



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



# Being future-conscious during a global crisis: The protective effect of heightened Futures Consciousness in the COVID-19 pandemic

Fanny Lalot<sup>a,\*</sup>, Dominic Abrams<sup>a</sup>, Sanna Ahvenharju<sup>b</sup>, Matti Minkkinen<sup>b</sup>

<sup>a</sup> School of Psychology, University of Kent, Keynes College, University Rd, CT2 7NP Canterbury, UK

<sup>b</sup> Turku School of Economics, University of Turku, Rehtorinpellonkatu 3, 20500 Turku, Finland



## ARTICLE INFO

### Keywords:

Futures Consciousness  
 COVID-19  
 Subjective wellbeing  
 Future-oriented thinking  
 Social relationships

## ABSTRACT

Futures Consciousness (FC) refers to the capacity that a person has for understanding, anticipating, and preparing for the future. In many respects, the COVID-19 pandemic has been a challenge for future thinking, implying delay discounting, uncertainty, low sense of control, and self-sacrifice for the benefit of the community at large. FC might hence have an important role in explaining people's perceptions of and reactions to the pandemic. The results of a longitudinal study over the course of the summer 2020 found that UK participants ( $N = 298$ ) who reported higher scores of FC at the first time of measure were more likely to express greater satisfaction and engagement with the COVID-19 government restrictions at the second time of measure. They also reported higher compassion for others, stronger sense of neighbourliness, and greater engagement in different forms of collective action. This positive engagement translated in benefit for the self: greater perceived wellbeing, lesser emotional blunting, and greater feelings of hope about the future. Remarkably, the same participants also reported greater concern about societal issues. It hence seems that FC triggers an active and aware engagement with the future. We discuss implications for future-thinking research and interventions aiming to improve Futures Consciousness.

## 1. Introduction

At the time of writing, the world faces an unprecedented pandemic of the coronavirus disease (COVID-19). The outbreak, first identified in China in November–December 2019, rapidly spread to the rest of the world and was officially recognised as a pandemic on March 11, 2020 (World Health Organization, 2020). Over the course of 2020, most countries across the globe imposed severe measures suppressing several constitutional rights, the most stringent form being national quarantine (or lockdown), implying restrictions of movement for the population, limitations on social interactions, and the closure of many schools and businesses. As the pandemic progresses, it becomes clearer that the “social distancing” measures, together with job insecurity/loss, salience of death, and general uncertainty about the future, have taken a serious toll on people's mental health and wellbeing (see e.g., Xiong et al., 2020). Research and commentaries have also warned on social cohesion being at risk, with people looking for others to blame for the continuous spread of the disease (BBC News, 2020; Reicher, 2020), potentially fuelling increased tensions between groups within and across local communities (Prosser, Judge, Bolderdijk, Blackwood, & Kurz, 2020).

An impressive amount of research has investigated the role of demographic factors (e.g., Xiong et al., 2020), underlying condition (e.g., Yao, Chen, & Xu, 2020) as well as job or role (e.g., Greenberg, 2020) or place in predicting people's sense of vulnerability or resilience in the face of the pandemic. Much less research, however, has focused on the role of social psychological factors such as personality and motivational orientation (for notable exceptions, see e.g., Kowalski & Black, 2021; Liu, Lithopoulos, Zhang, Garcia-Barrera, & Rhodes, 2021; Modersitzki, Phan, Kuper, & Rauthmann, 2020; Oosterhoff, Palmer, Wilson, & Shook, 2020; Volk, Brazil, Franklin-Luther, Dane, & Vaillancourt, 2021). In the present paper, we propose to investigate the role of future-thinking orientation (i.e., Futures Consciousness) in explaining people's perceptions and behaviours in the face of the pandemic. We measured Futures Consciousness as a personal disposition and considered its impact on respondents' (i) attitudes and expectations around the COVID-19 government restrictions, (ii) engagement with others during the pandemic, and (iii) resulting sense of resilience.

\* Corresponding author.

E-mail addresses: [f.lalot@kent.ac.uk](mailto:f.lalot@kent.ac.uk) (F. Lalot), [d.abrams@kent.ac.uk](mailto:d.abrams@kent.ac.uk) (D. Abrams), [sanna.ahvenharju@utu.fi](mailto:sanna.ahvenharju@utu.fi) (S. Ahvenharju), [matmin@utu.fi](mailto:matmin@utu.fi) (M. Minkkinen).

<https://doi.org/10.1016/j.paid.2021.110862>

Received 28 December 2020; Received in revised form 10 March 2021; Accepted 11 March 2021

Available online 23 March 2021

0191-8869/© 2021 Elsevier Ltd. All rights reserved.

### 1.1. Futures Consciousness: a comprehensive approach to future-oriented thinking

Futures Consciousness (FC) refers to “the capacity that a person has for understanding, anticipating, and preparing for the future” (Lalot, Ahvenharju, Minkkinen, & Wensing, 2019, p. 1). The concept was recently developed through theoretical work at the intersection of futures studies and psychology (see Ahvenharju, Lalot, Minkkinen, & Quiamzade, 2021; Ahvenharju, Minkkinen, & Lalot, 2018). With respect to a systemic approach, FC encompasses the notion of global consciousness (Morris, 2002; Rifkin, 2009) and awareness of the social, cultural, and political environment (Freire, 2013). It hence represents a broader construct than neighbouring concepts of future orientation or future time perspective (Strathman, Gleicher, Boninger, & Edwards, 1994; Zimbardo & Boyd, 1999).

Based on a review of the literature in the field of futures research, Ahvenharju and colleagues proposed a five-dimensional model of Futures Consciousness, composed of the following dimensions: Time perspective, Agency beliefs, Openness to alternatives, Systems perception, and Concern for others; five dimensions which together contribute to the high-level construct of FC (Ahvenharju et al., 2018, 2021). FC hence represents a disposition to think about the future (Time perspective), but not only that. This future-oriented thinking comes together with a sense of being an active agent who can effectively influence the direction the future will take (Agency beliefs), a more systemic or holistic way to think about people and systems in general (Systems perception), and finally a genuine sense of concern for others (Concern for others), so that the focus is not merely on *my* potential future, but on the future of all people around me globally.

The five-dimensional nature of FC was asserted in experimental studies and through the development of a psychometrical scale allowing to assess FC as an individual difference (Lalot, Ahvenharju, & Minkkinen, 2021; Lalot, Ahvenharju, Minkkinen, & Wensing, 2019). Crucially, these studies found FC scores to be related to greater engagement in different social future-oriented behaviours, including altruistic behaviour, engaged citizenship (Lalot, Ahvenharju, Minkkinen, & Wensing, 2019), engagement in collective action, and general interest in politics (Lalot, Ahvenharju, & Minkkinen, 2021).

### 1.2. Why should Futures Consciousness matter during the COVID-19 pandemic?

If anything, the pandemic has been an exercise in future thinking, delay discounting (e.g., accepting present restrictions on social life and liberties in the perspective of a future improvement of health conditions), considering consequences for a larger group than the self (e.g., respecting self-constraints to protect more vulnerable others), and dealing with a huge amount of uncertainty (with ever-changing rules, infections figures, and behavioural recommendations, Rutter, Wolpert, & Greenhalgh, 2020). In the light of these different challenges, FC hence seems an especially relevant construct to investigate people’s perceptions, behaviours, and sense of resilience in the face of the pandemic.

Indeed, future-oriented thinking (as encompassed in the Time perspective dimension) should promote delay discounting (Matta, Gonçalves, & Bizarro, 2012; Mischel, Ebbesen, & Raskoff Zeiss, 1972) and hence the acceptance of present-time rules and restrictions. Greater personal agency (assessed through the Agency beliefs dimension) should foster a sense of efficacy (Bandura, 1982) and control over the environment (Rotter, 1966), and thus encourage the adoption of individual protective behaviours, which are more likely to be perceived as they matter (see also Conner & Norman, 2015). Greater Openness to alternatives would alleviate the negative impact of uncertainty and allow engaging more comfortably in an uncertain and quickly-changing future (Carleton, 2016). A more holistic and comprehensive understanding of systems (i.e., Systems thinking; see also Lezak & Thibodeau, 2016) would facilitate making sense (at least subjectively) of the extremely

intricate current situation (which has been described by some scholars as “a complex problem in a complex system [...] made up of multiple interacting components”, Rutter et al., 2020, p. 1) – notably the “health versus economy” dilemma (Georgieva & Adhanom Ghebreyesus, 2020). Finally, a sense of Concern for others would enable making personal sacrifices for the sake of others, facilitating the adoption of social distancing and health protection behaviours even amongst those who are less directly vulnerable to the virus (Pfattheicher, Nockur, Böhm, Sassenrath, & Petersen, 2020). In sum, individual differences in FC should predict how well people are coping with the enduring hardships posed by the pandemic and how much they engage with others during these challenging times. In the present paper, we specifically considered how dispositional FC related to (i) specific attitudes and expectations around the COVID-19 rules and restrictions, (ii) engagement with others during the pandemic, and (iii) personal resilience and protection of mental health.

### 1.3. The present research

The present data are part of a longitudinal survey of social cohesion in the UK during the COVID-19 pandemic. We draw here from two successive waves of data collection, assessing Futures Consciousness in the first (June 2020) and all outcomes variables in the second (July/August 2020). The research was approved by the ethics committee at the first author’s institution (reference number: 202015886922686497).

Given the rapid pace of events in the year 2020, we summarise below the main events of the summer, for context. A national lockdown was initiated by the UK government on 23 March 2020. Lockdown rules were slightly relaxed on 10 May and some primary schools reopened in England on 1 June. Further relaxing of the rules followed with the reopening of English retail shops and places of worship (15 June) as well as pubs and restaurants (4 July). In July, most of the media attention turned to the deflating economy with much concern around job losses (12,000 job losses were announced over only two days) and the furlough scheme. Despite relaxing rules at the national level, some places that saw rising numbers of new infections were placed under stricter local rules, starting with the local lockdown of Leicester on 3 July, and new restrictions on Manchester on 30 July. The summer was also marked by the resurgence of tensions between social groups, with people scapegoating specific groups for the re-increasing rates of infection (most notably the Black Asian and Minority Ethnic (BAME) communities, BBC News, 2020; as well as young people, Reicher, 2020). It also showed a steady decrease in trust in the government’s response (for example in a weekly YouGov poll, percentage of respondents who “think the government was handling the issue of coronavirus ‘very’ or ‘somewhat’ well” fluctuated between 38 and 45% in June to August, down from 58% in May and 68% in April; YouGov, 2020).

## 2. Materials and method

### 2.1. Participants and procedure

Data were collected through an on-line survey and participants were recruited through external partners (Qualtrics Panels). They were people who voluntarily registered on survey distribution systems to participate in research surveys in exchange for a small incentive. The external partners were in charge of distributing the survey to potential respondents, ensuring responses quality and compensating participants. Specifically, participants who failed an attention check or completed the survey in an unreasonably short amount of time were automatically excluded from the sample. All participants were remunerated for their participation (£5, equivalent to €5.50 or \$6). They were given full information about the use and sharing of their anonymous responses and provided informed consent prior to starting the survey.

Participants were drawn from the general population of the regions of Scotland and Wales as well as the county of Kent in England. These

**Table 1**  
Demographics of the sample ( $N = 298$ ).

Demographic categories	Frequency	Percentage
Gender		
Male	164	55.0
Female	133	44.6
Undisclosed	1	0.3
Age		
18–24	11	3.7
25–34	29	9.7
35–44	58	19.5
45–54	37	12.4
55–64	59	19.8
65–74	79	26.5
75+	25	8.4
Ethnicity		
White/White British	279	93.6
Mixed/Multiple ethnicity	4	1.4
Asian/Asian British	1	0.3
Black/African/Caribbean/Black British	1	0.3
Undisclosed	13	4.4
Annual household income		
Less than £15,000	28	9.4
£15,000 to £30,000	76	25.5
£30,000 to £40,000	49	16.4
£40,000 to £60,000	61	20.5
£60,000 to £100,000	33	11.1
More than £100,000	10	3.4
Undisclosed	41	13.7
Political orientation		
Left-wing	91	30.5
Centre	98	32.9
Right-wing	109	36.6
Total	298	100%

Notes. Political orientation is measured on a 7-point scale (1 = Left-wing, 4 = Centre, 7 = Right wing). For the table breakout we considered 1–3 as left-wing, 4 as centre, 5–7 as right-wing. In the analyses, however, the variable is kept continuous.

areas were chosen because of their disparities in terms of demographics, political preferences, and history – so that considering them together would provide a comprehensive overview of citizens' perceptions in the UK. Everyone who completed the first questionnaire in June was invited to participate again in the second in July/August. The analyses only include participants who completed both questionnaires. Only complete questionnaires were taken into consideration (dropout rate was of 11% for the first questionnaire and 17% for the second).

A total of 298 participants completed both surveys. They were 164 male and 133 female (1 undisclosed) of a mean age of 54.35 years ( $SD = 16.10$ ). All demographics are reported in Table 1. Unless stated otherwise, all measures were assessed on 5-point Likert scales. Data are available on the OSF page dedicated to the project: <https://osf.io/7js3u/>.

## 2.2. Materials

### 2.2.1. Futures Consciousness

Futures Consciousness was assessed in the first survey (June 2020), relying on the Revised Futures Consciousness scale (Lalot, Ahvenharju, & Minkkinen, 2021). The R-FC scale includes 20 items (4 per sub-dimension of FC), e.g., “I think often about what tomorrow will bring” (Time perspective), “I believe I can succeed at most any endeavour to which I set my mind” (Agency beliefs), “I am often on the lookout for new ideas” (Openness to alternatives), “I think that all the Earth's systems, from the climate to the economy, are interconnected” (Systems thinking), and “When they are in need, I want to help people all over the world” (Concern for others), 1 = Not true of me at all, 5 = Very true of me. All items were aggregated into a single score of FC (see Lalot, Ahvenharju, & Minkkinen, 2021; Lalot, Ahvenharju, Minkkinen, & Wensing, 2019).

### 2.2.2. Attitudes and expectations around the COVID-19 rules and restrictions

The other measures were assessed in the second survey (June/August 2020). We first measured the *Perceived importance of COVID-19 government restrictions* with a single item, “How important do you think it is that everyone respects the guidelines introduced by the government at any given time?” (1 = Not at all, 5 = Extremely). *Trust in others* to respect the restrictions was measured for a series of different groups and people: “How much do you think people from each group can be trusted to follow the government instructions about social distancing?” (10 items, e.g., “People in the UK in general”, “People living in your neighbourhood”, 1 = Not at all, 5 = Completely). *One's own behaviour* relative to the restrictions was measured with a single item, “How do you think your own behaviour compares to the government guidelines?” (1 = Less careful than the guidelines, 3 = Corresponding to the guidelines, 5 = More careful than the guidelines). Finally, *Perceived threat from COVID-19* was measured with 7 items inspired from Kachanoff, Bigman, Kap-saskis, and Gray (2020): “In the short- to medium-term, what impact do you think the pandemic will have on each of the following?” (e.g., “The health of the UK population as a whole”, “The UK economy (jobs and economic growth)”; 1 = Strong negative impact, 3 = No impact, 5 = Strong positive impact).

### 2.2.3. Engagement with others during the pandemic

We considered engagement with others during the pandemic through three indicators. First, we measured how much *Compassion* participants reported feeling for different groups (3 items, e.g., “I feel compassion for those most vulnerable to COVID-19”; 1 = Strongly disagree, 5 = Strongly agree). We then assessed their sense of *Neighbourliness* (or good relations in their local area) with 3 items (e.g., “How much do you enjoy spending time with other people in your local area?”, 1 = Not at all, 5 = Very much so; see Wardrop, 2012). Finally, as a behavioural indicator of investment in the community, we measured past *Engagement in collective action*. Participants indicated how many of 14 collective actions they had engaged in during the past month (e.g., signing a petition, demonstrating, donating, volunteering). We summed the numbers of activities reported (score from 0 to 14).

### 2.2.4. Personal resilience and protection of mental health

Several indicators were used to assess participants' sense of resilience, better mental health, and positivity regarding the future. We first asked about the level of *Concern over social issues*: “Compared with other things, how concerned are you about each of the following policy areas?” (12 items, e.g., “Jobs and economic growth”, “Environmental issues”, 1 = Not at all concerned, 5 = Extremely concerned). We then assessed the emotions experienced when thinking about “the way the future looks for people in the UK”, including *Anxiety* (“anxious, worried”), *Anger* (“frustrated”, “angry”) and *Hope* (“hopeful”, “confident”), 1 = Not at all, 5 = A great deal. To assess people's sense of resilience, we finally measured *Emotional blunting* (4 items, e.g., “My emotions are numbed (or flattened) compared to before the pandemic”, 1 = Strongly disagree, 5 = Strongly agree; adapted from Price, Cole, Doll, & Goodwin, 2012), and *Subjective wellbeing* (2 items, e.g., “All things considered, how satisfied are you with your life as a whole nowadays?”, 1 = Very dissatisfied, 5 = Very satisfied; Delhey & Dragolov, 2016).

## 3. Results

### 3.1. Analyses strategy

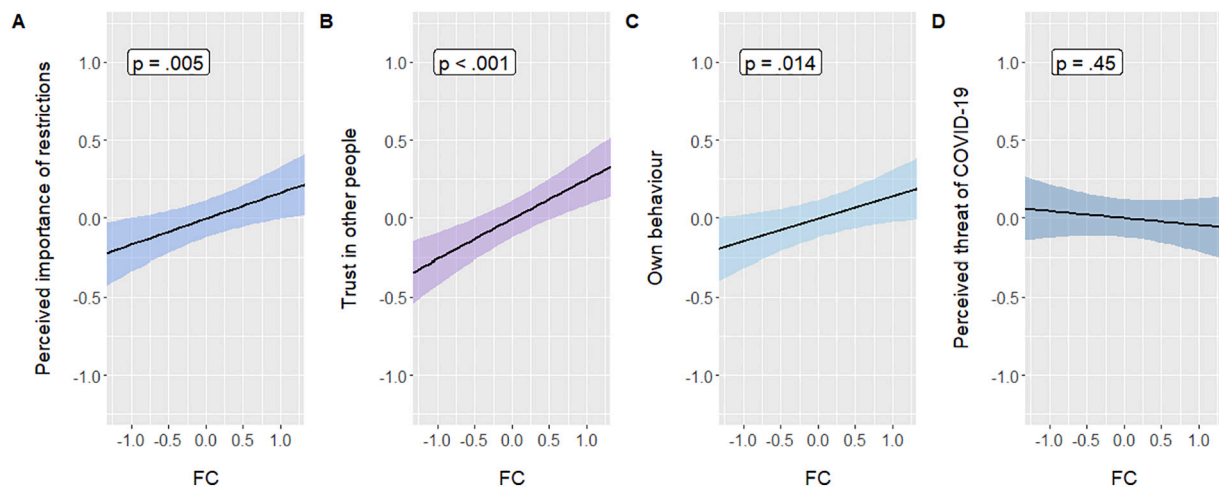
All descriptive statistics, reliability indices and correlations appear in Table 2. We conducted a series of linear regressions on the different dependent variables with FC as the main predictor (continuous score, standardised), while including the following demographics as covariates: gender (−1 = male, 1 = female), ethnicity (−1 = other than

**Table 2**  
Descriptive statistics, reliability indices, and correlations between Futures Consciousness and all constructs.

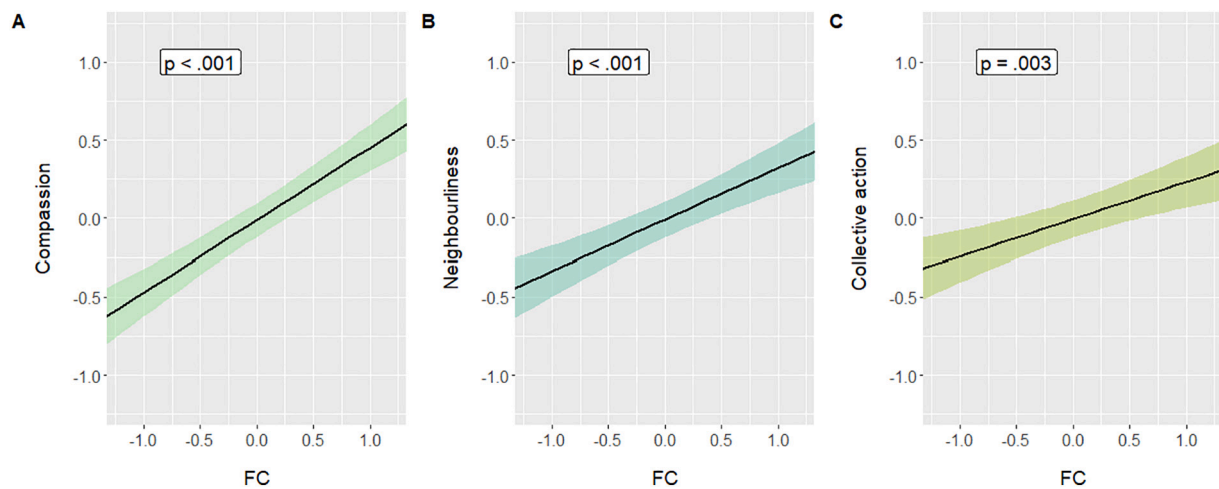
	<i>M (SD)</i>	$\alpha/\omega_t$	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Futures Consciousness (FC)	3.49 (0.47)	0.85/ 0.88	0.11	0.23***	0.14*	-0.09	0.48***	0.23***	0.35***	0.34***	0.05	0.14*	0.24***	-0.31***	0.17**
2 Perceived importance of restrictions	4.54 (0.76)	-		0.11	0.31***	-0.06	0.21***	0.06	0.14*	0.12*	-0.10	-0.04	0.07	-0.09	0.10
3 Trust in others to respect restrictions	2.94 (0.61)	0.88/ 0.92			-0.08	0.17**	0.31***	0.03	0.35***	0.08	-0.05	-0.09	0.31***	-0.25***	0.18**
4 Own's behaviour relative to restrictions	3.58 (0.97)	-				0.03	0.17**	0.00	0.05	0.24***	0.05	0.05	0.03	-0.04	-0.04
5 Perceived threat from COVID-19	2.26 (0.58)	0.79/ 0.82					-0.08	-0.00	0.04	-0.23***	-0.23***	-0.22***	0.27***	-0.03	0.19**
6 Compassion	3.85 (0.70)	0.77/ 0.78						0.16**	0.34***	0.39***	0.10	0.07	0.17***	-0.23**	0.15**
7 Engagement in collective action	1.54 (1.83)	-							0.17**	0.22**	0.10	0.21***	0.10	0.04	-0.05
8 Neighbourliness	3.12 (1.05)	0.88/ 0.89								0.14*	-0.10	-0.02	0.24***	-0.31***	0.30***
9 Concern over social issues	3.02 (0.83)	0.91/ 0.93									0.40***	0.36***	0.02	0.01	-0.20**
10 Feelings of anxiety	2.74 (1.11)	0.86/ 0.86										0.67***	-0.25***	0.14*	-0.36***
11 Feelings of anger	2.42 (1.10)	0.85/ 0.85											-0.08	0.01	-0.20**
12 Feelings of hope	2.42 (0.94)	0.81/ 0.81												-0.18**	0.39***
13 Emotional blunting	2.48 (0.75)	0.64/ 0.70													-0.34***
14 Wellbeing	3.51 (0.92)	0.94/ 0.94													

Notes. All constructs are measured on 5-point Likert scales except *Engagement in collective action*, which is a summed score of up to 14 possible collective actions (1 = has done, 0 = not done). Reliability:  $\alpha$  represents Cronbach's alpha, and  $\omega_t$  McDonald's omega reliability index (total). Absence of reliability index indicates single-item measures.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Fig. 1.** Relations between Futures Consciousness (FC) and Perceived importance of COVID-19 restrictions (A), Trust in other people to respect the restrictions (B), Own behaviour relative to the restrictions (C), and Perceived threat of COVID-19 (D). All scores are standardised.



**Fig. 2.** Relations between Futures Consciousness (FC) and Compassion (A), Neighbourliness (B), and Engagement in collective action (C). All scores are standardised.

White, 1 = White or White British), age, income, socioeconomic status, and political orientation (all standardised). For simplicity purposes, we only report below the main effect of FC on each outcome. The complete output describing the effects of all demographics can be found in Supplementary material. It can already be noted that results were mostly unchanged by the introduction of the various covariates. Given the exploratory nature of the study and the fact that many tests were performed, we determined a threshold of  $\alpha = 0.01$  to interpret a result as statistically significant.

### 3.2. Attitudes and expectations around the COVID-19 rules and restrictions

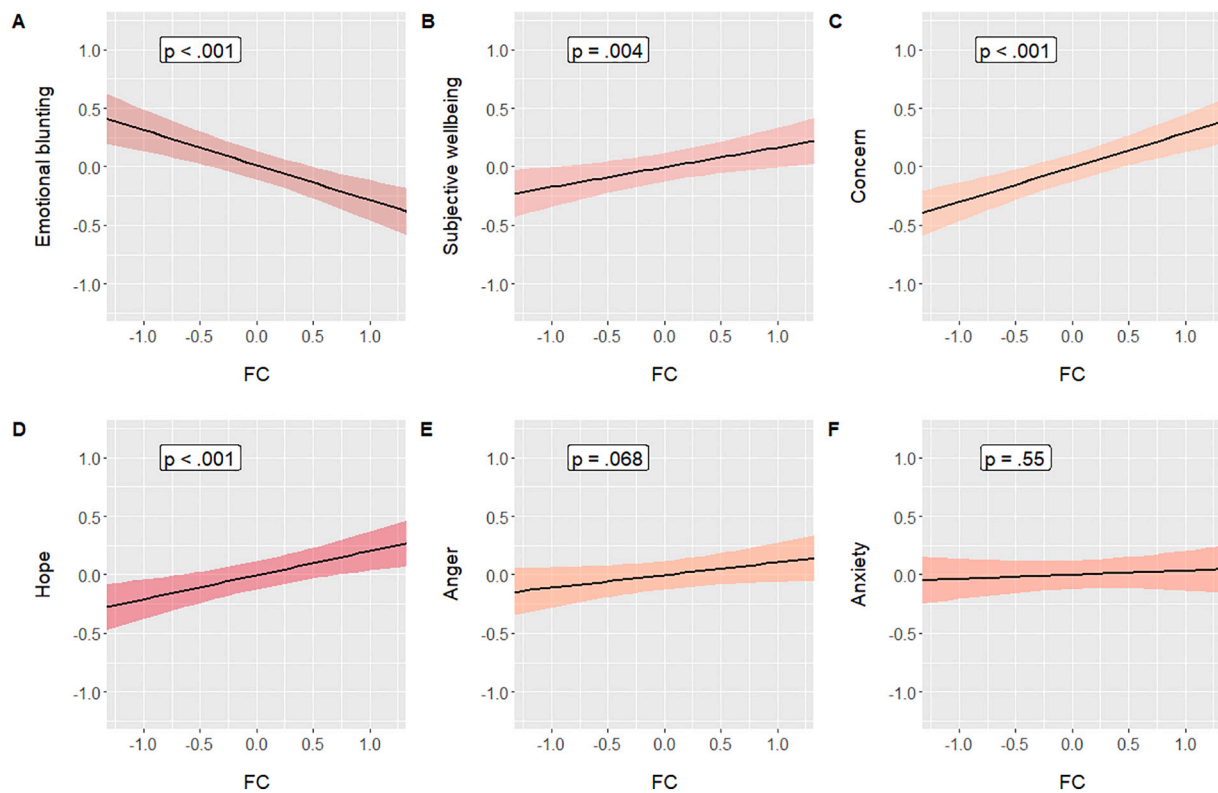
FC scores were related with a greater perceived importance of the COVID-19 restrictions,  $b = 0.13$ ,  $SE = 0.05$ ,  $\beta = 0.18$ ,  $t(248) = 2.85$ ,  $p = .005$ , and with higher trust in other people to follow these restrictions,  $b = 0.17$ ,  $SE = 0.04$ ,  $\beta = 0.28$ ,  $t(248) = 4.44$ ,  $p < .001$ . At the determined threshold of  $\alpha = 0.01$ , there was no significant effect on personal behaviour relative to the restrictions, although the results descriptively hinted towards a more careful personal behaviour amongst respondents with higher FC,  $b = 0.15$ ,  $SE = 0.06$ ,  $\beta = 0.16$ ,  $t(248) = 2.47$ ,  $p = .014$ . Interestingly, FC played no role in the perception of threat from COVID-19,  $b = -0.03$ ,  $SE = 0.04$ ,  $\beta = -0.05$ ,  $t(248) = -0.77$ ,  $p = .45$  (see Fig. 1).

### 3.3. Engagement with others during the pandemic

FC was also related with a greater engagement with others during the pandemic. Greater FC scores predicted greater feelings of compassion,  $b = 0.35$ ,  $SE = 0.04$ ,  $\beta = 0.50$ ,  $t(248) = 8.99$ ,  $p < .001$ , greater sense of neighbourliness,  $b = 0.37$ ,  $SE = 0.06$ ,  $\beta = 0.36$ ,  $t(245) = 5.92$ ,  $p < .001$ , and greater engagement in collective action (generalised linear model with gamma probability distribution; log link function),  $b = 0.15$ ,  $SE = 0.05$ , Wald's  $\chi^2(1) = 8.96$ ,  $p = .003$  (see Fig. 2).

### 3.4. Personal resilience and protection of mental health

Finally, FC predicted greater resilience and better mental health. Participants with higher FC scores reported lower emotional blunting,  $b = -0.25$ ,  $SE = 0.05$ ,  $\beta = -0.32$ ,  $t(225) = -4.88$ ,  $p < .001$ , as well as greater subjective wellbeing,  $b = 0.16$ ,  $SE = 0.06$ ,  $\beta = 0.18$ ,  $t(245) = 2.89$ ,  $p = .004$ . When thinking of the country's future, participants with higher FC reported higher hope,  $b = 0.21$ ,  $SE = 0.06$ ,  $\beta = 0.23$ ,  $t(247) = 3.56$ ,  $p < .001$ . In contrast, feelings of anger,  $b = 0.13$ ,  $SE = 0.07$ ,  $\beta = 0.12$ ,  $t(247) = 1.83$ ,  $p = .068$ , and anxiety,  $b = 0.04$ ,  $SE = 0.07$ ,  $\beta = 0.04$ ,  $t(247) = 0.59$ ,  $p = .55$ , were not affected by FC. Crucially, this greater



**Fig. 3.** Relations between Futures Consciousness (FC) and Emotional blunting (A), Subjective wellbeing (B), Concern over societal issues (C), and feelings of Hope (D), Anger (E), and Anxiety (F). All scores are standardised.

positivity towards the future appeared despite participants with higher FC also reporting greater concern about the different policy areas,  $b = 0.25$ ,  $SE = 0.05$ ,  $\beta = 0.31$ ,  $t(247) = 5.22$ ,  $p < .001$  (see Fig. 3).<sup>1</sup>

## 4. Discussion

### 4.1. Futures Consciousness and the COVID-19 pandemic

Futures Consciousness (FC) is a relatively new construct developed at the intersection of futures studies and psychology. It represents an active and open orientation towards the future, so that people with higher FC are more oriented towards future-thinking but also report a greater sense of agency over future events, a more holistic perception of systems, more openness towards different alternatives, and a sense of concern for the future of others above and beyond the self (Ahvenharju et al., 2018, 2021; Lalot, Ahvenharju, Minkkinen, & Wensing, 2019).

On many respects, the COVID-19 pandemic has been and continues to be a challenge for future thinking. The ever-changing nature of the pandemic has implied delay discounting, dealing with uncertainty, accepting self-sacrifice for the benefit of the community at large, and fighting creeping feelings of low control and helplessness. It hence seems that FC had an important role in explaining people's perceptions of and reactions to the pandemic.

The results of a longitudinal study over the course of the summer 2020 found that UK participants who reported higher scores of FC at the

first time of measure (June 2020) were more likely to express greater satisfaction and engagement with the COVID-19 government restrictions at the second time of measure (July/August 2020; as shown in higher perceived importance of the restrictions, greater trust in other people to respect the restrictions and, at least descriptively, more cautious personal behaviour). This appeared despite a relatively equal perception of threat from the pandemic (not impacted by FC scores). When it comes to relationships with others, participants with greater FC reported higher compassion for others, stronger sense of neighbourliness or good relations with their local area, and were more likely to have engaged in different forms of collective action over the past month. This positive engagement seemed to have translated in benefit for the self, as these participants also reported greater perceived wellbeing, lesser emotional blunting, and greater feelings of hope (but not anger nor anxiety) when thinking about the future of the country. Even more remarkable, this appeared despite greater concern about societal issues amongst the same participants. It hence seems that FC triggers an active but not 'naïve' engagement about the future. Rather, high-FC people, attuned to future problems as they are, take a positive and proactive approach to them – which has a protective effect on the self as well.

### 4.2. Limitations and future directions

The present study complements past work around the FC scale (Lalot, Ahvenharju, & Minkkinen, 2021; Lalot, Ahvenharju, Minkkinen, & Wensing, 2019) which had found FC to correlate with engagement in future-oriented social behaviour (e.g., civic and proenvironmental actions). The present study prolongs this past work in two respects. First, it is the first to test the effects of FC in a longitudinal study, hence reinforcing notions of causality, or at least temporal antecedence. Second, it considers the impact of FC not only on socially-oriented behaviours but also on consequences on the self in terms of resilience and wellbeing. That being said, some limitations remain that will need to be addressed in future research.

<sup>1</sup> Three more policy areas were initially included in the list ("immigration levels", "crime", and "terrorism"). However, an exploratory factorial analysis found those items to load on a different factor than all other 12 items. For simplicity purposes, we hence removed them from the aggregated index of concern. It can be noted that FC had no significant effect on the mean level of "immigration/terrorism/crime" concern,  $b = 0.04$ ,  $SE = 0.06$ ,  $\beta = 0.03$ ,  $t(248) = 0.58$ ,  $p = .56$ .

First, the current sample was limited to a single country (the UK). Past research on FC has also focused on Western countries. It remains an open question how FC manifests itself and which consequences occur in other cultural settings. Most notably, there are open questions around the notions of systemic thinking and concern for others in more collectivist cultures (Lalot, Ahvenharju, Minkkinen, & Wensing, 2019).

Second, FC was here primarily construed as an interindividual difference. This, however, does not mean that FC cannot be taught or improved. Within the field of psychology, there is evidence for example that people can learn to engage in episodic future thinking (Altgassen et al., 2015) and improve their critical thinking capacities (King & Kitchener, 1994). Agency beliefs can also be boosted (Margolis & McCabe, 2006). In the field of futures studies, different types of futures workshops have been developed since the 1970s, and in recent years there has been increasing interest in developing skills and capacities in futures thinking (Jungk & Mullert, 1987; Miller, 2015). These workshops are often co-creative methods set on different purposes (e.g., strategic planning, scenario development, or educational goals). In light of the present results, it seems that such workshops and tools – to the extent that they are indeed successful in increasing participants' Futures Consciousness – are worth developing and integrating in educational settings.

### Funding sources

This work was supported by the Nuffield Foundation (grant number WEL/FR-000022582, awarded to D. Abrams and F. Lalot). The Foundation has funded this project, but the views expressed are those of the authors and not necessarily the Foundation.

### Data availability statement

Data are available on the OSF page dedicated to the project: <https://osf.io/7js3u/>.

### CRedit authorship contribution statement

**Fanny Lalot:** Conceptualization, Methodology, Investigation, Data curation, Writing – original draft, Visualization. **Dominic Abrams:** Conceptualization, Methodology, Data curation, Writing – review & editing, Project administration, Funding acquisition. **Sanna Ahvenharju:** Conceptualization, Writing – review & editing. **Matti Minkkinen:** Conceptualization, Writing – review & editing.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2021.110862>.

### References

- Ahvenharju, S., Lalot, F., Minkkinen, M., & Quiamzade, A. (2021). Individual futures consciousness: The psychology behind the five-dimensional Futures Consciousness Scale. *Futures*. <https://doi.org/10.1016/j.futures.2021.102708>.
- Ahvenharju, S., Minkkinen, M., & Lalot, F. (2018). The five dimensions of Futures Consciousness. *Futures*, *104*, 1–13. <https://doi.org/10.1016/j.futures.2018.06.010>.
- Altgassen, M., Rendell, P. G., Bernhard, A., Henry, J. D., Bailey, P. E., Phillips, L. H., & Kliegel, M. (2015). Future thinking improves prospective memory performance and plan enactment in older adults. *The Quarterly Journal of Experimental Psychology*, *68*(1), 192–204. <https://doi.org/10.1080/17470218.2014.956127>.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, *37*(2), 122–147. <https://doi.org/10.1037/0003-066X.37.2.122>.
- BBC News. (2020). Craig Whittaker: MP defends saying some Muslims not taking covid seriously. <https://www.bbc.co.uk/news/uk-politics-53612230>.
- Carleton, R. N. (2016). Fear of the unknown: One fear to rule them all? *Journal of Anxiety Disorders*, *41*, 5–21. <https://doi.org/10.1016/j.janxdis.2016.03.011>.
- Conner, M., & Norman, P. (2015). *Predicting and changing health behaviour: Research and practice with social cognition models* (3rd ed.). Open University Press.

- Delhey, J., & Dragolov, G. (2016). Happier together. Social cohesion and subjective well-being in Europe. *International Journal of Psychology*, *51*(3), 163–176. <https://doi.org/10.1002/ijop.12149>.
- Freire, P. (2013). *Education for critical consciousness* (Reprint ed.) (Bloomsbury Academic).
- Georgieva, K., & Adhanom Ghebreyesus, T. (2020, 3 April 2020). Some say there is a trade-off: Save lives or save jobs – This is a false dilemma. The Telegraph. <https://www.telegraph.co.uk/global-health/science-and-disease/protecting-healthhandli-velihoods-go-hand-in-hand-cannot-save/>.
- Greenberg, N. (2020). Mental health of health-care workers in the COVID-19 era. *Nature Reviews Nephrology*, *16*(8), 425–426. <https://doi.org/10.1038/s41581-020-0314-5>.
- Jungk, R., & Mullert, N. (1987). *Future workshops: How to create desirable futures* (Institute for Social Inventions).
- Kachanoff, F., Bigman, Y. E., Kapsaskis, K., & Gray, K. (2020). *Measuring realistic and symbolic threats of COVID-19 and their unique impacts on well-being and adherence to public health behaviors* (pp. 1–14). OnlineFirst: Social Psychological and Personality Science. <https://doi.org/10.1177/1948550620931634>.
- King, P. M., & Kitchener, K. S. (1994). *Developing reflective judgment: Understanding and promoting intellectual growth and critical thinking in adolescents and adults* (1st ed.). Jossey-Bass Publishers.
- Kowalski, R. M., & Black, K. J. (2021). Protection motivation and the COVID-19 virus. *Health Communication*, *36*(1), 15–22. <https://doi.org/10.1080/10410236.2020.1847448>.
- Lalot, F., Ahvenharju, S., & Minkkinen, M. (2021). *Aware of the future? Adaptation and refinement of the Futures Consciousness Scale*. Submitted for publication.
- Lalot, F., Ahvenharju, S., Minkkinen, M., & Wensing, E. (2019). Aware of the future? Development and validation of the Futures Consciousness Scale. *European Journal of Psychological Assessment*, Advance Articles. <https://doi.org/10.1027/1015-5759/a000565>.
- Lezak, S. B., & Thibodeau, P. H. (2016). Systems thinking and environmental concern. *Journal of Environmental Psychology*, *46*, 143–153. <https://doi.org/10.1016/j.jenvp.2016.04.005>.
- Liu, S., Lithopoulos, A., Zhang, C.-Q., Garcia-Barrera, M. A., & Rhodes, R. E. (2021). Personality and perceived stress during COVID-19 pandemic: Testing the mediating role of perceived threat and efficacy. *Personality and Individual Differences*, *168*, 110351. <https://doi.org/10.1016/j.paid.2020.110351>.
- Margolis, H., & McCabe, P. P. (2006). Improving self-efficacy and motivation: What to do, what to say. *Intervention in School and Clinic*, *41*(4), 218–227. <https://doi.org/10.1177/10534512060410040401>.
- Matta, A. D., Gonçalves, F. L., & Bizarro, L. (2012). Delay discounting: Concepts and measures. *Psychology & Neuroscience*, *5*(2), 135–146. <https://doi.org/10.3922/j.pns.2012.2.03>.
- Miller, R. (2015). Learning, the future, and complexity. An essay on the emergence of futures literacy. *European Journal of Education*, *50*(4), 513–523. <https://doi.org/10.1111/ejed.12157>.
- Mischel, W., Ebbesen, E. B., & Raskoff Zeiss, A. (1972). Cognitive and attentional mechanisms in delay of gratification. *Journal of Personality and Social Psychology*, *21*(2), 204–218. <https://doi.org/10.1037/h0032198>.
- Modersitzki, N., Phan, L. V., Kuper, N., & Rauthmann, J. F. (2020). Who is impacted? Personality predicts individual differences in psychological consequences of the COVID-19 pandemic in Germany. *Social Psychological and Personality Science*, *1948550620952576*. <https://doi.org/10.1177/1948550620952576>.
- Morris, M. (2002). Ecological consciousness and curriculum. *Journal of Curriculum Studies*, *34*(5), 571–587. <https://doi.org/10.1080/00220270110108187>.
- Oosterhoff, B., Palmer, C. A., Wilson, J., & Shook, N. (2020). Adolescents' motivations to engage in social distancing during the COVID-19 pandemic: Associations with mental and social health. *Journal of Adolescent Health*, *67*(2), 179–185. <https://doi.org/10.1016/j.jadohealth.2020.05.004>.
- Pfafftheicher, S., Nockur, L., Böhm, R., Sassenrath, C., & Petersen, M. B. (2020). The emotional path to action: Empathy promotes physical distancing and wearing of face masks during the COVID-19 pandemic. *Psychological Science*, *31*(11), 1363–1373. <https://doi.org/10.1177/0956797620964422>.
- Price, J., Cole, V., Doll, H., & Goodwin, G. M. (2012). The Oxford Questionnaire on the Emotional Side-effects of Antidepressants (OQuESA): Development, validity, reliability and sensitivity to change. *Journal of Affective Disorders*, *140*(1), 66–74. <https://doi.org/10.1016/j.jad.2012.01.030>.
- Prosser, A. M. B., Judge, M., Bolderdijk, J. W., Blackwood, L., & Kurz, T. (2020). “Distancers” and “non-distancers”? The potential social psychological impact of moralizing COVID-19 mitigating practices on sustained behaviour change. *British Journal of Social Psychology*, *59*(3), 653–662. <https://doi.org/10.1111/bjso.12399>.
- Reicher, S. (2020). Scapegoating young people for Britain's rising coronavirus rates is a poor strategy. The Guardian - Opinion <https://www.theguardian.com/commentisfree/2020/sep/09/scapegoating-young-people-britain-coronavirus-rates>.
- Rifkin, J. (2009). *The empathic civilization: The race to global consciousness in a world in crisis* (1st ed.) (Tarcher Perigee).
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*(1), 1–28. <https://doi.org/10.1037/h0092976>.
- Rutter, H., Wolpert, M., & Greenhalgh, T. (2020). Managing uncertainty in the COVID-19 era. *BMJ*, *370*, m3349. <https://doi.org/10.1136/bmj.m3349>.
- Strathman, A., Gleicher, F., Boninger, D. S., & Edwards, C. S. (1994). The consideration of future consequences: Weighing immediate and distant outcomes of behavior. *Journal of Personality and Social Psychology*, *66*(4), 742–752. <https://doi.org/10.1037/0022-3514.66.4.742>.
- Volk, A. A., Brazil, K. J., Franklin-Luther, P., Dane, A. V., & Vaillancourt, T. (2021). The influence of demographics and personality on COVID-19 coping in young adults.



- Personality and Individual Differences*, 168, 110398. <https://doi.org/10.1016/j.paid.2020.110398>.
- Wardrop, H. M. (2012). *Analysing changing public attitudes towards equality and intergroup relations: Developing a new measure of good relations*. Canterbury, UK: University of Kent.
- World Health Organization. (2020). WHO announces COVID-19 outbreak a pandemic. Retrieved 12/03/2020 from <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic>.
- Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., ... McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders*, 277, 55–64. <https://doi.org/10.1016/j.jad.2020.08.001>.
- Yao, H., Chen, J.-H., & Xu, Y.-F. (2020). Patients with mental health disorders in the COVID-19 epidemic. *The Lancet Psychiatry*, 7(4), Article e21. [https://doi.org/10.1016/S2215-0366\(20\)30090-0](https://doi.org/10.1016/S2215-0366(20)30090-0).
- YouGov. (2020). COVID-19: government handling and confidence in health authorities. <https://yougov.co.uk/topics/international/articles-reports/2020/03/17/perception-government-handling-covid-19>.
- Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality and Social Psychology*, 77(6), 1271–1288. <https://doi.org/10.1037/0022-3514.77.6.1271>.