Specifically, female (vs. male) targets were less likely to be correctly categorized by respondents. As a consequence, the occlusion of the lower part of the face altered the inferential process that typically occurs in the case of unmasked faces (see Oliveira & Garcia-Marques, 2022; Ganel & Goodale, 2022). Furthermore, when taking into account ethnicity, masked targets categorized as Black Americans were perceived as less trustworthy compared to masked White Americans (see Christiani et al., 2020), whereas Black Americans were perceived as more trustworthy and less threatening when their evaluation was compared to other Black Americans wearing bandanas or cloth masks. Thus, face masks used by different targets elicit different stereotypes that overall lead to a more negative impression (see Chapter 3).

Nonetheless, the data in the aforementioned studies were collected during different pandemic waves, in which mask-wearing mandates changed (mandatory vs. voluntary). However, during the various waves of the pandemic, when people made inferences from masked faces it is likely that they could hardly disregard the deepest meaning of wearing masks, both in terms of personal protection from the virus and communal behavior aimed at safeguarding the health of others (see Olivera-La Rosa et al., 2020). In particular, in most countries, since the onset of the pandemic, injunctive norms (see Cialdini et al., 1990) prescribed the use of face masks, and strict law requirements were in place. At the same time, descriptive norms (i.e., norms based on the assessment of how people behave; Cialdini et al., 1990) signaled that wearing face masks was the typical, widespread, and appropriate behavior. Hence, mask wearers could be appraised as individuals complying with the prevalent norms and this, in turn, could affect the trait inferences drawn from their faces.

4.2 Trait Inferences and Proximal Context

Contextual influences on trait inferences could also operate at a more proximal level, namely as a function of the specific setting in which encountering people. Mallinas and colleagues (2021) assessed the attitudes to mask-wearing by measuring the inferences of masked (vs. unmasked) targets in public spaces (e.g., grocery stores). In doing so, they labeled individuals who positively evaluated masked targets in the grocery store were likely to have more "pro-mask" use attitudes, whereas "anti-mask" were individuals who had more positive views of unmasked targets in the same scenario (Mallinas et al., 2021). This study was one of the first to take into account the role of the context, more specifically the setting, in which faces were presented. Indeed, in the experiments reported so far on face inferences (see Chapters 2 & 3), the pictures of the targets were presented without background, but in reality, individuals rarely encounter other targets in a social vacuum (Hehman et al., 2019). This points to the importance of studying facial impressions considering the

surrounding context, and this approach also enhances the ecological validity of the findings. For instance, several studies demonstrated that the evaluation of facial trustworthiness is significantly affected by the background scenario in which faces are presented (Brambilla et al., 2018; Brambilla, Masi, et al., 2021; Mattavelli et al., 2022; see also Jenkins et al., 2011). Notably, faces appeared to be judged as less trustworthy when shown in threatening contexts, thus indicating that facial impressions may incorporate information provided by the properties of the surrounding environment. These results found support from previous studies that have shown that the activation of stereotypical knowledge depends on the context background in which members of stigmatized outgroups are placed (Barden et al., 2004; Wittenbrink et al., 2001).

Accordingly, it might be expected that the trait inferences about people either wearing or not a face mask are sensitive to the context in which the faces are embedded. The adoption of protective measures is indeed differentially relevant as a function of the specific contexts. During a pandemic, whereas in closed spaces (e.g., supermarkets) wearing a mask is maximally valuable to prevent the transmission of the virus from one person to another, in open and uncrowded contexts (e.g., in a park) it might be less so. Trustworthy inferences are mostly influenced by threat detection in the surrounding environments (see Mattavelli et al. 2022; Willis and Todorov, 2006). The perception of a threat, such as the risk of contracting COVID-19, might change depending on the immediate context, with indoor settings potentially heightening this perception. Consequently, the subsequent inference on the trustworthiness of an individual wearing a mask (or not) might also change accordingly.

Most of the time norms are activated by the surrounding social context as demonstrated by Wittembrick and colleagues (2001). During the pandemic in Italy, face masks were mandatory only in public spaces until February 2022. Hence, it was necessary to explore how different contexts elicit different norms, and the impact of these additional factors in shaping facial impressions. For this reason, Study 4 presented masked and unmasked targets and manipulated the background scenario that could either be the aisle of a supermarket or a public park.

4.3 Trait inferences and Changes across Time and Norms

During the pandemic, inferences associated with mask wearers changed since wearing the face mask was an internalized social norm. Therefore, masked targets were a signal of compliance with norms and, thus, they were not perceived as a threat (Mejova et al., 2023; Krishna et al., 2021). Differently, before the pandemic, several studies reported the sanitary mask effect as the one that elicited more negative inferences regarding masked targets. Indeed, masked targets represented a potential threat in terms of safety and health risk (Krishna et al., 2021).

During the pandemic, Carragher and colleagues (2021) conducted an experimental study, which found that training individuals across different time sessions to focus on diagnostic features of masked targets (e.g., focusing on visible marks) implemented their identity recognition of masked faces. Nonetheless, in this study, it was not possible to rule out the high accessibility of cognition related to mask-wearing, since these protective measures were familiar in the everyday context. Therefore, people might have already been more trained to recognize masked targets in the social context since face perception adapts over time (Bennetts et al., 2022).

Overall, studies related to temporal shifts in face perception during the pandemic were few and they reported inconclusive findings. For instance, Takehara and colleagues (2023), in a study conducted in Japan, found that higher trustworthiness ratings were provided towards unmasked targets and this pattern was stable across time (i.e., September 2020 vs April 2022). Additionally, Bennetts and colleagues (2022) tested British participants in 3 different periods (i.e., between June 2020 and August 2021) and reported no effect of masks on judgments about trust and competence, as well as no effect of time of assessment. Finally, in a study by Di Crosta and colleagues (2023) involving Italian respondents and conducted between the end of 2020 and the beginning of 2021, mask wearers were associated with higher ratings of trustworthiness as compared to non-wearers. More specifically, individuals without the face mask were similarly evaluated during the pandemic

period and before it (see Palumbo et al., 2017), although no temporal comparison could be carried out with faces wearing the mask.

Most importantly, the aforementioned studies were assessed mostly before and during the pandemic, thus the temporal context in which their data were collected was either before mask-wearing became mandatory or while it was mandatory. As a result, none of the studies mentioned reported temporal shifting in covered face inferences after the pandemic, when mask-wearing was no longer necessary nor salient. Therefore, the social norms were different between the pandemic and post-pandemic time frames.

The present research (Study 5) aimed at addressing this lack of evidence in literature by considering temporal changes in the normative context during the pandemic. Therefore, a longitudinal study was developed comparing trait inferences of masked and unmasked targets in a period in which mask-wearing was less common and rules relaxed (T2, December 2022) with a period in which mask-wearing was a widespread behavior also supported by law requirements (T1, December 2021).

CHAPTER V[6]

THE EFFECTS OF CONTEXTUAL AND TEMPORAL FACTORS IN MASK-WEARING

5.1 STUDIES OVERVIEW

According to this rationale, not only changes regarding the background context but also changes in the normative context could lead to shifts in trait inference that are gathered from faces. The following studies aim to assess the impact of these contextual factors in face inferences. Study 4 aim is to assess the inferences of masked and unmasked faces both on an explicit level and an implicit level by measuring the individuals' tendency to approach and avoid masked (and unmasked) targets in indoor and outdoor contexts. Additionally, Study 4 took into account psychological variables such as moral outrage, since COVID-19 mitigation behaviors were extremely moralized (Prosser et al., 2020) and there was strong individual variability in pro-mask (vs. anti-masks) attitudes (see Mallinas et al., 2021).

Study 5, in a quasi-experimental design, compared the trait inferences provided by the same respondents about the same face stimuli – either wearing or not face masks – at two different points in time. In particular, Study 5 compared judgments assessed during an intense phase of the pandemic in Italy (i.e., December 2021) when both injunctive and descriptive norms supported the use of face masks (see Study 2, Chapter 3) with judgments provided roughly one year later (i.e., December 2022) when governmental regulations softened, and the large majority of people no longer wore face masks. The expected results were that changes in the normative context would be significantly associated with a decrease in positive inferences regarding masked targets.

[6] This chapter is retrieved by Tumino, M., Carraro, L., & Castelli, L. (under review). The social factors behind the mask: Contextual effects on traits inferences about faces wearing a face mask.

In addition, all the studies that assessed trait inferences in different pandemic waves (see Bennetts et al., 2022; Takehara et al. 2023) provided different samples in each wave of data collection, thus preventing a precise evaluation of eventual temporal shifts. Study 5 directly addressed this issue by testing the same sample of respondents at two distinct points in time characterized by a different normative context.

Overall, the main aim of Studies 4 and 5 was to assess how individuals react to masked and unmasked faces in different contexts, namely the settings in which they encountered them (indoor and outdoor contexts), and in time, specifically the norms used in the time of the pandemic (temporal factor).

5.2 Study 4 – Hypothesis

The overall aim was to observe a stronger difference between the facial inferences towards masked and unmasked targets presented in indoor contexts, as compared to when targets were embedded in an open environmental setting. Since behavior responses follow social norms (Ingram et al., in press), the hypothesis was to find more positive inferences of masked (vs. unmasked) targets in indoor (vs. outdoor) contexts, due to the fact that mandatory mask-wearing law was applied only to indoor contexts in Italy when data were collected. Similarly, on an implicit level, the expected results were that more positive impressions of masked targets were mirrored by faster response times in approaching masked (vs. unmasked) targets in indoor (vs. outdoor) contexts.

However, before implementing Study 4, the implicit measure, namely the VAAST (Aubé et al., 2019; Rougier et al., 2018) was tested and adapted in Italian. Therefore, a pilot study was run before the data collection of Study 4.

Moreover, given the moralization of norms relating to mask-wearing (Prosser et al., 2020), moral outrage (Goodenough, 1997) was measured to explore the reaction toward faces with and without face masks in indoor and outdoor contexts.

5.2.1 Pilot test – The Visual Approach Avoidance Task by the Self (VAAST)

The task implemented by Aubé and colleagues (2019) is based on simulating visual feedback, in which the stimulus moves closer to or further away from the participant. The VAAST was provided by the authors as a PsyToolkit script, an open-source platform. In this task, the background image helps create the effect that it is the participant himself who is moving closer to or further away from the stimulus. The VAAST simulates the approach and avoidance movements of the whole self by manipulating the visual information provided to the participants. Before each task, participants are instructed to press two different keys on the keyboard according to the stimulus that the experimenter wants them to avoid vs. approach.

When participants press the start button, the initial white circle displayed in the center of the screen is replaced by a "+" fixation cross (random duration of 800 – 2000 ms) followed by a word (Rougier et al., 2018). Participants then have to press on the computer keyboard one key to move forward (i.e., closer to the stimulus) vs. another key to backward (i.e., away from the stimulus) depending on instructions. Depending on the type of movement, the entire visual environment (i.e., background image and target word) zooms in (e.g., approach, "move forward") or zooms out (e.g., avoidance, "move backward") by 10 percent after each button press, giving the visual impression of walking forward or backward as a consequence of these actions (Rougier et al., 2018).

Reaction times are measured during the task and the rationale behind it is that a faster response time to approach (vs. avoid) a stimulus represents an approach (vs. avoidance) tendency toward this stimulus. Thus, assessing approach/avoidance tendencies toward a stimulus would be informative of the general attitude toward it.

5.2.2 PILOT TEST – PARTICIPANTS

One hundred participants (73 females, 27 males) with a mean age of 24.57 years (*SD* = 6.42), ranging from 18 to 61 years, participated in the pilot study. The experiment was run on PsytoolKit software (Stoet, 2010, 2017). The sample size for the present pilot study was determined by previous studies by Rougier and colleagues (2018) and Aubé and colleagues (2019), in which they found a large effect size (ds > 0.79) with 50 participants to achieve a power of 80% to detect an equivalent compatibility effect with a .05 alpha two-tailed criterion.

5.2.3 PROCEDURE

The words used were half positive (*amore, piacere, bello, paradiso, felicità, gioia, amicizia, calma, pace, stupendo*) and half negative (*vomito, schifo, nausea, ribrezzo, brutto, orribile, dolore, rabbia, odio, disordine*).

The task was implemented with 4 blocks:

- Training Block: compatible movement (approach positive words vs. avoid negative ones);
- Test Block: critical block with compatible movement;
- Training Block: incompatible movement (avoid positive words vs. approach negative ones);
- Test Block: critical block with incompatible movement.

The training trials were 10 for each block, whereas the test trials were 20. The order of presentation of the compatible and incompatible blocks was counterbalanced between participants.

5.2.4 RESULTS

An ANOVA 2 (approach vs. avoidance) x 2 (negative vs. positive words) was run with the mentioned factors within participants. Results showed a main effect of approach vs. avoidance factor, $F(1,99) = 58.33$, $p < .001$, $\eta^2_p = .37$. The type of word (positive vs. negative) did not elicit any significant results, $p = .523$, nor the two-way interaction, $p = .067$.

Then, two separate paired t-test were run to assess significant differences in the RTs time for positive and negative words between compatible and incompatible required movements. As predicted, participants were faster in approaching positive words (M = 763.1, SD = 174.39) than avoiding them (M = 898.79, SD = 240.62), t (99) = -7.28, p <.001, d = -.73. Similarly, they were faster in avoiding negative words (M = 780.92, SD = 177.19) than in approaching negative words (M = 890.43, SD = 222.53), t (99) = -6.69, p <.001, d = -.67.

Participants were thus faster at approaching positive words and avoiding negative words, while they were slower at performing the task in which the instructions were reversed. Overall, Aubé and colleagues' (2019) results were confirmed, and more importantly, to the aim of the current work, these results confirmed that the VAAST indeed could pick up spontaneous reactions in terms of approach and avoidance towards positive and negative stimuli. In light of these results, this task has been implemented in Study 4 including faces with vs. without a face mask presented in an indoor vs. outdoor context. Participants' RTs in approaching and avoiding such types of stimuli were recorded.

5.3 STUDY 4

5.3.1 PARTICIPANTS

The data collection of study 4 was stopped once the norms related to mask wearing changed. Hence, one hundred and twenty-eight participants (89 females, 39 males) with a mean age of 29.93 years (*SD* = 11.80), ranging from 18 to 69 years, participated in the study in February 2022[7]. The sensitivity analysis showed that a sample size of 128 with effect sizes of ds >0.25 could detect an effect with the probability of 80%-90% CI (and a type I error rate = 0.05). At the time the data collection was opened, face masks were mandatory only in indoor contexts (e.g., supermarkets), whereas they were voluntary in outdoor contexts (e.g., public parks). The experiment was run on PsytoolKit software (Stoet, 2010, 2017) and after the task, participants were redirected to Qualtrics

[7] In February 2022 the face mask was mandatory only in indoor context 12,57% of the population tested positive to COVID-19.

for the final part of the study. All participants were Italian native speakers and they all provided informed consent before starting the experiment. The Psychology Ethic Committee approved the study at the University of Padova.

5.3.2 PROCEDURE

Participants were initially presented with the online version of the Visual Approach and Avoidance by the Self Task (VAAST; Aubé et al., 2019; Rougier et al., 2018). For this study, participants were randomly assigned to one of two versions of the VAAST: in one version participants were asked to approach targets who were wearing a facemask and avoid targets without a facemask (compatible condition; see Table 7), whereas in the other version, they were asked to approach targets without a facemask and avoid targets who were wearing a facemask (incompatible condition; see Table 7). In this way, the movement required was manipulated between participants, whereas the context (the main aim of the present study) was manipulated within participants.

Specifically, participants had to behave either according to the face-masking policy that was enacted in Italy at the time of the data collection, and thus perform a compatible movement, or in contrast with such norms by performing an incompatible movement. The pictures of the targets were retrieved from the Chicago Face Database (Ma et al., 2015). All targets had a neutral expression, moreover, half of them were presented with a facemask and half without. The face mask was added to the pictures using Adobe Photoshop. Overall, participants were presented with 50 targets (25 male and 25 female).

Moreover, importantly for the current study, the background of the pictures shown during the VAAST was manipulated within participants in two different blocks: an outdoor context (i.e., a public park) and an indoor context (i.e., a supermarket). The order of these two blocks (10 training trials and 40 test trials for each block) was counterbalanced between participants. When participants provided their responses by pressing either the Y (i.e., approach) or the N (i.e., avoidance) key on the keyboard, the stimulus and the background zoomed in or out, and gave participants the general impression that they were moving toward or away from the stimulus. This “illusion” was the same

both in the indoor context and the outdoor one. Importantly, before these two blocks that represented the test trials, there was always a training block with 5 masked targets and 5 unmasked ones to help participants familiarize themselves with the context and the task. Participants were provided with an error message for each mistake only in the training trials.

Table 7 Compatible condition

Block 1	Training Trials 10 images	Press “Y” on your keyboard to move toward targets wearing a facemask. Press “N” to move forward from targets without facemasks.		
Block 2	Test Trials 25 images	Press “Y” on your keyboard to move toward targets with facemask. Instead, press “N” to move forward from targets without facemasks.		
Block 3	Training Trials 10 images	Press “Y” on your keyboard to move toward targets with facemask. Instead, press “N” to move forward from targets without facemasks.		
Block 4	Test Trials 25 images	Press “Y” on your keyboard to move toward targets with facemask. Instead, press “N” to move forward from targets without facemasks.		

Table 8 Incompatible condition.

Block 1	Training Trials 10 images	Press “Y” on your keyboard to move toward targets without a facemask. Instead, press “N” to move forward from targets with a facemask.		

Block 2	Test Trials 25 images	Press “Y” on your keyboard to move toward targets without a facemask. Instead, press “N” to move forward from targets with a facemask.		
Block 2	Training Trials 10 images	Press “Y” on your keyboard to move toward targets without a facemask. Instead, press “N” to move forward from targets with a facemask.		
Block 4	Test Trials 25 images	Press “Y” on your keyboard to move toward targets without a facemask. Instead, press “N” to move forward from targets with a facemask.		

After completing the VAAST, participants were redirected on Qualtrics.com platform. Participants were first asked to randomly evaluate twelve of the targets shown during the VAAST. Half of the targets were presented in an indoor context and half in an outdoor, moreover, half were wearing a facemask and half did not. Participants were asked to evaluate – on a slider from 0 *(“not at all”*) to 100 *(“totally”*) - the perceived competence, trustworthiness, sociability, altruism, morality, and beauty of each target. Moreover, participants were asked how much they would feel comfortable interacting with each of the twelve targets along a slider from 0 (“*not at all*”) to 100 (“*totally*”).

Subsequently, participants were asked to report, on a Likert scale from 1 (“*not dangerous at all*”) to 5 (“*totally dangerous*”), how dangerous in their opinion was for the health of a person to contract COVID-19 (M = 3.25; SD =.72). After this question, participants were asked about their perception of the efficacy of the facemask for preventing the COVID-19 spread in indoor (M = 87.50; SD = 15.60) and outdoor context (M = 40.40; SD = 27.90).

Next, participants indicated their emotions, in terms of moral outrage (Carlsmith et al., 2002), when they had to think about someone who did not wear a facemask, both in an indoor context and in an outdoor one ("*Please indicate what emotions arouse in you when you think about meeting these people in an outdoor context (for example, in the park)/ in an indoor context (for example, in a supermarket)*"). Specifically, they were asked to indicate how much they would have felt anger, shame, blame, rage, and contempt along a slider ranging from 0 ("*not at all*") to 100 ("*totally*") for each question. Two separate scores were computed for each participant: moral outrage in the outdoor context ($\alpha = .90$, $M = 16.69$; $SD = 21.10$) and the indoor context ($\alpha = .84$, $M = 40.62$; $SD = 28.00$).

Finally, before completing the socio-demographic questions, political orientation was measured through three items on general, economic, and social orientation ($\alpha = .92$; $M = 34.37$, $SD = 20.48$). Finally, participants were asked if they had ever contracted COVID-19 (dichotomous question; 33.6% reported "*yes*"), and to indicate how many people close to them had been infected ($M = 6.46$; $SD = 6.42$).

5.3.4 Results

5.3.4.1 VAAST

First of all, according to the criteria of Aubé and colleagues (2019) 7 participants were excluded. Indeed, participants were excluded with less than 60% of correct trials. Moreover, RTs below 450 ms above 2500 ms were excluded (i.e., 1.70% of the trials as reported by Aubé et al., 2019).

For each participant, indoor and outdoor reaction times (RTs) of the VAAST were computed. These two indexes were then included in a 2 (context: outdoor vs indoor) x 2 (required movement: compatible movement – that is approach targets wearing a face mask and at the same time avoiding targets without a face mask vs. incompatible movement – that is approach targets not wearing a face-mask and avoiding targets without a face-mask) ANOVA with the former factor manipulated

within participants whereas the latter was manipulated between participants. Interestingly, the two-way interaction emerged, $F(1, 119) = 4.47$, $p = .033$, $\eta^2_p = .04$. Participants were faster in approaching a target with a facemask and at the same time avoiding a target without a facemask (i.e., compatible condition) in the indoor context (M = 697.58, SE= 16.79) than in the outdoor context (M = 716.40, SE = 17.71), t (69) = 2.15, $p = .035$[8]. At the same time, participants were slightly slower when they were asked to approach a target without a facemask and at the same time avoid a target with a facemask (i.e., incompatible condition) in an indoor context (M = 720.01, SE = 19.34) than in an outdoor context (M = 708.04, SE = 20.41). However, in the post-hoc test, this difference was not statistically significant, t (52) = 1.03, $p = .306$.

5.3.4.2 Explicit Attitudes

Because the reported facial impressions elicited by each target along the various trait dimensions were highly intercorrelated (αs > .93), a summary score was computed for each target. Four means were then computed as a function of the type of targets (i.e., with a face mask in an indoor context, with a face mask in an outdoor context, without a face mask in an indoor context, and without a face mask in an outdoor context). These scores were then analyzed through a 2 (Face mask: present vs. absent) x 2 (Context: outdoor vs indoor) ANOVA with both factors varying within participants. A main effect of the face mask emerged, $F(1,127) = 69.173$, $p < .001$, $\eta^2_p = .35$, indicating that individuals with the face mask elicited more positive facial impressions as compared to the individuals without the mask. The main effect of the context was also significant, $F(1,127) = 5.79$, $p = .018$, $\eta^2_p = .04$, suggesting more positive facial impressions in the indoor rather than outdoor context. Most importantly, the analysis yielded a significant interaction effect between the context and whether the target wore the face mask or not, $F(1,127) = 60.53$, $p < .001$, $\eta^2_p = .32$.

[8] In a subsequent analysis, the order of the context was included as a between-participants factor. Interestingly, the described two-way interaction was not influenced by the order of the context, p = .98, and thus it was not further considered in the analyses.

Indeed, post-hoc comparisons using the Bonferroni correction indicated the presence of more positive impressions in the case of masked targets presented in an indoor (M = 58.27, SE = 1.05) than in an outdoor context (M = 51.73, SE =1.15), $F(1,127) = 76.35$, $p < .001$, $\eta^2_p = .36$. In contrast, in the case of unmasked targets, impressions were more negative when presented in an indoor (M = 43.44, SE = 1.42) than outdoor context (M = 46.83, SE =1.30), $F(1,127) = 10.54$, $p < .001$, $\eta^2_p = .08$.

Then, a 2 (Face mask: present vs. absent) x 6 (Trait: trustworthiness, morality, sociability, competence, altruism, and beauty) x 2 (Context: indoor vs. outdoor) ANOVA was run with all the factors varying within participants. The aim was to compare the evaluation targets wearing a face mask and without a face mask, in the indoor and outdoor contexts. Results showed a main effect of face mask, $F(1,127) = 69.17$, $p < .001$, $\eta^2_p = .35$. A main effect of the context was confirmed, $F(1,127) = 5.79$, $p < .018$, $\eta^2_p = .04$. Additionally, the main effect of the trait emerged too, $F(1,127) = 21.93$, $p < .001$, $\eta^2_p = .15$. A three-way interaction emerged between the factors, $F(1,127) = 12.94$, $p < .001$, $\eta^2_p = .09$.

To better understand the interaction, a paired t-test was run for each single trait, comparing the evaluation masked and unmasked targets, in the indoor and outdoor contexts (see Table 9). Results showed more positive evaluations towards mask wearers in the indoor rather than outdoor context for all the dimensions. In contrast, unmasked targets were associated with more positive evaluations in an outdoor context as compared to the indoor context, with the only exception of the sociability trait for which there was no effect of the context (see Table 9).

Table 9 Means (M), standard deviations (SD), and results from the paired t-test for masked and unmasked targets.

	Mask Indoor	Mask Outdoor				No Mask Indoor	No Mask Outdoor			
	M (*SD*)	M (*SD*)	t	*p*	d	M (*SD*)	M (*SD*)	t	*p*	d
Overall evaluation	58.27 (11.91)	51.73 (13.04)	8.56	<0.001	0.76	43.44 (16.05)	46.83 (14.69)	-3.25	<0.001	-0.29
Trustworthy	61.76 (14.18)	55.76 (15.95)	5.63	<0.001	0.50	44.12 (19.32)	48.24 (16.20)	-2.81	0.003	-0.25
Moral	57.89 (12.87)	55.53 (14.42)	5.11	<0.001	0.45	43.30 (19.86)	47.87 (15.41)	-3.20	<0.001	-0.28
Sociable	55.90 (12.66)	48.38 (13.88)	7.25	<0.001	0.64	44.87 (15.32)	45.72 (15.37)	-0.82	0.28	-0.07
Competent	58.12 (13.35)	53.19 (14.25)	4.90	<0.001	0.43	45.38 (17.95)	49.08 (15.80)	-2.94	0.002	-0.26
Altruistic	58.14 (14.88)	54.26 (15.01)	5.00	<0.001	0.44	41.26 (20.05)	45.62 (16.90)	-3.07	<0.001	-0.27
Attractive	57.84 (14.54)	43.26 (14.96)	13.70	<0.001	1.21	41.69 (15.48)	44.43 (15.68)	-3.04	<0.001	-0.27

5.3.4.3 WILLINGNESS TO INTERACT

A 2 (Face mask: present vs. absent) x 2 (Context: outdoor vs indoor) ANOVA with both factors varying within-participants was run on the willingness to interact with the different targets. Results showed a main effect of the face mask, $F(1,127) = 54.75$, $p < .001$, $\eta^2_p = .30$, indicating that participants were overall more willing to interact with individuals wearing the face mask than with unmasked individuals. Moreover, a main effect of the context emerged, $F(1,127) = 3.83$, $p = .052$, $\eta^2_p = .03$. Overall, participants tended to be more willing to interact with social targets in an indoor context ($M = 54.10$, $SE = 1.52$) than in an outdoor one ($M = 52.10$, $SE = 1.43$). Most importantly, a two-way interaction between the Face mask and the Context emerged, $F(1,127) = 42.01$, $p < .001$, $\eta^2_p = .25$. Respondents reported being more willing to interact with masked targets in an indoor ($M = 62.42$, $SE = 16.89$) than in an outdoor context ($M = 54.76$, $SE = 16.87$; Bonferroni post-hoc $p < .001$). The opposite pattern emerged for unmasked targets. Indeed, respondents were less willing to interact with unmasked targets in an indoor ($M = 45.78$, $SE = 23.20$) than in an outdoor context ($M = 49.84$, $SE = 19.60$; Bonferroni post-hoc $p < .001$).

5.3.4.4 RELATIONSHIP BETWEEN THE EXPLICIT ATTITUDES

First of all, moral outrage assessed by respondents was analyzed with a paired t-test. Results showed that there was a strong significant difference between the means of moral outrage triggered by unmasked targets in an indoor and outdoor context, t(127) = -10.8, $p < .001$, d = -.952. Specifically, respondents reported feeling more morally outraged by unmasked targets in indoor (M = 40.60, SD = 28.00) than in outdoor (M = 16.70, SE = 21.10) contexts.

Correlations have been investigated among the explicit measures, specifically the overall evaluation of masked and unmasked targets between moral outrage and individual variables (such as personal attitudes toward the usage of face masks in indoor and outdoor contexts, and political ideology). Results showed a negative correlation between the overall evaluation of masked targets in an indoor context and moral outrage reported in an outdoor context, r (126) = -.28, $p < .001$. Similarly, moral outrage reported in an outdoor context negatively correlated both with the evaluation of unmasked targets, r (126) = -.35, $p < .001$, and with the willingness to interact with an unmasked target indoors, r (126) = -.32, $p < .001$, and outdoor, r (126) = -.36, $p < .001$. Moral outrage reported indoors, instead, was positively correlated with the overall evaluation of masked targets outdoors, r (126) = -.22, $p = .014$; and negatively correlated with political ideology, r (126) = -.19, $p < .001$. Conversely, indoor moral outrage was positively correlated with attitudes toward the use of face masks in indoor contexts, r (126) = .23, $p < .001$. No other relationship emerged.

The main results are summarized in Table 10.

Table 10 Correlation between the explicit measures.

	IndoorMoralOutrage	Indoor_NoMaskEvaluation	Indoor_MaskEvaluation	Indoor_MaskInteraction	Indoor_NoMaskInteraction
IndoorMoralOutrage	—				
Indoor_NoMaskEvaluation	−0.157	—			
Indoor_MaskEvaluation	0.075	0.391 ***	—		
Indoor_MaskInteraction	−0.043	0.333 ***	0.692 ***	—	
Indoor_NoMaskInteraction	−0.254 **	0.840 ***	0.339 ***	0.459 ***	—
OutdoorMoralOutrage	0.506 ***	−0.277 **	−0.046	−0.141	−0.323 ***
Indoor_MasksAttitudes	0.227 *	−0.120	0.142	0.208 *	−0.129
Outdoor_MaskEvaluation	0.216 *	0.370 ***	0.764 ***	0.470 ***	0.288 ***
Outdoor_NoMaskEvaluation	−0.066	0.708 ***	0.458 ***	0.316 ***	0.553 ***
Outdoor_MaskInteraction	−0.005	0.402 ***	0.617 ***	0.773 ***	0.488 ***
Outdoor_NoMaskInteraction	−0.096	0.621 ***	0.429 ***	0.530 ***	0.689 ***
Outdoor_MasksAttitudes	0.170	−0.027	0.101	−0.104	−0.079
PoliticalIdeology	−0.187 *	0.060	−0.057	0.012	0.097

	Outdoor_MaskEvaluation	Outdoor_NoMaskEvaluation	Outdoor_MaskInteraction	Outdoor_NoMaskInteraction	Outdoor_MasksAttitudes
IndoorMoralOutrage					
Indoor_NoMaskEvaluation					
Indoor_MaskEvaluation					
Indoor_MaskInteraction					
Indoor_NoMaskInteraction					
OutdoorMoralOutrage					
Indoor_MasksAttitudes					
Outdoor_MaskEvaluation	—				
Outdoor_NoMaskEvaluation	0.446 ***	—			
Outdoor_MaskInteraction	0.730 ***	0.391 ***	—		
Outdoor_NoMaskInteraction	0.377 ***	0.825 ***	0.575 ***	—	
Outdoor_MasksAttitudes	0.158	−0.069	0.004	−0.088	—
PoliticalIdeology	−0.046	−0.033	0.019	−0.094	−0.174 *

5.4 Discussion

Study 4 contribution highlighted the role of the context in which individuals interact and focus their attention. The aim of Study 4 was to test the effect of the context in which faces are presented, and to corroborate the complexity of social perception since faces, in reality, are not encountered in a vacuum (Hess & Hareli, 2014). Indeed, as results showed, both the VAAST and the explicit evaluation of masked and unmasked targets changed also as a function of the context in which targets were presented. For instance, on an explicit level, masked targets were evaluated more positively in an indoor as compared to an outdoor context. On the contrary, unmasked targets were evaluated more negatively in an indoor context as compared outdoor contexts.

Moreover, Study 4 tried to move forward to the self-reported measures by adding a behavioral response to a newly established norm (e.g., mandatory mask-wearing only in indoor contexts). Indeed, approach-avoidance measures (i.e., the VAAST) implemented the understanding of response to mask-wearing targets. The first attempt to study the approach-avoidance tendency

related to mask-wearing during the pandemic was the unpublished study by Ingram and colleagues (2021). Their results provided initial support to the hypothesis that during the pandemic there was an approaching tendency toward masked targets and at the same time an avoiding tendency toward unmasked persons. However, interestingly these tendencies varied based on the proximal context, that was the background of the picture in this specific study. Indeed, unmasked targets represented a possible threat of infection (Adjodah et al., 2021). To better explore this approaching bias, Krishna and colleagues (2021) implemented the approach-avoidance measure of individual belief about face masks (e.g., aesthetic appeal) and anxiety on health-related behavior (Krishna et al., 2021). They found that participants' beliefs about face masks predicted the spontaneous response of approaching masked targets (vs. avoiding unmasked ones).

In line with these findings, Study 4 confirmed the approaching bias toward masked targets during the VAAST. However, the observed results did not allow any conclusive findings concerning the relationship between spontaneous response and explicit attitudes (e.g., moral outrage toward unmasked targets indoors and outdoors; face inferences). Indeed, due to methodologic limitations related to the software used for the VAAST, it was not possible to fully balance the design of the study, therefore the decision was to take the required movement as a fixed factor for each participant manipulated between participants to better capture the influence of the context for each participant performing the same required movement but in a different context. Additionally, since the relevance of the situational norms related to mask-wearing, it was not possible to arrange another data collection with a better research design due to the sensitivity of preventive behavioral norms in the context of the pandemic.

As for explicit attitudes, specifically face inferences, results showed more positive evaluations towards mask wearers in the indoor rather than outdoor context for all the dimensions. In contrast, unmasked targets were associated with more positive evaluations in an outdoor context as compared to the indoor context, with the only exception of the sociability trait for which there was no effect of the context.

Overall, Study 4 mirrored the effect of positive inferences of masked targets (vs. unmasked ones) both in spontaneous responses and in explicit evaluations. Most importantly, these results were sensitive to the context presented to respondents.

5.5 Study 5 – Hypothesis

To better develop Study 4 findings on the effect of the context on face inferences, Study 5 focuses on the effect of the historical and temporal context, specifically the changes in the normative context. The hypothesis was that since the normative context changed throughout the pandemic, this could lead to shifts in the inferences from the face. Therefore, the trait inferences provided by the same respondents about the same face stimuli – either wearing or not face masks – were compared at two different points in time. In particular, Study 5 relied on judgments assessed during an intense phase of the pandemic in Italy (i.e., December 2021) when both injunctive and descriptive norms supported the use of face masks (see Study 1, Chapter 3) with judgments provided roughly one year later (i.e., December 2022) when governmental regulations softened and the large majority of people no longer wore face masks. The expected outcome was that these contextual changes would be significantly associated with a reduction in the positivity of the trait inferences made concerning faces wearing masks.

5.6 Participants

Of the original 200 respondents (from Study 1 presented in the first part of the present dissertation, T1), 24 of them were no longer active on Prolific at the time of the present data collection which took place in December 2022 (T2) [9]. From the remaining 176 original respondents, 169 completed the questionnaire (84 females, 81 males, 4 others; M_{age} = 28.29 years, SD_{age} = 8.29;

[9] Importantly, wearing face masks was mandatory in Italy in all indoor public spaces (e.g., shops, schools, buses) until May 2022. Afterward, such strict requirements were removed and obligations remained active only in hospitals and other high-risk settings.

84.5% of the original sample at T1). All participants were Italian native speakers and they all provided informed consent[10].

5.7 PROCEDURE

At T2, participants were presented with the same 8 pictures portraying White males that they had evaluated at T1: 4 targets wore the face mask, and the other 4 did not wear any masks (see Study 2, Chapter 3). Pictures were presented in a random order and, for each picture, participants were required to look at the face of the portrayed individual and report the perceived trustworthiness, morality, sociability, competence, and altruism. Responses were provided along a continuum ranging from 0 (= not at all) to 100 (= very much). Afterward, participants were asked to report demographics.

5.7 RESULTS[11]

Data were submitted to a 2 (Face mask: present vs. absent) × 5 (Trait: trustworthy, moral, sociable, competent, and altruistic) × 2 (Time of assessment: T1 vs. T2) ANOVA with all factors manipulated within participants. A significant main effect of the Face mask emerged, F (1, 166) = 88.73, $p < .001$, $\eta^2_p = .35$, indicating more positive evaluations towards targets using the mask, as well as the main effect of Time, $F(1, 166) = 25.23$, $p < .001$, $\eta^2_p = .13$, indicating overall more positive evaluations at T1 than at T2. The main effect of the Trait factor was also significant, $F(1, 166) = 58.86$, $p < .001$, $\eta^2_p = .26$, as well as the interaction between Trait and Time, $F(1, 166) = 6.60$, $p < .001$, $\eta^2_p = .04$, indicating that evaluations changed from T1 to T2 to a different extent as

[10] It was first compared the facial impressions reported at T1 by participants who took part in both phases of the Study (N = 169) with those of participants who responded only at T1 (N = 31). A 2 (Face mask: present vs. absent) × 5 (Trait: trustworthiness, morality, sociability, competence, and altruism) × 2 (Involvement: only at T1 vs. at both T1 and T2) ANOVA was run with the latter factor between participants. Results showed that the Involvement factor did not give rise to any significant effect (all ps > 0.215).

[11] The data analysis was conducted both with SPSS (v. 28) and with Rstudio (v. 4.3.1). Since the data were not normally distributed, it was also carried out non-parametric tests to check for the robustness of our findings. In both Study 4 and Study 5, results were consistent with those emerging from the ANOVAs. A sensitivity analysis run afterward showed that our sample was robust enough to confirm our hypothesis.

a function of the specific trait dimension that was assessed. Most important for the aims of the present work, the analyses yielded a significant interaction effect between Time and Face mask, $F(1, 166) = 33.36$, $p < .001$, $\eta^2_p = .17$. As can be seen in Table 11, while the evaluation of targets wearing a face mask became less positive at T2 as compared to T1, the impressions of targets who did not wear the face mask remained far more stable with time. Finally, a three-way interaction between Face mask, Time, and Trait emerged, $F(1, 166) = 7.12$, $p < .001$, $\eta^2_p = 0.04$.

Further separate analyses were carried out as a function of the specific trait. Findings showed that the evaluation of mask wearers was more positive at T1 than at T2 for all dimensions ($4.75 < ts < 5.58$; all $ps < .001$; $.39 < ds < .55$; see Table 11). In sharp contrast, for targets who did not wear the face mask, only the sociability trait displayed a significant effect of Time, with slightly less positive evaluations at T2, $t(166) = 1.84$, $p = .034$, $d = .14$; all other ps $> .10$.

Table 11 Means (M), standard deviations (SD), and results from the paired t-test comparing evaluations at T1 and T2 separately for Masked and Unmasked targets.

	T1 Mask	T2 Mask				T1 No Mask	T2 No Mask			
	M (*SD*)	M (*SD*)	t	*p*	d	M (*SD*)	M (*SD*)	t	*p*	d
Overall evaluation	60.41 (12.00)	53.00 (13.55)	6.53	<0.001	0.50	51.75 (10.81)	49.47 (10.65)	2.32	0.011	0.26
Trustworthy	61.62 (14.53)	55.09 (15.45)	4.98	<0.001	0.39	48.09 (14.86)	47.81 (12.70)	0.21	0.415	0.17
Moral	62.42 (14.28)	54.75 (16.46)	5.11	<0.001	0.39	47.40 (13.68)	47.46 (12.55)	0.03	0.487	0.002
Sociable	56.13 (13.69)	47.37 (14.47)	7.07	<0.001	0.55	50.36 (13.70)	47.99 (12.75)	1.84	0.034	0.142
Competent	60.73 (13.01)	54.40 (14.46)	4.75	<0.001	0.37	50.52 (12.68)	49.42 (12.40)	0.96	0.169	0.074
Altruistic	61.15 (14.30)	53.39 (16.60)	5.58	<0.001	0.43	47.38 (15.51)	47.38 (12.38)	-0.001	0.500	0.000

5.8 Discussion

Findings indicated a remarkable change between the facial impressions of individuals wearing a face mask that were reported in a period in which the COVID-19 pandemic was still threatening and a period in which the impact of the pandemic on social life was significantly reduced. Whereas at T1 wearing face masks was a common behavior that was enforced to limit the spread of the virus, such behavior was largely unusual at T2. This was reflected in a shift in the valence of the traits that

were inferred from faces wearing the mask. In contrast, no relevant modification in the traits inferred from faces without the mask was detected. Hence, results are consistent with the idea that temporal factors may indeed shape facial impressions, and fluctuations can be observed in response to cues that signal behaviors that are appraised as either normative or not (or, at least, less normative) in a given historical period.

In many countries, since the emergence of the pandemic, there has been a prevailing inclination towards the enforcement of injunctive norms, which advocate for mask-wearing behavior. Simultaneously, there has been a strict implementation of legal mandates. Additionally, descriptive norms, which are rooted in the evaluation of societal conduct, indicated that mask-wearing was the prevalent and suitable behavior to comply with. Consequently, individuals who chose to wear masks during the legal mandates were perceived as adhering to the prevailing norms. As a result, this perception influenced the inferences made about their characteristics based on their facial expressions during the pandemic.

5.9 General discussion

Temporal and contextual factors, such as the visual context in which individuals interact, play pivotal roles in the intricate process of trait inference, shaping how individuals perceive and interpret the characteristics of others (see Hehman et al., 2019). The context in which inferences are made might serve as a powerful cue, influencing the traits ascribed to an individual (see Brambilla et al., 2021). As Harsányi and Carbon (2015) reported the visual context alone prompts individuals with adaptive social categorization (e.g., ingroup categorization after being exposed to the visual image of an outgroup member). In line with their findings, Study 4 showed that trait inferences about masked and unmasked targets largely changed as a function of the nature of the background context. In Study 4 it was clear on an explicit level that facial impressions towards faces wearing the mask were more positive when targets were presented in indoor rather than outdoor settings. Conversely, unmasked faces elicited more positive impressions in outdoor rather than indoor

settings. This effect was mirrored by the spontaneous tendency to approach masked targets (vs. unmasked ones).

Due to the externalities associated with wearing face masks, it was mandatory in many countries (Adjodah et al., 2021), norms related to mask-wearing shifted from being personal to being a shared social norm (Schunk & Wagner, 2021). Specifically, as demonstrated in Study 4, situational norms oriented social behavior automatically. Situational norms refer to socially expected ways of behaving when being in an environment, these norms are readily accessed to direct ongoing actions when visiting the environment (Aarts & Dijksterhuis, 2003; Bargh, 1990). During COVID-19, the norms regarding mask-wearing changed greatly during the different pandemic waves. On one hand, injunctive norms prescribed the use of face masks, and strict law requirements were in place. At the same time, descriptive norms (i.e., norms based on the assessment of how people behave; Cialdini et al., 1990) signaled that wearing face masks was the typical, widespread, and appropriate behavior. Then, mask-wearing was the appropriate thing to do, however, it was not legally required anymore. Faces covered by masks were signals that prompted perceptual bias and prejudices (e.g., unmasked targets perceived as untrustworthy and less socially desirable, see Schönweitz et al., 2022).

Temporal factors, assessed as changes in the normative context, contributed to the dynamic nature of trait inference as demonstrated by Study 5. With a longitudinal design, Study 5 found that the trait inferences triggered by faces wearing the mask became less positive in a period in which mask-wearing was less common and rules relaxed (T2), as compared to those observed in a period in which mask-wearing was a widespread behavior also supported by law requirements (T1). Most importantly, the effect of normative context changing across the pandemic was significant only for masked targets and not for unmasked ones. Once again, these results highlighted a positive perception bias toward mask wearers.

Taken together, these two studies explored the profound impact of face masks on trait inferences from faces, highlighting the critical role of some contextual factors that might help

explain the variability in the facial impressions involving individuals wearing face masks. Furthermore, the impact of context is crucial in triggering stereotypical knowledge, as observed by Wittenbrink et al. (2001). The effect of the context and situational norms might be particularly salient in inferences of individuals without masks, thus activating negative stereotypes and inferences related to their moral transgression.

As the following chapter will show, the pandemic made salient a series of negative outgroup stereotypes activated by threat perception. The pandemic was perceived to be a highly threatening event on different levels (e.g., economic, health, survival). In response to perceived threats, individuals seek a sense of belonging to specific social categories or groups, often in contrast to other outgroups (Branscombe et al., 1999). Consequently, threatening events tend to foster negative intergroup attitudes. The subsequent chapters will systematically examine the adverse impact of the pandemic on intergroup attitudes. This evaluation will commence with a comprehensive literature review in Chapter 6, followed by empirical studies conducted within the Italian context in Chapter 7.

CHAPTER VI[12]

THE IMPACT OF THE PANDEMIC ON STIGMATIZED SOCIAL GROUPS

6.1 MULTIPLE LEVELS OF PERCEIVED THREAT TRIGGERED BY THE PANDEMIC[13]

The COVID-19 pandemic indubitably represented for most people a novel highly threatening event. Literature has shown that highly threatening circumstances could have an impact on both personal and on social levels (see Drury et al., 2019). Politi and colleagues (2021) review underlined how the pandemic triggered different levels of perceived threat. On one hand, some individuals perceived COVID-19 as a threat to their health and their livelihood conditions (e.g., their economic condition due to the several lockdowns and restrictions). On the other, the pandemic triggered a series of perceived threats on a societal level. A societal threat was represented by the perception of resource scarcity that prompted perceived competition with other groups (Vezzali et al., 2016). In response to this threat, individuals started to perceive outgroups as a potential threat to group cohesion and survival (Stephan et al., 2009). When threats are symbolic or realistic to group survival, individuals perceive outgroup as a potential threat to the status quo (see Kai & Jost, 2003), and to the loss of national values (e.g., Kachanoff et al., 2020). The individual response to cope with perceived threats is feelings of belonging to social categories or groups in contraposition with other outgroups (e.g., Branscombe et al., 1999). Hence, threatening events might prompt negative intergroup attitudes. Negative intergroup consequences of natural disasters and pandemics stem from several processes, such as outgroup blaming for spreading the disease (Zagefka, 2021), perceived competition for restricted resources (Vezzali et al., 2016), or protection of ideological belief systems (Fairlamb & Cinnirella, 2021). In a study conducted in 23 different countries, the

[12] For the present Chapter a special acknowledgment is due to Matilde Baldi, Elisabetta Buffa, Zhaoyue Ma for all their precious work in the selection and categorization of all the articles.
[13] The present chapter is an adaptation of the systematic review by Tumino, M. et al. (in preparation) "The Global Impact of COVID-19 pandemic on Ethnic Minorities Stigmatization and Hate Crimes"; and of Tumino, M., Carraro, L., & Castelli, L. (in preparation). "Unmasking Prejudice: Examining the Impact of COVID-19 Prevention Norm Compliance on Intergroup attitudes" (in preparation).

lockdown emerged to be positively related to the perceived threat of immigrants (Han et al., 2023). In the UK, subjective perceptions about the prevalence of the virus were also associated with a greater avoidance of ethnic minorities (Meleady et al., 2021), whereas, in a study conducted in Italy, COVID-19 perceived threat was associated with a decreased perception of sharing a common destiny with several disadvantaged outgroups (Fuochi et al., 2021).

Perceived threat is also strongly related to political ideology (see Jost et al., 2003). Research in the last decades has outlined a causal link between perceived threats, increased conservative ideology, and negative intergroup attitudes (e.g., Brooks et al., 2016; Pettigrew et al., 2007). Several studies have underlined how political conservatism is more related to ingroup antipathy than progressive ideology (Brooks et al., 2016; Pettigrew et al., 2007), this effect could also be based on the perceived differences related to moral reasoning. As Hatemi and colleagues reported (2019), politically based differences in moral reasoning can lead to opposite valence attitudes toward social targets. In this framework, perceived norm violation (e.g., in terms of avoiding the virus spreading) could trigger a potential threat to the maintenance of the status quo of the self-relevant group (Jost & Amodio, 2011). Interestingly, in the pandemic scenario, COVID-19 norms were extremely politicized: Partisanship influenced behavioral responses specifically in the US (Grossmann et al., 2020). Conservative ideology was related to less support for COVID-19 mitigation norms and more virus skepticism (van Holm et al., 2020; Rosenfeld & Tomiyama, 2021) as compared to more liberal ideology. This conservative response was considered counterintuitive by scholars (Kemmelmeier & Jami, 2021; Ollerenshaw, 2022) because the pandemic was associated with an overall existential threat and uncertainty posed to society, instead, conservatives displayed little concern toward the risks posed by COVID-19.

Another possible explanation for the stem of intergroup attitudes during the pandemic might be due to the perceived threat they pose in terms of a possible contagion (Faulkner et al., 2004). According to the literature about the operation of the Behavioral Immune System (BIM, Schaller & Park, 2011), perceiving oneself as invulnerable (or less vulnerable) affects how others are appraised

and the perception of the threat they may potentially represent (see also Napier et al., 2018). In the context of the COVID-19 pandemic, progress in the vaccination program has been associated with a significant decrease in perceived COVID-19 threat (Meleady & Hodson, 2022). Most importantly, individuals who exhibited greater reductions in perceived COVID-19 threat were also those who displayed greater reductions in avoidance tendencies towards immigrant outgroups (Meleady & Hodson, 2022). These relevant findings consistently suggest that when people feel safer, attitudes toward outgroups may also become less negative.

Following this rationale, the response to perceived threats might be to promote social norms based on shared social identity (see Drury, 2009). Although threat avoidance mechanisms promote ingroup favoritism and outgroup derogation, several studies have found that in threatening circumstances individuals increase their levels of pro-sociality with other groups (Andrighetto et al., 2016; Van Leeuwen, 2007). In the case of positive responses to outgroups, decisions to help others are not fully predicted by social identity and self-categorization (Zagefka, 2021). Several factors might play a role, such as empathy for the shared destiny (Andrighetto et al., 2014; Vezzali et al., 2014), blame attribution to the ingroup (see Zagefka, 2021), and social desirability – meaning to create a positive image of one's ingroup or the self (see Van Leeuwen, 2007).

Unfortunately, several contributions confirmed that the pandemic, specifically, strengthened negative attitudes not only related to Chinese people who at the beginning of the pandemic were perceived as responsible for the spread of COVID-19 (Budhwani & Sun, 2020) but also toward other minority groups (see also Prati & Pietrantoni, 2016).

6.2 Negative intergroup consequences of the pandemic

Consistent evidence supporting the idea that the COVID-19 pandemic aggravated prejudice and discrimination against minorities emerges from several studies (Kaushal et al., 2022; Lu et al., 2021; Politi et al., 2021; Zhao et al., 2022). The overall picture derived from data collected during the pandemic suggested that the COVID-19 outbreak strengthened negative consequences toward

minority groups in terms of marginalization, stigmatization, and the "othering effect". The latter intergroup negative consequence refers to the increased stigmatization, during health-related pandemics, of the "vulnerable" minorities, thus leading to the alienation and marginalization of "the other" and eventually generating the "we/us versus they" dichotomy of the social divide (Banerjee et al., 2020). During the COVID-19 pandemic, the dichotomy of social divide and blame attribution of the virus to the Chinese population was supported also on the institutional level. For instance, in the Italian context, the spread of the virus was associated with asylum seekers by the far-right politician Matteo Salvini, thus using the pandemic as a pretense to border closures (Dhanani & Franz, 2021). Also, in the US context, President Trump used COVID-19 to increase hostile immigration policies and framed COVID-19 as the "Chinese virus" (Dhanani & Franz, 2021). This institutional response might have justified the increment of marginalization and stigmatization of these ethnical groups. This hostile response led immigrants and ethnic minorities to feel constrained and marginalized from their sources of social support due to border closures, interruption of family reunification procedures, and travel bans (Politi et al., 2023). Moreover, since the early stage of the pandemic, Christiani and colleagues (2021) and Utych and colleagues (2021) underlined how Black US citizens were negatively affected by the face-masking policy. Indeed, face-covering in the US was usually related to the association of threat perception with Black individuals and criminality (Devine, 1989). Christiani and colleagues' (2021) work showed that most likely for this reason, Black targets were evaluated more negatively when they were presented with a surgical face mask as compared to a White target (Christiani et al., 2021).

Similarly, Utych and colleagues' (2021) study showed that face masks provided a humanizing effect only when the targets presented were White (vs. Black). As for the Italian context, Pacilli and colleagues' (2022) work showed that COVID-19 anxiety increased negative attitudes toward two stigmatized social groups: Immigrants and sexual minorities. Specifically, Italians who perceived institutions and politicians as less trustworthy experienced more anxiety related to the spread of

COVID-19 and more negative attitudes toward immigrants and sexual minorities (Pacilli et al., 2022).

Given the emerging pattern of potentially negative effects of the pandemic on intergroup attitudes, it becomes important to explore the multiple effects of the virus spread on prejudice and negative intergroup attitudes. In doing so, the implication of this research might prevent the increasing of negative intergroup attitudes with specific interventions.

6.3 The impact of the pandemic on ethnical groups: a systematic review

The COVID-19 pandemic has had a tremendous impact on people's social life. In addition to the dramatic loss of lives and the widespread health consequences, the pandemic has largely affected how individuals shape interactions and perceive each other. The need to adopt strict prevention measures – such as social distancing and face mask use – forced constraints (e.g., mask-wearing) in everyday social encounters that significantly affect socio-cognitive processes (Carbon, 2020; Pavlova & Sokolov, 2021). In addition, since the outbreak of the pandemic, several authors have warned about the possible increase in negative attitudes and discriminatory behaviors towards immigrants and, more in general, national outgroups (Esses & Hamilton, 2021). Critically, because of the perceived connection with the country in which the pandemic originated (i.e., China), Asian individuals have frequently become the privileged targets of microaggressions, acts of violence, and hate crimes (Edara, 2020), with relevant consequences also on the perceived discrimination and the well-being of group members (Bresnahan et al., 2022; Haft & Zhou, 2021). However, the detrimental impact of the pandemic on the intensification of prejudiced attitudes towards stigmatized groups was not often limited to Asian individuals. Still, it appeared to be a more generalized phenomenon involving other ethnic/national groups (Lu et al., 2021) and gay people (De Zavala et al., 2021).

In the following paragraphs, a systematic review of the literature on the negative impact of the pandemic on intergroup attitudes will be presented. The focus will specifically be on ethnic groups, such as Asians, Black Americans, and other ethnic/national minorities all around the globe during –

and after – the pandemic peak. The selected papers stem from several different research lines relying on different methodologies. Studies adopting a correlational approach have shown that pandemic perceived threat was related to increased negative intergroup attitudes. Consistent evidence supporting the idea that the COVID-19 pandemic has aggravated prejudice and discrimination against minorities emerges from experimental studies (Kaushal et al., 2022; Lu et al., 2021; Zhao et al., 2022).

One of the systematic review's aims is to assess long-lasting threats beyond the immediate fear of virus transmission (Politi et al., 2021). The other aim is to shed light not only on the majority perception of ethnical groups during the pandemic but also on the perspectives of ethnic and immigrant minorities during the pandemic. Indeed, several studies reported how intergroup attitudes of the majority became more negative toward ethnic and immigrant minorities (Lu et al., 2021; Zagefka, 2021). However, fewer studies focused on the perceived discrimination experienced by these outgroups.

6.4 Methodology

The main purpose of the systematic review was to define the impact of COVID-19 intergroup attitudes. Not only related to the majority's attitudes toward the stigmatized ethnical group but also to the stigmatized ethnical group's perceived discrimination. To do so, the identification of relevant journal articles was conducted by employing Arksey and O'Malley's (2005) scoping method. Accordingly, the present methodology implements the PRISMA standard for Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Liberati et al., 2009).

The first step of the systematic review was to consult two different multi-disciplinary data banks: Web of Science and Scopus (end of June 2023). The goal was to identify all the scientific productions that investigated the effects of COVID-19 on the perception and evaluation of stigmatized groups. Hence, the selected word strings were a combination of three of the following keywords using the Boolean operator AND: COVID-19, minority/ies (OR race OR ethnicity),

attitudes (OR stereotypes OR evaluation OR discrimination OR prejudice). The search was limited to scientific Journal articles and literature reviews written in English and published from 2020 on. The selected research areas were: Psychology, Behavioral Sciences, Social Sciences, and Social Issues. The outputs were then downloaded and transferred into the Rayyan software, which helped to keep track of all the pinned material, analyze it, and classify it. By using the before-mentioned criteria, 1185 articles were initially identified in the data banks. After checking with Rayyan, 389 of them were removed because they were duplicated. In a second phase, a screening of the abstracts was conducted and, of the 796 remaining papers, 730 of them were eliminated because the content was not relevant to our research question. The exclusion criteria were applied when papers did not provide information on how the COVID-19 pandemic impacted intergroup relations from a socio-psychological perspective. In addition, another exclusion criterion was applied to papers that did not mention how COVID-19 affected attitudes toward minorities around the world. In the end, 66 articles resulted to be eligible for the present systematic review, 59 of which were empirical, whereas the remaining 7 were theoretical papers.

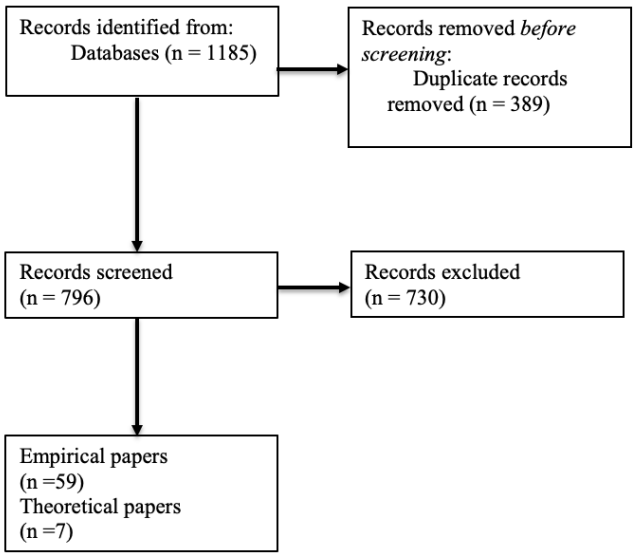
The research procedure was run initially by two persons on the team who were in charge of downloading all the relevant articles from the data banks by entering the chosen word strings. Afterward, other two people from the research team were involved in the analysis and autonomously read the abstracts. Subsequently, the selected people read the full body of the selected articles. The results were shared within the research group and eventual contrasts were sorted out through confrontation between the team members. To ensure the accuracy and quality of the work, the team had constant communication exchanges throughout the whole process and, only when full agreement was reached, the following step was approved.

Based on the main articles' thematic that emerged from this screening, the vast majority of the selected articles specifically investigated the conditions of racial minorities within the pandemic framework. The few articles that regarded other social minorities (e.g., sexual minorities, old people, women, etc.) were still considered in the general articles' count before-reported, but were

excluded from a more in-depth analysis of the review results. Considering this specific focus of interpretation, three main categories of results were distinguished: The first one regarded Asian minorities (including studies on both Asian Americans and actual inhabitants of Western Asia), the second one regarding Black people (including both African Americans and other Black minorities around the world), whereas the last category concerned "other minorities" in general, including any further ethnic group (e.g., the Roma, Muslims, Indigenous people, etc.). The selected papers are reported in Graphic 1 and their results are reported in the following paragraphs.

Finally, the content of a few articles compared and contrasted the effects of the pandemic on ethnic minorities versus non-racial minorities. These articles were excluded from the results because such comparison was not relevant for the specific review's focus, however, they were still considered in the general articles' count indicated before.

Graphic 1 PRISMA Diagram.



6.5 Results: Target Groups Negatively Affected by the Pandemic

6.5.1 Asians

As for the effects of the COVID-19 pandemic on attitudes targeting Asian populations, the studies included in this systematic review investigated various aspects, employing diverse methods. Before beginning with this section, however, it is important to remark that the COVID-19 virus was also referred to as the Chinese virus (Fallows, 2022) due to the first cases of contagious in Wuhan (Hubei, China) at the end of 2019. Consequently, Asians and Asian Americans, in general, were included in the stigmatized group due to their perceived resemblance with people of Chinese heritage (Gover et al., 2020; Ponder et al. 2023). The present systematic review included (n = 29) papers focused on the increase in hate crimes labeled as "anti-Asian attitudes" during the pandemic.

The fact that COVID-19 was referred to as the "Chinese virus" was one of the key factors for the stigmatization of this target group. The experimental confirmation of the effect of framing COVID-19 as the "Chinese virus" was also provided by Dhanani and Franz (2021). The authors investigate the role of language in increasing the expression of prejudice and xenophobia toward Asian Americans. According to the authors, the messages about COVID-19 were framed to emphasize the link between the virus and Asians. To prove this, they ran an experimental study on the effects of using stigmatized language to describe the virus. To control for the effect of stigmatized language, they added two more conditions, framing one as a threat to safety and the other to the economy. Their dependent variables were the attitudes toward Asian Americans (e.g., how much participants perceived Asian Americans to be a threat to American citizens, Beliefs about prioritizing financial and healthcare resources for American citizens rather than Asian Americans, and general xenophobic attitudes toward immigrants). Their results showed that the impact of depicting the virus as being imported from China led individuals to express negative beliefs and attitudes about people of Asian descent. This effect was also strong on the general xenophobic attitudes towards immigrants, indicating that the pandemic might have had a negative spillover effect on other social groups as well.

Importantly, among the papers selected for the present systematic review, two studies presented qualitative data. These data appear important for gaining a deeper understanding of the core aspects

of the discrimination experienced by this specific target group. Indeed, Cheng and colleagues (2021) asked Asian American college students (N = 120) to reflect on any anti-Asian racism (in person or online) that they had encountered or heard about during the COVID-19 pandemic. The authors identified a spectrum of discriminatory behaviors: notably, derogatory non-verbal treatment (44%), verbal blaming (35%), and physical shunning (24%) emerged as the most prevalent forms of COVID-19-related racism. Of significant concern, pandemic-related scapegoating toward Asians as the one-to-blame for COVID-19 surfaced prominently in the shape of verbal blaming and physical shunning, indicating their prevalence among the most frequent instances of racist encounters during this period.

Whereas the second qualitative study by Ponder and colleagues (2023) aimed at understanding not only Asian Americans' coping strategies and their source of information but also their perception of social stigma during the pandemic. In doing so, they conducted a series of focus groups in which they identified, among other experiences related to the pandemic, personal experience and perception of social stigma. Overall, participants believe the anti-Asian sentiments were fueled by the institutional rhetoric that labeled COVID-19 as the "China virus". Furthermore, the stigma not only negatively impacted participants' emotional well-being but also created a risk to physical safety and security. In some public spaces (e.g., supermarkets), participants reported being avoided by other individuals who moved away every time they entered the aisles. Likewise, potential judgment from peers influenced decisions to participate in in-person social activities. In addition, participants from the focus group reported that other groups were stigmatized in response to the degree to which they complied with the preventive measures (e.g., face masking): They experienced stigma if an individual's compliance was perceived as "not enough" or "too much".

Asian students in the U.S. scholar system (e.g., college) were the first population targeted in the social context and exposed to xenophobic attacks. Haft and Zhou (2021) compared the data from a self-reported questionnaire from two groups of Chinese before the outbreak of COVID-19 (N = 134; T1), and during-COVID (N = 64; T2). The authors aimed to compare mean differences in

perceived discrimination and anxiety, testing whether COVID-19 moderated the link between perceived discrimination and anxiety, and examining whether media exposure portraying Chinese individuals negatively mediated relations between COVID-19 and discrimination. Respondents from T2 reported higher perceived discrimination, and more anxiety symptoms compared to T1 respondents. Additionally, mediation analyses showed that the relation between the COVID-19 pandemic and perceived discrimination was partially mediated by exposure to media that negatively portrayed Chinese individuals.

Mass media acted as an echo chamber during the pandemic, thus amplifying the stigmatization of Asian individuals as demonstrated by Lu and colleagues (2021). The authors with a two-wave survey investigated the dynamics between different media for the pandemic (U.S. media vs. Chinese media) and how media perceptions influence minority groups' alienation perceptions and subsequent adoption of protective behaviors. Results underlined that the negative effects of media perception (e.g., the increase of hate crimes toward Asians) led U.S.-dwelling Chinese to comply more with all the preventive health behaviors. Information consumption and literacy played a key role in mitigating negative intergroup attitudes toward Asian people during the pandemic. Pahl and colleagues (2022) focused on the individual predictor of structural literacy, namely, being aware of the racial and socioeconomic disparities during COVID-19, on attitudes toward Asian Americans. The authors administered a survey between April (T1) and August 2020 (T2), in which they assessed participants' awareness of racial and socioeconomic disparities that were affecting the Asian community during COVID-19, participants' socioeconomic status, and other demographic information, alongside with questions about participants' anti-Asians attitudes and how much they associate Asians in relation with the pandemic. Overall, they found that the more individuals were aware of the structural disparities on a socio-economic level, the less they reported anti-Asian attitudes that motivate harmful association with the spread of the virus.

From another point of view, Ren & Feagin (2020) investigated another important variable, such as the number of attacks for hate crimes against Asians recorded in public records, underlying that

most attacks targeted Asians wearing a face mask. Indeed, the authors reported that, in the US context, the majority of attacks on Asian Americans involved White perpetrators, and that the attacks on Asian targets wearing face masks revealed the following core categories: Stigmatization of masked Asian individuals as the source of the pandemic (63%), the perception that Asians were notably sickly individuals (15%), and the general assertion of foreignness or inherent socio-racial inferiority of Asian groups (12 %), and the mocking of mask-wearing individuals (4%). In the majority of cases, Ren & Feagin (2020) reported that most perpetrators openly indicated or strongly implied a racialization of their Asian targets. Shifting the focus from the U.S. context to other countries, the negative impact of the pandemic on stigmatization confirmed the increase of hate crimes targeting the Chinese-descent population on a cross-country level. Gray & Hansen (2021) compared hate crimes against Chinese people before COVID-19 (October 1, 2019, to the end of December 2019) with other ethnic groups across the same time frame. They found that COVID-19 negatively affected the environment for Chinese people in London leading to an increase in hate crimes toward this group specifically (vs. other minorities). Dipoppa et al. (2023) found a rise in anti-Asian hate crimes in Italy during the pandemic, analyzing data from 2007 onward. While individual prejudice was not a strong predictor, a xenophobic national discourse and local far-right institutions motivated hate crimes.

A common element of the hate crime component was that attacks were mostly on Asian targets wearing face masks (Ren & Feagin, 2020). Wearing or not wearing a face mask represented for Asians (but also for other minorities) a sort of dilemma: wearing a face mask but then being more likely racially profiled and thus stigmatized targets, or not wearing a face mask but then risking being infected with COVID-19. Kahn and Money (2022) examined White, Black, and Asian individuals' experiences of race-related social identity threat wearing face masks during COVID-19, and its impact on safety and health behaviors. They carried out two surveys during May (T1) and August (T2) 2020. The measures were focused on scales regarding mask-wearing behaviors and attitudes, race-based social identity threat, police-related social identity threat concerning mask-

wearing (e.g., respondents wanted to avoid the police while wearing the face mask), and an open-ended face mask question about respondents' perceived implication of wearing face masks in public. Their results showed that Black and Asian participants (vs. White) reported experiencing mask-related, race-based social identity threats from both the public and police (this latter aspect was particularly salient for Black respondents): They perceived to be more likely targeted as potential threats by police and people around them. The authors found that this perception spontaneously reflected in the open-ended question: Overall, White participants explicitly recognized their race was protected from negative perceptions, being aware that the same protective factor did not have the same meaning for other ethnical minorities.

Moreover, the evaluation of Asians became extremely negative on the broader dimension of trait inferences. Indeed, face masks had a negative impact also on the perceived attractiveness of Asian individuals as demonstrated by Dudarev and colleagues (2022). White-masked individuals were generally rated as more attractive than unmasked individuals, but Asian-masked individuals were rated as less attractive than unmasked individuals. The negative impact of COVID-19 on attitudes toward Asians was empirically confirmed by Daley and colleagues (2022), who asked participants to perform a face-rating task by Cheryan and Monin (2005) and to assess the perceived Americanness of Asians and White targets by a semantic differential questionnaire (e.g., Osgood, 1964). Overall, participants rated White people as significantly more American than Asian people on both a composite semantic differential scale (American-Foreign, Familiar-Unfamiliar, Insider-Outsider) and a face-rating measure. Interestingly, the authors underlined how the gap in the perceived Americanness of White versus Asian people narrows as the perceived risks from COVID-19 increase, not only due to increased perceptions of the Americanness of Asian people but also because of decreased perceptions of the Americanness of White people. They found that participants who were more concerned with COVID-19 were also the ones who evaluated Asians as more Americans. The explanation for this counterintuitive result might be the one proposed by Weil and Wolfe (2021): Subjective feelings about the COVID-19 threat might increase cognitive

reflection, which decreases the individual tendency to reason more simplistically and stereotypically.

These results underlined how even for a dimension that is not strictly relevant from a social point of view, Asians were negatively affected in their everyday social life due to the pandemic. The additional empirical support for the negative impact of the pandemic on the everyday social life of Asians is the experimental study by Lu and colleagues (2021) about the roommate selection process. In their experimental design, they found support for claiming that the pandemic was having an impact on everyday attitudes toward other social groups, specifically Asian Americans. Compared to the control group, respondents in the group in which they were exposed to COVID-19 information, exhibited increased prejudice and discriminatory intent against East Asian and South Asian, hypothetical room-seekers. The same pattern of results was statistically significant also for Hispanics, however prejudice against them was mitigated when controlling for experience of contact.

Another experimental study by Zhao and colleagues (2022) provided evidence of a link between the COVID-19 pandemic and racial discrimination. In their experimental study, they manipulated the instructions given before a dictator game (Baldassarri & Grossman, 2013) to measure the donation size that participants would divide between themselves and Asian American vs. Black vs. White recipients. Indeed, respondents either read a story about the rising risks of another pandemic from Asia (experimental) or about market growth for Android phones in Asia (control). Their results found that White respondents in the pandemic experimental condition (vs. control) donated significantly less money to Asians (vs. Black Americans). Similar to Zhao and colleagues (2022), Abascal and colleagues (2023) conducted another study implementing the dictator game with a longitudinal approach. They aimed to explore whether the Behavioral Immune System (BIS, Schaller, 2006) might explain the increase in anti-Asian attitudes. They create dyadic couples between participants and a Chinese vs. U.S. fictional partner. Participants were asked to play with their partners a give-or-take dictator game. Participants played the dictator game in May (T1,

beginning of the pandemic) and October (T2, end of the first pandemic peak) 2020. Results from T1 revealed a notable discrepancy in charitable contributions, indicating that the average American tended to contribute less to individuals of Chinese descent compared to those born in the United States. However, in T2, this discrimination in the donation size disappeared.

In another interesting study, Georgarakis (2023) aimed to demonstrate that disgust and emotion elicited by pandemic-related information would increase negative intergroup attitudes, as well as health and political attitudes. In doing so, his study design had a between-participants manipulation regarding the type of information that participants were exposed to before measuring attitudes toward Asians and attitudes toward prevention policies. In one experimental manipulation Georgarakis (2023) presented information about the curve of COVID-19 cases, in the other, he primed incidental disgust (by showing a clip about people eating unconventional foods with worms and insects), whereas in the third experimental condition, he combined the two information with virus information and incidental disgust, then he added a control condition with no information related to both topics. Results showed that the experimental manipulation regarding the combination of disgust and pandemic-related information negatively affected attitudes toward Asian people. In addition, in the incidental disgust condition, participants heightened public support for harsh punishment policies (e.g., preventive quarantine of Asian people).

Some studies have also assessed the role of some individual variables, such as political ideology (Lantz et al., 2022) and structural literacy (Pahl et al., 2022), in affecting negative attitudes toward Asians during COVID-19. Lantz and colleagues (2022) aimed to understand the causal link between political attitudes, differential information consumption, political rhetoric, and anti-Asian prejudice during the pandemic. Their survey included as a dependent variable a measure to assess anti-Asian attitudes and three independent variables, such as individual fear of COVID-19, political attitudes, and COVID-19 information consumption. As control variables, they added socio-demographic information, and Right-Wing Authoritarianism (RWA; Altemeyer, 1996). As for individual characteristics, their results showed that anti-Asian attitudes were higher among younger

respondents, among those with lower education levels, and those with more right-wing authoritarian attitudes. Moreover, their results showed that, on average, participants with political attitudes more in line with the Trump administration (vs. non-Trump supporters) exhibit greater anti-Asian negative attitudes, regardless of individual perceptions of the risk of COVID-19. Overall, individuals who identify as Trump supporters and perceive a significant COVID-19 fear exhibit the highest levels of anti-Asian attitudes. Conversely, those who do not support Trump and perceive a low COVID-19 fear demonstrate the lowest levels of anti-Asian attitudes.

In conclusion, the pandemic had an immediate and everyday impact on the lives of people represented by the media as Asians. The global repercussions of the COVID-19 pandemic have been significant, extending beyond the immediate health crisis to encompass social and cultural dimensions. Our attempt to explore the pandemic's impact on the stigmatization of Asians reveals a complex interplay of factors, transcending mere health concerns.

6.5.2 Black Americans

Black people were one of the most vulnerable groups to be severely impacted by COVID-19, and, as the pandemic spread, also extreme racial disparities arose. Black minorities were the most prone to illness, hospitalization, and death from COVID-19 (Miller et al., 2023) and they had lower access to healthcare, which aggravated their already precarious conditions even more. Adding up to these structural inequities, they were exposed to unfair societal treatment, which deteriorated their psychological well-being and made the pandemic an even harder experience to go through than it already was.

As Lantz and Wenger (2022) demonstrated in a correlational study, Black individuals faced an exceptionally dangerous social environment during the pandemic, having to deal with both the risk of the virus itself as well as the risk of becoming targets of violence and discrimination. More specifically, Black participants were asked to indicate how often they were exposed to criminal or non-criminal racial victimization. Overall, 51% of respondents reported having experienced at least

one of the two types of victimization during the prior two months. The most common non-criminal discrimination reported was being exposed to verbal threats and racial slurs, whereas the most widespread hate crimes were those related to the enactment of physical aggressions. Within the same study, the authors also found that increased mask-wearing by respondents was significantly associated with decreased odds of victimization. The authors hypothesized that this pattern might have underlying risk-avoidance traits of the participants, which might have been indicative of an overall propensity to behave in ways that minimize the risk of negative outcomes, regardless of the specific situation. Indeed, there is evidence that demonstrates how mask usage did not always decrease the possibility of being exposed to victimization for Black people but, conversely, it might have also enhanced their risk of being discriminated against. For example, an experimental study by Christiani and colleagues (2022) demonstrated how the good practice of wearing masks might have put Black people at an even higher risk of victimization since it increased the perception of them as a "potential threat" to the safety of the ingroup. According to the results of the study, this counterintuitive effect was linked to the type of mask used (bandana vs. cloth mask vs. surgical face masks). If, on one hand, surgical masks were "safe" to wear for all, Black people could not wear bandanas or cloth masks, because they made them appear more threatening and not trustworthy. Nevertheless, the same masks were not problematic in general: When bandana and cloth masks were worn by a White target, they were still evaluated as positively as in all other conditions. In conclusion, Christiani et al.'s work (2022) contributes to remark how, although mandated mask-wearing was believed to be a race-neutral policy, its implications for Black people were not. Thereupon, these results contribute to suggest how, during the pandemic, Black individuals were left in a double bind when deciding whether or not to wear face coverings, either risking being racially profiled or contracting the virus. Similarly, Kahn and Money's (2022) correlational study demonstrated how, as a consequence of such stereotype threat, during the pandemic, Black people experienced extremely high levels of mask-related, race-based social identity threat both from the general public and from the police in the United States. In particular, respondents were most

concerned about this danger during interactions with the police and, consequently, avoided any contact with them, even in times of need. As a consequence, such fear during the pandemic resulted in their avoidance of any contact with the police because, otherwise, their physical safety might have been put at risk, more than the virus already did.

Such a scenario of heightened discrimination during COVID-19 was experienced not only by African Americans in the United States but also by other Black minorities throughout the world. For example, Jaspal and Lopes (2020) conducted a correlational study demonstrating how Black individuals in the UK also experienced high levels of racism and ethnic discrimination within various contexts of daily experience. The exposure to this negative treatment resulted in their lowered British national identification and in a lack of feelings of social support, belonging, and inclusion. As a consequence, Black participants reported poor life satisfaction and were more likely to develop mental illnesses such as depression and generalized anxiety, mainly due to the stigma associated with their valued identity. Likewise, anti-Black sentiments spread also in China (Adebayo, 2022), within the cradle of the pandemic. In the Chinese context, Black people were severely discriminated against, by being evicted from their homes, denied access to public locations, and forced to embark on compulsory quarantine regardless of their travel histories. These attitudes were generated from a racialized perception of Black people as “disease spreaders”, which made them become one of the main scapegoated social groups in China, “figures of blame” who were supervised, controlled, and discriminated against. Moving from China, another context in which Black people were exposed to a similar mistreatment is the one of the Kingston communities, in Jamaica, as reported by Mahabir and colleagues’ (2022) thematic analysis. Their study points out how this Black community was depicted by the general media as a group of “threatening others” who had to be feared and kept at a safe distance. These discourses then generated the heightening of social tensions and promoted the stigmatization and marginalization of Kingston's Black inhabitants. The media hence played a crucial role in impacting general opinions around pandemic-related issues and contributed to exacerbating the pre-existing negative conditions of the group,

promoting the idea that they were the ones to blame for the spread of the virus and legitimizing their social exclusion.

Overall, these studies demonstrated how the disparate effects of the pandemic on Black individuals regarded not only pragmatic aspects of life but extended also to the psychological domain. Indeed, not only were they more likely to contract, be hospitalized, and die from the virus, but they also had to deal with the detrimental consequences that COVID-19 provoked for them at the societal level. Nevertheless, regardless of the evidence, very little attention was paid by the general public to the unequal effects that the pandemic generated on Black minorities. Starting from this lack of public interest, some experimental studies investigated the effects that racial disparities framing had on participants' attitudes and behaviors toward the pandemic and what individual factors influenced these results. For example, Stephens-Dougan (2022) sought to point out the effects that the exposure to information regarding COVID-19 racial disparities had on the adherence to safety precautions and on the support for pandemic guidelines among racially prejudiced whites. The author found a correlation between individuals who tended to label Black people as lazy and unintelligent. When these individuals experienced the disproportionate racial impacts of the pandemic, their response was characterized by reduced endorsement of mask-wearing. The author framed preventive measures as a limitation on their rights, advocated for the elimination of social restrictions, and asserted that African Americans were not following these guidelines themselves. Similarly, Miller and colleagues (2023) conducted multiple experiments where they found that, when exposed to the racial disparities framing, participants with significant anti-Black attitudes displayed less concern about COVID-19, low adherence to health guidelines and social distancing, and greater desire to return to normality. Accordingly, Franks and colleagues (2022) demonstrated that framing the pandemic in terms of racial disparities caused reduced support for COVID-19 mitigation policies among individuals high in racial bias. The underlying mechanism was a decrease in moral outrage and perception of realistic threat linked to the virus.

Overall, these studies highlight how framing the pandemic in racial terms - by emphasizing its disproportionate impact on Black people - may generate counter-productive effects and exacerbate pre-existing anti-Black biases while also decreasing law-abiding behaviors aimed at preventing the spread of COVID-19. Differently from Asians people, the negative impact of COVID-19 on Black people produced an increment in defense mechanism: The more individuals were presented with the fact that this stigmatized social group was suffering the negative consequences of the pandemic (in terms of life threat), the more they increased generalized negative attitudes toward Black people and the preventive measures in general. These findings underscore the influential role of racial attitudes in shaping individuals' responses to the pandemic, particularly when framed within the context of racial disparities. Notably, participants with pronounced anti-Black attitudes - especially those tied to political orientation, white racial identification, and perceptions of racial disparities - exhibited diminished concern about the virus, lower adherence to health guidelines and social distancing practices, and a heightened desire to return to pre-pandemic norms.

6.5.3 Other Ethnic Minorities

Despite Asians and Black people being the two ethnic minorities who had been more negatively impacted by the pandemic, several other ethnic groups around the world have suffered from similar negative responses and had to face the detriment of their already unequal living conditions. Indeed, as psychosocial research demonstrates, being part of an ethnic minority implies having one’s identity crossed by multiple oppressions (De Azevedo Silva Júnior, 2022). All pandemics share the same historical constant: The attribution of the origin of the lethality to specific, disadvantaged groups (León, 2022). The same attribution happened during COVID-19; the present paragraph will provide an overview of studies that aimed at investigating the experiences of different minority members. The data collected were within a variety of cultural contexts around the world, thus giving voice to histories of mistreatment and identifying the common elements that characterized their conditions.

Platt and Warwick's (2020) quantitative report on the COVID-19 situation in the United Kingdom highlighted how the health and economic crisis triggered by the virus underscored the inequalities between different ethnic groups, especially Bangladeshi and Pakistanis. Indeed, these minorities reported a higher incidence of mortality and a more significant economic risk than British White people, due to a more elevated prevalence of previous pathologies and their work involvement in specific economic sectors that were the first to undergo temporary suspension of activities. Therefore, these pre-existing living conditions predisposed them to an increased risk of contagion, disease, and death from the virus as well as an enhanced probability of stigmatization by the general public. Similar circumstances were experienced by other East and South Asian ethnic groups in the city of Hong Kong, where they represent 14.5% of the overall minority population. As Siu and colleagues (2023) demonstrated by carrying out 25 semi-structured interviews with individuals from India, Pakistan, and Ghana, their groups were exposed to disadvantageous experiences caused by a process of stigmatization carried out both by the Chinese locals and the government at large. These negative experiences during the pandemic can be traced down to multiple inequalities that were embedded in the Hong Kong social system long before the pandemic and which generated structural inequalities in access to social and medical resources. Because of this pre-existing seclusion, they were object to isolation and perceived as infectious, both at the community and institutional level. For instance, Chinese people avoided any type of contact with them when walking around the streets. At the institutional level, the government reinforced a perception of certain ethnic groups as carriers of infection by reporting the ethnicity information only in cases where the individual was of Brown ethnicity, while such information was omitted for White individuals who contracted COVID-19.

Interestingly, Indians were not only the victims of such discrimination in Hong Kong but, within the Indian society, intergroup hatred was promoted against the religious minority of the Muslims. Indeed, as illustrated by Balabantaray’s (2022) exploratory study, Indian people widely drew a linkage between this religious community and the spread of the virus, promoting their

segregation and resulting in various forms of hate against them. Such intergroup conflict escalated due to large-scale misbelief and fake news about Muslims purposefully spreading the virus, which led many people to believe in conspiracy theories thereby resulting in physical attacks and verbal abuses. According to Prasad (2020), this politicization of the health crises in India was linked to populist leaders strategically crafting their discourses with the scope of promoting an anti-Muslim ideology, thus increasing public paranoia and legitimizing symbolic and physical violence toward them.

Another minority who suffered from severe pre-existing social exclusion and, hence, was exposed to a higher risk of morbidity, mortality, and negative psycho-social effects during the pandemic, was the Roma minority residing in Spain. As León (2022) pointed out in his thematic review, COVID-19 did nothing but exacerbate the structural discrimination and xenophobia that were already present in Spanish society before 2020. Even before the arrival of COVID-19, the majority of the Roma population in Spain lived well below the poverty line and had an average life expectancy of about ten years less than the general population, reporting high levels of illiteracy and unemployment. Adding up to these structural disadvantages, during COVID-19, the Roma became targets of high levels of discrimination, violent acts, and hate crimes. COVID-19 fomented these pre-existing anti-Roma feelings, generally constructing an idea of their group as "the others" designated targets of social hostility. These racist discourses promoted the blaming of Roma people for the spread of COVID-19 and led to the enactment of discriminatory restrictions toward them. In support of León (2022) contribution, the International Ngo European Roma Right Center (ERRC, 2020) reported several violent attacks toward Roma communities, including disproportionate use of force, the use of tear gas against women and children, and police attempts to prevent NGOs from providing them humanitarian aid. According to the author, these discriminatory behaviors were probably linked, among others, to the images disseminated in the media depicting Roma as individuals unwilling to comply with social norms and the confinement rules dictated by the State of Alarm. Such discrimination against the Roma community occurred not only in Spain but also in

other countries such as Brazil, where the Romani population was held accountable for disseminating the virus and scapegoated to draw attention away from the actual problems related to the pandemic (De Azevedo Silva Júnior, 2022). Even within the Brazilian context, the pre-existing living conditions of the Roma community were particularly disadvantaged, mainly due to the colonialist anti-gypseous policies of Portugal (Magano & D'Oliveira, 2023). These policies contributed to defining a disqualified portrayal of Romani individuals and promoted their blame and marginalization. Nonetheless, they were not the only Brazilian ethnic minority who reported such disproportionate negative effects, the indigenous population was also exposed to discriminatory policies imposed by the Brazilian State and resulting from a rooted history of violence against them (Bragato et al., 2021).

Taking now into consideration a completely different context, another minority group who experienced increased inequities due to the pandemic was the Silesian people, in Poland. As highlighted by Chromik and colleagues (2022) in their mixed-methods study, during the COVID-19 outbreak, Silesians were object to profound stigmatization due to general media discourses depicting their living area as the one region where things had gone particularly badly and hence promoting the escalation of online hate speech toward its inhabitants. Consequently, given that a prominent part of the region's economy is based on coal mining, a negative stereotype was soon established between Silesian "dirty miners" and their "lack of hygiene", which then led to the idea that they were the main subjects to be held responsible for the spread of the virus. They were thus scapegoated for COVID-19 and destined to face extreme public discrimination, which went from being called out as "infectious" to being denied access to facilities all over the country and even abroad.

In conclusion, the above-mentioned studies show how, even if located in different social contexts and geographical areas around the world, each of these minority groups saw its unfortunate living conditions exacerbated by the pandemic due to an increase in the levels of perceived public threat. Despite their pre-existing living conditions being already disadvantaged due to structural and

systemic inequalities, the pandemic contributed to their detriment, leading minorities to be easily scapegoated and rendered targets of generalized hatred to reduce the paranoia of the public population. In conclusion, despite Asian and Black communities being the two social groups to have been more evidently impacted by the pandemic, many other ethnic minorities around the world have also experienced the same negative backlashes due to the historical inequities sedimented in their social context of reference.

6.6 General Discussion

Overall, the present systematic review underlined the negative effect on intergroup attitudes during the pandemic. The focus of the review was on specific ethnic groups such as Asians, Black people, and other ethnic minorities all around the world. Due to the association of COVID-19 with Asian descendants, which was widely supported by institutions, this target group was exposed to an "othering" process (Dhanani & Franz, 2021; Kahl & Money, 2022). The result was that Asians were perceived to be blamed for the pandemic, specifically at the early stage of the COVID-19 outbreak.

However, longitudinal studies across the pandemic underlined how the othering process and the subsequent stigmatization of Asian people were salient only at the beginning of the pandemic (Gray & Hansen, 2021). Indeed, once the pandemic was under control (e.g., by the implementation of COVID-19 mitigating practices) intergroup attitudes toward Asian people positively increased. Moreover, the impact of the pandemic has revealed distinct effects on Asian and Black communities, shedding light on the role of racial attitudes in shaping individuals' responses. Studies indicate that among Asian individuals, heightened awareness of structural disparities on a socio-economic level correlated with decreased reports of anti-Asian attitudes, mitigating harmful associations with the virus's spread (see Pahl et al., 2022). Conversely, studies focusing on Black communities found a concerning trend: as individuals became more aware of the pandemic's disproportionate impact on this stigmatized social group, there was a simultaneous increase in

generalized negative attitudes toward Black people and a skepticism toward preventive measures. This suggests that racial attitudes play a pivotal role in influencing responses to the pandemic, particularly when viewed through the lens of racial disparities. Alarmingly, individuals harboring pronounced anti-Black attitudes, often tied to factors like political orientation, white racial identification, and perceptions of racial disparities, exhibited reduced concern about the virus, lower adherence to health guidelines, a reluctance to practice social distancing, and a heightened desire to return to pre-pandemic norms.

It is important to note the limitations of these findings, primarily stemming from the disproportionate focus on the U.S. context, in which the generalized valence attributions to social groups usually tend to display more positive attitudes toward Asians than Black people (e.g., white-good/African American-bad; Kurdi et al., 2019).

The inclusion of fewer studies from Europe and other contexts underscores the need for a more comprehensive understanding of the global impact of the pandemic on Asian communities. Additionally, the macro categorization of "Asians" fails to account for the diverse health and socio-economic disparities within this group, as highlighted for instance by Ponder (2023). The pandemic's immediate and enduring impact on the lives of Asians, as portrayed by the media, necessitates nuanced consideration of individual experiences, health statuses, living conditions, and socioeconomic factors.

The present systematic review tried not only to assess the change in intergroup attitudes throughout the pandemic but also to represent and give voice to the impact of the pandemic on other ethnic minorities, which already suffered from disadvantaged conditions (De Azevedo Silva Júnior, 2022; Léon, 2022). The pandemic has not only revealed disparate effects on Asian and Black communities but has also exacerbated the unfortunate living conditions of these minority groups, intensifying the levels of perceived public threat. Even before the pandemic, structural and systemic inequalities had placed these communities at a disadvantage, but the global crisis further contributed to their detriment. The heightened public threat led to an alarming increase in the

scapegoating of minorities, making them targets of generalized hatred as a means to assuage public paranoia. Despite the pre-existing challenges rooted in historical inequities, the pandemic acted as a catalyst for intensified negative backlashes against outgroups.

Based on the knowledge gained from all these theoretical and empirical contributions used for the present systematic review, interventions aimed at reducing the fear of contagion should also result in an attenuation of such negative responses towards outgroups. The general aim of this intervention would be to shift the mental representation of stigmatized social groups by underlining, on an institutional level, the perceived outgroup compliance with ingroup norms.

Indeed, in situations where individuals typically respond to fear by relying on stereotypes, the probability of such a response could decrease when it is provided access to accurate information outlining effective ways to counteract the perceived threat. Consuming reliable information could act as a buffer against prejudicial stereotypes.

Following this rationale, the last part of the present dissertation aimed at testing on an empirical level the impact of being informed about outgroup compliance with preventive behaviors (e.g., mask-wearing) on positive intergroup attitudes. On the contrary, a lack of information or exposure to misinformation might have increased belief in negative stereotypes, as suggested by previous studies (Kuklinski et al., 2000; Rubinstein et al., 2018).

Chapter VII[14]

PERCEIVED NORM COMPLIANCE AND INTERGROUP ATTITUDES

7.1 STUDY 6 – OVERVIEW

The present work explored how the perceived compliance of immigrant groups with a series of prevention measures was linked to attitudes towards those outgroups. Critically, xenophobic attitudes do not appear to only originate from the assumption that ethnic outgroups are the major source of transmissible diseases (Schaller et al., 2021). Hence, behaviors that communicate the endorsement of shared social norms may play an important role in prejudice reduction, whereas outgroup norm violations may foster prejudice, especially if this increases the risks for the ingroup (Packer et al., 2021). The present study hypothesizes that the more an outgroup is perceived as relatively reluctant to carefully adopt COVID-19 prevention measures, the less positive the attitudes toward the outgroup will be. In the first study, this prediction was first tested through a correlational design, assessing both the perceived level of compliance with COVID-19 prevention measures of several immigrant outgroups and the attitudes towards those groups.

7.2 PARTICIPANTS

The web version of the WebPower R package (Zhang & Yuan, 2018) determined that to have a medium effect size, $f^2 = .15$, with $\beta = .95$ and $\alpha = .05$, the sample needed was N = 119. Therefore, two hundred one participants residing in Italy were recruited through Prolific in March 2022[15]. Eight respondents reported a foreign origin and therefore their data were discarded. Moreover, a participant was discarded because he/she failed both the attention checks that were added through the study. The final sample thus comprised 192 Italian respondents (93 females, 97 males, and 2

[14] The following studies are retrieved from Tumino, M., Carraro, L., & Castelli, L. (in preparation). "Unmasking Prejudice: Examining the Impact of COVID-19 Prevention Norm Compliance on Intergroup attitudes".
[15] In March 2022 the use of face masks was mandatory. 15% of the population tested positive for COVID-19.

others) with a mean age of 28.24 years (SD = 8.34). The study was approved by the Ethics Committee of the University of Padua.

7.2 Procedure

Participants were first required to report their political orientation along a continuum (0 = extreme left, 100 = extreme right). The same response scale was used to separately assess political orientation about social and economic issues. The responses to these 3 items were averaged (α = 0.92; M = 29.84, SD = 21.10). Participants were then required to focus on immigrants from China and to report on a 7-point scale (1 = not at all, 7 = very much) how much they believed the members of this group a) habitually use face masks as a preventive gear against COVID-19, b) respect interpersonal distance as a way to reduce the spread of the virus, and c) have complied with vaccination requirements. Afterward, participants were requested to report a) their attitudes towards people who immigrated to Italy from China, b) the perceived attitude of Italians in general towards people who immigrated to Italy from China, and c) the perceived general attitude of people who immigrated in Italy from China towards Italians. Responses to these 3 questions were provided along 3 continua ranging from 0 (very negative) to 100 (very positive). The responses to the 3 questions assessing the perceived COVID-related behaviors of people who immigrated to Italy from China were highly correlated and a summary score was thus computed (α = 0.88; M = 5.52, SD = 1.17). The same set of 6 questions was delivered about both people who immigrated to Italy from Romania (α = 0.94; M = 4.49, SD = 1.34) and from North Africa (α = 0.91; M = 4.57, SD = 1.48). The order of the target groups was counterbalanced across participants. Next, participants were asked to focus on Italians (i.e., the ingroup) and to respond to the same 3 questions about face mask use, respect for interpersonal distance, and vaccination (α = 0.82; M = 4.46, SD = 1.19). A fourth question was an attention check and participants were always invited to press one specific button among 7 different options. In a final set of questions, individual beliefs about the perceived efficacy of face masks, interpersonal distance, and vaccination as a way to limit the spread and the

consequences of the virus were assessed. Responses were provided along a continuum ranging from 0 (not at all) to 100 (very much). The three responses were averaged (α = .72) and the sample showed strong positive beliefs about the efficacy of preventive measures (M = 86.89; SD = 15.33). At the end of the questionnaire, participants reported their gender, age, and nationality.

7.3 Results

7.3.1 Personal attitudes toward the outgroups

Three separate multiple linear regression analysis on personal attitudes towards Chinese/Romanians/North African group members was carried out, controlling also for age, gender, political ideology, beliefs about the perceived ingroup compliance, and personal attitudes toward COVID-19 preventive behaviors. Results showed a main effect both of political ideology and perceived outgroup compliance with COVID-19 preventive behaviors. Indeed, right-wing participants reported more negative outgroup attitudes. Moreover, and more interestingly for the aim of the current study, as predicted, the more respondents believed outgroup members did not comply with preventive measures the more negative personal attitudes towards the outgroup were. Gender, age, and personal attitudes toward COVID-19-preventing behaviors were not significant predictors (see Tables 12 – 14)[16].

Table 12 Multiple linear regression on personal attitudes toward Chinese people.

Predictors	β	SE	t	p
Intercept	63.94	11.58	5.52	< .001
Political Ideology	-.26	.06	-3.99	< .001
Age	-.20	.15	-1.31	.192
Belief Ingroup	.01	1.16	.01	.994
Covid-19 attitudes	-.07	.09	-.85	.396
Belief Chinese	5.14	1.21	4.24	< .001

[16] Standardized coefficients.

Table 13 Multiple linear regression on personal attitudes toward Romanian people.

Predictors	β	SE	t	p
Intercept	73.75	10.70	6.89	< .001
Political Ideology	-.35	.06	-5.49	< .001
Age	-.13	.15	-.85	.394
Belief Ingroup	-2.60	1.25	-2.07	.040
Covid-19 attitudes	-.14	.09	-1.60	.112
Belief Romanians	7.30	1.15	6.35	< .001

Table 14 Multiple linear regression on personal attitude toward North African people.

Predictors	β	SE	t	p
Intercept	66.70	10.77	6.19	< .001
Political Ideology	-.29	.15	-1.90	0.059
Age	-.39	.06	-6.05	< .001
Belief Ingroup	.26	1.25	.21	0.832
Covid-19 attitudes	-.05	.08	-.59	0.557
BeliefNorthAfrican	5.42	1.04	5.2	< .001

7.3.2 Perceived ingroup attitude toward the outgroups

The same three separate multiple regression analyses were carried out on the expected attitudes of ingroup members toward the outgroups. Results showed a significant effect of the perceived compliance with COVID-19 preventive behaviors of the outgroup on the perceived ingroup attitudes toward the specific outgroup only in the case of Romanians, but not for North African people and Chinese: The more participants believed that the outgroup was in support of COVID-19 preventive behavior, the more participants expected their ingroup to have positive attitudes toward that specific group (Romanians). As for North African members, political ideology and personal attitudes toward COVID-19 preventive behaviors were the main predictors. The more participants were in support of COVID-19 preventive behavior, the more they expected their ingroup to have

negative attitudes toward North African members. Additionally, more conservative participants expected more positive attitudes from Italians toward North Africans (see Table 15 – 17).

Table 15 Multiple linear regression on ingroup attitude toward Chinese people.

Predictors	β	SE	t	p
Intercept	35.74	12.89	2.77	.006
Political Ideology	.10	.07	1.41	.159
Age	.12	.17	.68	.497
Belief Ingroup	2.01	1.29	1.57	.121
Covid-19 attitudes	-.12	.01	-1.22	.224
Belief Chinese	.94	1.35	0.69	.488

Table 16 Multiple linear regression on ingroup attitude toward Romanian people.

Predictors	β	SE	t	p
Intercept	34.80	11.73	2.97	.003
Political Ideology	.09	.07	1.24	.216
Age	.02	.17	.15	.878
Belief Ingroup	.25	1.37	.18	.856
Covid-19 attitudes	-.20	.10	-2.07	.039
BeliefRomanian	3.65	1.26	2.89	.004

Table 17 Multiple linear regression on ingroup attitude toward North African people.

Predictors	β	SE	t	p
Intercept	28.80	11.53	2.50	.013
Political Ideology	.15	.07	2.19	.030
Age	-.01	0.16	-.094	.925
Belief Ingroup	2.13	1.39	1.59	.113
Covid-19 attitudes	-.26	0.09	-2.89	.005
BeliefNorthAfrican	1.87	1.11	1.67	.095

7.3.3 Perceived outgroup attitude toward participants' ingroup

The same three separate multiple regression analyses were carried out on the expected attitudes of outgroup members toward the participants' ingroup. Importantly, as expected a main effect of outgroup perceived compliance with COVID-19 preventive behaviors for both Chinese, Romanians, and North Africans emerged. The more respondents believed outgroup members did comply with preventive measures the more positive the perceived outgroup attitude towards the ingroup was. Additionally, for both Chinese and North African outgroups the main effect of ingroup perceived compliance with COVID-19 preventive behaviors emerged: The more respondents believed their ingroup members to comply with preventive measures the more positive the perceived outgroup attitudes towards the ingroup were.

As for political ideology, the main effect emerged only for Romanians and North African outgroups: Respondents who reported a more left-wing political orientation were also more likely to perceive more positive outgroup attitudes towards the ingroup (see Table 18 – 20).

Table 18 Multiple linear regression on Chinese people's attitudes toward the ingroup.

Predictors	β	SE	t	p
Intercept	43.30	11.7575	3.683	< .001
Political Ideology	-.09	.06	-1.38	.170
Age	-.13	.16	-.84	.402
Belief Ingroup	2.45	1.18	2.08	.039
Covid-19 attitudes	-.06	.090	-.64	.520
Belief Chinese	2.84	1.231	2.31	.022

Table 19 Multiple linear regression on Romanian people's attitude toward the ingroup.

Predictors	β	SE	t	p
Intercept	37.54	10.60	3.54	< .001
Political Ideology	-0.16	.06	-2.57	.011
Age	.13	.15	.88	.382
Belief Ingroup	1.33	1.24	1.07	.286
Covid-19 attitudes	-0.10	.09	-1.14	.256
BeliefRomanian	5.44	1.14	4.78	< .001

Table 20 Multiple linear regression on North African people's attitude toward the ingroup.

Predictors	β	SE	t	p
Intercept	41.42	10.63	3.90	< .001
Political Ideology	-.24	.06	-3.71	< .001
Age	-.031	.15	-0.20	.840
Belief Ingroup	2.45	1.24	1.98	.049
Covid-19 attitudes	-.11	.09	-1.34	.182
BeliefNorthAfrican	4.71	1.03	4.58	< .001

7.4 Study 6 – Discussion

Overall, a consistent pattern of findings showed that the perceived compliance with COVID-19 preventive behaviors of outgroup members was always a significant predictor of the personal attitudes towards the specific outgroup and the expected reciprocal attitudes between the groups (from the outgroup and the ingroup). Findings showed a strong link between intergroup attitudes and the perception of how carefully members of an outgroup comply with COVID-19 prevention measures. The correlational nature of the study, however, did not allow to draw clear conclusions about the directionality of the effects. It might well be that more prejudiced individuals are also more likely to perceive outgroups as being less prone to adopt appropriate behaviors aimed at protecting personal and collective health against COVID-19.

Hence, in the following studies, the information about norm compliance was experimentally manipulated by presenting the outcomes of an alleged survey about members of an immigrant group as either strongly or weakly committed to the implementation of specific prevention behavior, namely the use of face masks.

7.5 Study 7 – Overview [17]

The between-participants manipulation was to present to participants the information that the outgroups (Romanian vs. Danish people) were complying with mask-wearing norms for the majority (90%) vs. minority (20%). As literature has been showing, the social environment is structured based on normative differentiation, dividing individuals into norm-conforming vs. violating categories (Brambilla & Leach, 2014; van Leeuwen et al., 2012). When a threat is perceived (i.e., the COVID-19 pandemic), the categorization processes between different social groups become salient. Hence, the intergroup attitudes might negatively increase, since the outgroup is perceived as more likely to be a potential risk for the ingroup's safety. Moreover, the automatic categorization process that follows the compliance vs. violation of social norms leads observers to respond in terms of moral judgments. In the following studies, intergroup attitudes and moral appraisal (in terms of moral emotions and judgments) will be assessed.

7.6 Study 7 – Hypothesis

The present study predicted that the more an outgroup is perceived as relatively reluctant to carefully adopt COVID-19 prevention measures, the less positive the attitudes toward the outgroup will be. Therefore, when only the minority (vs. majority) of the outgroup is presented to comply with mask-wearing, the intergroup attitudes and the group impression (in terms of moral emotion and judgments) will be more negative. The subsequent hypothesis was that when the descriptive norm of the outgroup was not in line with mandatory mask-wearing, negative intergroup attitudes

[17] In January 2022 the use of face mask was mandatory, 14.97% of the population tested positive for COVID-19.

would increase (vs. decrease) toward the outgroup. In addition, the moral appraisal of the outgroup was assessed, namely the emotions and moral judgments that were triggered after reading the survey outcome about the outgroup compliance (vs. violation) with face mask use.

7.7 Participants

To detect a two-way interaction for an ANOVA with a medium effect size, $\eta^2 = .25$, with $\beta = 0.95$ and $\alpha = .05$, the sample needed was N = 209. The sample size was calculated with the web version of the WebPower R package (Zhang & Yuan, 2018). Therefore, two hundred and fourteen participants took part in the study in January 2022. However, one hundred and eighty-nine participants (76 females, 110 males, and 3 others) were considered for the present analyses. Indeed, two participants reported coming from different Countries (such as Tunisia and Lithuania), whereas 23 failed to respond to both our manipulation checks (they were wrong about the group target identity and about the attitudes of the target group). Overall, participants had a mean age of 28.50 years (SD = 8.77), ranging from 18 to 62 years. All participants agreed to the informed consent form. The study was approved by the Ethics Committee of the University of Padua.

7.8 Procedure

At the beginning of the study, participants were presented with the results of a brief poll in which the attitudes towards the face-masking policy of a specific target group were manipulated in a 2 × 2 between participants design. Specifically, participants were told that the 90% majority (vs. 20% minority) of Immigrants from Romania (vs. from Denmark) were in support of mask-wearing as a preventive behavior to contrast the COVID-19 spread. The following example might help to clarify our between-participants manipulation.

After the manipulation, participants had to report how much the outcome of the survey met their expectations on a 7-point Likert scale (1 = not at all, 7 = very much). In addition, participants were probed about their emotional reactions to the survey outcome by reporting how much they felt

anger, disappointment, relief, indignation, joy, and pride (see Haidt, 2003). Responses were provided along a 7-point Likert scale (1 = not at all, 7 = very much). After appropriate rescaling, answers to the 6 items were averaged (α = .87) with higher values indicating more positive reactions (M = 4.06, SD = 1.50). Therefore, the evaluation of the behaviors of the target group regarding the use of face masks was then assessed through 6 items including moral terms (i.e., respectful, disloyal, selfish, immoral, fair, honest). Responses were provided along a 7-point Likert scale (1 = not at all, 7 = very much). After appropriate rescaling, responses were averaged (α = .96) with higher values indicating more positive evaluations (M = 4.54, SD = 1.96). Since the two measures were highly correlated with each other, r(189) = .88, $p < .001$, a single score was computed, between emotional reactions and moral evaluations, and this overall measure was "moral appraisal" (α = .96).

After the moral appraisal measure, a manipulation check was then administered. Participants were shown 10 values and had to mark the percentage that allegedly emerged from the survey presented at the beginning of the study.

Then, the personal attitude toward the use of face masks was assessed through 3 items (i.e., "I think that the use of face mask is vital to stop the spread of the virus", "I think that the benefits of using face masks are far stronger than the inconvenience of wearing them"; "It irritates me very much to see a person who does not wear the mask correctly in a public place, such as a supermarket"). Responses were provided along a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree, α = .88; M = 5.85, SD = 1.26)

Then, intergroup attitudes were administered. Participants were asked about their attitudes towards immigrants both from Romania and Denmark, regardless of the experimental manipulation to which participants were exposed ("My personal attitude toward Romanians/Danes is"). Responses to these two items were provided along a slider ranging from 0 ("very negative") to 100 ("very positive"). Similarly, to Study 6, two items assessed the expected attitudes of Italians toward immigrants from Romania and Denmark ("I think that the attitude of Italians toward

Romanian/Danes people is…" 0 "very negative" – 100 "very positive"). Two further items assessed the expected attitudes of immigrants from Romania and Denmark toward Italians ("I think that the attitude of Romanian/Danes people toward Italians is…" 0 "very negative" – 100 "very positive").

Finally, as a control variable, participants were required to show their level of agreement with the following statement: "The fact of being Italian is a central aspect of my identity". Responses were provided along a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree; M = 4.33 SD = 1.61).

7.9 Results

7.9.1 Confirming expectancies

A 2 (outgroup presented in the survey: immigrants from Romania vs Denmark) x 2 (outgroup descriptive norm: 20% vs 90%) ANOVA with both factors between participants. Results yielded a marginal main effect of the outgroup, $F(1,185) = 3.40$, $p = .057$, $\eta^2_p = .01$. Moreover, there was a main effect of the descriptive outgroup norm, $F(1,185) = 57.50$, $p < .001$, $\eta^2_p = .22$. The interaction effect was also significant, $F(1,185) = 13.74$, $p < .001$, $\eta^2_p = .05$. Overall, when respondents were presented with the majority (90%) of the outgroup complying with mask-wearing, they reported that their expectations were more in line for Danes (M = 5.76, SE = .22) than for Romanians (M = 4.58, SE = .21), see Figure 7.

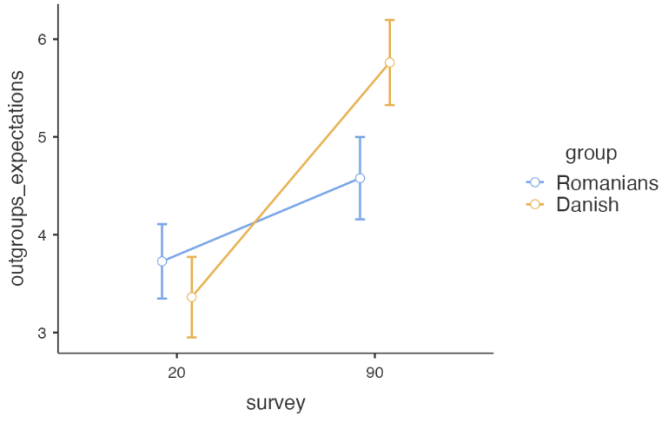


Figure 7 Confirming expectancies.

7.9.2 Moral Appraisal

A 2 (outgroup presented in the survey: immigrants from Romania vs Denmark) x 2 (outgroup descriptive norm: 20% vs 90%) ANOVA with both factors between participants. Results yielded a main effect of the outgroup, $F(1,185) = 7.15$, $p = .008$, $\eta^2_p = .04$. Danes elicited more moral appraisal ($M = 4.62$, $SE = .11$) as compared to Romanians ($M = 4.22$, $SE = .11$). Moreover, there was a main effect of the descriptive outgroup norm, $F(1,185) = 329.65$, $p < .001$, $\eta^2_p = 0.64$. When the descriptive norm was followed by the majority of the outgroup, the outgroup elicited more moral appraisal ($M = 5.75$, $SE = .11$), than when the descriptive norm was followed only by the minority ($M = 3.09$, $SE = .10$). The interaction effect was not significant, $p = .542$.

7.9.3 Personal attitude toward the use of face masks

The same 2 (outgroup presented in the survey: immigrants from Romania vs Denmark) x 2 (outgroup descriptive norm: 20% vs 90%) ANOVA was carried out on the personal attitude toward the use of face masks. A main effect of the alleged survey outcome emerged, $F(1,185) = 9.31$, $p = .003$, $\eta^2_p = .05$, indicating that more favorable personal attitudes were reported when the outgroup descriptive norm was followed by the majority[18]. No effect of the outgroup identity emerged, $p = .082$. Noteworthy, the interaction between the alleged survey outcome and the target group identity emerged, $F(1,185) = 4.42$, $p = .037$, $\eta^2_p = .02$. Indeed, participants reported more favorable personal attitudes toward face masks when the descriptive norm was followed by the majority of Danes ($M = 6.16$, $SE = .19$) than when Romanians did ($M = 6.10$, $SE = .18$). At the same time when only 20% of Romanians followed the outgroup descriptive norms, participants reported more positive attitudes toward the face mask ($M = 5.93$, $SE = .16$) as compared to Danes ($M = 5.24$, $SE = .18$).

[18] post-hoc comparison: $t(185) = -3.05$, $p_{turkey} = .003$.

7.9.4 PERSONAL ATTITUDE TOWARD THE OUTGROUPS

Since participants reported their attitudes toward both Danes and Romanians regardless of the experimental manipulation, a 2 (outgroup presented in the survey: immigrants from Romania vs Denmark) x 2 (outgroup descriptive norm: 20% vs 90%) x 2 (evaluated outgroup: Danish vs. Romanian) ANOVA was carried out on the personal attitude toward the two outgroups presented. The former two factors were manipulated between-participants whereas the latter was measured within-participants. A main effect of the evaluated outgroup emerged, F (1,185) = 18.69, $p < .001$, $\eta^2_p = .09$, indicating more favorable personal attitudes toward Danes (M = 68.40, SE = 1.29) than toward Romanians (M = 63.20, SE = 1.39). The between-participant main effect of the outgroup descriptive norm emerged, F (1,185) = 9.79, $p = .002$, $\eta^2_p = .05$. When the outgroup descriptive norm was presented as followed by the minority (20%) this information elicited less positive personal attitude (M = 62.00, SE = 1.63) than with 90% compliance (M = 69.50, SE = 1.76). The main effect of the outgroup presented in the survey did not emerge, p = .780. Finally, a three-way interaction emerged, F (1,185) = 4.78, $p = .030$, $\eta^2_p = .02$. Hence, in order to better understand the three-way interaction, participants were divided in two groups on the bases of the outgroup presented in the manipulation (either Romanian or Danes) and then for each group an independent t-test was run in order to test the effect of the information provided in the manipulation (descriptive norm: 20% vs 90%) on the personal attitude. As for the group of participants who were presented with information about the Romanians, results showed that personal attitude toward Danes (the outgroup participants did have information about their compliance) was not affected by the information about Romanian, $p = .057$. Whereas, the personal attitude was affected for Romanians, t (98) = - 2.58, $p < .001$, d = -.52. In fact, respondents reported less positive attitude after reading about the 20% survey outcome (M = 57.65, SE = 2.61) than the 90% (M = 67.40, SE = 2.70).

Contrariwise, as for participants who were presented with information about Danes, results showed that personal attitude toward Romanian (the outgroup participants did have information about their compliance) was not affected by the information about Danes, $p = .151$. Whereas, the

personal attitude towards Danes was affected by the information provided in the manipulation, t (87) = -2.69, p = .004, d = -.53 (M = 63.17, SE = 2.67 for 20%; M = 73.79, SE = 2.85, for 90%; see Figure 8).

Overall, only personal attitude toward the specific outgroup presented changed as a function of their compliance with the descriptive norm: When the majority (90%) of the target outgroup complied with the descriptive norm, participants reported more positive personal attitude toward the specific outgroup. Conversely, a more negative personal attitude emerged when the outgroup presented was followed only by the minority (20%) with the descriptive norm.

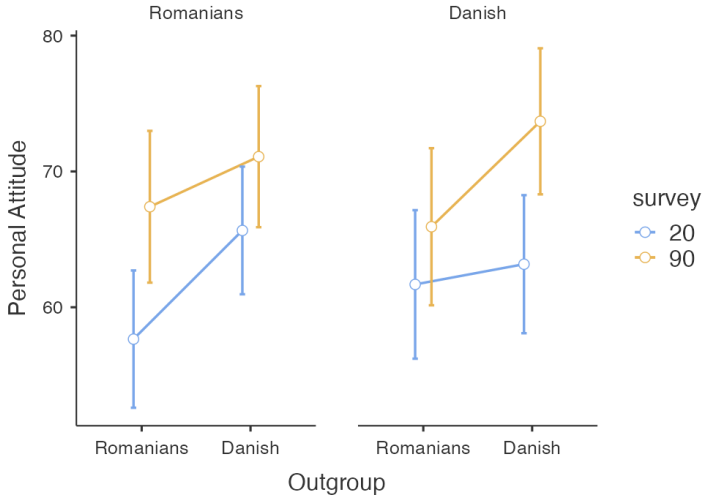


Figure 8 Personal attitude toward the outgroups.

7.9.5 Perceived ingroup attitude toward the outgroups

The same 2 (outgroup presented in the survey: immigrants from Romania vs Denmark) x 2 (outgroup descriptive norm: 20% vs 90%) x 2 (target outgroup: Danish vs. Romanian) ANOVA was carried out on perceived ingroup attitude toward the outgroup. In this case, only a main effect of the within-participants factor, target outgroup, emerged, F(1,185) = 292.27, p < .001, η^2_p = .61. Participants expected more positive attitudes from their ingroup (i.e., Italians) toward Danish (M = 65.60, SE = 1.16) than Romanian people (M = 35.40, SE = 1.26). No other effects emerged.

7.9.6 PERCEIVED OUTGROUP ATTITUDE TOWARD PARTICIPANTS' OUTGROUPS

The same 2 (outgroup presented in the survey: immigrants from Romania vs Denmark) x 2 (outgroup descriptive norm: 20% vs 90%) x 2 (target outgroup: Danish vs. Romanian) ANOVA was carried out on perceived attitudes from each specific outgroup toward participants' ingroup (i.e., Italians). A main effect of the within-factor, the target outgroup, emerged, F (1,185) = 8.40, p = .004, η^2_p = .04, indicating that more favorable attitudes towards participants' ingroup (i.e., Italians) were expected from Danes (M = 60.20, SE = 1.22) than from Romanians (M = 56.40, SE = 1.40). Also, the between-participant main effect of the outgroup descriptive norm emerged, F (1,185) = 30.57, p < .001, η^2_p = .14. When the outgroup descriptive norm was presented as followed by the minority (20%) this information elicited less positive perceived outgroup attitude (M = 52.00, SE = 1.53) than with 90% compliance (M = 64.60, SE = 1.67). The main effect of the outgroup presented in the survey did not emerge, p = .772. Finally, and more importantly for the aim of the present study, a three-way interaction emerged, F (1,185) = 30.78, p < .001, η^2_p = .14. Also in this case, in order to better explore and understand this interaction, participants were divided on the bases of the outgroup presented in the manipulation (Romanian vs. Danes). For each group of participants two independent t-test were run in order to test the effect of the provide descriptive norm (20% vs. 90%) on the perceived attitudes from the outgroup towards participants' ingroup (i.e., Italians). As for respondents who were presented with information about the Romanians, results showed that perceived Danes' attitude (the outgroup participants did have information about their compliance) was not affected by the information about Romanian, p = .070, whereas, the perceived Romanians' attitude was affected by the descriptive norm, t (97) = -4.57, p < .001, d = -.98 (M = 45.60, SE = 2.93 for 20%; M = 65.29, SE = 2.60, for 90%).

As for participants who were presented with information about Danes, results showed that perceived Romanians' attitude (the outgroup participants did have information about their compliance) was not affected by the information about Danes, p = .077. Whereas, Danes' attitude was perceived as less positive after reading the survey outcome, t (87) = -5.49, p < .001, d = -.30 (M

= 50.47, SE = 2.68) and more positive after reading that the majority complied with the descriptive norm (M = 70.78, SE = 2.52, for 90%; see, Figure 9). Hence, similarly to personal attitudes, perceived outgroup attitude changed as a function of the compliance with the descriptive norm, that was experimentally manipulated with the survey outcome percentage (20% vs. 90%).

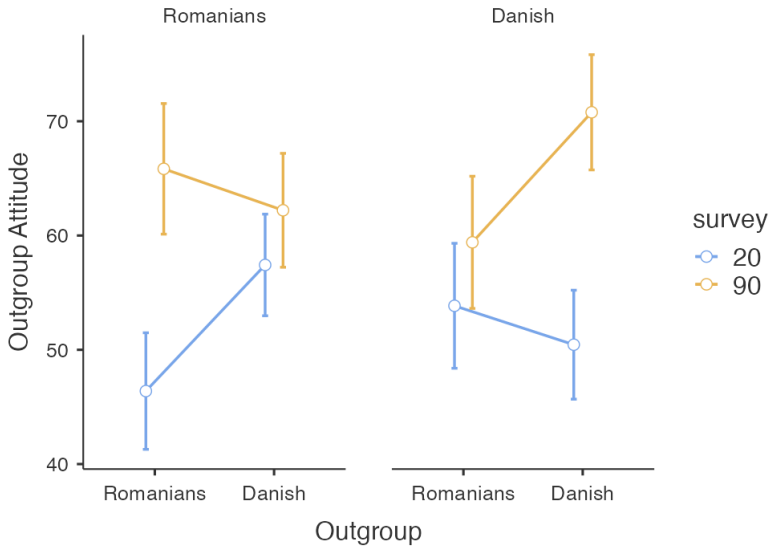


Figure 9 Outgroup attitudes toward the ingroup.

7.9.6 National identity

From a 2 (Outgroup described in the survey: Immigrants from Romania vs Denmark) x 2 (outgroup descriptive norm: 20% vs 90%) ANOVA, no main nor interaction effect emerged on the reported identification with the national ingroup (all ps > 0.388).

7.10 Study 7 – Discussion

As predicted, there was a link between intergroup attitudes and the perception of how carefully members of an outgroup comply with COVID-19 prevention measures. Indeed, low levels of perceived compliance with the prevention measures not only were associated with more negative attitudes towards the outgroups but also with the idea that the outgroups hold negative attitudes towards the ingroup. Low (vs. high) levels of perceived compliance were used as a cue to infer how much the minority outgroup cares about the majority ingroup. The findings affirmed the primary

objective of the present study, demonstrating that attitudes toward both target groups indeed underwent specific changes in response to the information presented in the descriptive norm. This observed pattern remained consistent across both target groups. However, this further highlighted that the Danish group consistently elicited a more positive attitude in comparison to the Romanian group. Interestingly, the perception of the Romanian attitude towards the ingroup differed based on their compliance with descriptive norms. Participants perceived Romanians more unfavorably when the minority complied with the descriptive norm. Conversely, when Romanians followed the descriptive norm for the majority, they were viewed more favorably, or at least not as negatively. This aligns with the study's hypothesis and with theories suggesting that conformity to majority norms is often associated with positive perceptions.

Furthermore, the information about the outgroup descriptive norm had an impact also on outgroup moral appraisal. Indeed, when the minority followed the descriptive norm, the perceived moral appraisal was less positive than when the outgroup majority did. However, differently from intergroup attitudes, the outgroup identity had an impact on perceived moral appraisal. Danish people were evaluated as more morally acceptable when they were presented with a high level of descriptive norm compliance as compared to Romanians' evaluation. Furthermore, when respondents were presented with the majority (90%) of the outgroup complying with mask-wearing, they reported that their expectations were more in line for Danish than for Romanians. Hence, the outgroup identity played a role in outgroup beliefs, measured by the measures of 'confirming expectancies', and moral appraisal. This result might be explained by group stereotypes: Respondents might have positive inferences regarding Danish people, assuming that they are of higher status; conversely, Romanian suffer from prejudice since they are perceived as lower in morality and competence in the Italian context (Meneghini et al., 2023), thus respondents might have perceived them as a lower-status group.

Therefore, Study 8 aims to shed light on the effect of outgroup identity when also the ingroup norms are made salient. The aim is to assess whether the relevance of the ingroup behavior is the same as the outgroup.

7.11 STUDY 8 – OVERVIEW [19]

Individuals demonstrate sensitivity to outgroup information in norm-based reasoning because it serves to further differentiate and maintain a positive self and ingroup image, as suggested by the Social Identity Theory (Tajfel & Turner, 1979). However, some studies have proposed that only ingroup norms are relevant in individuals' inferences, according to the perceived outgroup irrelevance theoretical framework (for instance see Hysenbelli et al., 2013). Therefore, Study 8 aims to explore the role of the norm source: ingroup vs. outgroup norms. In doing so, Study 8 implemented a 2 (Romanians descriptive norm: 65% vs. 5%) x 3 (Italians descriptive norm: 65% vs. 5% vs. no information) between-participants design. The aim was to assess whether outgroup or ingroup descriptive norms predicted different intergroup attitudes.

7.12 STUDY 8 – HYPOTHESIS

The following study aims to assess the effect of ingroup vs. outgroup normative behavior on intergroup attitudes. Since the categorical differentiation sorts the social sphere into ingroups ('us') and outgroups ('them'), the interaction between these categories underlines different hypotheses. Indeed, the current study aims to investigate whether individuals are sensitive to outgroup (vs. ingroup) norms. Given the heightened sensitivity to norm violations, individuals might be more responsive to outgroup (vs. ingroup) normative behavior and this might have an impact on increasing (vs. decreasing) positive intergroup attitudes and outgroup moral appraisal.

[19] Data collection for Study 8 was run when in Italy 10.45% of the population tested positive for COVID-19.

7.13 Participants

To test the abovementioned hypothesis the aim was to detect a two-way interaction for the ANOVA with a medium effect size, $\eta^2 = .25$, with $\beta = .95$ and $\alpha = .05$, the sample needed was N = 250 total. The sample size was calculated with the web version of the WebPower R package (Zhang & Yuan, 2018). Three hundred and three participants residing in Italy were recruited through Prolific after the 1st of May 2022. Indeed, after this date, all the COVID-19 restrictions were lifted, and the face-masking policy was no longer legally enforced. The final sample comprised 280 participants (122 females, 149 males, and 9 others) with a mean age of 27.22 years (SD = 8.12) due to the failure of the manipulation check (n = 18), or because they reported a foreign origin (n = 5). The study was approved by the University of Padua Ethics Committee.

7.14 Procedure

At the beginning of the study, participants were presented with a brief poll in which a specific target group's positive vs. negative attitudes towards the face-masking policy were manipulated. Specifically, participants were told that the 65% majority (vs. 5% minority) of Immigrants from Romania (the outgroup) vs. Italians (the ingroup) were in support of wearing face masks as a preventive behavior to contrast the COVID-19 spread even after the face-masking mandate would expire. In addition, the ingroup behavior was manipulated: in one condition, only 5% percentage of Italians were inclined to continue using the face mask; in the other 65% of Italians. Hence, four different experimental conditions were presented to participants. The following example might help to clarify our between-participants manipulation.

"A recent survey carried out in Italy reveals that, beyond the legal obligations, as many as 65% (vs. 5%) of Immigrants from Romania are still in favor of the use of face masks to prevent the spread of COVID-19 even after the mandate expires. The percentage of Italians still in favor of using face masks is 65% (vs. 5%)".

Furthermore, additional two separate conditions were added in which no information about the ingroup was given, but only the Romanian target group's attitude toward the use of face masks (positive vs. negative): “A recent survey carried out in Italy reveals that, beyond the legal obligations, as many as 65% (vs. 5%) of Immigrants from Romania are still in favor of the use of face-masks to prevent the spread of COVID-19 even after the mandate will expire”.

After the manipulation, participants reported their moral appraisal and ingroup attitudes as in Study 7. After the manipulation check (see Study 7, PROCEDURE section), only participants in the control condition (the one without mentioning the descriptive mask-wearing norm of Italians), were asked to focus on Italians (i.e., the ingroup) and to estimate the percentage of the ingroup that will still use the face mask on a slider from 0 to 100% (M = 33.85, SD = 21.15).

Differently from Study 7, this time all participants were asked to report on a 7-point Likert scale, from 1 (“not at all”) to 7 (“completely") their present concern about being infected by COVID-19 (M = 3.79, SD = 1.55) and, together with demographics, participants were then required to report their overall political orientation along a continuum (0 = extreme left, 100 = extreme right) (M = 28.72, SD = 19.08).

7.15 RESULTS

7.15.1 MORAL APPRAISAL

A 2 (Romanians descriptive norm: 65% vs. 5%) x 3 (Italians descriptive norm: 65% vs. 5% vs. no information) ANOVA analysis was run on moral appraisal. Results showed a main effect of the outgroup norm, F (1,274) = 147.81, $p < .001$, $\eta^2_p = .35$; but not of the ingroup, $p = .131$. The two-way manipulation did not emerge, p = .502. However, Figure 10 might help to better understand the results. In fact, the outgroup norm was affecting the moral appraisal toward the outgroup, regardless of the ingroup behavior. In a subsequent ANCOVA political ideology was added and it showed no effect on moral appraisal, $p = .515$. Hence, the pattern of results was confirmed to be the same.

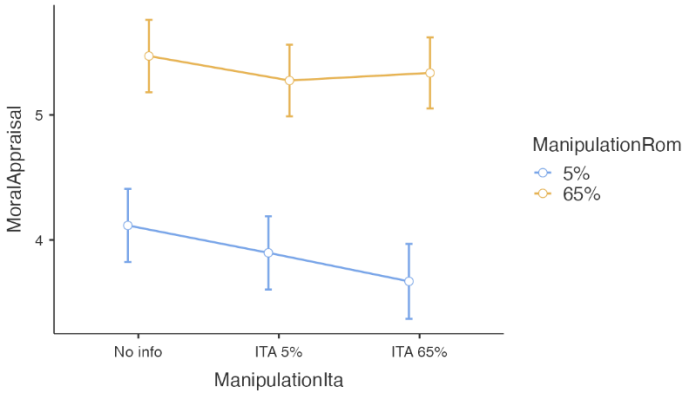


Figure 10 Moral appraisal.

7.15.2 Personal Attitude toward Romanians

A 2 (Romanians descriptive norm: 65% vs. 5%) x 3 (Italians descriptive norm: 65% vs. 5% vs. no information) ANOVA was run on personal attitude toward the outgroup. Results showed a main effect of the outgroup norm, F (1,274) = 10.63, $p < .001$, $\eta^2_p = .04$; but not of the ingroup, $p = .085$. Indeed, when Romanians complied for the majority with the descriptive norm, personal attitudes were more positive (M = 70.30; SE = 1.62) than when they did comply but only for the minority (M = 62.70; SE = 1.67). The two-way interaction did not emerge, p = .189. Meaning that the outgroup norm was affecting the personal attitude toward the outgroup, regardless of the ingroup behavior. In a subsequent ANCOVA political ideology was added and it showed no effect on moral appraisal, $p = .112$. Hence, the pattern of results was confirmed to be the same.

7.15.3 Perceived Ingroup Attitude toward the Outgroups

As for the perceived ingroup attitude toward Romanians, no significant effect emerged in the ANOVA. Nor for the descriptive outgroup norm presented, $p = .718$, or the ingroup information, $p = .921$, or the two-way interaction emerged, $p = .458$.

7.15.4 Perceived Outgroup Attitude toward Participants' Outgroups

A 2 (Romanians descriptive norm: 65% vs. 5%) x 3 (Italians descriptive norm: 65% vs. 5% vs. no information) ANOVA was run on the outgroup attitude toward the ingroup. Results showed a

main effect of the outgroup norm, F (1,274) = 24.56, $p < .001$, $\eta^2_p = .08$; but not of the ingroup, $p = .639$. Again, when Romanians complied for the majority with the descriptive norm, personal attitudes were more positive (M = 61.50; SE = 1.46) than when they did comply but only for the minority (M = 51.10; SE = 1.50).

The two-way interaction did not emerge, p = .320. Meaning that the outgroup norm was affecting the perception of their attitude toward the ingroup, regardless of the ingroup behavior. Political ideology was then added as a control variable in the ANCOVA (no effect, $p = .138$), and the pattern of results was confirmed to be the same.

7.16 Study 8 – Discussion

Overall, no effect related to ingroup information yielded a main effect on the dependent variables assessed (e.g., moral appraisal, intergroup attitudes). This result strengthened the previous findings of Studies 6 and 7 by confirming the relevance of outgroup normative behavior in intergroup attitudes and group perception. Specifically, the more the majority (vs. minority) of the outgroup complied with mask-wearing the more personal and perceived outgroup attitudes were, regardless of the ingroup normative behavior. Similarly, moral appraisal was affected by the outgroup descriptive norm: High (vs. low) levels of compliance were used as a cue to infer how much the minority outgroup was morally acceptable.

Despite political ideology being one of the main predictors of outgroup antipathy (Brooks et al., 2016; Pettigrew et al., 2007), in Study 8 no results were confirmed for intergroup attitudes or moral appraisal. However, political ideology played a central role in personal attitudes toward the use of face masks, and COVID-19 concerns. Conservative ideology was related to more negative attitudes toward behavior aimed at protecting personal and collective health against COVID-19 and less COVID-19 concern.

7.17 General Discussion

In the previous systematic review (see Chapter 6), studies showed that heightened public threats led to generalized hatred of ethnic minorities. The pandemic intensified negative backlashes against outgroups already facing pre-existing challenges rooted in historical inequities (Wenger & Lantz, 2021). Based on the knowledge gained from all these theoretical and empirical contributions in the systematic review, Chapter 7 aimed at testing, on an empirical level, the impact of being informed about outgroup compliance (vs. violation) with preventive behaviors (e.g., mask-wearing) on intergroup attitudes. First, a correlational approach was implemented to assess whether there was a link between perceived outgroup compliance with normative behavior and intergroup attitudes (Study 6). Results showed that the perceived compliance with COVID-19 preventive behaviors of outgroup members was always a significant predictor of the personal attitudes towards the specific outgroup and the expected reciprocal attitudes between the groups (from the outgroup to the ingroup). It was needed to experimentally manipulate the compliance to empirically test the directionality of this pattern (Study 7). The findings indicated that low levels of perceived compliance with the prevention measures not only were associated with more negative attitudes towards the outgroups but also with the idea that the outgroups hold negative attitudes towards the ingroup. Furthermore, the information about the outgroup descriptive norm had an impact also on outgroup moral appraisal. Another key element was to compare the outgroup normative behavior with the ingroup one (Study 8). It was expected that more positive intergroup attitudes would arise when both the ingroup and the outgroup endorsed in the same way with the descriptive norm (congruency). On the contrary, more negative intergroup attitudes would arise when the ingroup and the outgroup differently endorsed the descriptive norm (incongruency). Nonetheless, findings showed that only information about outgroup descriptive norms played a role in intergroup attitudes. Again, positive intergroup attitudes were reported when the descriptive outgroup norm was followed by the majority of the outgroup.

In conclusion, the expected results were confirmed: On an empirical level being informed about outgroup compliance with preventive behaviors (mask-wearing) fostered positive intergroup

attitudes. On the contrary, a lack of information or exposure to misinformation increased belief in negative stereotypes. Hence, these empirical findings might be a contribution to interventions aimed at reducing the negative mental representation of stigmatized social groups. Specifically, on an institutional level, outgroup compliance with ingroup norms should be communicated and shared to help individuals shift their negative outgroup stereotypes.

Indeed, in situations where individuals typically respond to fear by relying on stereotypes, the probability of such a response could decrease when it is provided access to accurate information outlining effective ways to counteract the perceived threat. Consuming reliable information could act as a buffer against prejudicial stereotypes.

CHAPTER VIII

CONCLUSIONS

8.1 IMPLICATION FOR FACE PERCEPTION

This comprehensive research contributed to the study of the intricate dynamics of social perception within the widespread use of face masks, with a specific focus on their influence on processes such as trait inferences from faces and social interactions. Hence, to highlight the findings of the present research work, the focus of the discussion will be on the three aspects inquired by the present thesis: The implication of face masks in person perception, the implication for understanding how the pandemic affected social interactions, and practical and applied implication within the realm of the present research work.

Starting from the implication of face masks in person perception, in making trait inferences, individuals use the faces, alongside with the observed behavior of a target, as a piece of information to understand the target's personality (Fiske et al., 2002). With the pandemic, scholars focused on the impact of face masks on individual perception, emphasizing the shift in perception brought about by the COVID-19 pandemic (Bennetts et al., 2022; Biermann et al., 2021). Before the pandemic, face masks were associated with impairments in emotion and identity recognition, hindering communication and leading to negative social judgments (Carbon, 2020; Freud et al., 2020). However, with the outbreak of COVID-19, face masks became a global preventive measure, and studies indicated a change in perception (Biermann et al., 2021; Schönweitz et al., 2022). Mask wearers were initially associated with illness and threat but were later considered more trustworthy and socially desirable than those without masks. This shift was attributed to the normalization of mask-wearing as a preventive measure: Compliance with COVID-19 measures became a social cue influencing positive impressions (Olivera-La Rosa et al., 2020; Schönweitz et al., 2022).

Moreover, the present research explored the implication of face masks on trait perception. Specifically on the fundamental social dimension of judgment such as trustworthiness,

attractiveness, and moral judgments. Across several studies face masks initially led to lower trustworthiness perceptions but later became associated with trust and safety, especially among individuals compliant with preventive measures (Mejova et al., 2023; Mallinals et al., 2021). However, previous studies (see Olivera-La Rosa et al., 2020) collected only explicit attitudes and evaluation of masked and unmasked targets. In the present dissertation, the aim was to provide insight also into less conscious responses, namely implicit associations of mask wearing and more automatic reactions.

Findings revealed that the impact of face masks on trait inferences from faces was not uniform, with distinct variations arising from individual predispositions and contextual factors. Thus, highlighting the powerful role of situational and contextual information in influencing trait inferences that should be addressed in future studies on face perception.

Study 1 explored explicit attitudes and implicit associations related to mask-wearing, indicating a general halo effect favoring masked individuals on an explicit level. However, explicit measures are indeed sensitive to response strategies or social desirability, that are unlikely to affect implicit measures (Nosek et al., 2011). Hence, Study 1 adopted also an IAT (Greenwald et al., 1998) to detect implicit associations.

However, the automatic associations with face masks and moral or positive categories did not find support on an implicit level (see Study 1). A possible explanation might be that the stimuli selected reminded to negative aspect of the pandemic (for instance, the negative words in the evaluative IAT) or to contagious related associations (e.g., the association of face masks with diseases).

Nonetheless, with Studies 2 and 3 it was possible to ascertain the role of face masks in influencing more spontaneous processes. Results suggested that face masks were not only a mere perceptual cue, but they became a salient social cue used to spontaneously organize information in memory (see Studies 2 & 3). Thus, underling that traits impression from faces are influenced by both perceptual cues (e.g., the size of the eyes) and more conceptual information, such as the

meaning attributed to specific features of the target, such as the presence vs. absence of the face mask.

Subsequent studies investigated the role of contextual factors in impression formation and traits inferences, demonstrating that also the visual context significantly shaped trait inferences (see Study 4) both on explicit inferences and on automatic response times in deciding whether to approach or to avoid a masked (vs. unmasked) targets in an indoor (vs. outdoor) context. Overall, findings of Study 4 pointed to the importance of considering trait impressions from faces as context-dependent and highly flexible (see Hehman et al., 2019).

An additional implication of the present studies on trait inferences from faces was to highlight that the situational norms related to mask-wearing, influenced by both injunctive and descriptive norms, played a crucial role in guiding social behavior. The longitudinal approach adopted in Study 5 further revealed the dynamic nature of trait inferences from faces when the normative context changed, showing the implication for face perception when the normative context supported more the implementation of mask wearing as compared when this norm was not strongly supported anymore. Indeed, positive perception bias toward mask wearers were once again context dependent: Temporal factors, such as changes in normative contexts, were identified as key contributors to the variability in facial impressions involving individuals wearing face masks.

In conclusion, this research highlighted the multifaceted impact of face masks on trait inferences – both on explicit attitudes and on automatic association processes – from faces, shedding light on individual differences, contextual influences, and the evolving nature of trait inferences during the COVID-19 pandemic. In the end, these findings offered a nuanced understanding of how face masks might have shaped face perception, highlining the factors that can shape face perception in general.

8.2 Implication for Understanding how the pandemic affected Social Interaction

The human brain is very fast in making evaluative judgments and distinguishing bad from good stimuli (Leuthold et al., 2015; Yoder & Decety, 2014). As previously metioned, individuals form inferences about a person by observing their behavior or nonverbal cue (e.g., their faces), however, when forming inferences about a group, people usually tend to use information already available in memory (e.g., stereotypes, see Hamilton & Sherman, 1989). Additionally, threatening situations elicit the social divide between social groups, "us" vs. "them", with the outgroup being more likely to represent a potential threat to the ingroup's survival (Fairlamb & Cinnirella, 2020; Vezzali et al., 2017). Therefore, the relevance of other's behavior becomes extremely important in a threatening situation, such as the pandemic. COVID-19 underlined the need for individuals to find evident cues signaling whether an interaction could be risky or not. Hence, to understand whether an outgroup member was a threat, individuals relied on information already available in memory such as present group stereotypes. In the case of a threat related to health, the literature on the process of the Behavioral Immune System (BIM, Schaller & Park, 2011) underlines that negative attitudes toward ethnic/national outgroups might be due, at least partially, to the perceived threat they pose in terms of a possible contagion due to negative outgroup stereotypes (Faulkner et al., 2004). Indeed, research evidence indicates that ethnic outgroups were considered particularly threatening because they did not follow the hygienic and pathogen-neutralizing norms that have evolved within the ingroup to prevent the potential spread of diseases (Karinen et al., 2019; Zakrzewska et al., 2019; see also Schaller & Murray, 2008; Tybur & Lieberman, 2016). Hence, ethnic outgroups might be perceived as not complying with the local traditional norms that implemented to limit the proliferation and transmission of pathogens (e.g., food preparation, and hygiene practices). Therefore, social interactions might be affected due to the increase of negative intergroup attitudes since the outgroup is perceived to represent a pathogen threat.

Xenophobic attitudes do not appear to only originate from the assumption that ethnic outgroups are the major source of transmissible diseases (Schaller et al., 2021). The perception of

outgroup normative behavior affected also inferences related to several social dimensions (e.g., competence and moral appraisal) originating from the assumption that some groups are poorer in core social dimensions (e.g., competence, and morality) than others, and thus justify their lower status (see Kai & Jost, 2003). Implicitly, individuals tend to differentiate two social targets in a comparative context in which advantaged and disadvantaged group members are seen as possessing distinctive strengths and weaknesses (Kay & Jost, 2003). Literature has shown how implicit cognition, namely the activation of outgroup stereotypes, alters the perception of the outgroup's moral status (Gawronski & Payne, 2010). This theoretical framework was also tested in the present dissertation work, in which it was explored the effect of the pandemic on the perceived compliance of outgroups with a series of prevention measures. The findings indicated that the perception of outgroup compliance with descriptive norms affected the attitudes toward those outgroups. This pattern of results was in line both with the BIS theoretical framework (Schaller & Park, 2011), and with implicit bias toward outgroups (Gawronski & Payne, 2010). In fact, the link between perceived outgroup compliance (vs. violation) and positive (vs. negative) intergroup attitudes was confirmed throughout Studies 6 to 8: The perception of outgroup normative behavior affected also inferences related to several social dimensions (e.g., competence and moral appraisal) and intergroup attitudes.

Moreover, results showed that experimentally manipulating the normative behavior of the outgroup (see Study 7 & 8), led respondents to different moral inferences and attitudes toward the outgroup: The more the outgroup normative behavior was followed, the more positive the outgroup moral appraisal was, as well as the attitudes reported toward the outgroup. Therefore, in the "us" vs. "them" divide the ingroup was always perceived as more moral compared to the lower-status outgroups, such as stigmatized ethnic minorities (i.e., Romanians in the Italian context).

Knowing how implicit cognition might cause negative outgroup perception and subsequent behavioral outcomes (e.g., intergroup attitudes, group inferences), might inform (rather than uninformed) individuals about their biases (Gawronski & Payne, 2010). This might help individuals be aware of the fact that stereotypes about social groups likely do not accurately reflect the true

attributes of outgroup members. Moreover, stereotypes serve the purpose of helping individuals fulfill their motivation for system justification, which is the psychological mechanism to perceive the current societal status quo as fair, legitimate, and desirable, even when confronted with conflicting information or interests (Cichocka et al., 2015; Van Lange et al., 2012; Kay et al., 2007).

In conclusion, the present research provided a theoretical and empirical contribution to the crucial importance of effectively managing individuals' mental representations of outgroup members. The findings suggest that interventions targeted at mitigating the perceived outgroup threat (e.g., fear of outgroup contagion in a pandemic) can concurrently alleviate negative responses directed toward outgroups. A key objective of such interventions should be to reshape the mental representations of stigmatized social groups. This can be achieved at an institutional level by emphasizing perceived outgroup compliance with ingroup norms. This research was meant to offer experimental insight into the practical implications of psychological interventions in reshaping group perceptions and intergroup attitudes, hence fostering constructive and respectful societal relations.

8.3 Implications and Limitations

Building on the insights gained from the current thesis, which focused on the impact of a single, consistent factor (mask-wearing) during the COVID-19 pandemic on social perception, future research should delve deeper into the multifaceted dimensions of pandemic-related norms and their social implications. Given the fluctuating nature of COVID-19 norms during the study period, a key contribution of the present thesis is to give a first set of studies that underlined how different types of changing norms influence social perception and behavior. Future studies could develop from the present research by analyzing a broader range of preventive measures beyond mask-wearing, such as social distancing or vaccination statuses, and examining their impact on interpersonal and intergroup dynamics.

Furthermore, predictive models suggest that pandemics will continue to be a challenge in an increasingly interconnected world (Coccia, 2023). Future studies should therefore focus on developing and testing theoretical frameworks that can predict social and psychological responses to emerging health crises. Hence, the present research work could be an applied contribution to identify which factors and variables can have an impact on social and individual responses. This could involve interdisciplinary collaboration, integrating insights from public health, psychology, sociology, and behavioral economics, to create robust models that can guide policy and public health interventions in real-time during pandemics. Ultimately, the goal of such research would be not only to understand the immediate social effects of pandemic norms but also to contribute to the development of strategies that can mitigate negative social impacts, by implementing more effective communication strategies during future health crises (see Van Bavel et al., 2020 at the outbreak of the pandemic).

Building on the exploration of pandemic behaviors and their immediate social effects, the dynamic and unpredictable nature of COVID-19 norms, as highlighted in the present thesis, adds a layer of complexity to understanding their impacts.

As mentioned at the beginning of the present thesis, during the data collection of the present research COVID-19 norms changed quite often and unpredictably. This aspect was a double-edge sword. In fact, it was a limitation because it was not possible to replicate some of the observed effects, due to the continuous change of the normative context. However, it was also a strength of the present research work because it provides a unique frame in which run experimental studies on social perception.

However, the limited amount of time available for the data collection through the different rules of the pandemic, provided the present studies with a limited sample size, robust enough only for a two-way interaction. To overcome the limitation related on the data collection and therefore to the limited sample size, it was necessary to assess the impact of COVID-19 focusing on one ‘fixed’ factor (i.e., mask-wearing throughout the pandemic) on social perception and adding different

perspectives while studying this relationship. Hence, the present research first focused on the general impact on individual perception and trait inferences from faces. Then, on the impact of the pandemic on group perception, always using mask-wearing as a fixed factor to highlight some differences.

Another possible limitation of the current studies is related to the absence of specific hypothesis and subsequent analysis concerning gender differences was due to a decision rooted in the acknowledgment of the sample size limitations. While the literature may have suggested the relevance of exploring gender variations, the study's commitment to methodological rigor and precision led to the prioritization of other aspects. This choice ensures that the findings and interpretations derived from the research maintain a higher level of reliability and accuracy within the defined scope of the investigation.

Additionally, in terms of methodological rigor, the choice was made to exclusively utilize faces sourced from the Chicago Face Database (retrieved from Ma et al., 2015) in the investigations on trait inferences. This decision was based on the advantages it offers, providing to the studies to achieve precise replications by employing the identical stimuli utilized by other researchers.

This approach not only enhances the robustness of the findings but also underscores the broader implications of the research in the context of preventive norms.

The relevance of studying preventive norms and their effect on social perception is that in an increasingly populated world, pandemics are thought to be something that might be present in the future. Predictive models warn about the likelihood of recurrent new pandemics (Marani et al., 2021; Markov et al., 2022). Therefore, it becomes essential to continue to explore the multifaceted ways in which the adoption of preventive measures, such as mask-wearing, might affect inferences about individuals and social groups.

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