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Aversion amplification in the emerging COVID-19 pandemic: The impact of political trust
and subjective uncertainty on perceived threat

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Data availability statement

Data is publicly available on the OSF repository of the project: <https://osf.io/pwf9e/>

Abstract

Health psychology shows that responses to risk and threat depend on perceptions as much as objective factors. The present study focuses on the precursors of perceived threat of COVID-19. We draw on political and social psychology and use the aversion amplification hypothesis to propose that subjective uncertainty and political trust should interactively impact perceived threat. We conducted a cross-sectional survey amongst the general population of Scotland ($N = 188$) in the early period of the COVID-19 pandemic in the UK. We hypothesised that high political trust should ameliorate the threat-elevating impact of uncertainty, thereby reducing perceived threat from high to moderate level. This hypothesis was supported, even after accounting for demographic differences. The discussion addresses the implications of the interactive role of trust and uncertainty for strategies to manage public behaviour as the pandemic progresses.

Keywords: aversion amplification; COVID-19; perceived threat; political trust; uncertainty

Introduction

At the time of writing, the world faces the coronavirus pandemic (COVID-19), an event unprecedented in most people's living memory. The outbreak was first identified in China in November/December 2019, from where it rapidly spread to the rest of the world. It was officially recognised as a pandemic on 11 March 2020 (World Health Organization, 2020). As well as scientific research to develop tests, vaccines and treatments, there are also important tasks for psychological science, for example by anticipating and measuring individuals' emotional and cognitive response to this unforeseen event. The present research investigated personal and societal factors influencing the extent to which people perceive the pandemic as threatening. Specifically, we tested the interactive effect of subjective uncertainty and political trust on perceived level of threat. From prior research and theory, we contend that a *moderate* rather than high level of threat is likely to be most adaptive as it facilitates a sense of coping and the adoption of health protection behaviour whilst avoiding excessive reaction. Specifically, we hypothesised that perceived uncertainty should be associated with increased level of threat but that this relationship should weaken when political trust is high. We now consider these variables in turn.

Perceived threat

Perceived threat is defined as the set of cognitions or thoughts a person has about a danger or harm that exists in the environment (Witte, 1994), for themselves or for others. The consequences of perceived individual threat have been extensively studied in health psychology, notably in the framework of fear appeals (e.g., Witte & Allen, 2000), where evidence indicates that perception of high threat may promote adoption of protective health behaviour, but only if accompanied with high efficacy (Peters et al., 2013; see Ruiter et al., 2014, for a review). Otherwise, high threat is more likely to trigger fear control mechanisms (Witte & Allen, 2000) whereby people focus on coping with their fear rather than with the

source of the threat. Thus, high threat is liable to stimulate reactance, denial, defensive avoidance of the threat, and lack of behaviour change (Witte, 1994). Other evidence indicates that threatening information may increase panic reactions during a painful occurrence, reducing coping strategies, and ultimately decreasing pain tolerance (Jackson et al., 2005). Similar findings emerge in the specific context of pandemics, and authors have reported how fear-driven behaviour could hinder public health efforts (e.g., with people avoiding to seek healthcare out of fear of being exposed to the virus in hospitals and therefore ultimately accelerating transmission; O’Leary et al., 2018). At the other extreme, low perceived threat may also be ineffective because it does not trigger any motivation to change one’s behaviour (Harris & Napper, 2005; Witte, 1994).

Perceived threat may be conceptualised both at the group and individual levels. In social psychological research, the focus is often on perceived threat for the entire group to which the individual belongs (e.g., Stephan et al., 2009). In the present research, we focus on individuals’ perceived threat concerning the (national) group. This is because data were collected during the very early stage of the pandemic, when individuals’ personal exposure to the virus was still very low and their behaviour could have been influenced by the implications of virus for the group as a whole. Importantly, however, individual threat and group threat often align with each other, at least to an extent (Rosenstein, 2008), because individuals tend to project their own views and experiences on to their entire group (e.g., Wojcieszak & Price, 2009) or assimilate their sense of self to the group prototype (e.g., Hogg & Abrams, 1988).

In addition, research on group-level threat distinguished between ‘realistic’ threat (tangible risk for the group’s physical or material conditions) and ‘symbolic’ threat (risk for the group’s values, identity, and way of life; Stephan et al., 2009; Stephan & Stephan, 2017). Although public health issues are primarily conceptualised as a form of realistic threat, there

is evidence that they also constitute symbolic threat if they potentially disrupt people's way of life and social interactions (see Kachanoff et al., 2020). Thus, in the context of the COVID-19 outbreak, it is important to consider both realistic and symbolic forms of threat.

In summary, we propose that, psychologically, a moderate to high level of perceived threat of COVID-19 is likely to be more optimal than a very high or extreme level, because more moderate levels should enhance a sense of coping and encourage the adoption of protective health behaviour (e.g., frequent hand-washing, respecting social distancing) while avoiding panic behaviour and denial/reactance reactions. We next discuss how uncertainty and political trust could together determine the level of perceived threat.

Uncertainty

Uncertainty has been defined as the “subjective *experience* of ignorance. It is a higher-order metacognition representing a particular kind of explicit knowledge—an acknowledgment of *what* one does not know, but also *that* one does not know” (Anderson et al., 2019, p. 2). There is a strong agreement in psychology as well as behavioural economics that humans are generally aversive to uncertainty (Al-Najjar & Weinstein, 2009; Carleton, 2016b; Zeckhauser, 2006), notwithstanding some cross-cultural (Hofstede, 2011) and interindividual variations (Sorrentino et al., 1988). Generally, individuals favour less uncertain choices and are ready to pay to reduce uncertainty (Lovallo & Kahneman, 2000). ‘Fear of the unknown’ has moreover been described as one of the most fundamental fear (Carleton, 2016a; see also Pyszczynski et al., 2010; Pyszczynski et al., 2015). Consequentially, potentially negative events whose outcomes are also highly unpredictable elicit strong negative responses and increase a sense of threat. For example, Slovic (1987) illustrated how events with high catastrophic potential (or *dread risk*; i.e., low-probability, high-consequence) are evaluated as more threatening than less catastrophic events even if the latter lead to higher annual fatalities (see also Gigerenzer, 2004). Interestingly, simulation

data show that this stronger aversion of dread risk might be an ecologically rational reaction when majority of fatalities will be young people, but not when fatalities will mostly be older people (as is the case in the COVID-19 pandemic; Bodemer et al., 2013). It is worth noting that findings seem to apply both to personal uncertainty (as is more studied in behavioural economics) and group uncertainty (as reflected by reactions to dread risks, which represent a risk to one's entire group, nation, etc.). It follows that the uncertainty linked to the outcomes of a dread risk posed by the COVID-19 pandemic is likely to have at least as strong, and probably a stronger impact on people as uncertainty linked to *continuous* risks (such as diabetes, cancer, or household accidents). Therefore, we expect to observe that those who feel greater uncertainty of the impact of the COVID-19 pandemic (for the self and for one's group) are likely to perceive a greater level of threat. The strength of this relationship might, however, depend on political trust.

Political trust

In general terms, political trust refers to the faith people have in their government (Levi & Stoker, 2000). It hence represents a form of diffuse support for the authorities (Easton, 1975). Political trust has been found to predict different outcomes, for example increasing institutionalised participation (voting, etc.; Hooghe & Marien, 2013), decreasing non-institutionalised participation (demonstrating, boycotting, etc.; Kaase, 1999), and increasing compliance with governmental demands and regulations (Levi & Stoker, 2000). There is also evidence that political trust influences citizens' perception of global or social events as more or less threatening. Early on, Short (1984) proposed that risk perception was subject to social factors, and that the influence of "respected public officials" might downplay certain threats. More recently, Abrams and Travaglino (2018) showed that political trust decreased perceived threat from immigration amongst a representative sample of Scottish and English people. Specifically, they found *low* levels of trust to *amplify* perceived threat, in

interaction with people's concern about the situation, a process they defined as 'aversion amplification'.

Given the nature of the COVID-19 outbreak, we believe political trust is a key factor to take into account (Travaglino & Moon; 2020). The pandemic has quickly become a highly politicised issue because of its global nature and the need for a clear national (if not international) stance. People have depended on government authorities to set parameters for what they can or should do, for valid information, and confirmation of social reality. In turn, governments have been quick to issue (sometimes imperfect) recommendations and decrees to guide their citizens' behaviour. Hence, we expect a negative relationship between political trust and perceived threat, so that more trusting individuals would perceive the outbreak as less threatening for their national group. Moreover, based on Abrams and Travaglino's (2018) aversion amplification hypothesis, we expect trust to moderate the impact of uncertainty. However, whereas Abrams and Travaglino (2018) examined how lower trust amplifies threat, the present research tests the flip side of the hypothesis: when individuals perceive a high level of uncertainty over the situation of their country, their perceptions of threat should be ameliorated to the extent that they have greater trust that their government will take adequate measures and cope optimally with situation. In other words, higher trust should *ameliorate* the impact of uncertainty.

The Present Study

This cross-sectional study tested the hypothesised interactive impact of political trust and uncertainty on perceived threat of the COVID-19 outbreak. Data were collected between 5th and 10th March 2020, at the time when reports identified the first deaths linked to the virus in the UK. Between these dates the number of cases in the UK rose from 90 to 373 (6 to 23 in Scotland specifically), and the number of confirmed deaths rose from 1 to 6 (none in Scotland). In the same time window, China had confirmed more than 80,000 cases (and

approximately 4,000 deaths) and in Europe Italy went from 3,900 to 9,000 cases (150 to 1,800 deaths). Right afterwards (11 March) the World Health Organisation declared COVID-19 outbreak a pandemic (World Health Organization, 2020). Hence, even though most people in Scotland had yet to be directly affected, they were aware of the potential of the outbreak. Participants completed an online questionnaire. They first reported demographics, then indicated how (un)certain they were about the current situation, and how much they (dis)trusted their politicians. Finally, they reported their perceptions of threat from the outbreak. Data is publicly available on the OSF repository of the project: <https://osf.io/pwf9e>.

Method

Participants

Participants were Scottish residents recruited as part of a larger national survey with the help of an external partner, Qualtrics Panels. A subsample of 188 participants answered questions related to the ongoing COVID-19 pandemic which are the focus on the present paper. There were 76 men and 112 women aged 18 to 80 ($M = 55.9$, $SD = 13.7$) from all regions of Scotland. A sensitivity power analysis indicated that the sample size would allow detecting a small-to-medium interaction effect (Cohen's $d = 0.41$) at 80% power ($\alpha = .05$, G*Power; Faul et al., 2007).

We measured and controlled for the following demographics: education level (coded 1 to 5, a higher score representing higher education degree), SES status (continuous composite score of three measures: number of books owned, numbers of vehicles owned, whether they own or rent their home, ranging from 0 to 1; see Table 1), and subjective socioeconomic (SES) status (status ladder with rungs numbered 1 to 8, a higher score representing higher subjective status).

Table 1. *Descriptive statistics and correlations between uncertainty, political trust, and threat, and main demographics.*

		Pearson's correlation							
		<i>M (SD)</i>	2	3	4	5	6	7	8
1	Uncertainty	3.08 (1.06)	-.06	.14 [†]	-.03	-.10	.02	-.01	-.06
2	Political trust	2.46 (0.84)		-.19**	-.05	.19**	.18*	.23**	.16*
3	Perceived threat	3.87 (0.82)			.13	-.02	.00	-.11	.02
4	Gender	-				-.24**	-.13	-.14 [†]	-.06
5	Age	55.9 (13.7)					.16*	.34***	.02
6	SES status	0.60 (0.25)						.46***	.36***
7	Subjective status	4.28 (1.40)							.24**
8	Education level	2.85 (1.33)							

Notes. Uncertainty, trust, and threat were measured on 5-point scale. SES status ranges from 0-1, education level from 1-5, and subjective status was measured on an 8-point scale ('status ladder'). Gender: -1 = male, +1 = female.

[†] $p = .060$, * $p < .05$, ** $p < .01$, *** $p < .001$

Measures

Uncertainty. Uncertainty was measured with a single item: "How unsure or sure do you feel about how the coronavirus will affect people in Scotland?" (1 = Extremely sure, 5 = Extremely unsure). This item and all the following were measured on a 5-point scale; descriptive statistics are reported in Table 1.

Political trust. Five items assessed political trust (e.g., "Most members of the UK parliament are honest", "Politicians are mainly in politics for their own benefit and not for the benefit of the community" (recoded); 1 = Strongly disagree, 5 = Strongly agree) and were averaged ($\alpha = .74$).

Perception of threat. Because the COVID-19 outbreak and its consequences are likely to interfere with various domains of life (see Kachanoff et al., 2020), and in line with previous work in social psychology on the assessment of perceived threat (Abrams & Houston, 2006; Abrams & Travaglino, 2018), we measured perception of threat with two items: "To what extent do you think that the general way of life is becoming worse or better

because of the coronavirus outbreak?”, “To what extent do you think that safety, security and health are becoming worse or better because of the coronavirus outbreak?” (1 = Much better, 5 = Much worse). Items were strongly correlated ($r(186) = .78, p < .001$) and averaged in a score of perceived threat (Spearman-Brown coefficient = .88).

Results

A three-stage hierarchical multiple regression was conducted with perceived threat as the dependent variable. The main effects of uncertainty and political trust (both standardised) were entered at stage one; their interaction was entered at stage two. Finally, gender (-1 = male, 1 = female), age, subjective and observed SES, and level of education (all standardised) were entered at stage three to ensure that any effect identified held when controlling for demographics. Results are reported in Table 2. Of all demographics, only gender had a significant effect: Women ($M = 3.95, SD = .86$) reported higher perceived threat than men ($M = 3.69, SD = .72$). The analysis yielded a significant main effect of political trust that held through stages 1 to 3: Perceived threat decreased when political trust increased. There was no main effect of uncertainty. More importantly, the expected political trust \times uncertainty interaction was significant, regardless of whether demographics were included in the model (see Figure 1).

Decompositions of simple effects revealed that, amongst participants with lower political trust (-1 SD), uncertainty was associated with increased perception of threat, $b = .21, SE = .07, t(184) = 3.00, p = .003, d = 0.44, 95\% CI [0.15, 0.74]$. However, political trust ameliorated the impact of uncertainty: participants with higher political trust (+1 SD) reported a similar perceived threat regardless of their level of uncertainty, $b = -.08, SE = .09, t(184) = -0.87, p = .39, d = -0.13, 95\% CI [-0.42, 0.16]$. Put differently, amongst participants with higher uncertainty (+1 SD), greater political trust was associated with significantly lower perceptions of threat, $b = -.32, SE = .09, t(184) = -3.70, p < .001, d = -0.54, 95\% CI [-0.84, -$

0.25], which was not the case amongst participants with lower uncertainty ($-1 SD$), $b = -.03$, $SE = .07$, $t(184) = -0.47$, $p = .64$, $d = -0.07$, 95% CI [-0.36, 0.22].

Figure 1. Perceived threat of the COVID-19 outbreak as a function of political trust and uncertainty. Both variables are standardised and bands represent 95% confidence intervals.

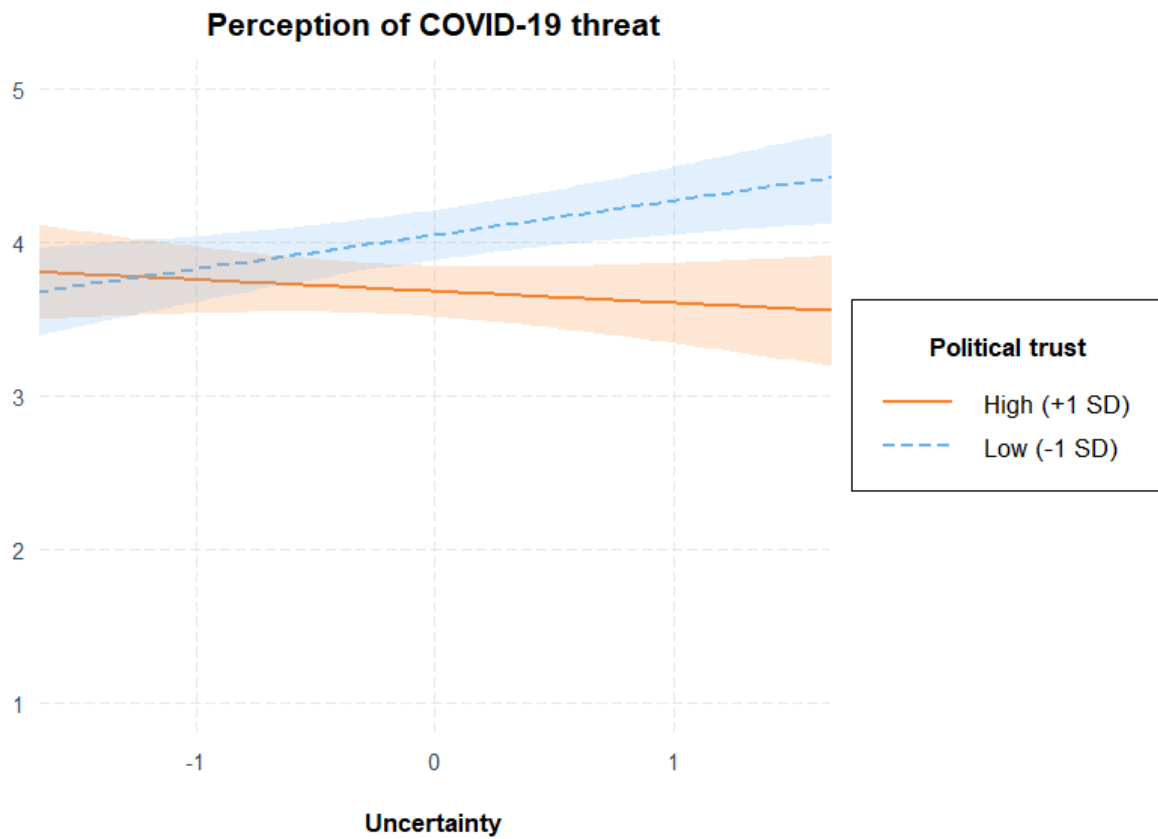


Table 2. Summary of hierarchical regression analysis for variables predicting perceived threat.

Variable	Step 1				Step 2				Step 3			
	<i>b</i> (SE)	β	<i>t</i> -test	<i>p</i> -value	<i>b</i> (SE)	β	<i>t</i> -test	<i>p</i> -value	<i>b</i> (SE)	β	<i>t</i> -test	<i>p</i> -value
<i>Intercept</i>	3.87 (.06)		65.7	< .001	3.86 (.06)		66.4	< .001	3.81 (.06)		63.6	< .001
Uncertainty	.10 (.06)	.13	1.76	.080	.07 (.06)	.08	1.13	.26	.12 (.06)	.14	1.91	.057
Political trust	-.15 (.06)	-.18	-2.53	.012	-.18 (.06)	-.22	-3.09	.002	-.16 (.06)	-.20	-2.62	.010
Uncertainty \times Trust					-.15 (.06)	-.20	-2.67	.008	-.15 (.06)	-.20	-2.68	.008
Gender									.13 (.06)	.16	2.10	.038
Age									.05 (.07)	.06	0.77	.44
SES status									.06 (.07)	.08	0.94	.35
Subjective status									-.10 (.07)	-.12	-1.38	.17
Education level									.05 (.06)	.06	0.75	.46

Step 1: $F(2, 185) = 5.05, p = .007, R^2 = .052, R^2_{\text{adj}} = .041$

Step 2: $F(3, 184) = 5.84, p = .001, R^2 = .087, \Delta R^2 = .035, R^2_{\text{adj}} = .072$

Step 3: $F(8, 168) = 3.35, p = .001, R^2 = .138, \Delta R^2 = .051, R^2_{\text{adj}} = .097$

Discussion

The present study investigated perceptions of threat from the COVID-19 pandemic in the early days of the outbreak in the UK. In line with the aversion amplification hypothesis and with previous findings in political and social psychology, we found that the combination of uncertainty regarding the group's situation and political trust predicted perceived threat for the group. Specifically, high political trust ameliorated the impact of uncertainty, leading to a more moderate perception of threat.

Importantly, even the most 'prepared' participants (those reporting low uncertainty and high political trust) did not report *low* but rather moderate levels of perceived threat (slightly above the scale mid-point). With respect to our initial reasoning, this level of threat seems likely to be the optimal response to the situation, since it should facilitate healthy coping and behaviour change without triggering panic responses nor fear control mechanisms (such as denial or reactance; see Witte, 1994). This response should be beneficial both at the individual and the group level, given the need for a coordinated response from all people in order to tackle the pandemic effectively (O'Leary et al., 2018).

It is also important that these effects held when taking demographics into account, highlighting the need to incorporate individuals' perspectives and not just their demographic context when addressing perceptions of threat from the pandemic. People's age, level of education, and SES status were all positively related to political trust but those factors are not directly amenable to influence. Moreover, it was their psychological mediation through trust that accounted for levels of threat and which seems most proximally relevant and amenable to influence.

The present research makes several contributions. First, data were collected early in the course of the pandemic in the UK, when we were able to capture citizens' representations of the pandemic before they had been directly affected. Thus, the evidence anticipates why

people may subsequently have responded more or less appropriately to the actual level of threat. Second, this work combines insights from the different fields of health psychology, political psychology, and social psychology to propose a distinctive account of perceived threat as a function of the wider social environment. The findings notably extend previous research in political psychology by showing a novel impact of political trust that has seldom been explored in the domain of health. Most importantly, the evidence has immediate relevance to people's lives and actions at a time when it matters.

Some limitations must also be recognized. First, the cross-sectional design of the study limits a causal interpretation of the results. Experimentally manipulating the variables would be beneficial to ascertain claims of causality. However, in the present context, experimental manipulation of trust or uncertainty might be ethically questionable. We believe the value of the evidence lies in the insight it provides into how individuals' subjective perception of trust and uncertainty are likely to be implicated in their sense of threat. Managing this threat is clearly relevant to ensuring that behavioural responses are adaptive and appropriate rather than dysfunctional or disruptive. Threat is a particularly important variable because it is known to affect a series of different outcomes such as people's sense of coping, their adoption of protective behaviour, panic reactions, reactance or denial (Peters et al., 2013; Witte & Allen, 2000). It will be useful if future studies test this causal chain more extensively, particularly whether uncertainty and trust impact other psychological and behavioural outcomes through perceived threat. Different types of threat should also be investigated as recent evidence suggest that symbolic and realistic threat are differently related to health protection behaviour (Kachanoff et al., 2020). Individual threat and group threat could also impact people's behaviour differently (e.g., whether they prioritise personal protection or interpersonal helping, versus distancing from outgroups or volunteering and help groups perceived to be more at risk).

In summary, the present results offer insight into factors that drive perceptions of extreme threat, and which might be open to influence to ensure threat levels are adaptive. One avenue is to optimise the population's level of uncertainty, while another is to increase their political trust. Another, which might be better suited to local contexts, is to calibrate the balance between these differently for different individuals and locales to ensure that behaviour is appropriate for their immediate or local situation. Political trust tends to build or decline gradually, but this may not be the case in times of crisis such as the present pandemic. An opinion survey conducted in Italy during the first half of March 2020 (when the entire country went into lockdown) revealed that trust in the authorities was much higher than it had been a few months before the outbreak started (Falcone et al., 2020). Hence, it seems that trust may also react directly to how adequate governmental responses to the crisis are perceived to be. Importantly, it can decline just as quickly if the governmental responses are perceived as ineffective, e.g. as the death rate rose dramatically.

We believe the most direct implications of this research concern communication strategies (see Kronick, 2020) and involve both the media and official entities. Governments are likely to inspire higher trust by communicating a clear and sensible action plan and globally conveying an impression of competence, motivation, and legitimacy. In addition, it is important to provide –as far as possible– clear information or projection of the individual and collective level impact of the social, economic and medical aspects of the course of the pandemic. This might best be achieved if medical and social science advisors, governments and the media offer a unified and coherent interpretation of the facts (see e.g., The Times, 2020).

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