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## Mapping the personality of (exceptional) intergenerational concern

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### ABSTRACT

While present-favoring biases prevail in typical displays of intergenerational concern, some people feel exceptional levels of concern for near and distant future generations alike. In six studies ( $N = 4787$ ) with pre-registered designs and hypotheses, we aimed to (1) map the personality characteristics of intergenerational concern and (2) develop a systematic approach to identifying exceptionally concerned individuals, whom we identify as “longtermists,” using attitudinal and behavioral metrics. Longtermists exhibit prosocial personality characteristics, including Big-5/HEXACO traits of open-mindedness, conscientiousness, and honesty-humility, fewer tendencies associated with “Dark Tetrad” personality traits (with the exception of narcissism), and Primal beliefs that the world is in need and deserving of their personal contributions to improve it. The current research serves as a first step towards a framework for identifying personality differences underlying intergenerational concern, and longtermism beliefs. These findings, paired with further research to replicate and expand upon them, may benefit policymakers and advocates by helping to target receptive demographics for promoting intergenerational stewardship.

Humanity's greatest vulnerability to existential threats like climate change, pandemic disease, and global poverty may not be technological limitations (Benjamin Hilton, 2023), but rather psychological constraints posed by a prevailing tendency to undervalue the welfare of future generations (Ord, 2021; Wade-Benzoni, 2008). Nonetheless, a considerable number of individuals demonstrate expansive concern for humanity's future (Syropoulos, Law, Young, 2024b). As the ways in which the personality structures present in these individuals may distinguish them from the rest of the population remain unexplored, we set out to systematically map the personality profile of exceptional intergenerational concern.

### 1. Prevailing presentism and exceptional intergenerational concern

Intergenerational attitudes are often marked by prevailing presentism. Seminal research from behavioral economics (Wade-Benzoni, 2002, 2008) and emerging inquiry across psychological disciplines suggests people empathize more easily with (Coleman & DeSteno, 2023), feel greater concern for (Syropoulos, Law, Young, 2024a), and

are more willing to help (Hauser et al., 2014) people in the present versus the future. Such presentism intensifies when considering generations farther away in time.

Yet, the increasingly popular longtermism ethical philosophy contends that intergenerational beneficence—action to safeguard humanity's long-term future—should be a key moral priority in the present (MacAskill, 2022; Ord, 2021). While presentism prevails for most, roughly 25 % of the US population demonstrates extreme intergenerational concern for near and distant future generations alike, as indicated by high scoring on the Longtermism Beliefs Scale (LBS; Syropoulos et al., 2023), a recently-developed metric capturing endorsement of longtermist philosophical principles. We will refer to these individuals as “longtermists” for the sake of conciseness, though it should be noted that the longtermism philosophy is associated with a social movement of the same name, and its adherents are at times referred to as “Longtermists.” We use the term not to refer to individuals associated with the longtermism movement, but to those who express exceptional concern for near (i.e., 100 years from now) and far-future (e.g., 100,000 years from now) generations without showing a gradient decline in concern across increasing temporal distance.

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High-scorers on the LBS are unique. Extensive research has shown them to possess numerous farsighted prosocial inclinations. For instance, compared to the rest of the population, longtermists extend more support for public policies advocating climate justice for future generations, feel more responsible for future welfare, ascribe greater moral rights to future people, and donate larger sums of money to farsighted charities (Syropoulos et al., 2023, 2024b). Longtermists also exhibit numerous prosocial attitudes towards present-day targets, even socially distant ones (e.g., such as outgroups and the natural world; Syropoulos et al., 2023). While our comprehension of intergenerational concern is expanding, no published study has examined how the personalities of exceptionally concerned individuals compare to those of individuals with typical levels of concern for the future. Existing research on the psychology of longtermism beliefs and extant knowledge of prosocial personality dimensions outside of the intergenerational context provide a basis for making predictions.

2. The personality characteristics of intergenerational concern

2.1. The BIG-5 and HEXACO traits

Initially, we aim to explore the variation between longtermists, individuals with exceptional intergenerational concern, and the rest of the population on the Big Five and HEXACO personality traits (i.e., Honesty-Humility, Extraversion, Agreeableness, Conscientiousness, Open-Mindedness), which account for substantial variability in human behavior, emotion, and cognition (Soto & John, 2017). We hypothesize that longtermists will score higher on agreeableness, honesty-humility, conscientiousness, and open-mindedness. These dimensions are associated with prosocial behavior outside the intergenerational context (Oda & Matsumoto-Oda, 2022), and with exceptional acts of altruism in special populations (e.g., extraordinary altruists like altruistic kidney donors show elevated honesty-humility; Rhoads et al., 2023). Moreover, these dimensions comprise compassion, fairness, cooperation, responsibility and inventive capability, aligning with existing research connecting intergenerational concern to fairness in resource allocations across temporal and social distance, a heightened sense of intergenerational responsibility, and a robust capacity for vivid imagination (Law et al., 2023).

2.2. The dark side of personality

We will additionally evaluate whether longtermists show differences from those with lower levels of intergenerational concern on “Dark Tetrad” traits (e.g., Paulhus et al., 2021), comprising sub-clinical variability in (1) narcissism (i.e., egotistical and attention-seeking behaviors), (2) Machiavellianism (i.e., tendencies towards the strategic manipulation of others), (3) psychopathy (i.e., impulsive and thrill-seeking behaviors), and (4) sadism (i.e., deriving pleasure from causing harm). Research in the general population has linked lower dark tetrad scores to elevated prosociality (e.g., Jonason et al., 2010). Moreover, extraordinary altruists demonstrate a set of empathic cognitive, behavioral, and neural patterns that contrast those of high-scorers on assessments of psychopathy (e.g., Law et al., 2024), and effective altruists, who sacrifice resources to benefit distant strangers, feel heightened empathy compared to controls (Wilks et al., 2023). Compellingly, intergenerational concern is associated with greater empathic responding to suffering (Coleman & DeSteno, 2023).

While evidence overwhelmingly supports that longtermists likely score relatively lower on assessments of dark traits, narcissism, which is at times correlated positively with prosociality (Palmer & Tackett, 2018), may be exception. Narcissists (1) derive pleasure from positive evaluations from others, which often accompany prosocial decisions and (2) exceptional intergenerational concern entails heightened a sense of confidence in one's ability to impact the future. So, while we hypothesize that longtermists will score relatively lower on measures of psychopathy,

sadism, and Machiavellianism, we also reason that longtermists may score relatively higher on trait narcissism.

2.3. Primal world beliefs

Finally, we will investigate whether longtermists have different Primal World Beliefs (i.e., “primals”) than the rest of the population. Primals encompass 26 foundational beliefs, arranged from the most general down to the more nuanced and specific (J. Clifton, 2023). At the highest order is the “good” umbrella primal, which captures perceptions of the world as inherently good or bad. Three subordinate “Big 3” primals represent components of the “good” primal and comprise “safe” (i.e., whether people see the world as a safe or dangerous place), “enticing” (i.e., whether people see the world as interesting or dull) and “alive” (i.e., whether people see the world as having intention or purpose and desiring of our help). These Big 3 can be further delineated into 17 lower-order “tertiary primals” and five additional tertiary primals are unassociated with the Big 3 (see Table 1).

While research is yet to link primals to future thinking or prosociality, we can cautiously hypothesize how longtermists might differ from the general population, drawing on existing knowledge. For reasons we elaborate on in the Supplementary Online Materials (SOM), we predict that individuals with exceptional levels of intergenerational concern will score higher on metrics evaluating the primals “alive,” “enticing,” “good,” and “changing” and lower on those evaluating the primals “safe,” “hierarchical,” and “acceptable.” In essence, we predict intergenerational concern will be marked by seeing the world as a generally good place in need of and deserving improvement.

2.4. The present research

We set out to delineate the personality profile of intergenerational concern for the first time, contrasting trait patterns of empirically identified longtermists with those of individuals who show less-exceptional levels of intergenerational concern. We classified individuals as longtermists based on their exceptional concern for the nearest future generations and their absence of declining concern for more distant ones using the Longtermism Beliefs Scale (LBS). While this method offers the utility of capturing high intergenerational concern in a manner resistant to intertemporal discounting of more distant future welfare, it trades off employing the full variability in LBS scores. Thus, we replicated all primary analyses treating the scale as a continuous measure, confirming the main text findings (see SOM).

In seven highly-powered studies, we probed longtermists' standings on the Big 5 and HEXACO traits (Studies 1a and 1b), “Dark Tetrad” traits (Studies 2a and 2b), and examined their Primal World Beliefs (Study 3). Finally, Study 4 internally replicated all previously observed findings and expanded upon results from a supplementary study (see SOM) to explore whether similar patterns could be identified in the behaviors

Table 1  
Structure of primal world beliefs.

Level	Primal		
1. First Order Primal		Good	
2. Second Order “Big 3” Primals	Safe	Enticing	Alive
3. “Big 3” Tertiary Primals	Pleasurable	Interesting	Intentional
	Regenerative	Beautiful	Needs Me
	Progressing	Abundant	Interactive
	Harmless	Worth Exploring	
	Cooperative	Meaningful	
	Stable	Improvable	
	Just	Funny	
4. Neutral Tertiary Primals		Acceptable	
		Changing	
		Hierarchical	
		Interconnected	
		Understandable	

associated with alternative methods of identifying longtermists. These studies advance our understanding of the psychological profile of intergenerational concern and raise implications for how society might better integrate and harness farsighted intergenerational attitudes in broader decision-making and policy formulation for the sake of our collective future. All measures we employ have been validated in prior research or in the context of the present research where specified. All data, surveys, and code for analyses are available on the Open Science Framework (OSF), [https://osf.io/f9wmv/?view\\_only=c7800fc3a7a7432b81fa9583a4980d66](https://osf.io/f9wmv/?view_only=c7800fc3a7a7432b81fa9583a4980d66).

### 3. Studies 1a and 1b – the BIG-5 and HEXACO personality traits

Study 1a, examined whether longtermists differed from those with more typical levels of intergenerational concern in their scores on the BIG-5 personality traits. Study 1b was a pre-registered ([https://aspredict.ed.org/31V\\_95P](https://aspredict.ed.org/31V_95P)) replication and extension examining the HEXACO model.

#### 3.1. Methods

##### 3.1.1. Participants

**3.1.1.1. Study 1a.**  $N = 691$  participants were recruited on Prolific. This sample was the result of combining two control conditions of experiments manipulating longtermism beliefs. For the control condition in each study, participants completed the Big Five-2 Inventory (BFI-2; Soto & John, 2017) as a filler task. After completing the BFI-2, participants completed the Longtermism Beliefs Scale (LBS; see SOM for all items), followed by a measure capturing support for reform for future generations for one study, and a donation task for the other study. Measures were shown in a fixed order and thus the two key measures of our study were not influenced by other study procedures. Consent was provided online at the beginning of the survey.

**3.1.1.2. Study 1b.**  $N = 800$  participants were recruited on Prolific. After applying our pre-registered exclusion criteria, a total of 776 participants were retained in the study. Participants completed the LBS and the HEXACO-60 (Ashton & Lee, 2009) in a randomized order. Consent was provided online at the beginning of the survey.

##### 3.1.2. Measures

**3.1.2.1. BFI-2 (Study 1a).** The 60-item BFI-2 was included. Responses were captured on 1–9 analog slider scales ranging from 1 = strongly disagree to 9 = strongly agree. The five facets were highly reliable: Open-mindedness:  $\alpha = 0.90$ , Negative emotionality:  $\alpha = 0.94$ , Conscientiousness:  $\alpha = 0.0.88$ , Agreeableness:  $\alpha = 0.89$ , Extraversion:  $\alpha = 0.89$ .

**3.1.2.2. HEXACO-60 (Study 1b).** The 60-item HEXACO-60 was included. Responses were captured on 1–5 Likert-type scales ranging from 1 = strongly disagree to 7 = strongly agree. The six facets were highly reliable: Honesty-Humility:  $\alpha = 0.78$ , Emotionality:  $\alpha = 0.82$ , Extraversion:  $\alpha = 0.85$ , Agreeableness:  $\alpha = 0.80$ , Conscientiousness:  $\alpha = 0.83$  Openness to Experience:  $\alpha = 0.80$ .

**3.1.2.3. LBS.** Longtermism beliefs were captured with a 7-item measure (Syropoulos et al., 2023). Each item was completed simultaneously four times. Scores were captured on slider scales ranging from 0 = strongly disagree – 100 = strongly agree. For each response, participants were asked to respond for a specific timeframe in mind as a reference point for their answer. These were 1000, 10,000, 100,000, and 1000,000 years in the future. The average across all seven items for each time frame is first estimated. These seven average scores are then averaged into a single construct ( $\alpha = 0.96$  in Study 1a;  $\alpha = 0.96$  in Study

1b). Participants are empirically classified as longtermists if they have a score greater or equal to 75 for the temporally closest timeframe, and they have the same or a higher score for future timeframes.

#### 3.2. Results

##### 3.2.1. Study 1a

Analyses were performed in SAS. Correlations between scores on the LBS and the facets of each personality trait, as well as the five personality traits are shown in Table S1 in the SOM. To compare longtermists ( $N = 185$ ) to the general population ( $N = 506$ ), we estimated five independent sample  $t$ -tests. Given the lack of an a priori power analysis, we report sensitivity tests (two-tailed,  $\alpha = 0.05$ , power = 0.80) using G\*power 3.1.9.7 (Faul et al., 2007). Results suggest that we could meaningfully detect effect sizes as small as  $d = 0.24$ .

On the BFI-2 (Study 1a), longtermists reported significantly higher scores on open-mindedness ( $t(689) = 3.93, p < .001, d = 0.35$ ), conscientiousness ( $t(689) = 2.94, p < .001, d = 0.25$ ), and agreeableness ( $t(689) = 5.19, p < .001, d = 0.44$ ), but not extraversion ( $t(689) = 1.18, p = .240, d = 0.10$ ) or negative emotionality ( $t(689) = 0.17, p = .861, d = 0.02$ ). Fig. 1 presents a graphical depiction of these results.

##### 3.2.2. Study 1b

Correlations between scores on the LBS and the facets of each personality trait, as well as the six personality traits are shown in Table S3 in the SOM. To compare longtermists ( $N = 196$ ) to the general population ( $N = 580$ ), we estimated six independent samples  $t$ -tests.

On the HEXACO-60, longtermists reported significantly higher scores on honesty-humility ( $t(774) = 3.09, p = .002, d = 0.25$ ), emotionality ( $t(774) = 2.96, p = .003, d = 0.24$ ), openness to experience ( $t(774) = 2.42, p = .016, d = 0.20$ ), conscientiousness ( $t(774) = 3.45, p < .001, d = 0.28$ ), and agreeableness ( $t(774) = 2.78, p = .006, d = 0.23$ ), and extraversion ( $t(774) = 3.11, p = .002, d = 0.25$ ). Fig. 2 presents a graphical depiction of these results.

#### 3.3. Discussion

Our first set of studies suggest that longtermists are on average higher in open-mindedness, conscientiousness, honesty-humility and agreeableness but not in extraversion or negative emotionality. These results suggest that, to some degree, intergenerational concern is associated with the same adaptive personality traits as other prosocial orientations (Oda & Matsumoto-Oda, 2022; Pollmann et al., 2017; Rhoads et al., 2023), which hints at a possible common underlying foundation.

### 4. Studies 2a and 2b – the dark side of personality

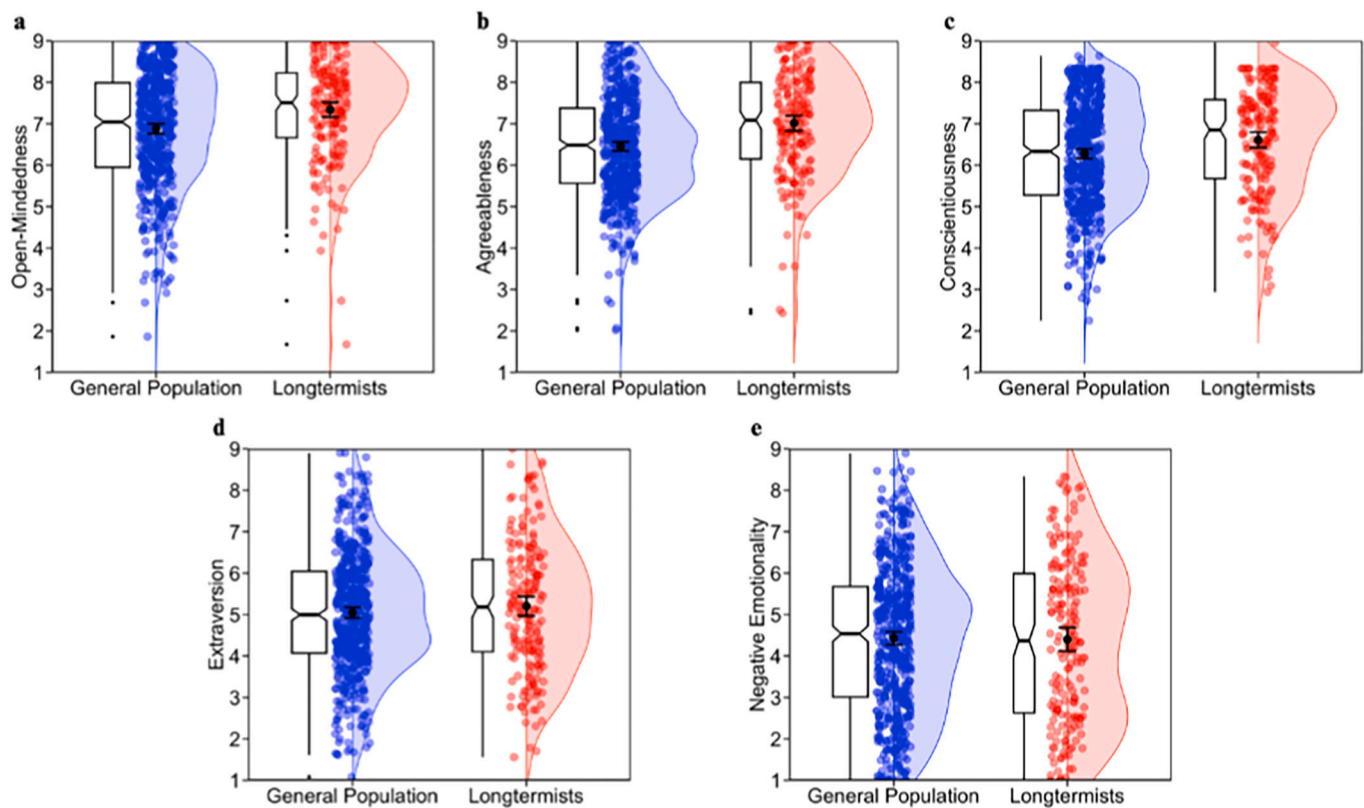
In our next set of studies, we sought to dig deeper into the personality characteristics that differentiate exceptional from typical levels of intergenerational concern. This time, our emphasis was placed on the dark side of personality, focusing on the Dark Tetrad (Study 2a; Paulhus et al., 2021) and more specific measures of psychopathy, sadism and Machiavellianism (Study 2b).

#### 4.1. Participants

We recruited 800 participants on Prolific for Studies 2a and 2b respectively. After applying our pre-registered exclusion criteria, a total of 782 (Study 2a) and 783 (Study 2b) were retained. For both studies, consent was provided online at the beginning of the survey.

#### 4.2. Measures

The measures described below were shown to participants in a randomized order.



**Fig. 1.** Big-five traits in longtermists versus general population controls (Study 1a).

Note. Plots depicting open-mindedness (a), conscientiousness (b), agreeableness (c), extraversion (d), and negative emotionality (e) for longtermists and general population controls (Study 1a). Ratings were made on a scale from 1 to 9 and averaged to form composite measures. Colored dots correspond to individual data points and are jittered for readability, with split violin plots overlaid to show the relative distribution of scores across populations. Error bars depict  $\pm 1.96 \times \text{SEM}$ . Notched boxplots are included, with notches depicting a confidence interval around the median with a value of  $\pm 1.58 \times \text{IQR}/\sqrt{n}$ .

#### 4.2.1. LBS

Longtermism beliefs were captured with the identical 7-item measure used in Studies 1a-1b ( $\alpha = 0.97$  in Study 2a;  $\alpha = 0.97$  in Study 2b).

#### 4.2.2. Dark Tetrad (Study 2a)

Participants completed the Short Dark Tetrad (Paulhus et al., 2021). This measure has four facets, each comprising seven items: Psychopathy ( $\alpha = 0.85$ ; e.g., “People who mess with me always regret it.”), Sadism ( $\alpha = 0.82$ ; e.g., “Some people deserve to suffer.”), Machiavellianism ( $\alpha = 0.82$ ; e.g., “Flattery is a good way to get people on your side”), and Narcissism ( $\alpha = 0.87$ ; e.g., “I’m likely to become a future star in some area.”).

#### 4.2.3. Psychopathy (Study 2b)

Participants completed the 26-item Levenson Self-Report Psychopathy scale (LSRP; e.g., “For me, what’s right is whatever I can get away with.”; Levenson et al., 1995). Exploratory factor analyses suggested that contrary to the original conceptualization of the scale, and our pre-registration, items best loaded as a single factor. This construct was reliable ( $\alpha = 0.91$ ). Responses were captured on Likert-type items ranging from 1 = strongly disagree to 7 = strongly agree.

Participants also completed the 58-item Triarchic Psychopathy Measure (TriPM; Patrick et al., 2009). This measure has 3 facets: Meanness (19 items;  $\alpha = 0.92$ ; e.g., “I enjoy pushing people around sometimes”), Boldness (19 items;  $\alpha = 0.87$ ; e.g., “I can convince people to do what I want”), and Disinhibition (19 items;  $\alpha = 0.90$ ; e.g., “I often act on immediate needs”). Responses were captured on a 4-point (false, somewhat false, somewhat true, true) scale.

#### 4.2.4. Machiavellianism (Study 2b)

The two-Dimensional Machiavellianism Scale was used (Monaghan et al., 2020) to capture individual differences in Machiavellianism. This construct includes 12 items ( $\alpha = 0.86$ ), which can be separated into the views (6 items, e.g., “In my opinion, human nature is to be dishonest.”,  $\alpha = 0.87$ ) and tactics (6 items, e.g., “It is sometimes necessary for me to mislead others to get things done.”,  $\alpha = 0.86$ ) subscales. All items were captured on a 7-point Likert scale. The views dimension reflects the cynical worldview of Machiavellians whilst, the tactics dimension captures the belief that it acceptable to use immoral behavior for personal gain.

#### 4.2.5. Sadism (Study 2b)

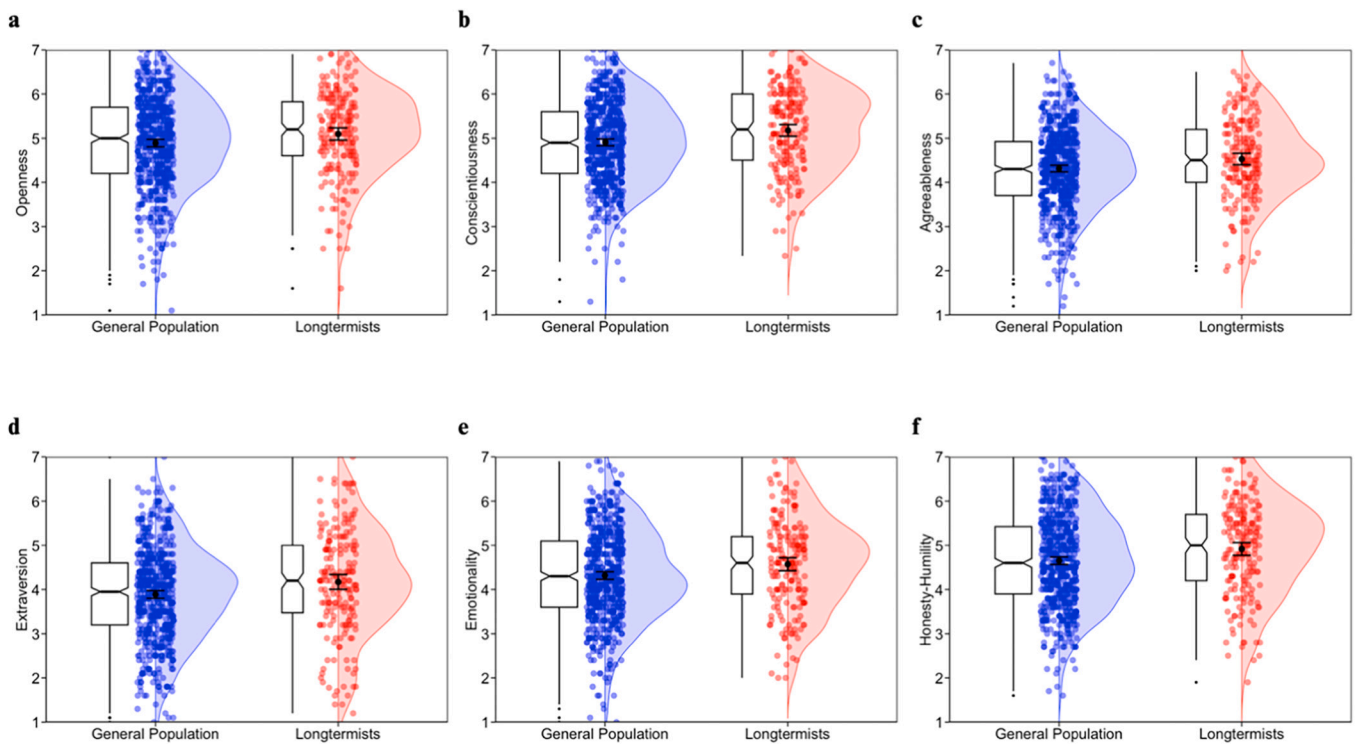
Two measures of sadism were used. The 9-item Assessment of Sadistic Personality scale (ASP; Plouffe et al., 2017;  $\alpha = 0.89$ ; e.g., “Being mean to others can be exciting”) and the 10-item Short Sadistic Impulse Scale (SSIS; O’Meara et al., 2011;  $\alpha = 0.90$ ; e.g., “I enjoy seeing people hurt”). For both, scores were captured on 7-point Likert scales.

### 4.3. Results

#### 4.3.1. Study 2a

Analyses were performed in SAS. Correlations between scores on the LBS and each personality trait can be found in Table S1 in the SOM. To compare longtermists ( $N = 167$ ) to the general population ( $N = 615$ ), we estimated four independent sample *t*-tests. Our pre-registered expectations were that longtermists would have significantly lower scores in sadism and psychopathy, driven by their tendency to want to help future others, which positions them to be more prosocial. However, on the basis that intergenerational concern involves efficacy over being able to





**Fig. 2.** HEXACO traits in longtermists versus general population controls (Study 1b).

*Note.* Plots depicting openness (a), conscientiousness (b), agreeableness (c), extraversion (d), emotionality (e), and Honesty-Humility (f) for longtermists and general population controls (Study 1b). Ratings were made on a scale from 1 to 7 and averaged to form composite measures. Colored dots correspond to individual data points and are jittered for readability, with split violin plots overlaid to show the relative distribution of scores across populations. Error bars depict  $\pm 1.96 \times \text{SEM}$ . Notched boxplots are included, with notches depicting a confidence interval around the median with a value of  $\pm 1.58 \times \text{IQR} / \sqrt{n}$ .

positively impact the future, we predicted longtermists would score higher in narcissism. Finally, we had no a priori hypothesis about a significant difference in Machiavellianism. All aspects of the study were pre-registered on AsPredicted, [https://aspredicted.org/CWJ\\_PZ7](https://aspredicted.org/CWJ_PZ7).

Longtermists scored significantly lower on sadism ( $t(780) = 2.00, p = .046, d = 0.18$ ), Machiavellianism ( $t(780) = 2.46, p = .014, d = 0.21$ ), and psychopathy ( $t(780) = 2.58, p = .010, d = 0.23$ ), but not narcissism ( $t(780) = 1.73, p = .083, d = 0.15$ ). Fig. 3 presents a graphical depiction of these results.

#### 4.3.2. Study 2b

All aspects of the study were pre-registered on AsPredicted, [https://aspredicted.org/TK7\\_WT4](https://aspredicted.org/TK7_WT4).<sup>2</sup> Compared to the rest of the population ( $N = 574$ ), longtermists ( $N = 209$ ) reported significantly lower scores for Sadism on the SSIS ( $t(431.79) = 2.37, p = .018, d = 0.18$ ), and the ASP ( $t(441.88) = 5.15, p < .001, d = 0.40$ ), and significantly lower scores for Machiavellianism on the two-Dimensional Machiavellianism Scale ( $t(781) = 5.40, p < .001, d = 0.43$ ). Differences in Machiavellianism were driven by longtermists scoring significantly lower in the tactics subscale ( $t(781) = 7.10, p < .001, d = 0.58$ ), but not the views subscale ( $t(781) = 1.59, p = .111, d = 0.13$ ). With regards to psychopathy, longtermists scored significantly lower on the LSRP ( $t(781) = 5.05, p < .001, d = 0.41$ ), and the meanness ( $t(487.43) = 7.14, p < .001, d = 0.53$ ), and disinhibition ( $t(781) = 2.95, p = .003, d = 0.24$ ) subscales of the TriPM, but not boldness ( $t(334.97) = 1.35, p = .178, d = 0.11$ ). Fig. 4 presents a graphical depiction of these results.

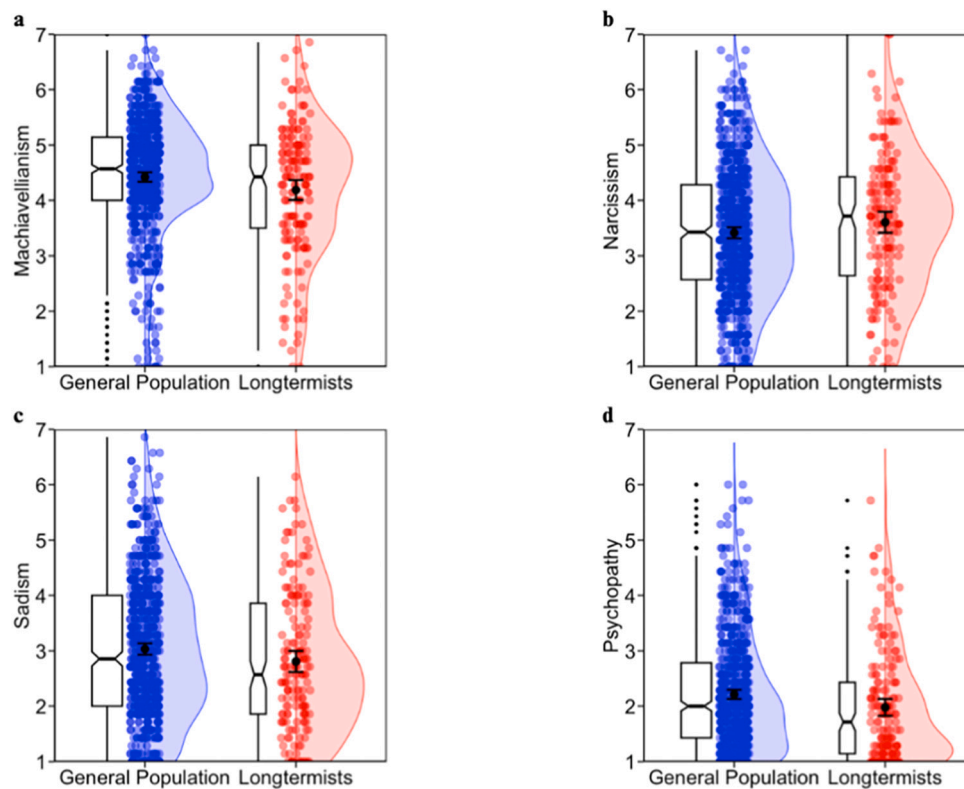
<sup>2</sup> An amendment to our pre-registration of Study 2b was submitted prior to analyzing the data, [https://aspredicted.org/13Z\\_R95](https://aspredicted.org/13Z_R95). This amendment was submitted to pre-register analyses for the TriPM.

#### 4.4. Discussion

Our second set of studies investigated potential differences between longtermists and the general population for the dark side of personality. Results suggested that, on average, longtermists score lower in psychopathy, sadism, and Machiavellianism, with no significant difference in narcissism. Thus, our hypotheses with regards to psychopathy and sadism were supported, while findings for narcissism were not.

#### 5. Study 3 – primal world beliefs

Primals (short for primal world beliefs) are extremely basic beliefs about the world as a whole which influence decision-making (e.g., Clifton et al., 2019). We considered the possibility that individuals with exceptional versus typical levels intergenerational concern might differ from the general population in the degree to which they endorse certain primals. Given inherent recognition of looming global threat is central to intergenerational concern, we predicted longtermists would score lower on the Big 3 primal “safe.” Conversely, considering intergenerational concern implies an inherent belief that the world is valuable and worth protecting, we theorized longtermists would score higher on the Big 3 primals “enticing” and “alive” as well as the superordinate primal “good.” Similarly, intergenerational concern may also involve seeing the world as “changing,” capable of getting worse and, importantly, better as a result of present-day action. Finally, recent evidence suggests that longtermists feel greater concern for distant others (Syropoulos, Law, Young, 2024a). Considering these results, we also posited that they would score lower on the tertiary primals “hierarchical” and “acceptable,” seeing the need to promote greater equality amongst the world’s inhabitants into the future.



**Fig. 3.** Dark tetrad traits in longtermists versus general population controls (Study 2a).

*Note.* Plots depicting Machiavellianism (a), narcissism (b), sadism (c), and psychopathy (d) for longtermists and general population controls (Study 2a). Ratings were made on a scale from 1 to 7 and averaged to form composite measures. Colored dots correspond to individual data points and are jittered for readability, with split violin plots overlaid to show the relative distribution of scores across populations. Error bars depict  $\pm 1.96 \times \text{SEM}$ . Notched boxplots are included, with notches depicting a confidence interval around the median with a value of  $\pm 1.58 \times \text{IQR} / \sqrt{n}$ .

## 5.1. Methods

### 5.1.1. Participants

A total of 800 participants were recruited on Prolific, 782 of whom remained after applying our pre-registered exclusion criteria. Consent was provided online at the beginning of the survey.

### 5.1.2. Measures

The measures described below were shown to participants in a randomized order.

**5.1.2.1. LBS.** Longtermism beliefs were captured with the identical 7-item measure used all previous studies ( $\alpha = 0.96$ ).

**5.1.2.2. Primals.** The 26 primal world beliefs were captured with 99 items on the PI-99 (Clifton et al., 2019). Scores on these items were captured with scale responses ranging from 0 = Strongly Disagree – 5 = Strongly Agree. All primals (including tertiary, secondary, and the “good” primal) had good reliability ( $\alpha \geq 0.77$ ). Reliability estimates for specific primals are presented in the SOM.

## 5.2. Results

All aspects of the study were pre-registered [https://aspredicted.org/blind.php?x=PBD\\_PTD](https://aspredicted.org/blind.php?x=PBD_PTD). We present results for our pre-registered main analyses and for any other significant differences in endorsement of tertiary primals in the following section. All other results (including correlations between all measures) are presented in the SOM. For any exploratory analyses including the tertiary primals, we adjusted our alpha by applying a Bonferroni correction, adjusting our alpha to 0.002 (0.05/26 tests).

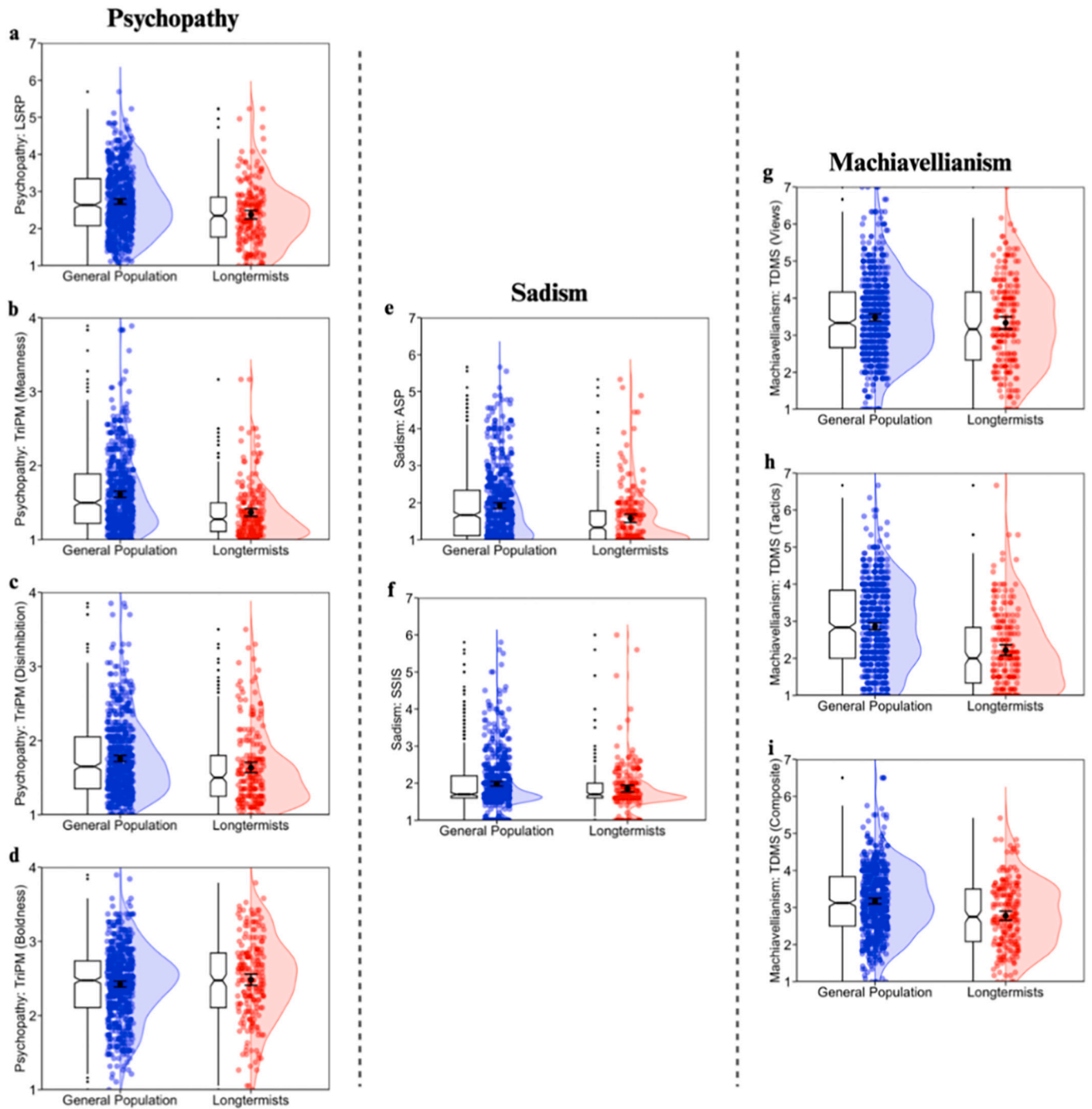
### 5.2.1. Pre-registered tests

Compared to the rest of the population ( $N = 597$ ), longtermists ( $N = 186$ ) did not significantly differ in the endorsement of the primal “safe” ( $t(781) = 1.20, p = .231, d = 0.10$ ), perhaps because both participant groups scored remarkably low on this world belief. However, supporting our expectations, they did score higher on the “enticing” ( $t(781) = 4.00, p < .001, d = 0.34$ ) and “alive” ( $t(781) = 2.87, p = .004, d = 0.24$ ) primals, and as a consequence on the “good” primal as well ( $t(781) = 2.95, p = .003, d = 0.25$ ). Fig. 5 presents a graphical depiction of these results.

Contrary to our pre-registered prediction, longtermists did not see the world as more changing ( $t(781) = 0.77, p = .441, d = 0.06$ ), which may owe to the fact that this world belief was endorsed remarkably highly by both participant groups. However, supporting our hypotheses, longtermists scored lower on the hierarchical ( $t(781) = -2.85, p = .005, d = 0.24$ ) and acceptable ( $t(781) = -3.01, p = .003, d = 0.25$ ) primals. Thus, longtermists and the general population both acknowledge the world's instability and constant flux. However, longtermists perceive this change and instability as less acceptable, viewing the world as more deserving of repair.

### 5.2.2. Exploratory analyses: significant effects for other tertiary primals

After adjusting for multiple comparisons, significant differences were noted only for the following primals: Interconnected ( $t(781) = 4.20, p < .001, d = 0.36$ ), Interesting ( $t(781) = 3.55, p < .001, d = 0.30$ ), Meaningful ( $t(781) = 4.75, p < .001, d = 0.41$ ), Needs Me ( $t(781) = 3.22, p = .001, d = 0.27$ ), and Worth Exploring ( $t(781) = 4.09, p < .001, d = 0.35$ ). These results suggested that, compared to the general population, longtermists, possibly due to their elevated perception that future generations deserve the same moral rights and consideration as people living today, and because of their perception that the present generation



**Fig. 4.** Dark personality traits in longtermists versus general population controls (Study 2b).

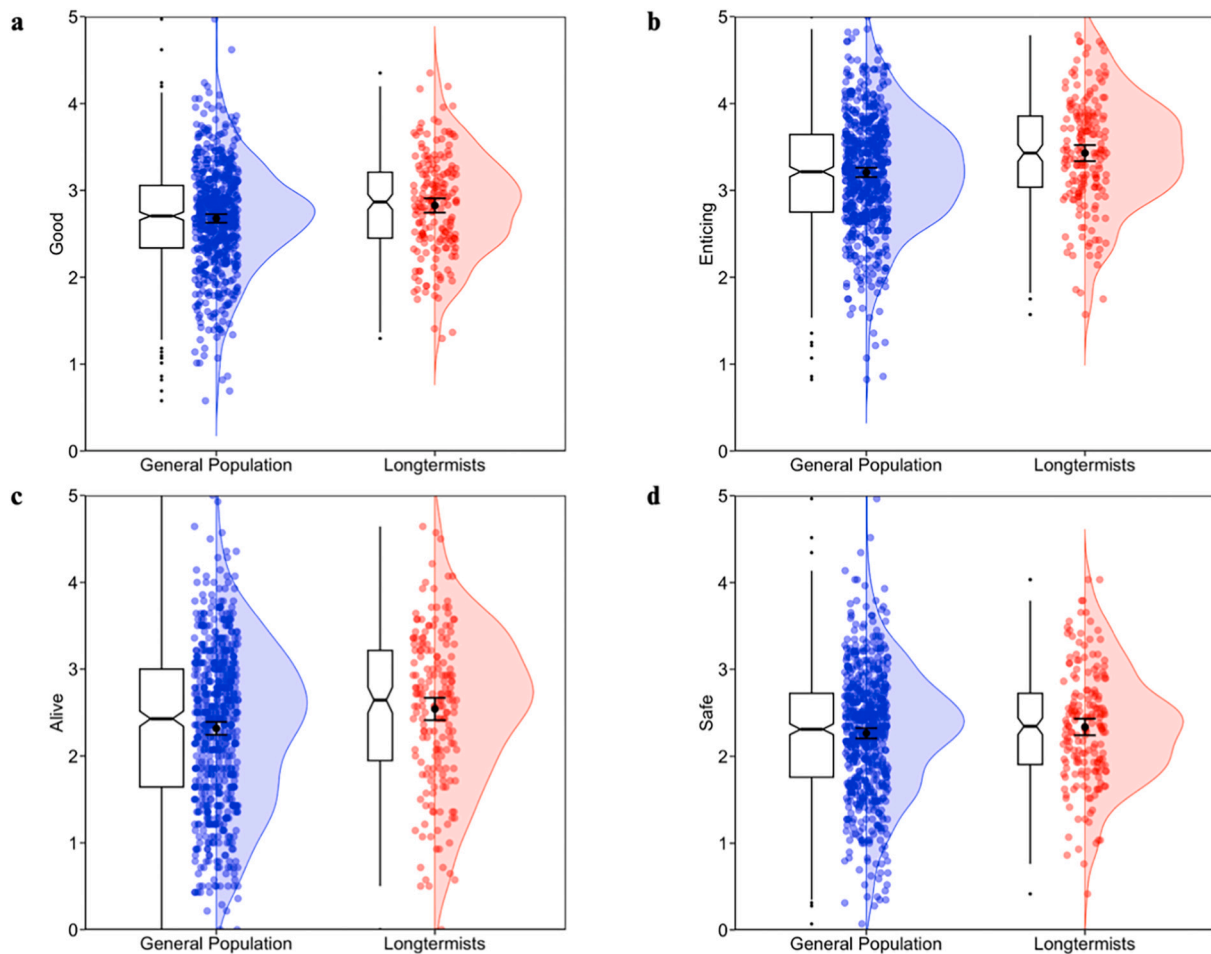
**Note.** Plots depicting psychopathy measured on the LSRP (a) and the three TriPM subscales (b - d), sadism measured on the ASP (e) and SSIS (f), and machiavellianism measured on the TDMS (g) and the two TDMS subscales (h - i) for longtermists and general population controls (Study 2b). Ratings were made on a scale from 1 to 7 for all measures except for the triPM, on which ratings were made on a scale from 1 to 4. These ratings were averaged to form composite measures. Colored dots correspond to individual data points and are jittered for readability, with split violin plots overlaid to show the relative distribution of scores across populations. Error bars depict  $\pm 1.96 \times \text{SEM}$ . Notched boxplots are included, with notches depicting a confidence interval around the median with a value of  $\pm 1.58 \times \text{IQR} / \sqrt{n}$ .

can greatly influence the lives of future people (Syropoulos et al., 2023), they see the world as more interconnected, unique (expressed through elevated scores in the worth exploring and interesting primals), and see themselves as an important piece of the puzzle that is the world (i.e., higher scores in the Needs Me primal). Relatedly, they also see the world as more meaningful, which could be the product of their elevated sense of importance in the world, driven by the perception that they can influence the lives of many future people. Fig. 6 presents a graphical

depiction of these results.

### 5.3. Discussion

Our third study highlighted that longtermists have some notable distinctions from the rest of the population. They see the world as alive and enticing, less hierarchical and are less accepting of the world as is. In exploratory analyses (which are re-examined in our final study), we also



**Fig. 5.** Primary and secondary primals in longtermists versus general population controls (Study 3).

*Note.* Plots depicting good (a), enticing (b), alive (c), and safe (d) for longtermists and general population controls (Study 3). Ratings were made on a scale from 0 to 5 and averaged to form composite measures. Colored dots correspond to individual data points and are jittered for readability, with split violin plots overlaid to show the relative distribution of scores across populations. Error bars depict  $\pm 1.96 \times \text{SEM}$ . Notched boxplots are included, with notches depicting a confidence interval around the median with a value of  $\pm 1.58 \times \text{IQR} / \sqrt{n}$ .

found that longtermists see the world as interesting, worth exploring, and meaningful, and interconnected, while also seeing themselves as an important part of the world.

## 6. Study 4 – generalizability across methods of longtermist identification

In our final study, we sought to replicate all previous significant differences. We included different ways of empirically identifying longtermists not only based on self-reported attitudes but also behaviors consistent with expressing intergenerational concern. Doing so allowed us to generate novel methods of empirically identifying those who feel exceptional levels of intergenerational concern (who we call longtermists) and generalize generalizability the pattern of differences relevant to personality and primals. All new ways of empirically identifying longtermists were validated in a pre-registered ([https://aspredicted.org/6QW\\_7PG](https://aspredicted.org/6QW_7PG)) supplementary study (see SOM). The findings of this study suggested that, regardless of the chosen method of identifying longtermists, participants were significantly more likely to be identified as longtermists in any other measurement (Odds Ratios ranged from 1.78 to 7.35).

## 6.1. Methods

### 6.1.1. Participants

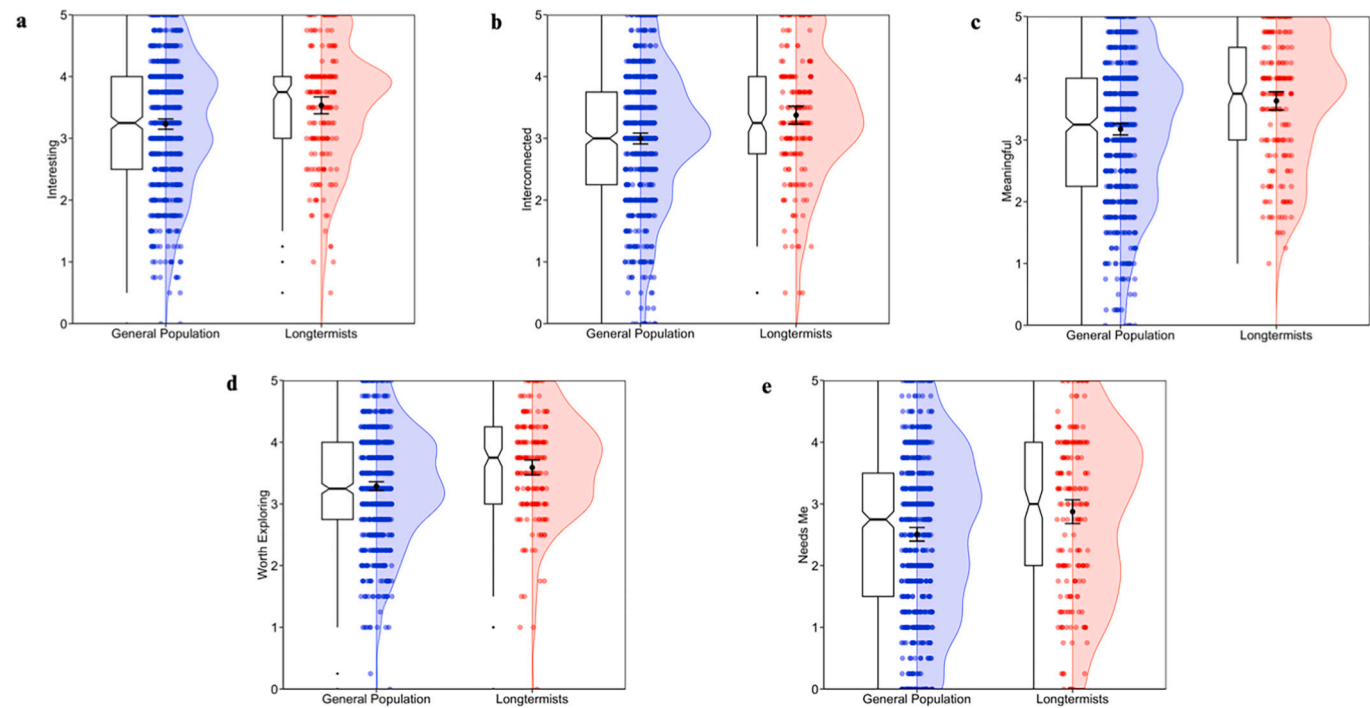
A total of 1000 participants were recruited on Prolific, 973 of whom remained after applying pre-registered exclusion criteria. Consent was provided online at the beginning of the survey.

### 6.1.2. Measures

**6.1.2.1. Personality measures.** Participants completed the Short Dark Tetrad (Paulhus et al., 2021), which included Psychopathy ( $\alpha = 0.85$ ), Sadism ( $\alpha = 0.82$ ) Machiavellianism ( $\alpha = 0.83$ ), and Narcissism ( $\alpha = 0.87$ ). Participants also completed the 24-item Brief HEXACO Inventory (BHI; de Vries, 2013). This decision was made due to the length and associated cost of the survey. Although well-validated, the BHI lacks in reliability compared to other more comprehensive HEXACO measures but is suitable when survey length constraints are present. Indeed, the 4-item versions of the six HEXACO facets had mediocre reliability: Honest-Humility ( $\alpha = 0.56$ ), Emotionality ( $\alpha = 0.53$ ), Open-Mindedness ( $\alpha = 0.57$ ), Extraversion ( $\alpha = 0.73$ ), Agreeableness ( $\alpha = 0.42$ ), and Conscientiousness ( $\alpha = 0.63$ ). All personality measures were captured on 7-point Likert scales.

**6.1.2.2. Primals.** We retained only tertiary primals that had significant differences in Study 3. Thus, the Interconnected (e.g., “Every single





**Fig. 6.** Tertiary primals in longtermists versus general population controls (Study 3).  
*Note.* Plots depicting interconnected (a), interesting (b), meaningful (c), worth exploring (d), and needs me (e) for longtermists and general population controls (Study 3). Ratings were made on a scale from 0 to 5 and averaged to form composite measures. Colored dots correspond to individual data points and are jittered for readability, with split violin plots overlaid to show the relative distribution of scores across populations. Error bars depict  $\pm 1.96 \times \text{SEM}$ . Notched boxplots are included, with notches depicting a confidence interval around the median with a value of  $\pm 1.58 \times \text{IQR} / \sqrt{n}$ .

thing is connected to everything else.”,  $\alpha = 0.88$ ), Interesting (e.g., “It feels like interesting and exciting things surround us all the time.”,  $\alpha = 0.89$ ), Meaningful (e.g., “The world is a place where most everything matters.”,  $\alpha = 0.91$ ), Needs Me (e.g., “The world needs me and my efforts.”,  $\alpha = 0.93$ ), Worth Exploring (e.g., “Everything deserves to be explored.”,  $\alpha = 0.79$ ), Hierarchical (e.g., “Most things in the world could be ranked in order of importance.”,  $\alpha = 0.85$ ), and Acceptable (e.g., “It’s usually better to accept a situation than try to change it.”,  $\alpha = 0.84$ ) primals were measured, using the PI-99 (Clifton et al., 2019), on a scale ranging from 0 = Strongly Disagree – 5 = Strongly Agree.

**6.1.2.3. Longtermism identification methods.** The following measures were used to empirically distinguish longtermists from the rest of the population. Each was chosen because it captured a different aspect of longtermism (see Table 2). The LBS captured endorsement of longtermism beliefs. The moral expansiveness scale captured attributions of moral worth to future people. The discounting task allowed to identify longtermists as those who did not discount the value of future people. The donation task captured financial support for a longtermist cause. The self-identification question functioned as a means of social identification based on individuals’ alignment with the underlying principles

of longtermism.

**6.1.2.4. LBS.** The identical 7-item measure used in all previous studies was included ( $\alpha = 0.97$ ).

**6.1.2.5. Moral expansiveness.** We used a short version of the Moral Expansiveness Scale (MES; Crimston et al., 2016) to examine moral worth attributed to future people. A total of 17 items were included. Five outgroup items (e.g., someone with different religious beliefs,  $\alpha = 0.88$ ), six animals and nature items (e.g., a parrot, a coral reef,  $\alpha = 0.93$ ), and one item each for one’s family and an intelligent robot were included as filler items. These items were used solely to examine whether, regardless of the longtermist identification method, longtermists had higher overall expansiveness, as well as moral expansiveness specifically towards outgroups and nature. Our results validated this claim, replicating past research and our supplementary validation study (see SOM). Four items focused on future people ( $\alpha = 0.93$ ). These were phrased as follows: “A person living 1,000/10,000/100,000/1,000,000 years from now”. Our a priori criterion for identifying longtermists was that scores for each of the four future people items had to be at least  $>2$ , alternatively stated as placing each entity at least in the outer circle of moral concern. Existing

**Table 2**  
Characteristics of all studies.

Study	N	Pre-registered	Personality Measure	N <sub>man</sub>	N <sub>woman</sub>	N <sub>White</sub>	N <sub>Black</sub>	N <sub>Asian</sub>	M <sub>age</sub>	SD <sub>age</sub>
1a	691	No	BFI-2	334	339	507	97	58	38.84	14.25
1b	776	Yes	HEXACO-60	369	374	574	82	67	37.00	13.22
2a	782	Yes	Short Dark Tetrad	389	381	569	95	81	38.08	13.02
2b	783	Yes	Psychopathy (TriPM, LSRP), Machiavellianism (2D), Sadism (ASP, SSIS)	385	374	553	123	60	41.54	13.81
3	782	Yes	Primals (PI-99)	384	370	585	96	79	37.80	12.76
S1	769	Yes	Alternative Longtermism Identification Methods	377	364	558	77	92	36.66	12.92
4	973	Yes	Brief HEXACO Inventory	488	461	734	138	67	40.51	13.35
			Short Dark Tetrad							
			7 Primals (PI-99)							

research suggests that the majority of individuals places their family and friends in the inner most circle of moral concern, and thus, anyone who placed future people items, regardless of their timeframe at least in the outer circle of moral would attribute high and consistent moral worth to future people.

**6.1.2.6. Discounting task.** We used a prosocial and temporal discounting task which asked people to choose to between giving \$85, \$75, \$65, \$55, \$45, \$35, \$25, \$15, \$5, and \$0 to people in the present versus \$75 to people living 1000, 10,000, 100,000, and 1000,000 years in the future. To determine an “indifference point” at which participants switched from the proximal beneficiary to the distal beneficiary, we identified the point at which participants switched from the proximal to the distal response option. We used the monetary value halfway between the descending values for the proximal response options (see Gershon & Fridman, 2022). We pre-registered that participants would be classified as longtermists if they scored above the overall sample average indifference point for the closest temporal timeframe (i.e., 1000 years in the future) without manifesting an indifference point below the one noted for the 1000-year timeframe in the future average, for increasingly distal future timeframes.

**6.1.2.7. Donation task.** We utilized the wording from the donation task used by Zaval et al. (2015). The only difference was that we used the Long Term Fund as our target charity. The Long Term Fund focuses on funding research and efforts relevant to longtermism. Participants were told that they could donate part of a \$10 bonus to this charity. Longtermists were participants who chose to donate to the charity, regardless of the amount.<sup>3</sup>

**6.1.2.8. Self-Identification question.** We provided participants with a short summary of the longtermist philosophy and asked them whether they identified as longtermists. Those who did, were also classified as longtermists.

**6.1.2.9. True longtermism.** As an exploratory analysis, we also examined the pattern of results for participants who displayed the longtermist pattern across all five possible longtermist identification methods. In our supplementary validation study (see SOM), only a small percentage of participants (3 % out of 800) scored in this pattern.

## 6.2. Results

All aspects of the study were pre-registered, [https://aspredicted.org/blind.php?x=TZ4\\_ZHL](https://aspredicted.org/blind.php?x=TZ4_ZHL). Supplementary analyses for this study focused on highlighting evidence for convergent validity in our new longtermist identification methods. Regardless of the method, longtermists scored significantly higher on overall moral expansiveness, moral expansiveness to outgroups, moral expansiveness to nature, longtermist beliefs, donations to the Long Term Fund, had a higher average indifference point, and a larger area under the discounting curve (see Table S13 in SOM). Further, as shown in Table 3, and replicating the results of our supplementary validation study, participants identified as a longtermist in one measure, had a higher likelihood of being identified as a longtermist in other measures. Notably, the degree of identification varied from each measure, ranging from a high of 56 % for the donation task, to a low of 11 % for the discounting task (see Table 3). Only 2.5 % ( $N = 25$ ) of the population met all five criteria and scored in the true longtermist pattern, closely mirroring the 3 % observed in our supplementary study. In the sections that follow we present differences based on each method (see Table 4).

<sup>3</sup> In total, 431 participants (44 %) did not donate any amount, 284 donated less than \$5, 178 donated \$5, 32 donated more than \$5, and 50 donated all \$10.

### 6.2.1. Differences in the Dark Tetrad

The most consistent significant differences noted were for Sadism. For all longtermist identifying methods (LIM) except for the donation task, longtermists scored significantly lower in sadism. Results for Psychopathy and Machiavellianism were less consistent. Notably, for the LBS, significant differences were noted in both of these traits, replicating the results of our previous studies. Where measures differed was narcissism. Although no significant differences in narcissism were observed for most LIMs, those identified as longtermists via the self-identification question and the donation task scored significantly higher. We consider this pattern of results to be indicative of virtue signaling, as those who openly identify as longtermists and support longtermist organizations might have an inflated sense of self, which also tracks well with the findings relevant to the Needs Me primal. Fig. 7 presents a graphical depiction of these results.

### 6.2.2. Differences in the HEXACO

The most consistent findings for the HEXACO concerned extraversion and open-mindedness, as almost all LIMs had significant differences in the pre-registered direction, replicating our previous results. Notably, conscientiousness, agreeableness and honesty-humility yielded less consistent results. Differences in honesty-humility emerged solely for the morally-focused LIMs (i.e., the LBS and the MES). Finally, no significant differences in any LIM was noted in emotionality. Fig. 8 presents a graphical depiction of these results.

### 6.2.3. Differences in primals

Findings for the selected primals were highly consistent across LIMs. Replicating our previous results, longtermists tended to score significantly higher on the Interconnected, Meaningful, Worth Exploring, and Interesting primals, which focus on seeing the world as beautiful and alive, as well as the Needs Me primal, which focuses on the perception that the world benefits from their presence. Supporting our pre-registered hypothesis, in almost all methods, longtermists scored significantly lower on the Acceptable primal. The only primal for which no significant effect was noted, which was also contrary to our pre-registered hypothesis, was the Hierarchical primal. Fig. 9 presents a graphical depiction of these results.

## 6.3. Discussion

Our final study had three goals. First, it sought to develop and validate alternative methods to identify longtermists. Replicating the results of a supplementary study (see SOM), we found considerable overlap in these methods. Notably, across all methods, only 2.5 % of subjects (3 % in the supplementary study) met all longtermist identification criteria. It's worth highlighting that this low percentage is primarily driven by failure to meet the criteria set for the discounting task, LBS, or MES, rather than the donation task or self-identification item. Thus, high scoring on the former three metrics may require considerably greater intergenerational concern compared to the latter two.

Our second goal was to replicate our previous findings involving the LBS. Most pre-registered hypotheses were replicated, highlighting a consistent pattern whereby longtermists, identified by LBS scores, tend to score higher on prosocial personality traits, and lower on Sadism, Psychopathy, and Machiavellianism. Notably, longtermists also differ in how they see the world, primarily in terms of its beauty and vividness. Further, they see the world as more interconnected, in need of their aid, and acceptable in its current state. Collectively, this is consistent with intergenerational concern entailing an overall positive assessment of the world, coupled with recognition of the challenges it faces and a sense of duty and confidence in one's ability to overcome them.

Our third and final goal was to examine how these results might differ across the different longtermist identification methods comprising intergenerational attitudes and behaviors. Considerable consistency was noted. Nonetheless, results differed most between methods for findings

**Table 3**

Odds Ratios for all possible relationships.

Measure	Identification Method	Percentage	Odds Ratio for being identified as a longtermist			
			Discounting task	MES task	Self-Identification question	Donation task
LBS	Score higher than 75 for each timeframe	23.6 % (N = 230)	4.28 [2.82, 6.48]	11.37 [7.69, 16.82]	6.49 [4.60, 9.15]	2.20 [1.61, 3.03]
Discounting task	Score above the average indifference point for each timeframe	10.9 % (N = 106)	–	2.93 [1.86, 4.62]	4.34 [2.93, 6.42]	2.18 [1.49, 3.19]
MES task	Place all future generation items at least in the outer circle	15.3 % (N = 149)	–	–	4.70 [2.94, 7.51]	3.87 [2.94, 5.01]
Self-Identification question	Self-identify as a longtermist when given a description of its principles	44.7 % (N = 435)	–	–	–	2.54 [1.61, 4.01]
Donation task	Donate to the Long Term Fund	55.8 % (N = 544)	–	–	–	–

Note. for all O.R., the associated *p* value of the regression weight was *p* < .001.**Table 4**

Differences in all outcomes for each longtermist identification method compared to population controls. Bolded values denote statistically significant results.

Measure	Longtermism Beliefs Scale		Discounting task		Moral Expansiveness task		Self-Identification question		Donation task		“True” Longtermists		Groups Showing Expected Results
	<i>t</i>	<i>d</i>	<i>t</i>	<i>d</i>	<i>t</i>	<i>d</i>	<i>t</i>	<i>d</i>	<i>t</i>	<i>d</i>	<i>t</i>	<i>d</i>	
Dark Tetrad													
Sadism	<b>−3.73***</b>	0.28	<b>−2.37*</b>	0.25	<b>−3.86***</b>	0.36	<b>−3.56***</b>	0.23	−1.15	0.07	<b>−3.89***</b>	0.89	5/6
Psychopathy	<b>−2.14*</b>	0.16	−0.45	0.05	−1.94	0.17	1.68	0.11	1.13	0.07	<b>−3.70***</b>	0.59	2/6
Machiavellianism	<b>−2.15*</b>	0.17	−0.54	0.06	<b>−3.14***</b>	0.27	−1.45	0.09	−1.11	0.07	<b>−2.38*</b>	0.49	3/6
Narcissism	0.42	0.03	1.32	0.13	−0.69	0.06	<b>5.21***</b>	0.34	<b>4.37***</b>	0.28	0.02	0.01	2/6
HEXACO													
Conscientiousness	<b>3.79***</b>	0.28	0.90	0.09	<b>3.58***</b>	0.32	<b>3.65***</b>	0.23	<b>1.98*</b>	0.13	1.75	0.39	4/6
Agreeableness	1.56	0.11	<b>3.26**</b>	0.33	1.54	0.14	<b>5.22***</b>	0.34	<b>4.14***</b>	0.27	<b>2.06*</b>	0.39	4/6
Extraversion	<b>4.45***</b>	0.34	1.35	0.14	<b>2.81**</b>	0.26	<b>4.57***</b>	0.30	<b>4.13***</b>	0.27	<b>3.26**</b>	0.49	5/6
Open-Mindedness	<b>4.13***</b>	0.31	<b>3.18**</b>	0.34	<b>2.87**</b>	0.25	<b>5.41***</b>	0.35	<b>2.52*</b>	0.16	<b>5.35***</b>	0.73	6/6
Emotionality	0.07	0.01	0.12	0.16	0.78	0.07	−0.16	0.01	0.52	0.03	0.86	0.18	0/6
Honesty-Humility	<b>4.59***</b>	0.35	0.85	0.09	<b>4.30***</b>	0.39	−0.85	0.05	−0.07	0.01	<b>2.32*</b>	0.49	3/6
Primals													
Acceptable	<b>−5.98***</b>	0.46	<b>2.34*</b>	0.24	<b>−3.87***</b>	0.34	<b>−2.48*</b>	0.16	<b>−2.07*</b>	0.13	−1.30	0.24	5/6
Hierarchical	−1.00	0.08	−1.01	0.10	−0.40	0.03	0.19	0.01	1.22	0.08	−1.50	0.27	0/6
Interconnected	<b>7.42***</b>	0.56	<b>3.54***</b>	0.38	<b>6.29***</b>	0.58	<b>7.93***</b>	0.51	<b>3.99***</b>	0.26	<b>3.98***</b>	0.88	6/6
Meaningful	<b>4.85***</b>	0.37	<b>2.34*</b>	0.25	<b>4.00***</b>	0.36	<b>3.89***</b>	0.25	<b>2.63**</b>	0.17	<b>2.41*</b>	0.49	6/6
Needs Me	<b>5.78***</b>	0.43	<b>3.21**</b>	0.33	<b>3.83***</b>	0.34	<b>6.73***</b>	0.43	<b>5.33***</b>	0.34	<b>4.12***</b>	0.94	6/6
Worth Exploring	<b>5.31***</b>	0.39	1.78	0.19	<b>3.11**</b>	0.29	<b>5.11***</b>	0.33	<b>3.19**</b>	0.21	<b>2.97**</b>	0.64	5/6
Interesting	<b>5.08***</b>	0.39	<b>2.11*</b>	0.20	<b>4.11***</b>	0.37	<b>3.27**</b>	0.21	<b>2.25*</b>	0.15	1.79	0.40	5/6
Pre-registered	13/17		8/17		12/17		12/17		11/17		11/17		
Hypotheses Supported													

Note. Satterthwaite approximation was used for any comparisons with unequal variances between groups.

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

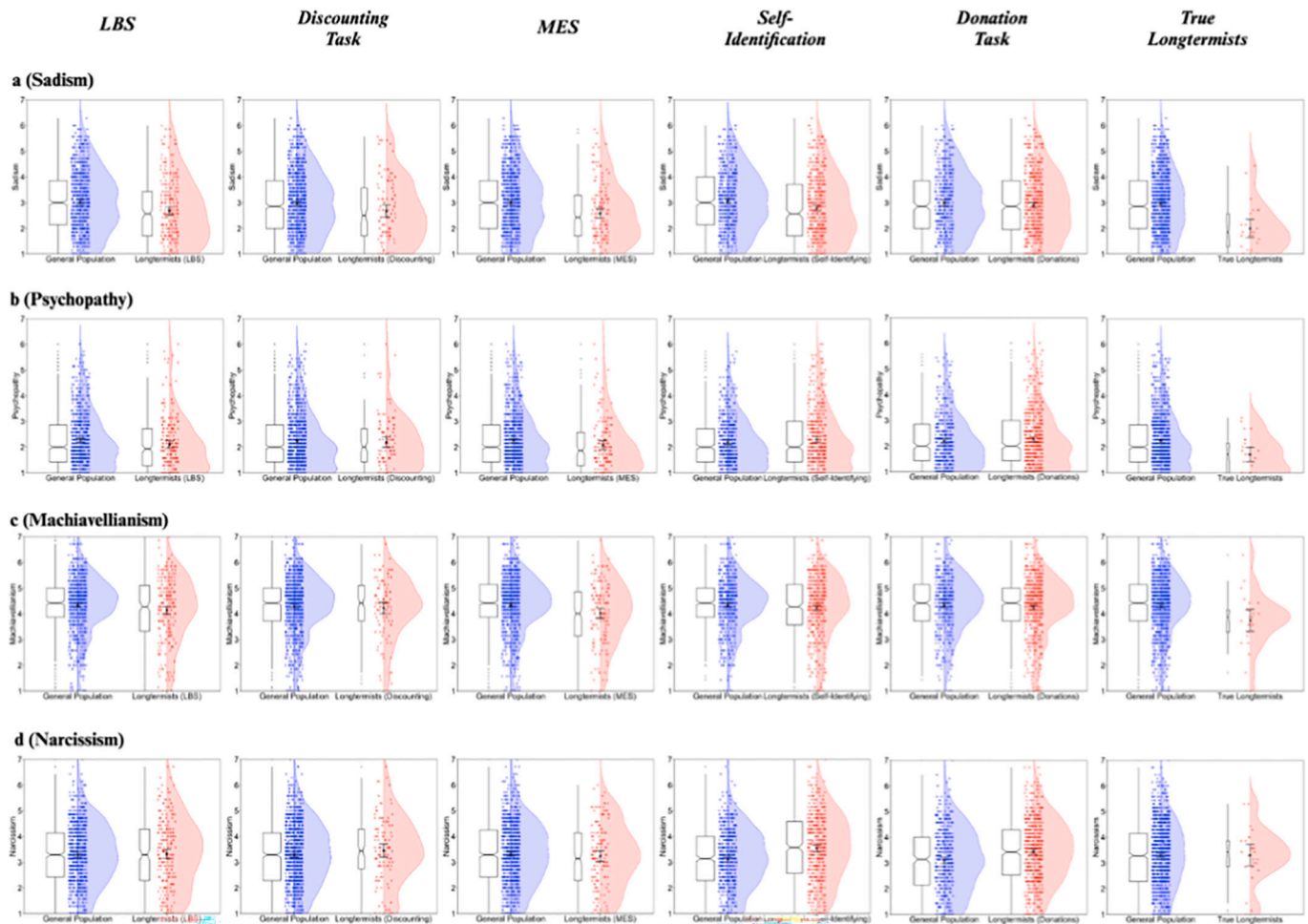
involving narcissism, where longtermists identified through the self-identification item and the donation task scored significantly higher than those identified by the other methods. This might imply that more outwardly focused or socially visible aspects of longtermism could potentially be associated with an inflated self-perception, a connection that is also supported by findings related to the Needs Me primal.

## 7. General discussion

In the first investigation of its kind, we find that exceptional concern for the well-being of future generations is characterized by heightened

open-mindedness, conscientiousness, and honesty-humility (Studies 1a, 1b, and 4), lower scoring on assessments of dark personality traits, such as psychopathy, Machiavellianism, and sadism (Studies 2a, 2b, and 4), and primal world beliefs that foster a profound sense of concern for the world and its inhabitants (i.e., seeing the world as more alive, enticing, interesting, worth exploring, meaningful, and interconnected, but less acceptable in its present state and in need of help; Studies 3 and 4).

Of particular note are our findings showing that longtermists' personality profiles converge to some degree with those of real-world extraordinary altruists (Amormino et al., 2022). Namely, both longtermists and extraordinary altruists score higher on assessments of



**Fig. 7.** Dark tetrad traits in longtermists versus general population controls across LIMs (Study 4).

*Note.* Plots depicting sadism (a), psychopathy (b), machiavellianism (c), and narcissism (d) for longtermists (red) and general population controls (blue) across LIMs (Study 4). Ratings were made on a scale from 1 to 7 and averaged to form composite measures. Colored dots correspond to individual data points and are jittered for readability, with split violin plots overlaid to show the relative distribution of scores across populations. Error bars depict  $\pm 1.96 \times \text{SEM}$ . Notched boxplots are included, with notches depicting a confidence interval around the median with a value of  $\pm 1.58 \times \text{IQR} / \sqrt{n}$ . (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

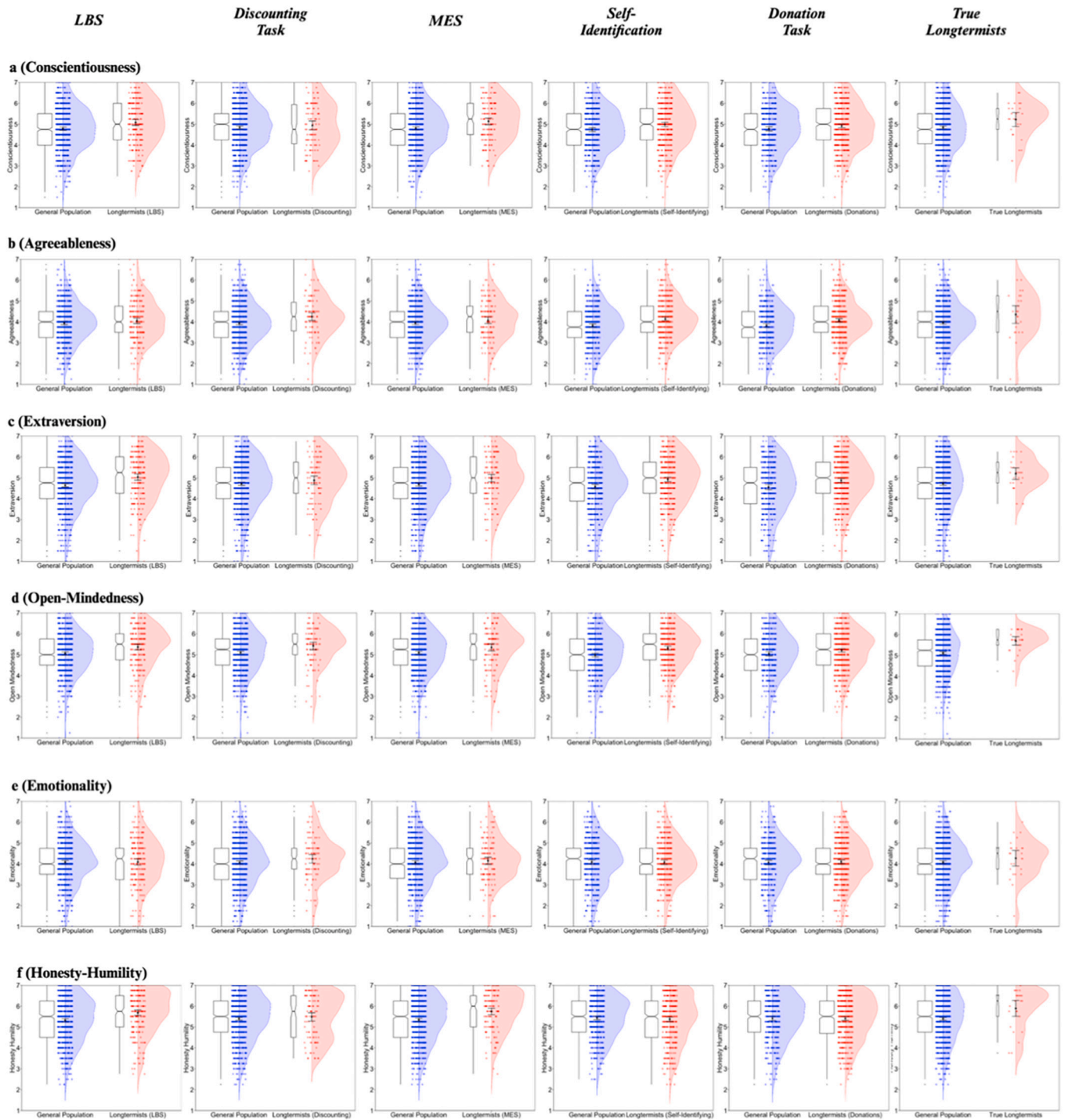
honesty-humility and lower on assessments of psychopathy (Law et al., 2024), though longtermists score higher on open-mindedness and conscientiousness as well. In some ways, these findings are unsurprising. Like extraordinary altruists, longtermists feel concern for the needs, moral rights and well-being of individuals who exist across vast divides of psychological distance (Gilead et al., 2020; Mentovich et al., 2016). Furthermore both show a reduced tendency to discount the subjective value of rewards for distant others (Rhoads et al., 2023; Vekaria et al., 2017). Indeed, research confirms that longtermists stand out from the rest of the population mainly due to their profound concern for future generations. Yet, similarly to extraordinary altruists, they also show a notable increase in moral regard and prosocial behavior towards those who are socially and physically distant (Syropoulos, Law, Young, 2024b).

Although not surprising, the similarities in scoring on assessments of traits such as honesty-humility and psychopathy between longtermists and extraordinary altruists are particularly fascinating, considering that longtermism has roots in the closely related effective altruism (EA) philosophy. Whereas influential figures within and adjacent to EA strongly emphasize the importance of downregulating empathic responding, favoring instead a reliance on deliberative reasoning to guide strategic allocations of altruistic resources (e.g., Caviola et al., 2021), the research on extraordinary altruism overwhelmingly supports

the role of empathy in guiding expansive and unconditional care (see Law et al., 2024 for review). Should further evidence show that longtermists and extraordinary altruists share not only personality traits but also an enhanced capacity to empathize with far-removed individuals, this would support the notion that empathy and rational thought are not necessarily countervailing forces, as EA proponents often suggest, and can in fact synergistically broaden the scope of prosociality to promote equity in global welfare.

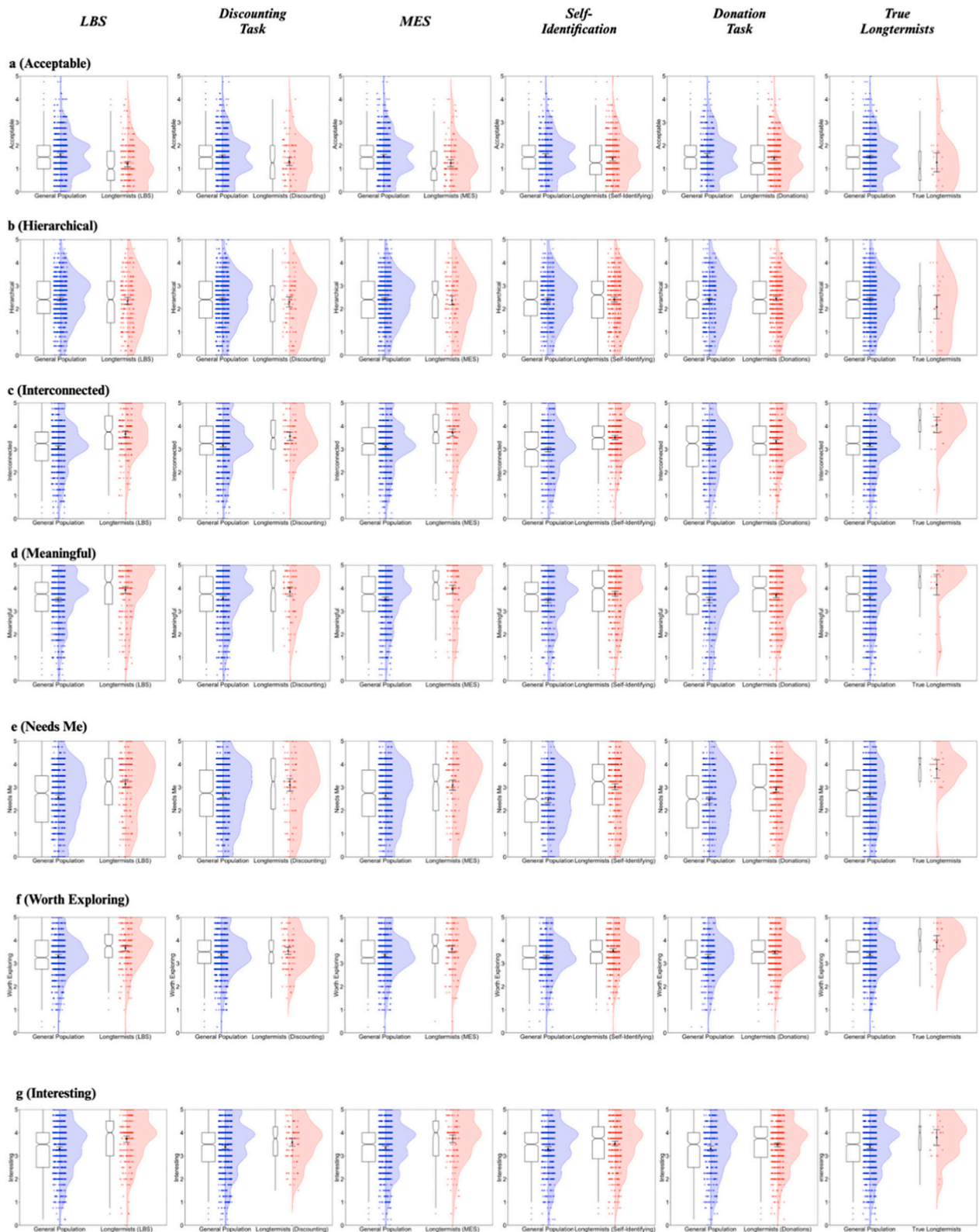
In addition to advancing theory in the domain of intergenerational concern, the present research offers practical insights which could inform efforts to tailor communication and outreach strategies to resonate with traits associated with intergenerational beneficence, thereby enhancing engagement in behaviors that support a more prosperous future for humanity. Furthermore, our research further contributes to the growing body of psychological knowledge related to intergenerational concern through setting more stringent criteria for the identification of individuals who manifest particularly high levels of the construct. Specifically, in addition to identifying longtermists by participants' high scoring on the Longtermism Beliefs Scale (LBS), as has been standard practice in the psychological research investigating exceptional intergenerational concern to date (Syropoulos, Law, Young, 2024b), we also did so by implementing a more comprehensive set of tasks and measures. This battery of Longtermist Identifying Methods





**Fig. 8.** HEXACO traits in longtermists versus general population controls across LIMs (Study 4).

*Note.* Plots depicting conscientiousness (a), agreeableness (b), extraversion (c), open-mindedness (d), emotionality (e), and honesty-humility (f) for longtermists (red) and general population controls (blue) across LIMs (Study 4). Ratings were made on a scale from 1 to 7 and averaged to form composite measures. Colored dots correspond to individual data points and are jittered for readability, with split violin plots overlaid to show the relative distribution of scores across populations. Error bars depict  $\pm 1.96 \times \text{SEM}$ . Notched boxplots are included, with notches depicting a confidence interval around the median with a value of  $\pm 1.58 \times \text{IQR} / \sqrt{n}$ . (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)



**Fig. 9.** Selected primals in longtermists versus general population controls across LIMs (Study 4).  
*Note.* Plots depicting acceptable (a), hierarchical (b), interconnected (c), meaningful (d), needs me (e), worth exploring (f), and interesting (g) for longtermists (red) and general population controls (blue) across LIMs (Study 4). Ratings were made on a scale from 0 to 5 and averaged to form composite measures. Colored dots correspond to individual data points and are jittered for readability, with split violin plots overlaid to show the relative distribution of scores across populations. Error bars depict  $\pm 1.96 \times \text{SEM}$ . Notched boxplots are included, with notches depicting a confidence interval around the median with a value of  $\pm 1.58 \times \text{IQR} / \sqrt{n}$ . (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

(LIMs) was selected to evaluate both the attitudes *and* behaviors indicative of a profound sense of concern for future generations.<sup>4</sup>

Inconsistencies regarding the outcomes of longtermism identification across the various LIMs we employed were noted. These could reflect that some of these approaches capture intergenerational concern better than others (e.g., the donation task was the most abstract and liberal estimate, whereas the discounting task was the strictest). Nonetheless, the diversity in classification methods enhances our understanding by illuminating the multifaceted nature of intergenerational orientations and commitments. Moreover, the present studies underscore the potential value of utilizing detailed personality profiles as a predictive tool for such identifications, offering a promising avenue for further exploration in this field.

Even though a remarkably small proportion of participants met our most stringent criteria for exceptional intergenerational concern, this proportion far exceeds the known proportion of the population that actively participates in the longtermism social movement (Greaves & MacAskill, 2019; MacAskill, 2022). Considering the rigorous criteria applied in this classification approach, our findings offer evidence that a significant number of individuals may hold a deep alignment with expansive intergenerational ethical principles. Moreover, these individuals could potentially show a greater eagerness to participate in real-world actions, both financial or otherwise, aimed at securing humanity's future, if this is indeed a societal objective.

A thought-provoking revelation stemming from our incorporation of various LIMs in Study 4 was the observation that individuals classified as longtermists through the donation task and self-identification item displayed notably elevated narcissistic tendencies compared to their non-longtermist counterparts. While these findings may seem counterintuitive at first blush, they were in line with our pre-registered predictions, and can be elucidated in part by existing research. First, the elevated trait narcissism observed in longtermist donors may stem from the possibility that economic displays of longtermism more strongly appeal to individuals with higher concerns regarding social desirability—those who possess an elevated drive to furnish a favorable public image through outward displays of good will (Grimm, 2010). In support, existing research has revealed positive associations between donation behaviors and an elevated need for uniqueness, as well as an inflated tendency to engage in virtue signaling displays (Wallace et al., 2020), both of which tend to track positively with narcissism (Ok et al., 2021). Perhaps even more convincing is that prosocial behavior more broadly tends to be associated positively with narcissism in the general population (Palmer & Tackett, 2018). While similarly counterintuitive at face-value, the elevated trait narcissism observed in longtermism self-identifiers becomes clearer after a deeper evaluation of longtermist principles. Central to longtermist ideology is believing that one's personal behaviors can have a substantial positive impact on generations in remote millennia to come (Greaves & MacAskill, 2019; MacAskill, 2022). Self-efficacy – perceiving a high capacity for success on a given task – tends to track positively narcissistic traits (Brookes, 2015).

Narcissism is generally construed as a dark trait owing to its detrimental effects on subjective well-being and close interpersonal relationships (Wright et al., 2017). For instance, narcissism is associated with heightened negative affect and antagonistic behaviors (Wright et al., 2017). Furthermore, pathological narcissists struggle to form close attachments, engage in more social withdrawal, and tend to be

dismissive towards relatives and relationship partners (Day et al., 2022). Nonetheless, research shows that narcissistic traits also carry some unexpected benefits, such as elevated self-esteem, self-confidence and self-efficacy (Hill & Lapsley, 2011). As feeling a sense of efficacy to positively impact the distant future can influence one's tendency to engage in pro-future action (Hornsey et al., 2021), trait narcissism may in fact serve an adaptive purpose in the context of intergenerational beneficence. After all, saving the future of humanity is a lofty and challenging task, so it's no surprise that many individuals feel little efficacy over distant future outcomes (Greaves & MacAskill, 2019). However, it's important to note that dark traits tend to be positively correlated with one another (Ashton & Lee, 2009). Consequently, attempts engage individuals with high levels of trait narcissism with rhetoric related to expansive intergenerational ethics comes along with the risk of inadvertently attracting those with tendencies towards psychopathy, Machiavellianism and Sadism, which could in turn backfire to harm society.

While our research serves as a substantial first step towards unveiling the personality profile of intergenerational concern, it does not provide a comprehensive understanding across all relevant personality dimensions and contexts. For instance, no study in the published literature to our has addressed the structure of moral values in longtermist individuals. Yet, moral values serve as a reliable guide for prosocial behavior and can serve to flexibly expand and contract the scope of altruism across spans of psychological distance (Curry et al., 2019; Everett & Kahane, 2020; Law et al., 2022). Future research into the psychology of intergenerational concern can seek to address open question related to the interplay of specific moral beliefs and propensities to extend regard and care towards future generations.

Furthermore, while lines of scientific inquiry are only just beginning to scratch the surface of the psychological antecedents and consequences of intergenerational concern, extensive existing research has explored how people think about and imagine the future more broadly. Research in this vein has examined individual differences in the ability to generate vivid representations of future scenes and events (i.e., episodic future thinking; e.g., Bo O'Connor & Fowler, 2023), the predictors and outcomes of thinking about one's own future self (i.e., future-self continuity, consideration of future consequences; e.g., Hershfield et al., 2009; Joireman, 1999), and, more recently, the intricacies of how people mentally construct and consider the futures of the collectives to which they belong (i.e., collective future-thinking; de Saint-Laurent, 2018). Synthesizing the findings from these diverse bodies of literature and integrating them into the ongoing study of intergenerational concern presents novel opportunity for developing deeper insight into each phenomenon and their interactions.

Notably, the current studies have yet to explore whether connections between intergenerational attitudes and behaviors with personality traits remain consistent when examined within different cultural contexts. Given substantial cultural diversity in norms, values, prosocial behavior, and intergenerational concern (Chiu et al., 2015; Hofstede & Bond, 1984), it's plausible the present findings, observed in US samples, may partially diverge with outcomes of an international investigation into these associations. Additionally, the preset findings may be moderated by the vast demographic variability that exists *within* the US. We invite and encourage future research to replicate and extend the findings presented here in more diverse national and international samples.

Moreover, our studies utilized self-report measures to assess the intended constructs, many of which employed Likert-type scales, which may introduce the issue of common method variance. However, we took strides to mitigate this issue by conceptually replicating all of our key findings employing diverse measurement approaches across studies to capture the same constructs, revealing largely consistent patterns across studies and measurement formats. Nevertheless, future research should aim to address this issue more comprehensively by incorporating a broader range of measurement approaches than those we employ here, such as natural language processing approaches to decoding signatures

<sup>4</sup> Notably, in exploratory and non-pre-registered analyses we found that when using the MES, LBS, and discounting task as a concurrent LIM, those who were identified as longtermists tended to score significantly higher on most validation traits (longtermism beliefs, moral expansiveness, discounting, donation) compared to those who were identified using only one of the three methods (see Table S15 in SOM). These results suggest that there is added utility of employing multiple LIMs concurrently, and primarily the MES, LBS, and discounting task.



of key constructs in written or spoken language.

Finally, it's important to note that while personality traits generally remain stable in adult samples over time (e.g., Allemand et al., 2013), intergenerational attitudes may not enjoy the same degree of intertemporal consistency. For instance, existing research explicates that even short-duration interventions can modulate longtermism beliefs within individuals, influencing subsequent behaviors (Syropoulos, Law, Young, 2024b). Consequently, there is reason to consider that the relationships which emerged in the present research between personality dimensions and longtermist attitudes may not be consistently stable over time. In a similar vein, there is reason to suspect that longtermist attitudes may fluctuate across the lifespan or between people at different life stages. For instance, older adults closer to end of life may have different perspectives on time and the legacies they will leave behind (e.g., Zaval et al., 2015), as may parents who have greater stake in safeguarding the future for the sake of their children (see Shrum et al., 2023 for a related discussion). In turn, parents and older adults may show more expansive intergenerational outlooks relative to younger adults and those without children. Nevertheless, these questions remain ripe for further investigation through longitudinal and developmental research. Moreover, while personality cannot be experimentally manipulated, longitudinal research may also help explore the causal directionality of the observed effects.

## 8. Conclusion

As extinction threats mount and pose increasing risk for the longevity of the human species (MacAskill, 2022; Ord, 2021), developing a comprehensive understanding of the traits and characteristics that predict intergenerational concern becomes all the more crucial. The present research serves as a substantial first step. Notably we find consistent evidence that longtermists, defined as people with exceptional intergenerational concern, show higher levels of traits associated with prosociality, diminished malevolent characteristics and see the world as a better place, more worthy and in greater need of their aid. Moreover, we develop a systematic and multifaceted approach to identifying longtermists amongst the general populace, showing largely consistent associations with personality traits across classification methods. These results lay the groundwork for future research to further unravel the complex psychological profile of intergenerational concern and potentially investigate means to cultivate farsighted action for the sake of ensuring long-term welfare.

## CRediT authorship contribution statement

**Stylianios Syropoulos:** Writing – review & editing, Writing – original draft, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Kyle Fiore Law:** Writing – review & editing, Writing – original draft, Visualization, Software, Resources, Project administration, Methodology, Investigation, Data curation, Conceptualization. **Paige Amormino:** Writing – review & editing, Conceptualization. **Liane Young:** Writing – review & editing, Supervision, Funding acquisition.

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## Declaration of competing interest

The authors have no conflicts of interest to disclose.

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## Data availability

A link to the OSF where all materials are available is included in the paper.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2024.112814>.

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