MSc Thesis Ula Nikolaja Ratajec (7808682)

How do norm-related beliefs influence social trust? Comparing moralistic and rationalistic explanation of social trust

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Supervisors:

Dr. Wojtek Przepiorka

Second Grader:

Dr. Rense Corten

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Abstract

In the light of many societal benefits of social trust, individual determinants of social trust have been a popular subject of sociological research. We draw from norm-research to investigate how a person's constellation of norm-related beliefs influences social trust. By applying structural equation modelling to survey of 1977 individuals conducted between June 2021 and January 2022 in Rome, Italy, we test whether the effect of respondents' beliefs about Covid-19 norms on social trust was better predicted by moralistic or rationalistic theory of social trust. Our findings show that the perception of moral similarities in relation to Covid-19 norms contributed more to social trust than the perception that others support norms that limit the pandemic. This indicates that moralistic account of social trust that grounds it in perceived moral similarity triumphs rationalistic one that grounds social trust in perceived preference of others to act in line with our interests. However, our findings also show that perceived moral agreement with others is not enough to explain social trust as perception of others' behaviour has an effect on social trust an independent effect on social trust. Although moralistic theory better reflected how norm-related beliefs about Covid-19 distancing norms affected social trust compared to rationalistic theory, none of them can explain the effect of perceived behaviour on social trust, calling for developement in theoretical mechanisms in the future.

1 Introduction

Social trust describes an individual's perception that people who she has no personal knowledge of are trustworthy (Uslaner, 2018). However, there is no general theory on what social trust is (Nannestad, 2008). Accounts that answer this question tend to differ based on whether they consider social trust moral-driven or rational (Nannestad, 2008): on one hand, trust in others is treated as a consequence of one's perception that others share the same fundamental moral values (Uslaner, 2018), whereas on the other hand, social trust is equated with one's rational evaluation of whether others will behave trustworthily (Hardin, 1940; Coleman,1990). Despite their differences, theories about what lies at the core of social trust, agree on a single premise: whether the basis of trust be moral or rational, *a person's trust in others depends on her perception of others*. In other words, one's perception that most unknown other people are trustworthy is tightly connected to one's perception of what others value and do. This establishes trust as a psychological/cognitive state of an individual (Hardin, 1992).

The importance of social trust is reflected in the attention it has received in sociological studies and their findings relating it to feelings of social belonging, health, happiness (Newton et al., 2018), lower levels of corruption and economic equality (Uslaner, 2002; 2008). To understand how to promote social trust and harvest its empirically established social benefits, most research on social trust has been focused on discovering its determinants (Nannestad, 2008:422). Although the common ground of different theories is the notion of social trust as a psychological state that *depends on individual's beliefs about others*, studies connecting one's social trust and one's secondary beliefs are rare. Most studies on individual determinants of social trust focus on participation in civic and voluntary activities (Putnam, 1993; Knack & Keefer, 1997; Stolle & Rochon, 2001; Herreros, 2004), individual personality traits or core values such as optimism, egalitarianism or religion (Uslaner, 2000; Uslaner, 2002; Delhey & Newton, 2005). This paper follows a different and relatively new approach to studying individual determinants of social trust that emerged in light of the Covid-19 pandemic. Contrasting other studies of individual determinants, we investigate how social trust could be affected not by a person's characteristics and values but rather by a person's secondary beliefs about other people's behaviour and values since it is one's perception of others that binds different theories of social trust.

How does one form an opinion about what other people that one has no personal knowledge of value and do? According to Coleman (1990) social norms are collective, macrolevel constructs about individual behaviour. Because social norms are a collective guide on what each individual member of society ought to think or do, they might be the basis of one's beliefs about what unknown others value and act like. Consequentially, a person's perception of what normative behaviours should be followed and what normative behaviours other members of society support and follow, might influence her social trust. To study norm-related beliefs as determinants of social trust, we follow other studies in the field using Bicchieri's framework of norm-related beliefs (Bicchieri & Xiao,2009; Bicchieri,2017) that distinguishes between:

1) one's expectations whether others *behave according* to norm-prescribed behaviour R (*empirical expectations – EE*)
2) one's expectations whether others *support* norm-prescribed behaviour R (*normative expectations – NE*)
3) one's own support for norm-prescribed behaviour R (*personal normative beliefs – PNB*)

Recent empirical findings point out that different norm-related beliefs differently influence social trust. Lo Iacono et al. (2021) studied the changes in social trust in Dutch population during Covid-19 and found that respondents who fostered *EE* that other people comply with self-isolation norms did not experience a loss in social trust typical for other respondents. Similarly, Lisciandra and de Wit (2020) who investigated 1999-2001 European Value Survey data found that the more people follow civic

norms in respondent's eyes (*EE*), the higher respondents social trust. Overall, *one's belief that others behave according to norms (EE) seem to promote one's social trust.* When it comes to *NE*, Lo Iacono et al. found that respondents who believed most others support self-isolation norms did not experience a loss of social trust during the pandemic, suggesting *one's belief that others support norms (NE) contributes to one's social trust*. Evidence regarding the effect of *PNB* on social trust is mixed. While respondents' beliefs that self-isolation norms should be followed negatively affected these respondents' social trust (Lo Iacono et al., 2021), trust was not affected by respondents' *PNB* regarding the legitimacy of civic norms (Lisciandra & de Wit, 2020)[1]. However, the evidence regarding the main effects of norm-related beliefs on social trust can be questioned due to the possibility of their interrelatedness which was not studied extensively. Lisciandra and de Wit found a significant correlation between respondents' *PNB* and *EE,* indicating that people's expectations about what others do fuel their own beliefs about what is right or, vice versa, that people tend to assume that their moral beliefs are also followed by others. Moreover, *EE* have been shown to influence one's *NE* (Horne et al., 2018; Horne and Przepiorka, 2021), which suggests that individuals assume others support the norms they seem to follow, hence the effect of *EE* could be mediated by *NE*.

This study aims to disentangle the relationship between norm-related beliefs and social trust by answering the research question how *PNB*, *NE* and *EE*, influence social trust. The contribution of this research is three-fold. Firstly, by investigating how norm-related beliefs affect social trust we investigate an individual determinant of social trust that is compatible with different theories of social trust. Secondly, we contribute to a small but growing number of empirical studies on how norm-related beliefs affect social trust. Third, compared to previous studies within this field, we consider the interrelatedness of all three norm-related beliefs.

Compared to studies that have investigated the relation between civic norms and trust (Lisciandra & de Wit, 2020), we will investigate how Covid-19 norm-related beliefs have influenced social trust. Our data was gathered in Italy during the pandemic. Embeddedness of this study in (Italian) Covid-19 context has advantages and disadvantages. During the pandemic Covid-19 related measures were brought to the forefront of political, moral and social debates which transformed the topic of Covid-19 into a highly polarizing one (Hart et al., 2020; Bobba & Hube, 2021). In the Italian context, political differences were reflected through the debate on how to manage the health emergency (Russo & Valbruzzi, 2022) and Italy was characterized by a high level of polarization (Charron et al., 2022) and conflict between supporters of governmental institutions and (populist) opposition (Bertero & Sedonne, 2021). Because political and public discussions were significantly marked by the Covid-19 context, one's social trust might have been more influenced by one's perception of others opinion on Covid-19 measures compared to other's opinion on alternative societal norms (such as civic norms). Compared to a non-pandemic situation, in which studying social trust would require to correctly identify which societal norms are most relevant to social trust, studying beliefs about Covid-19 norms during Covid-19 increases the likelihood that measured norm-related beliefs are relevant for current levels of social trust. However, Covid-19 measures themselves could have also changed the relation between norms and social trust. Covid-19 norms promoted social distancing, but it is interpersonal contact that is usually thought to increase social trust during crises (Lo Iacono et al., 2021). Furthermore, Covid-19 measures required a great deal of sacrifice of individuals' freedoms and lifestyle. Consequential increase of the "burden" for the individual that pandemic norms demanded compared to other societal norms might have changed how people's social trust was affected by perceived norm violations. For example, because the individual burden of complying to distancing norms was high, people might have been more forgiving of norm deviations and their trust less affected by non-compliance (Horne & Johnson, 2021). In contrast, because norm violations contributed to the spread of an unknown disease,

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[1] Although Lisciandra and de Wit (2020) refer to investigating the effect of NE on social trust, the measure of *NE* they find in European Value Survey is conceptually closer to the measure of *PNB*: "Do you think behaviour R is justified". Hence, we interpret their findings on *NE* as findings on *PNB*.

collective risks associated with norm violations might have been perceived as exceptionally high, which could make people less forgiving of norm violations (Horne & Johnson, 2021) and their trust more affected by non-compliance. To conclude, the advantageous "magnifying glass" effect of studying pandemic norms and social trust during a pandemic crisis is undercut by specifics of the pandemic that limit generalization to a non-pandemic context.

The study at hand uses data on 1977 respondents participating in the Covid Risk Survey conducted in 10 waves between June 2021 and January 2022. The survey measures respondents' *PNB*, *NE* and *EE* for 10 different behaviours prescribed by Covid-19 distancing norms and contains a 10-scale social trust item. After performing principal component analysis to examine whether measures of *PNB, NE* and *EE* related to different norms are organized along meaningful dimensions, we use path analysis to test relationships between norm-related beliefs and social trust. Reverse effects of social trust on norm-related beliefs are discussed.

2 Theoretical background

2.1 Two tales about social trust

One way to juxtapose competing theories of social trust is that it is perceived as either rooted in shared fundamental moral values with other people or rational perception of other people's trustworthiness (Frederiksen, 2019; Uslaner, 2018; Nannestad, 2008; Hardin, 1940;). Treating norm-related beliefs as determinants of social trust enables the comparison of theories that assume a person's social trust depends on her perception of others because these perceptions might be influenced by norms.

According to the moralistic perspective on social trust, social trust is founded upon sharing fundamental moral values (Uslaner, 2002). Every person perceives that her fundamental moral values are aligned with trustworthiness and good intention. In other words, having moral values is accompanied by a belief that one's "chosen" values are in fact "the right" values that are moral and indicative of trustworthiness, good-intendedness and should be morally valued by everyone. The content of fundamental moral values that dictates what kind of behaviour is indicative of trustworthiness and good intention differs from person to person and is not readily changeable during one's life course (Uslaner, 2002). However, the belief that the content of one's fundamental moral values should be morally valued among others does not depend on the values themselves or the person subscribing to them. Therefore, regardless of a person's moral values, she will be more likely to trust a person if she believes the person shares her moral values. *According to moralistic understanding of trust, social trust therefore develops when a person perceives that many other people in society share her fundamental moral values*. This is because, if a person perceives her "moral community" (Uslaner, 2002), i.e., the number of those with similar values, is large, she will perceive most members as trustworthy and good intentioned people. There are some empirical findings supporting moralistic perspective on social trust. Frederiksen (2019) combined survey measures of social trust and interviews with respondents and found that respondents with high social trust believe that most other people have similar moral values and would distrust people who would express fundamentally different values, for example, people with radical political beliefs that respondents morally oppose. Congruently, these respondents are, although expressing high level of social trust, distrustful of value outsiders (Frederiksen, 2019) which indicates social trust might be grounded in sharing moral values.

The rationalistic approach to social trust stresses that trust is rooted in a person's estimation of others' potential behaviour in relation to her interests (Uslaner, 2002). Trust is founded upon a person's belief that others are unlikely to voluntarily behave in a way that is damaging to the person (Gambetta, 1988). For development of trust, it is not only important that others merely act in line with another's

interest but that this act is a consequence of their choice rather than coercion (Gambetta, 1988). *According to rationalistic understanding of trust, social trust therefore emerges when a person perceives that many other members of society have a preference to not harm other members of society* (or even further others' interests) (Delhey & Newton, 2005). In other words, to have social trust is to believe that the probability of other members of society voluntarily acting against another person's interest is relatively low (Coleman, 1990). Contrary to the moralistic perspective on social trust which assumes that a person's social trust is founded upon perceived wide-spread presence of her own values, the rationalistic perspective assumes a person's social trust is grounded in perceived wide-spread preference of "valuing" others among members of society. Frederiksen (2019) found that people do perceive social trust in rationalistic terms – some respondents believed that members of society are motivated by their own interests but still prefer to pursue personal gain through cooperation with (rather than crossing) others which made them trustworthy in respondents' eyes.
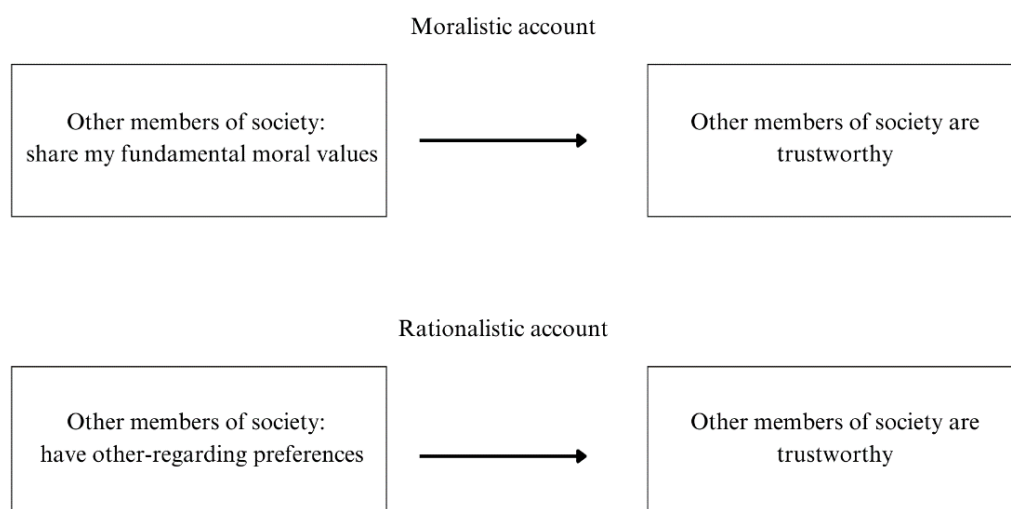
Moralistic account

| Other members of society: share my fundamental moral values | → | Other members of society are trustworthy |

Rationalistic account

| Other members of society: have other-regarding preferences | → | Other members of society are trustworthy |

FIGURE 1. Moralistic and rationalistic approaches to explaining social trust

2.2 Who is trustworthy? People with similar beliefs to us or people with beliefs beneficial for us?

How can norm-related beliefs further our understanding of mechanisms of social trust, be it grounded in perceived sharing of fundamental moral values or perceived omnipresence of the preference to regard other's interest? Since norms are macrolevel constructs that prescribe values and behaviour on the level of an individual (Coleman, 1990), people should infer what unknown members of society value and do based on norms they expect are followed and supported by others (Falcone et al., 2013).

The present study measures personal normative beliefs (*PNB)*, normative expectations *(NE)* and empirical expectations *(EE)* regarding norms that prescribed different distancing behaviours to prevent the spread of Covid-19. Distancing norms generally suggested compromising some level of different freedoms (for example, one's freedom to see close friends and family, to engage in leisure activities or use means of collective political organisation) to prevent the spread of the disease which would negatively affect public health. Distancing norms can therefore be seen as promoting behaviours that are furthering the general interests of societal members by temporarily restricting behaviours stemming from other values that are usually promoted within society (for example, visiting cultural events, collective political organisation or personal freedoms within family domain). One can find confirmation of the idea that distancing norms compromised different values in politization and

polarization regarding Covid-19 measures across Europe (Hart et al., 2020; Bobba & Hube, 2021), as well as in Italy (Bertero & Sedonne, 2021; Charron et al., 2022; Russo & Valbruzzi, 2022). Furthermore, distancing norms can be seen as promoting risk-reducing behaviours on an individual level which has been shown to be a common communal response to natural disasters that pose a collective risk (Toya & Skidmore, 2014).

According to the moralistic perspective on social trust, a person's social trust depends on her perception of how many other people share similar moral values. Therefore, during the pandemic, a person's social trust should increase if she perceived many other people supported those-social distancing norms she herself supported. This is because a person perceives that those that (dis)approve of the same norms she does, also share similar values which indicate their trustworthiness and good intent. For example, a person who believes it is appropriate to hug friends and family during Covid-19 pandemic will have higher social trust if she believes many other people believe this is appropriate too. This is because she perceives her own choice of disapproving this norm as morally "correct" and will assign trustworthiness and good intent to those who also "correctly" chose the same attitude towards the norm. Consequently, a person will perceive many people are trustworthy members of her moral community and her social trust will increase. On the contrary, if a person perceives many others disagree with her belief that one can have physical contact with close friends and family, she will be less likely to perceive them as trustworthy and good-intentioned as they "failed" to choose what is a morally correct belief in her eyes. Therefore, we hypothesize that: *the bigger the perceived difference between a person's normative beliefs (PNB) and her perception of others' normative beliefs (NE), the lower the person's social trust* (H1a).

According to rationalistic approach to social trust, social trust should increase if a person perceives many other people in her society prefer to behave in a way that is not harmful or even furthers interests of others. Therefore, as distancing norms promoted behaviour in line with the common interest of stopping the pandemic, people who supported distancing norms could have been seen as choosing behaviours beneficial for all members of society. According to rationalistic approach to social trust, if a person perceived many others support Covid-19 related norms, she perceived many others would choose to act in line with current interest of members of society in general, so her social trust should increase. For example, even if a person thinks hugging close friends and relatives is appropriate and thus disapproves of the norm that suggests physical distancing from close relations, the person still might assume that people who support the norm of physical distancing from friends and family care more about the spread of the disease and the protection of people's health achievable through distancing. Regardless of her own beliefs, others' support for distancing norms would increase her social trust. In line with grounding social trust in rationalist approach that stresses perceived preference for others' interest, we therefore hypothesize that: *the lower a person's perceived support for distancing norms among other members of society (NE), the lower the person's social trust* (H1b).

2.3 What do other people believe? From perceived behaviour to perceived beliefs

How does a person form a belief about what unknown other members of society believe? A mechanism that individuals use to draw conclusions and predictions about other people's actions is *attribution* (Falcone et al., 2013). According to attribution theory (Kelly & Michela, 1980) people tend to causally explain others' behaviour by attributing their behaviour to different causes including inner causes such as intentions, plans and beliefs. When it comes to supporting social norms, attribution theory can be applied to assume that a person might infer other people support norms that she perceives they adhere to. This would mean that she, based on perceived norm-related behaviour of others (*EE*), attributes others a set of normative beliefs (*NE*) that lead them to behave in a way she perceives. For example, if a person believes other people follow the norm of physical distancing from close friends and family, she will attribute this behaviour to their support or agreement with appropriateness of the norm. Equally,

if she perceives others do not adhere to the norm of physical distancing from close friends and family, she will ascribe others disagreement with the norm as a cause of their nonconformist behaviour. Therefore, we hypothesize that: *the more commonly a person perceives a norm is followed among other members of society (EE), the higher the person's perceived support for the norm among other members of society (NE) (H2)*.

How a person's perception of others' normative beliefs derived from her perception of others' behaviour influence social trust, depends on whether it is grounded in moralistic or rationalistic reasoning. However, both moralistic and rationalistic approach ground social trust in perceived beliefs (either similar values or other-regarding preferences) of societal members not in their behaviour. Therefore, people's norm-related behaviour should affect a person's social trust only if the person translates it into people's beliefs regarding norms. Therefore, we hypothesize that: *the effect of perceived behaviour of others (EE) on social trust is fully mediated by the relevant mediator: the difference between personal normative beliefs and normative expectations, in case of moralistic theory, or normative expectations, in case of rationalistic approach (H3)*.
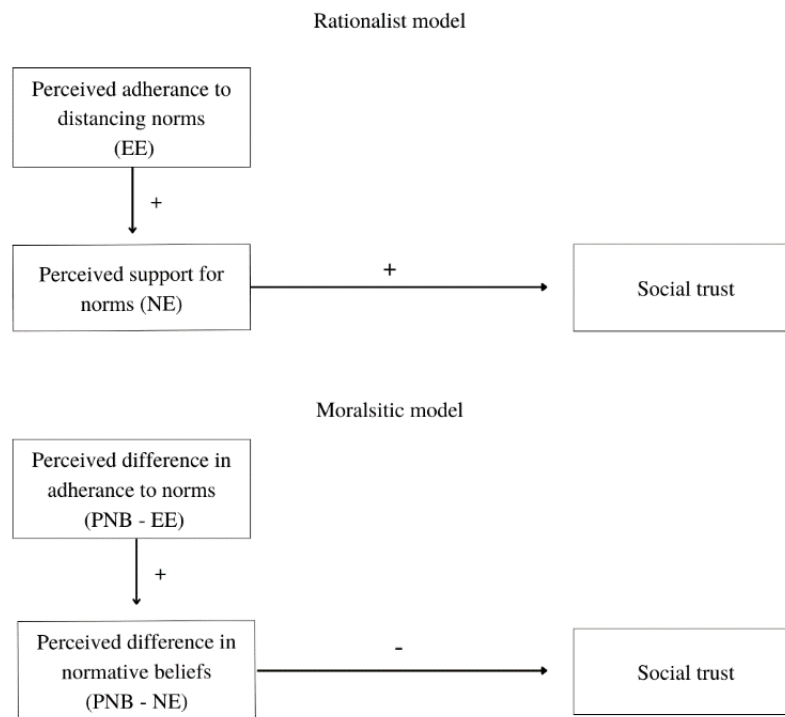

FIGURE 2. Rationalistic and moralistic models extended with mediation of perceived behaviour

2.4 Differences between distancing norms

Distancing norms during the pandemic differed in respects which might have influenced the relationships between *PNB, NE* and *EE*. Some distancing norms referred to behaviours in public places that are easily observable by others (like shaking hands, standing within one meter distance from other people or visiting public events), whereas some norms referred to "private behaviours" unlikely to be observed by others (such as socializing with or hugging close friends or relatives). The relationship between norm-related beliefs might differ between public and private distancing norms. In case of public norms, for example, a person could be more likely to contribute the perceived behaviour of others to contextual causes (like social or formal punishments) rather than to their normative beliefs. On the

contrary, private behaviours are less likely to be socially or formally controlled, so perceived behaviour of others might be attributed to perceived beliefs of others. Consequently, the effect of perceived behaviour on social trust might be mediated through perceived beliefs to a different extent, depending on whether norms target private or public behaviours. Furthermore, people might have more incentive to follow distancing norms in private networks since they are, besides themselves, also protecting their loved ones (compared to protecting strangers when following guidelines for public behaviours). Hence, supporting distancing in public might be interpreted as more indicative of other-regarding preferences compared to distancing behaviours in private domain. The positive effect of perceived conformism on social trust might therefore be greater for public than private norms. Moreover, people might hold different norm-related beliefs conditional on norm's prescription of social or physical distancing rather than public or private behaviours. For example, physical contact (kissing, hugging, or standing close to each other) might have been perceived as risker compared to social contact (visiting events or socializing), therefore perceived support for physical distancing norms might have been understood as more expressive of other-regarding preferences compared to social distancing norms. Perceived behaviour and beliefs about physical distancing might therefore affect social trust more than perceived adherence to social distancing. Because distancing norms differ in aspects (such as private/public, physical/social) that could lead to distinct relationships between *PNB*, *NE* and *EE* and their effects on social trust, we will firstly examine if different norms have different patterns of relations, and, if that is the case, adapt our analysis.

2.5. Causality problems

Causality between social trust and norm-related beliefs is difficult to establish. Firstly, this is because a person's perceptions regarding other people's behaviour (*EE*) and beliefs (*NE*) can be affected by social trust. Social trust might be mediating how people translate their experiences with unknown others into their generalized perceptions of others' normative beliefs (*NE*) and behaviour (*EE*). This is exemplified in the finding that people with high levels of social trust tend to disregard experiences of betrayal by interpreting it as accidental or a matter of necessity in the eyes of the (untrustworthy) trustee rather than as a sign of untrustworthiness (Frederiksen, 2019). In the present example, a person who supports physical distancing from friends and family might believe unknown others generally support and follow this norm even though she is aware of non-conformist examples if she has high social trust. Similarly, people with low social trust are unlikely to generalize the experience of trustworthiness to unknown others (Frederiksen, 2019). Hence, if a person has low social trust, she might assume that unknown others generally disobey the norm of physical distancing from friends and family that she supports even if she is aware of conformist behaviours in her social network, because she believes most unknown others are untrustworthy. Social trust can therefore affect how a person translates her concrete experiences with other citizens into general norm-related beliefs. Secondly, social trust might not only influence the link between concrete experiences and generalized beliefs about unknown others but also the type of experiences an individual has. Those with high levels of social trust seek more engagement in communities (Uslaner, 2002; Dinesen & Bekkers, 2017) which leads them to experiences of trustworthiness and cooperation. Those with low levels of social trust avoid opportunities where unknown others would be able to prove trustworthy because they believe others would most likely betray them (Frederiksen, 2019) leading them to have less experiences that can potentially lead to trust. Consequently, a person might seek out experiences that are more likely to reaffirm their initial assumptions about trustworthiness of others. Both mechanisms prevent causal interpretation of effects of norm-related beliefs on social trust. For example, if respondent's perception that others supported distancing norms positively affected social trust (as predicted by rationalist approach), this could also be because respondents with higher social trust were more likely to think others support distancing norms: perhaps they disregarded information about contradicting examples as unimportant or were more likely to engage in social contexts where Covid-19 norms were supported, such as volunteer

initiatives related to the pandemic. Although assuming norm-related beliefs affect social trust, the present paper has no means of examining which preceded the other.

3 Data and Methods

3.1 Data collection and survey design

This study uses a cross-sectional data gathered by The Institute of Sciences and Technologies of Cognition for a study *The perception of risk and the strength of social norms during vaccination coverage against COVID-19*. The study collected survey data from June 2021 to February 2022 among a sample of Rome residents. The survey was managed by Qualitrics[2], an online platform that provides the opportunity for repetition of a survey and for control of the sample representativeness. The data was collected in 10 waves, every two weeks from June to August 2021 and every month from August 2021 until February 2022 (see *Table 3* in results section). Altogether, 1977 respondents were surveyed. Each of the wave was stratified on age and gender, ensuring that each of the two genders represent half of the sample and that age is evenly distributed among three categories (less than 30, between 30 and 50 and above 50 years old). At the time of the survey, all respondents lived in Rome, Italy. Since we do not investigate time trends, we treat all respondents as a part of one sample and control for the wave respondents belonged to.

The survey firstly presented all respondents with Covid-19 statistics on infection, mortality, and vaccination rates for the two preceding weeks to minimize initial differences in respondents' knowledge about the latest Covid-19 developments. The survey then gathered information about respondent's objective risk factors regarding Covid-19 and their risk perceptions related to economic and social consequences of the pandemic. Furthermore, respondent's social trust as well as trust in political and medical institutions was measured. The central part of the survey measured respondents' perceptions of different Covid-19-related norms and how the norms are, in respondents' opinions, perceived and adhered to among other people. These were referred to as the citizens of Rome participating in the survey.

3.2. Variables

Dependent variable

Social trust was measured with the question "O*n a scale from zero to ten, where zero is not at all and ten is completely, in general, how much do you trust most people?"*. This is a variation of generalized trust question, also referred to as GTQ, that has been shown to be a more valid measure of generalized trust due to its neutral and symmetrical formulation (OECD Guidelines, 2017).

Independent variables

Respondents were asked about their and others' perception regarding 10 different Covid-19-related norms. Respondent's *personal normative beliefs* (*PNB*), *empirical expectations* (*EE*), and *normative expectations* (*NE*) were measured for 10 behaviours prescribed by distancing norms.

Behaviours for which norm-related beliefs were measured are:

1) shaking hands with others,

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2) keeping at least 1m distance from other people outside of the home,
3) attending personal events such as parties, weddings, funerals,
4) getting together with friends and family,
5) visit public places where many people gather,
6) hugging close friends or relatives,
7) going to restaurants,
8) kissing close friends or relatives,
9) taking public transport,
10) attending public events such as concerts or festivals.

Personal normative beliefs (PNB) about Covid-19-related norms were measured on a 6-point scale with the question "We *now ask you to indicate for each of the following behaviours to what extent you find them socially appropriate, considering that one means you find the behaviour extremely inappropriate while 6 means you find it extremely appropriate*". Possible answers were (1) *Extremely inappropriate,* (2) *Rather inappropriate,* (3) *A little inappropriate,* (4) *A little appropriate,* (5) *Rather appropriate,* (6) *Extremely appropriate.*

N*ormative expectations (NE)* were measured by asking respondents "According to you, what is the most frequent answer given by the people of Rome takin part in this survey to the question: "*To what extent you find the following behaviours socially appropriate?*". The possible answers were the same as for measuring respondent's personal normative beliefs: (1) *Extremely inappropriate,* (2) *Rather inappropriate,* (3) *A little inappropriate,* (4) *A little appropriate,* (5) *Rather appropriate,* (6) *Extremely appropriate.*

Respondents were also asked how often they engage in the 10 behaviours. *Empirical expectations (EE)* for each norm were measured by asking respondents to guess the most common answer to that question among other respondents. Specifically, respondents were asked: "According to you, what is the most frequent answer given by the people of Rome taking part in this survey to the question: "*How often do you engage in the following behaviours?*". Possible answers were: (*1) Never, (2) Rarely, (3) Sometimes, (4) Often, (5) Always.* The three sets of 10 variables containing *PNB, NE* and *EE* are treated as continuous.

Controls

Wave in which the data was gathered is controlled for since perception of the health crisis was changing in relation to new information regarding the virus outbreak. Italy experienced politization of the pandemic and consequential conflict and polarization during Covid-19 progression (Russo & Valbruzzi, 2022; Charron et al., 2022). For each wave a dummy variable was created and included in the analysis.

Education has been showed to affect one's level of social trust in many cross-sectional studies investigating different contexts (Dinesen and Bekkers, 2017). Positive effect of education on trust (Knack & Keefer, 1997) was explained through mechanisms such its contribution to a person's resources (Delhey & Newton, 2003), intelligence (Yamagishi, 2001) or adaptation of cosmopolitan values (Borgonovi, 2012). Educational level of respondents was measured with a question *"What is your highest educational degree?"*. Possible answers were: (*1) No degree/elementary school, (2) Middle school, (3) High school, (4) Bachelor, (5) Master* and (*6) PhD.* Based on Italian educational system[3], respondents were assigned the number of years they spend in education institutions, namely 5, 8, 13, 16, 18 and 22 for respective categories. Education was then included in the analysis as a continuous control variable.

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[3] https://eurydice.eacea.ec.europa.eu/national-education-systems/italy/overview

Perception of risk of Covid-19 for economic resources is also controlled for as economic resources and threat of unemployment have been shown to affect social trust (Dinesen and Bekkers, 2017; Delhey & Newton, 2003). The perception of financial risk as a consequence of Covid-19 was measured by asking respondents *"Please indicate how much of a threat, if any, the coronavirus outbreak is to your personal financial safety?"*. Possible answers were *(1) "Not a threat"*, *(2) "A little threatening"*, *(3) "Rather threatening"* and *(4) "A major threat"*. The variable is treated as continuous.

Risk attitude is controlled for as risk attitudes have been shown to be connected to one's tendency to trust (Schechter, 2007). Respondent's risk attitude was measured by asking *"On a scale from zero to ten, where zero is not at all and ten is completely, are you generally a person who is fully prepared to take risks or do you try to avoid taking risks*?" The variable is treated as continuous.

Age was measured by asking respondents *"What is your age?"*. The answers were given in years. It will be treated as a continuous control variable as the trust item is sensitive to age (OECD Guidelines, 2017).

Gender of a respondent was marked with a question *"What is you gender?"* with answers *(1) "Male"*, *(2) "Female"* and *(3) "Other"*. It is treated as a categorical control variable as trust item has been shown to be sensitive to gender (OECD Guidelines, 2017).

Institutional trust has been shown to be related to social trust with higher trust in state institutions contributing to higher social trust (Rothstein & Stolle, 2008; Sønderskov & Dinesen, 2016). Trust in institutions and especially their representatives can generally be perceived as influencing social trust by representing moral values or presence of trustworthy behaviour in the population (Dinesen & Bekkers, 2017). We do not control for institutional trust although it could influence social trust, because it could also be involved as a mediator in the relationships between norm-related beliefs and social trust. For example, people who support social distancing norms could gain more trust in political, health and science representatives that promote them and generalize this experience of trustworthiness with representatives to others in general. Furthermore, the causal direction between social and institutional trust is unknown since social trust could also contribute to institutional trust (Nannestad, 2008). Controlling for institutional trust would therefore limit the observation of the relationships between norm-related beliefs and social trust (Lederer et al., 2018).

3.3. Data preparation and methods

Data preparation

Variables measuring *EE*, *NE* and *PNB* related to all norms *but keeping at least 1 meter distance from people outside of home* were reversed, so that higher values of *PNB* indicate higher support for distancing norms and higher values of *NE* and *EE* indicate higher perceived support of and perceived adherence to distancing norms. Since there are only four participants with missing data, two participants who made a mistake reporting their age (reported age was less than 18), and 5 participants who did not identify as a man or a woman (which is too little to analyse them as a separate category), list wise deletion of these respondents was performed, leaving 1966 respondents for the analysis.

Modelling differences among norms

Distancing norms differ in aspects that might be relevant for the relationships between norm-related beliefs and social trust. Therefore, before modelling structural relationships between norm-related beliefs and social trust, we conducted principal component analysis (PCA) to examine how variance within *PNB*, *NE*, and *EE* is organized among 10 items (descriptive statistics for all 30 items in *Appendix 1*). The analysis was done in R using the "psych" package. Based on the appropriate number of components extracted with PCA, norm items are summed into component scores to test hypotheses in

subsequential analysis. This way, potential differences and potential similarities between norms are accounted for, since an appropriate number of components most parsimoniously describes variability contained within items (and is preferred over summing all items into one scale potentially neglecting relevant differences between them, or, on the contrary, treating potentially similar items separately, unnecessarily complicating the analysis). When choosing the relevant number of components to represent variability of *PNB*, *NE* and *EE*, the present paper uses two criteria. Firstly, components used in subsequential analysis must be theoretically justified – theoretically interpretable rather than representing a specific item and its relation to others. Secondly, a component's eigenvalue must be greater than one (Keiser rule) so that it contains at least as much variance as a single item.

Modelling of structural relationships between norm-related beliefs and social trust

To test the hypotheses structural equation modelling was used. Violation of normality assumption was adapted to by choosing a robust maximum likelihood estimator for standard errors (Kline, 2016). Scales of *PNB, NE* and *EE* are constructed according to relevant components determined in PCA of each norm-related belief. Based on constructed variables representing *PNB, NE* and *EE*, the complementary difference variables are calculated. The difference between a respondent's *PNB* and *NE* and between *PNB* and *EE* are calculated as *|PNB-NE|* and *|PNB-EE|* and referred to as perceived belief opposition and perceived behaviour opposition, respectively. When calculating perceived behaviour opposition, the scale of *EE* was transformed to match the range of *PNB*.

Hypothesis testing was performed in three stages. Models in stage one are testing hypotheses *H1a* and *H1b*. *Moralistic* and *Rationalistic* models are compared with the *Saturated model* by restricting parameters of the latter. The better fitting model is chosen to further test mediation hypotheses *H2* and *H3*. Within *Moralistic model*, in which perceived belief opposition (and not *NE*) is affecting social trust, *H2* and *H3* are modelled using perceived behaviour opposition (and not *EE*). In stage two, the direct effect of *EE* (*Rationalistic model*) or perceived behaviour opposition (*Moralistic model*) on social trust is established. In the third stage, we establish whether there is (full or partial) mediation of this effect.

Models will be compared in terms of model chi-square statistic, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Standardized Root Mean Square Residual (SRMR). The thresholds for good model fit set for last three model fit statistics follow common scientific practice and are RMSEA <0.05, CFI >0.95, SRMR <0.08 (Kline, 2016).

4 Results

4.1. Nature of norms: principal component analysis of norm-related beliefs

PCA was conducted separately on the correlation matrix of *PNB*, *NE* and *EE* (*Appendix 2*). The results showed that one of the items was an outlier compared to others in case of *PNB, NE* and *EE*, which might have been related to its different formulation. We decided to eliminate the item ("keeping at least 1 m distance") and conduct PCA on norm-related beliefs as well as further analysis without the distance item. Results of the analysis of nine times are presented below (results of the analysis of 10 items and a discussion on excluding the item are presented in *Appendix 3*).

Firstly, we focused on establishing how many principal components should be extracted to explain the variability of the nine items within *PNB, NE* and *EE*. For all three norm-related beliefs, the first component is the only component that has an eigenvalue over one (*Figure 3*) explaining 56%, 59%

and 56% percent of variance within *PNB, NE* and *EE,* respectively (*Appendix 4*). [4] Although the second components explain additional 10% of variance, their eigen values are lower than one, meaning they explain less variance than one item and fail to meet Keiser criterium.[5] PCA lead to the choice of using one principal component to parsimoniously represent the variability of the nine items.

Secondly, we focus on interpretation of the first principal components. In PCA, loadings of a principal component describe how a respondent's score on each item can be represented as a weighted sum of component scores. The score of each component is weighted according to the loading that component has with an item. In presented case, the score of an item can be represented as a product of a first component loading and the component score. In the case of *PNB, NE* and *EE,* the first components load positively on all nine items (*Appendix 4*). In the case of *PNB,* the component represents general support for the nine distancing norms. The higher the person's component score, the higher the score of each item, which means the more support the person expressed for distancing norms. Similarly, the principal component for *NE* represents a general perception that other people supported distancing norms. In this case, the higher a person's component score, the more a person perceived other people believe distancing norms to be socially appropriate. Lastly, regarding *EE,* the first principal component represents the general perception of how frequently others followed distancing norms in respondent's eyes.
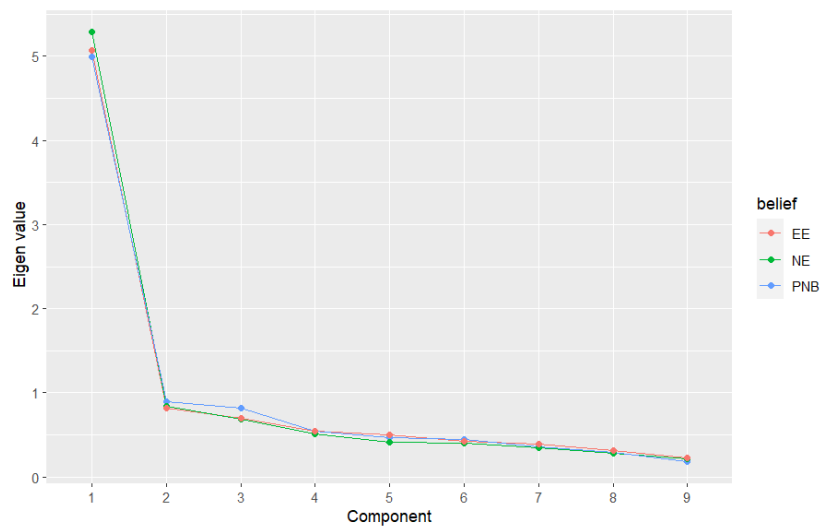
FIGURE 3. Eigen values of components for each norm-related belief

PCA shows that there are no relevant groupings among items. We therefore "merge" all nine items into a single score by using the average of items as predictors of social trust representing *PNB, NE* and *EE.* We could use component scores but since items load on one component and the correlation between principal component scores and averaged items scores for the nine items is above 0.998 for all three norm-related beliefs, we keep the solution that maintains the scale of original items.[6] *Table 1* and *Table 2* describe variables used in further SEM analysis.

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[4] Compared to extracting one component within the 10 items setting, dropping the distance item resulted in better representation of items with one component (*Appendix 3*).

[5] If we decided to neglect the Keiser criterium and potentially include components that have an eigen value lower than one, second components would be included and would distinguish between physical and social distancing norms (*Appendix 4*).

[6] Furthermore, not excluding the distance item yields similar outcomes of the analysis. The averaged scores of nine items have a correlation of more than 0.98 with the average scores of 10 items across *PNB, NE* and *EE,* and, respectively, a corelation above 0.99 with the component scores constructed with ten items.

TABLE 1. Descriptive statistics for variables used in SEM analysis (except controls for wave)

Variables	Mean	Standard deviation	Min.	Max.	N
Dependent variable					
Social trust	5.3	2.1	1	10	1966
Constructed variables					
PNB	4.14	1.04	1	6	1966
NE	3.86	1.00	1	6	1966
EE	3.18	0.73	1	5	1966
/PNB-NE/	0.74	0.74	0	5	1966
/PNB-EE/	0.86	0.76	0	5	1966
Controls					
Education	15.2	3.2	5	22	1966
Age	43.1	14.5			1966
Female	0.51		0	1	1966
Perceived economic threat	2.7	0.90	1	4	1966
Risk attitude	5.4	2.4	1	10	1966

TABLE 2. Waves of the survey

Wave	Date	Number of respondents
1	09.06.2021	106
2	23.06.2021	110
3	07.07.2021	218
4	21.07.2021	220
5	04.08.2021	217
6	13.10.2021	217
7	17.11.2021	220
8	15.12.2021	220
9	12.01.2022	219
10	02.02.2022	219
N		1966

4.2. Structural equation modelling

Moralistic or rationalistic model of trust

In the first stage we compare *Rationalistic* and *Moralistic model* of social trust to the *Saturated model* (*Table 3* and *Table 4*). In the *Saturated model*, social trust is affected by all three variables potentially affecting social trust: *PNB, NE* and perceived belief opposition (/*PNB-NE*/) as well as controls. We then restrict the *Saturated mode*l to reflect rationalistic and moralistic theories.

In *Rationalistic model* social trust is predicted by controls, *PNB* and *NE*. The model does not fit the data well, as all fit indices but SRMR fail to meet the threshold criteria: X^2 (2, N = 1966) = 30.295, p <0.001, CFI= 0.92(<0.95), RMSEA= 0.085 (>0.05) and SRMR=0.008 (<0.08). Comparing the *Saturated* to *Rationalistic model* with a likelihood ratio test shows that restriction of perceived belief opposition to zero significantly worsens the model fit ($\Delta\chi2(1)$ = 29.687, p <0.001). Therefore, *Rationalistic model*'s exclusion of the variable is not justified. Turning to model estimates (which should be interpreted with caution due to poor model fit), *NE* do not have a significant effect on social trust: contrary to rationalistic hypothesis, an increase in perceived support for distancing norms does not lead to an increase in social trust. Interestingly, *PNB* negatively influence social trust: one unit increase in support for distancing norms leads to 0.12 unit decrease in social trust, meaning that people who were more supportive of distancing norms had lower social trust. However, the negative effect *PNB* on social trust in *Rationalistic model* could also be reflecting the effect of the perceived belief opposition: controlling for *NE*, the higher the *PNB* of a respondent, the higher the potential perceived belief opposition (and the lower the social trust). This is also supported by insignificant effect of *PNB* in the presence of the effect of belief difference in the *Saturated model*.

In *Moralistic model*, social trust is affected by controls and perceived belief opposition (/*PNB-NE*/). *Moralistic model* has overall a very good fit as all indices meet the set thresholds: X^2 (3, N = 1966) = 5.004, p =0.171, CFI= 0.994 (>0.95), RMSEA= 0.018 (<0.05) and SRMR=0.004 (<0.08). Comparing *Moralistic* to *Saturated model* shows that restriction of the effects of *NE* and *PNB* on social trust does not significantly worsen the model fit ($\Delta\chi2(2)$ = 4.396, p =0.111). Therefore, *Moralistic model*'s exclusion of the effect of *NE* and *PNB* is justified. Turning to model's estimates, the absolute difference between a person's own normative beliefs and perceived beliefs of others has a negative and significant effect on social trust which is in line with moralistic theory. A one unit increase in the perceived belief opposition (the direction of the difference does not matter), leads to a 0.33 unit decrease in social trust. To check the assumption that negative and positive difference have a symmetric effect on social trust, we also ran models controlling for difference direction. It turns out not to be significant in predicting social trust (*Appendix 6*).

To conclude, in terms of model fit indices and model estimates we find support for *H1a* and no support for *H1b*. Therefore, we continue to test mediation within *Moralistic model*.

TABLE 3 Estimated parameters of trust models

Model DVs	Saturated	Rationalistic	Moralistic
Social trust			
PNB	-0.078 (0.057)	- 0.121* (0.057)	0
NE	-0.021 (0.062)	0.073 (0.057)	0
Perceived belief opposition |PNB-NE|	-0.339*** (0.074)	0	-0.330*** (0.066)
Education	0.010 (0.015)	0.010 (0.015)	0.011 (0.015)
Risk attitude	0.269*** (0.022)	0.271*** (0.023)	0.271*** (0.022)
Perceived economic threat	-0.367*** (0.055)	-0.384*** (0.056)	-0.369*** (0.055)
Age	0.024*** (0.003)	0.023*** (0.003)	0.022*** (0.003)
Female	-0.153´ (0.090)	-0.174´ (0.090)	-0.155´ (0.090)
Wave dummies	yes	yes	yes
R2	0.17	0.16	0.17

*** p <0.001   ** p < 0.01   * p < 0.05   ´ p <0.1
Note: Robust standard errors of coefficients in parentheses. The end of the table
with controls for survey waves is reported in Appendix 5.

TABLE 4 Model fit indices for trust models

Model fit	Saturated	Rationalistic	Moralistic
$\chi2(df)$, p	0.608 (1), p=0.436	30.295(2), p=0.001	5.004 (3), p= 0.171
CFI	1.000	0.920	0.994
RMSEA	0.000	0.085	0.018
SRMR	0.001	0.008	0.004

Mediation hypotheses

In the second stage, models test whether the effect of perceived behaviour of others on social trust is mediated through perceived normative beliefs of others. Within *Moralistic model*, the effect of perceived behaviour opposition is mediated through perceived belief opposition. Because using *PNB* in constructing perceived belief and behaviour opposition that represent a predictor and an independent variable in one of the equations, endogeneity might occur. To see how estimates were affected by our choice of variable construction, we compare them to estimates using untransformed variables *EE* and *NE* as well as variables without absolute values of the difference. Our choice of modelling does not seem to introduce bias in favour of our hypotheses (*Appendix 7*).

In the *Main effect only model* we first establish whether perceived behaviour opposition has an effect on social trust. The model fits the data reasonably well since all fit indices, but the chi-square statistics meet the set criteria: X^2 (2, N = 1966) = 8.691, p =0.013, CFI= 0.981 (>0.95), RMSEA= 0.041 (<0.05) and SRMR=0.003 (<0.08). The absolute difference between *PNB* and *EE* has a significant negative effect on social trust (*Table 5*): a unit increase in perceived behaviour opposition leads to 0.3 unit decrease in social trust. Likelihood ratio test shows that restricting the main effect of perceived behaviour opposition to zero significantly worsens the model fit ($\Delta\chi 2(1)$ = 28.079, p <0.001), justifying the inclusion of the main effect of this variable in the model.

The *Partial mediation model* adds to the *Main effect only model* the mediation path, testing if the perceived behaviour opposition affects social trust through perceived belief opposition, the effect of which has been established in previous step. The model has a very good fit with all fit indices meeting the threshold criteria (X^2 (2, N = 1966) = 4.373, p =0.112, CFI= 0.998 (>0.95), RMSEA= 0.025 (<0.05) and SRMR=0.003 (<0.08)). Firstly, perceived behaviour opposition is a significant predictor of perceived belief opposition: a unit increase in behaviour opposition leads to 0.6 increase in perceived belief opposition. Hypothesis *H2* is therefore supported: the more a person perceives others act differently than what she finds socially appropriate (*/PNB-EE/*), the more likely she is to assume that others support different norms than those she finds socially appropriate (*/PNB-NE/*). Perceived behaviour opposition has a significant indirect as well as direct effect on social trust: a unite increase in perceived behaviour opposition leads to a 0. 307 (-0.167 – 0.140) unit decrease in social trust. Comparing *Partial mediation model* to *Full mediation model* shows that excluding the main effect of the perceived behaviour opposition significantly worsens the model fit ($\Delta\chi 2(1)$ = 4.911, p =0.027), justifying the inclusion of direct and indirect effect of perceived behaviour opposition. Hypothesis *H3* is therefore rejected as mediation is partial not full.

TABLE 5. Estimated parameters of mediation models

Model DVs	Main effect only	Partial mediation	Full mediation
Social trust			
|PNB-EE|	-0.307*** (0.066)	-0.167* (0.085)	0
|PNB-NE|	0	-0.220** (0.086)	-0.330*** (0.066)
Education	0.012 (0.015)	0.012 (0.015)	0.011 (0.015)
Risk attitude	0.270*** (0.022)	0.270*** (0.022)	0.271*** (0.022)
Perceived economic threat	-0.364*** (0.055)	-0.362*** (0.055)	-0.369*** (0.055)
Age	0.023*** (0.003)	0.023*** (0.003)	0.022 (0.003)
Female	-0.154´ (0.090)	-0.149´ (0.090)	-0.155´ (0.090)
Wave dummies	yes	yes	yes
*Indirect effect (a*b)*		-0.140** (0.054)	-0.209*** (0.044)
R2	0.17	0.17	0.17
|PNB-NE|			
|PNB-EE|		0.634*** (0.032)	0.634*** (0.032)
Education		0.001 (0.004)	0.001 (0.004)
Risk attitude		0.001 (0.006)	-0.001 (0.006)
Perceived economic threat		0.005 (0.015)	0.005 (0.0015)
Age		-0.001 (0.001)	-0.001 (0.001)
Female		0.023 (0.025)	0.023 (0.025)
Wave dummies		yes	yes
R2		0.43	0.43

*** p <0.001   **p < 0.01   * p < 0.05   ´p <0.1

Note: Robust standard errors of coefficients in parentheses. The end of the table with controls for survey waves is reported in Appendix 8.

TABLE 6. Model fit indices for mediation models

Model fit	Main effect only	Partial mediation	Full mediation
$\chi^2(df), p$	8.691(1), p=0.013	4.373(2), p= 0.112	9.284 (3), p= 0.026
CFI	0.981	0.998	0.996
RMSEA	0.041	0.025	0.033
SRMR	0.003	0.003	0.004

Moralsitic model
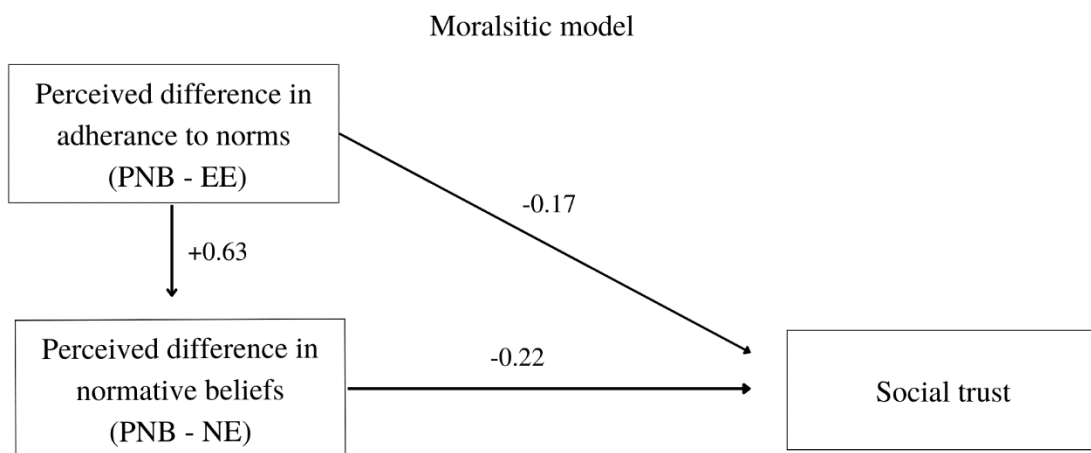
FIGURE 4. Final path model. Moralistic model with partial mediation of behaviour difference.

Controls over all models

Control variables show stable patterns over all six models when predicting social trust (*Table 3* and *Table 5*). Risk attitude had a positive effect on social trust, indicating that people who perceive themselves as more risk-taking had higher social trust. Perceived economic threat had a negative effect on social trust in all models: a unit increase in perceived threat of Covid-19 for personal financial safety lead to over 0.3 decrease in social trust. Furthermore, a 10-year increase in age lead to over 0.2 unit increase in social trust over all models, indicating older people have more social trust. Although gender is never significant considering the p<0.05 threshold, it has a negative effect on social trust at cutoff p< 0.1 in all models, indicating that women might have lower levels of social trust compared to men. Lastly, controls for waves of the survey as well as education are insignificant in predicting social trust over all models (*Appendix 5* and *Appendix 8*). When it comes to predicting perceived belief opposition, all control variables are insignificant across all models, but some binary controls for the waves of the survey. In some survey waves the perceived belief opposition was significantly higher than in the first wave, indicating that perceived disagreement over support for norms fluctuated through time (Appendix 8).

5. Discussion and conclusion

The present paper studied how a person's norm-related beliefs, *PNB, NE* and *EE,* affect social trust. By focussing on secondary beliefs as the main individual determinants of social trust, we could compare competing theoretical approaches to social trust.

Regarding the relationship between *PNB, NE* and social trust, we found support for *H1a* and no support for *H1b*. A person's perception that other people supported Covid-19 distancing norms did not positively influence her social trust. Rather, it was perceived similarity in Covid-19 norms support (and not support itself) that positively influenced social trust. These findings are somewhat contradicting to Lo Iacono et al. (2021). They found that a person's support for Covid-19 norms lowered her social trust, that a person's perception that others support norms increased her social trust and, that the interaction between the two is insignificant. In contrast, we find that a person's own support for norms is not significant, her perception of others' support for norms is not significant, whereas the difference between respondent's own beliefs and perceived beliefs of others significantly lowers social trust. The opposing findings could be explained by different decision on how to model the relationship between a person's own and perceived beliefs. Lo Iacono et al. modelled an interaction between one's own support for norms and perceived support for norms to capture the effect of perceived opposition in beliefs, whereas we, following our theoretical argument, proceeded to model the relationship as an absolute difference. Furthermore, when measuring *EE* and *NE*, Lo Iacono et al. asked respondents to estimate how many people out of 100 agreed or adhered to norms, whereas the present survey asked respondents to predict the most common answer among other respondents. Finally, Lo Iacono et al. used change in social trust as their dependent variable. Consequently, it is difficult to compare models' conclusion on *PNB, NE* and social trust. Applying OLS regression models using interaction to mimic the modelling approach of Lo Iacono et al., our results show that *NE* still do not have a significant effect on social trust. However, *PNB* have a significant negative effect on social trust as found in Lo Iacono et al., and interaction is significant only at $p<0.1$ level (*Appendix 9*). This suggests that that the methodological decision about how to model the argument that the relation between *PNB* and *NE* affects social trust strongly influences conclusions.

Regarding the relationship between *EE, NE* and social trust, we found evidence supporting *H2* and not *H3*. If a person believes others behave differently than what she thinks is socially appropriate, she is more likely to believe others also hold different beliefs about which norms are socially appropriate. That people tend to evaluate other's beliefs based on perceived behaviour of others is a conclusion in line with other studies confirming interrelatedness of perceived norm compliance (*EE*) and perceived normative beliefs (*NE*) (Horne et al., 2018; Horne and Przepiorka, 2021). Furthermore, we find the perception that other people behave differently from what a person thinks is socially appropriate has a negative effect on her social trust that is mediated through perceived different beliefs of others. This sheds a light on studies focusing on how *EE* influence social trust (Lo Iacono et al., 2021, Lisciandra and de Wit, 2020): in part, a person's perception of other's behaviour matters for social trust because she perceives it as an indicator of others' normative beliefs that have, in relation to her own normative beliefs, a significant effect on social trust. Perceived beliefs of societal members should therefore be accounted for when studying how perceived norm compliance affects social trust. However, others' opposing behaviour has a negative effect on social trust even when respondents' do not translate it to people's opposing beliefs. Hypothesis *H3* is therefore rejected which indicates that perceived behaviour affects social trust independently of serving as an indicator for others' beliefs.

Turning to theories of social trust, the present study of norm-related beliefs as individual determinants of social trust offers insights into its internal mechanisms. Contrasting rationalistic approach to social trust, the perception that other people have a preference to commit to individual costs of norm-compliance to contribute to a collective goal (preventing the pandemic) did not positively affect

social trust. Hence, it seems we cannot support the notion, that a person's social trust is founded upon her perception that most people prefer to act in line with others' interest. On the contrary, our findings are aligned with the notion that a person's social trust emerges when she perceives others share her values. Our findings therefore support moralistic account of social trust which argues that social trust reflects perceived fundamental moral agreement with other members of society (Uslaner, 2002).

A finding of the present paper that is not aligned with moralistic accounts of social trust is partial (and not full) mediation. When other's act differently than what a person believes is socially appropriate, this decreases her social trust even when a person does not contribute others' opposing behaviour to others' opposing beliefs. This indicates that social trust is not grounded only in perceived moral agreement with others. An explanation of why a person's perception that others behave differently to her values decreases social trust even when she does not translate this into others' different values, could be that "acting out of values" plays a role in social trust. If a person perceives others act differently to her moral values, but not because they would have different values themselves, she must assume others do not act out of their values as their values do not explain their action in the person's eyes. According to psychological approaches to perception of trustworthiness, perceived *integrity*, i.e., when someone's actions stem out of their values, is an important element of their trustworthiness (De George,1993; Huberts, 2018). Consequently, if a person perceives others do not act out of their values since their behaviour cannot be attributed to their beliefs, her social trust will be negatively affected by others' lack of integrity. In other words, every normative behaviour that is not attributable to a person's related values, could be perceived as a sign of their untrustworthiness because their normative actions are not a driven by their values.

The triumph of moralistic approach in our empirical findings should be taken with caution due to Italian Covid-19 context. Because managing the pandemic was a polarizing and politicized topic (Russo & Valbruzzi, 2022; Charron et al., 2022; Bertero & Sedonne, 2021), the differences between a person's own and perceived support for distancing norms might have had a heightened effect on social trust. Moreover, assuming that compliance to Covid-19 distancing norms was interpreted as expression of other-regarding preferences in the eyes of respondents might present an insufficient test of rationalistic approach. Namely, when consequences of people's actions are uncertain (as was the case for risks and benefits of (not) complying to distancing norms), people turn to other in-group members to interpret the social appropriateness of norm-prescribed behaviours (Horne & Johnson, 2021). Hence, it is precisely in times of crisis like the Covid-19 pandemic when consensus about how beneficial certain actions are, is difficult to establish between different social groups. In some groups of respondents did not interpret norm adherence as hypothesized, *H1b* does not represent a test of whether social trust is founded upon perceived presence of other-regarding individuals.

A person's social trust depends on her secondary beliefs about values and behaviours of others which is why norm-related beliefs are important individual determinants of social trust. However, to compare and test different theories of "origin" of social trust, accounts on how concretely these theories would be reflected in relationships between one's norm related beliefs must be further developed. The present paper is an example of this attempt. It points to the finding that shared moral values do not seem to be a sufficient condition for development of social trust as perceived behaviour of others seems to have an established effect independent of other's beliefs (Lo Iacono et al., 2021, Lisciandra and de Wit, 2020). How perceived value alignment influences social trust under conditions of perceived non-value-driven behaviour of others, is a question for future research. Lastly, although theories on social trust explain how norm-related beliefs affect social trust, it is possible that different individuals behave in line with different theories. Conducting subsequential interviews with survey respondents, Frederiksen (2019) concluded that different individuals adopt different narratives about social trust, some of which lean more towards rationalistic approaches and some towards moralistic. Future research on norm-related beliefs could therefore draw from research on other individual determinants of social trust, such as personality traits, optimism, egalitarianism, solidarity and self-efficacy (Uslaner, 2000; Uslaner,

2002; Delhey & Newton, 2005; Frederiksen, 2019), to determine whether different individuals have different constellations of norm-related beliefs that induce social trust.

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7. Supplementary materials

Appendix 1

Descriptive statistics of norm items measuring *PNB*, *NE* and *EE*

Personal normative beliefs (PNB)	Mean	Standard deviation	Min	Max	N
Shaking hands with others	4.7	1.4	1	6	1966
Keeping at least 1m distance	5.0	1.4	1	6	1966
Attending personal events	4.1	1.4	1	6	1966
Getting together with friends and family	3.3	1.3	1	6	1966
Visit public places	4.2	1.4	1	6	1966
Hugging close friends or relatives	4.2	1.5	1	6	1966
Going to restaurants	3.4	1.4	1	6	1966
Kissing close friends or relatives	4.5	1.5	1	6	1966
Taking public transport	4.0	1.5	1	6	1966
Attending public events	4.7	1.4	1	6	1966

Normative expectations (NE)	Mean	Standard deviation	Min	Max	N
Shaking hands with others	4.5	1.4	1	6	1966
Keeping at least 1m distance	4.4	1.4	1	6	1966
Attending personal events	3.9	1.2	1	6	1966
Getting together with friends and family	3.3	1.2	1	6	1966
Visit public places	3.9	1.3	1	6	1966
Hugging close friends or relatives	3.9	1.3	1	6	1966
Going to restaurants	3.3	1.3	1	6	1966
Kissing close friends or relatives	4.1	1.4	1	6	1966
Taking public transport	3.7	1.4	1	6	1966
Attending public events	4.2	1.4	1	6	1966

Empirical expectations (EE)	Mean	Standard deviation	Min	Max	N
Shaking hands with others	3.7	1.0	1	5	1966
Keeping at least 1m distance	3.5	1.0	1	5	1966
Attending personal events	3.3	0.9	1	5	1966
Getting together with friends and family	2.7	0.9	1	5	1966
Visit public places	3.1	1.0	1	5	1966
Hugging close friends or relatives	3.2	1.0	1	5	1966
Going to restaurants	2.8	0.9	1	5	1966
Kissing close friends or relatives	3.3	1.0	1	5	1966
Taking public transport	3.0	1.0	1	5	1966
Attending public events	3.5	1.0	1	5	1966

Appendix 2

Correlation among norm items

Spearman rank correlations among norm items (*PNB)*

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Mean correlation
1.	Shaking hands with others	1.00										0.51
2.	Keeping at least 1m distance	0.41	1.00									0.31
3.	Attending personal events	0.48	0.20	1.00								0.52
4.	Getting together with friends and family	0.39	0.05	0.52	1.00							0.46
5.	Visit public places	0.46	0.26	0.60	0.49	1.00						0.55
6.	Hugging close friends or relatives	0.59	0.28	0.52	0.56	0.54	1.00					0.55
7.	Going to restaurants	0.30	0.03	0.45	0.50	0.49	0.40	1.00				0.43
8.	Kissing close friends or relatives	0.63	0.36	0.50	0.45	0.51	0.80	0.36	1.00			0.55
9.	Taking public transport	0.36	0.15	0.41	0.32	0.48	0.35	0.40	0.36	1.00		0.44
10.	Attending public events	0.49	0.34	0.55	0.31	0.63	0.48	0.38	0.54	0.53	1.00	0.53

Spearman rank correlations among norm items (*NE*)

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Mean correlation
1.	Shaking hands with others	1.00										0.52
2.	Keeping at least 1m distance	0.31	1.00									0.24
3.	Attending personal events	0.50	0.10	1.00								0.55
4.	Getting together with friends and family	0.39	-0.04	0.57	1.00							0.49
5.	Visit public places	0.51	0.20	0.63	0.54	1.00						0.57
6.	Hugging close friends or relatives	0.59	0.20	0.55	0.56	0.57	1.00					0.57
7.	Going to restaurants	0.32	-0.03	0.51	0.57	0.51	0.46	1.00				0.47
8.	Kissing close friends or relatives	0.63	0.25	0.54	0.49	0.55	0.77	0.41	1.00			0.57
9.	Taking public transport	0.41	0.08	0.48	0.44	0.52	0.44	0.49	0.45	1.00		0.49
10.	Attending public events	0.56	0.28	0.61	0.41	0.65	0.54	0.44	0.60	0.58	1.00	0.57

Spearman rank correlations among norm items (*EE)*

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Mean correlation
1.	Shaking hands with others	1.00										0.47
2.	Keeping at least 1m distance	0.27	1.00									0.28
3.	Attending personal events	0.48	0.19	1.00								0.53
4.	Getting together with friends and family	0.35	0.09	0.51	1.00							0.49
5.	Visit public places	0.45	0.21	0.57	0.58	1.00						0.55
6.	Hugging close friends or relatives	0.54	0.21	0.55	0.55	0.55	1.00					0.55
7.	Going to restaurants	0.34	0.16	0.52	0.55	0.58	0.51	1.00				0.51
8.	Kissing close friends or relatives	0.54	0.26	0.52	0.48	0.50	0.74	0.49	1.00			0.55
9.	Taking public transport	0.32	0.14	0.41	0.41	0.47	0.38	0.44	0.41	1.00		0.45
10.	Attending public events	0.45	0.29	0.57	0.36	0.58	0.50	0.50	0.55	0.48	1.00	0.53

Appendix 3

Principal component analysis of *PNB*, *NE* and *EE* (10 items)

PCA was first conducted separately on the correlation matrix of *PNB*, *NE* and *EE* for 10 items. The results show that all first components in all three norm-related beliefs load heavily on all items but the "distance" item, whereas the second components represent the distance item and its contrast to "restaurant" and "getting together with friends and family" items. Distance item has lower average correlation across *PNB*, *NE* and *EE* compared to average correlations of other items. Furthermore, its correlation with the "restaurant" and "getting together with friends and family" items is specifically close to zero across *PNB, NE* and *EE*, and, in case of *NE*, negative. The reason for the item's lower correlation could be that it was the only one of ten norm items that was articulated in a reversed way (it asked participants about their acceptance of obeying rather than breaking a distancing norm) which may have gone unnoticed by some respondents. The second components can be mostly interpreted as explaining the low correlation between distance item and two other items, adding, in terms of eigen value, the explained variance similar to information contained by one item. Third extracted components explaining the variance of ten items within *PNB, NE* and *EE* had an eigenvalue lower than one so would not be extracted, however they seem to be interpretable as distinguishing between norms related to physical versus norms related to social distancing behaviours. Conducting PCA on all ten items therefore leads to choosing one principal component to describe the variance of ten items within *NE, PNB* and *EE*, since the second component mostly represents the distance item and is not interpretable in a theoretical sense, and the eigenvalue of the third component did not satisfy the Keiser criterium. However, since relevant dimensions that explain variability among norms could be overlooked due to components overrepresenting the distance item and because that item has on average lower correlations with other items across *PNB, NE* and *EE* (with the reason potentially being in its formulation), we decided to eliminate the item, and conduct PCA on norm-related beliefs as well as further analysis without the distance item. Results of the analysis of nine times are presented in the results section.

Eigenvalues of extracted components for *PNB*, *NE* and E*E (10 items)*

Component	PNB		NE		EE	
	Eigen value	*% of explained variance*	*Eigen value*	*% of explained variance*	*Eigen values*	*% of explained variance*
1	5.08	0.51	5.31	0.53	5.15	0.52
2	1.21	0.12	1.22	0.12	1.03	0.10
3	0.87	0.09	0.72	0.07	0.79	0.08
4	0.59	0.06	0.59	0.06	0.64	0.06
5	0.53	0.05	0.50	0.05	0.55	0.05
6	0.46	0.05	0.41	0.04	0.50	0.05
7	0.44	0.04	0.39	0.04	0.42	0.04
8	0.35	0.04	0.34	0.03	0.39	0.04
9	0.29	0.03	0.29	0.03	0.31	0.03
10	0.18	0.02	0.22	0.02	0.22	0.02

Loadings of the first two principal components for *PNB*, *NE* and *EE* (10 items)

	PNB			NE			EE		
	Loadings C1	*Loadings C2*	*Explained variance of items*	*Loadings C1*	*Loadings C2*	*Explained variance of items*	*Loadings C1*	*Loadings C2*	*Explained variance of items*
Shaking hands with others	0.73	0.29	0.62	0.73	0.29	0.61	0.67	0.24	0.51
Keeping at least 1m distance	0.30	0.81	0.75	0.17	0.87	0.78	0.29	0.86	0.82
Attending personal events	0.78	-0.12	0.62	0.80	-0.11	0.65	0.78	-0.08	0.61
Getting together with friends and family	0.68	-0.40	0.62	0.73	- 0.37	0.67	0.72	-0.34	0.64
Visit public places	0.81	-0.08	0.66	0.82	0.00	0.67	0.80	-0.11	0.66
Hugging close friends or relatives	0.81	0.06	0.67	0.81	0.08	0.67	0.81	0.01	0.65
Going to restaurants	0.64	-0.45	0.61	0.69	-0.39	0.63	0.75	-0.22	0.61
Kissing close friends or relatives	0.81	0.19	0.70	0.81	0.19	0.69	0.80	0.11	0.65
Taking public transport	0.63	-0.13	0.42	0.70	-0.12	0.51	0.65	-0.11	0.43
Attending public events	0.78	0.17	0.63	0.80	0.18	0.67	0.76	0.16	0.60

Appendix 4

Principal component analysis of *PNB, NE* and *EE* (9 items)

First components in PCA with 9 items have an eigenvalue explaining 56%, 59% and 56% percent of variance within *PNB, NE* and *EE*, respectively. Although the second components explaining the variance within *PNB, NE* and *EE* have an eigen value lower than one and were not included, they seem to distinguish norms that relate to physical behaviour/contact (shaking hands with others outside home, hugging close friends and relatives and kissing close friends and relatives) that load negatively on second components across *PNB, NE* and *EE* from norms that refer to social distancing. However, the interpretation of the second components is not straightforward, as not all social distancing norms represent the positive spectrum. Interpretation of PCA findings in relation to hypothesis testing is presented in results section.

Eigenvalues of first components for *PNB*, *NE* and *EE (9 items)*

Component	PNB		NE		EE	
	Eigen value	*% of explained variance*	*Eigen value*	*% of explained variance*	*Eigen values*	*% of explained variance*
1	5.00	0.56	5.29	0.59	5.08	0.56
2	0.90	0.10	0.85	0.09	0.82	0.09
3	0.82	0.09	0.69	0.08	0.70	0.08
4	0.54	0.06	0.50	0.07	0.55	0.06
5	0.46	0.05	0.41	0.05	0.50	0.06
6	0.45	0.05	0.40	0.05	0.42	0.05
7	0.35	0.04	0.35	0.04	0.40	0.04
8	0.29	0.03	0.29	0.03	0.31	0.03
9	0.18	0.02	0.22	0.02	0.22	0.02

Loadings of the first principal component for *PNB*, *NE* and *EE (9 items)*

	PNB		NE		EE	
	Loadings	*Explained variance of items*	*Loadings*	*Explained variance of items*	*Loadings*	*Explained variance of items*
Shaking hands with others	0.72	0.52	0.72	0.52	0.67	0.44
Attending personal events	0.78	0.61	0.80	0.64	0.78	0.61
Getting together with friends and family	0.69	0.48	0.74	0.54	0.73	0.54
Visit public places	0.81	0.65	0.82	0.67	0.81	0.65
Hugging close friends or relatives	0.81	0.66	0.81	0.66	0.81	0.66
Going to restaurants	0.65	0.43	0.69	0.48	0.75	0.56
Kissing close friends or relatives	0.81	0.65	0.81	0.65	0.80	0.63
Taking public transport	0.64	0.40	0.70	0.50	0.65	0.42
Attending public events	0.77	0.59	0.80	0.63	0.75	0.56

Appendix 5

Continuation of *Table 3* (wave controls)

Estimated parameters of trust models

Model DVs	Saturated	Rationalistic	Moralistic
Social trust			
Wave2	-0.208	-0.250	-0.197
	(0.270)	(0.273)	(0.272)
Wave3	0.143	0.045	0.160
	(0.234)	(0.233)	(0.235)
Wave4	-0.206	-0.270	-0.204
	(0.237)	(0.237)	(0.238)
Wave5	-0.160	-0.257	-0.151
	(0.239)	(0.239)	(0.240)
Wave6	-0.256	-0.274	-0.211
	(0.240)	(0.239)	(0.241)
Wave7	0.174	0.119	0.207
	(0.234)	(0.232)	(0.235)
Wave8	-0.104	-0.164	-0.081
	(0.242)	(0.242)	(0.243)
Wave9	0.039	-0.038	0.038
	(0.246)	(0.245)	(0.246)
Wave10	0.102	0.042	0.119
	(0.236)	(0.236)	(0.236)

*** $p < 0.001$ ** $p < 0.01$ *$p < 0.05$ ´$p < 0.1$
Note: Robust standard errors of coefficients in parentheses.

Appendix 6

Models controlling for direction of perceived belief opposition

A binary variable that describes the direction of the difference between respondent's own normative beliefs and perceived normative beliefs of others is included in the presented models. The variable equals 1 in case respondent perceived others have greater support for norms (PNB<NE) and 0 in case she perceived other have less or equal support for distancing norms (PNB>NE or PNB= NE). In 1318 cases respondents believed that perceived norm support of others was not greater than their own (0) and in 648 cases perceived support of others was greater than respondent's in respondent's eyes. *Saturated* and *Moralistic model* in which the effect of the difference is estimated were run controlling for direction of the difference. "*Perceived support of greater"* has an insignificant effect in both models, indicating that whether the difference is positive or negative does not affect social trust.

Estimates of models with perceived belief opposition controlling for its direction

Model DVs	Saturated	Moralistic model
Social trust		
PNB	-0.054 (0.078)	0
NE	-0.046 (0.082)	0
Perceived belief opposition /PNB-NE/	-0.347 (0.077)***	-0.329 (0.066)***
Perceived support greater	0.072 (0.136)	0.088 (0.095)
Education	0.010 (0.015)	0.012 (0.015)
Risk attitude	0.269 (0.022)***	0.271 (0.022)***
Perceived economic threat	- 0.367 (0.055)***	-0.369 (0.055)***
Age	0.024 (0.003)***	0.023*** (0.003)
Female	-0.152´ (0.090)	-0.153´(0.090)
Wave2	-0.214 (0.270)	-0.204 (0.272)
Wave3	0.139 (0.235)	0.155 (0.236)
Wave4	-0.210 (0.238)	-0.208 (0.239)
Wave5	-0.165 (0.240)	-0.155 (0.240)
Wave6	-0.265 (0.241)	-0.222 (0.241)
Wave7	0.169 (0.235)	0.201 (0.235)
Wave8	-0.107 (0.242)	-0.088 (0.243)
Wave9	0.034 (0.246)	0.031 (0.246)
Wave10	0.096 (0.237)	0.109 (0.237)
R2	0.17	0.17
Model fit indices		
$\chi2(df)$, p	0.604 (1), p=0.436	4.400 (3), p=0.221
CFI	1.000	0.996
RMSEA	0.000	0.015
SRMR	0.001	0.003

*** p <0.001   **p < 0.01   *p < 0.05   ´p <0.1

Note: Robust standard errors of coefficients in parentheses.

Appendix 7

Endogeneity in predicting perceived belief opposition based on perceived behaviour opposition

Due to modelling mediation within moralistic approach the paper used the option presented in *Model 3*, namely, predicting perceived belief opposition based on perceived behaviour opposition. However, because the predictor and the dependent variable are constructed using *PNB*, the relationship between the two might be endogenous. Therefore, we also present models for different pairs of variables. Comparing *Model 1* and *Model 2*, using *PNB* as the base for construction of behaviour and belief difference increases the variable correlation and explained variability which is indicative of endogeneity. However, larger estimates are no longer present when absolute values of the variables are used (*Model 3*). Modelling mediation within *Moralistic model (Model 3)* does not seem to present estimates that would be biased towards conforming our hypotheses compared to *Model 1*. In all three cases there is a significant amount of unexplained variance which accounts for the correlation between values of the dependent variable and error terms.

Estimates predicting perceived beliefs with perceived behaviour (for different pairs of variables)

Independent variable	Dependent variables		
	NE (Model 1)	PNB – NE (Model 2)	Abs (PNB -NE) (Model 3)
EE	0.95*** (0.03)		
PNB-EE		0.70 *** (0.014)	
Abs(PNB – EE)			0.64*** (0.03)
R2	0.48	0.57	0.42
Cor(y, x)	0.69	0.76	0.65
Cor(y, residual error)	0.72	0.65	0.76
Cor(x, residual error)	0	0	0

*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ ´$p < 0.1$

Note: Estimates with robust errors in parentheses (model fit indices not reported since models have no restricted parameters).

Continuation of *Table 5* (wave controls)

Estimated parameters of trust models

	Main effect only	Partial mediation	Full mediation
Model DVs			
Social trust			
Wave2	-0.210	-0.193	-0.197
	(0.273)	(0.272)	(0.272)
Wave3	0.124	0.165	0.160
	(0.235)	(0.236)	(0.235)
Wave4	-0.215	-0.193	-0.204
	(0.240)	(0.239)	(0.238)
Wave5	-0.184	-0.145	-0.151
	(0.240)	(0.241)	(0.240)
Wave6	-0.200	-0.195	-0.211
	(0.241)	(0.241)	(0.241)
Wave7	0.189	0.214	0.207
	(0.234)	(0.235)	(0.235)
Wave8	-0.087	-0.069	-0.081
	(0.243)	(0.243)	(0.243)
Wave9	0.035	0.053	0.038
	(0.246)	(0.246)	(0.246)
Wave10	0.083	0.114	0.119
	(0.237)	(0.237)	(0.236)
|PNB-NE|			
Wave2		0.078	0.078
		(0.065)	(0.065)
Wave3		0.186**	0.186**
		(0.059)	(0.059)
Wave4		0.097´	0.097´
		(0.054)	(0.054)
Wave5		0.179**	0.179**
		(0.060)	(0.060)
Wave6		0.020	0.020
		(0.055)	(0.055)
Wave7		0.116**	0.116**
		(0.056)	(0.056)
Wave8		0.079	0.079
		(0.060)	(0.060)
Wave9		0.081	0.081
		(0.057)	(0.057)
Wave10		0.142**	0.142**
		(0.057)	(0.057)

*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ ´$p < 0.1$

Note: Robust standard errors of coefficients in parentheses.

Appendix 9

OLS models with interaction (comparison to Lo Iacono et al. (2021))

OLS regression models using interaction between *PNB* and *NE*

Model DVs	Rationalistic	Moralistic
Social trust		
PNB	-0.12* (0.049)	-0.36** (0.135)
NE	-0.07 (0.051)	-0.204 (0.152)
PNB*NE	0	-0.066´ (0.034)
Education	0.010 (0.014)	0.011 (0.014)
Risk attitude	0.271*** (0.019)	0.268*** (0.019)
Perceived economic threat	-0.384*** (0.051)	-0.389*** (0.051)
Age	0.023*** (0.003)	0.022*** (0.003)
Female	-0.174´ (0.090)	-0.172´ (0.090)
Wave2	-0.250 (0.264)	-0.243 (0.264)
Wave3	0.045 (0.230)	0.057 (0.230)
Wave4	-0.270 (0.230)	-0.258 (0.229)
Wave5	-0.257 (0.230)	-0.245 (0.230)
Wave6	-0.274 (0.231)	-0.275 (0.231)
Wave7	0.119 (0.230)	0.130 (0.230)
Wave8	-0.164 (0.230)	-0.157 (0.230)
Wave9	-0.038 (0.230)	-0.027 (0.230)
Wave10	0.042 (0.230)	0.062 (0.230)
R2	0.16	0.16

*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ ´$p < 0.1$
Note: Standard errors of coefficients in parentheses.