

Impartial Intergenerational Beneficence: The Psychology of Feeling (Equal) Intergenerational Concern for All Future Generations

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Abstract

Across a series of eight high-powered studies ($N = 6,866$), we develop a method for assessing impartial intergenerational beneficence, defined as intergenerational concern for all possible future generations. Across our studies, roughly 20% of participants displayed impartial intergenerational beneficence. Participants with impartial intergenerational beneficence expressed greater perceptions that future threats can be resolved, support for policies seeking to protect future generations of people, and a profound sense of responsibility for the long-term survival and prosperity of humanity. Similarly, associations with various future-oriented attitudes, patterns of prosociality, and longtermism-related behaviors and intentions were noted. This research thus introduces a method to capture impartiality in expressed intergenerational concern and finds that people who display impartial intergenerational concern endorse prosocial principles, such as altruism and utilitarianism, while also being more concerned about their own future, the future of others, and how they will be remembered by others.

Keywords

intergenerational concern, prosociality, individual differences, future thinking, legacy

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Many large-scale societal challenges are expected to disproportionately affect far-future populations (MacAskill, 2022). Although psychologists (Caviola et al., 2021), philosophers (MacAskill, 2022; Ord, 2021), and natural scientists (Jacquet et al., 2013) agree that present-day action can help to mitigate catastrophic threats, protecting strangers in future generations requires intergenerational concern (IC) for the welfare of those to come. Decades of research in psychology (Ersner-Hershfield et al., 2009; Tversky & Kahneman, 1992) and behavioral economics (Agneman et al., 2024; Wade-Benzoni & Tost, 2009) have examined future thinking with respect to personal futures and shorter timescales. Yet, little is known about how people prioritize long-term collective welfare. Although research on parochial bias (e.g., Sherif et al., 1961), welfare-maximizing prosociality (Kahane et al., 2018), and imagination (Tamir & Mitchell, 2011) suggests concern for others may be limited by intergenerational distance, studies on prospection, both self-oriented (Ersner-Hershfield et al., 2009; Strathman et al., 1994) and other-oriented (Lalot et al., 2021; Zaval et al., 2015), indicate there may be significant variability in concern for long-term intergenerational issues.

Using a conceptual model of intergenerational ethics from longtermism (MacAskill, 2022), we develop and validate a

measure for long-term IC in the general population. We also examine the prevalence of “impartial intergenerational beneficence” (IIB), reflecting high and equitable concern for near- and distant-future generations alike. Finally, to evaluate the convergent and discriminant validity of our measure and its ability to predict outcomes relevant to long-term societal priorities, we examine the associations of IC and IIB with: (a) longtermist outcomes—attitudes, behaviors, and intentions safeguarding long-term welfare; (b) future-focused phenomena from existing psychological research; (c) related but distinct prosocial ethical beliefs, such as utilitarianism and effective altruism; and (d) moral concern for near- and distant-future generations. Ultimately, the framework we devise aims

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to offer insights into how individuals prioritize future generations and the antecedents and consequences of IC.

Psychological Barriers Barring Concern for the Far Future

Although there is limited evidence on the temporal extent of human beneficence, research in social psychology highlights parochial biases in empathy (e.g., Bloom, 2016), moral concern, and prosociality (e.g., Crimston et al., 2016; Waytz et al., 2019) that prioritize present-day beneficiaries who are socially and spatially closer, similar to oneself, and fewer in number (i.e., scope insensitivity; Kogut et al., 2015). Peripheral evidence suggests these biases may apply to temporally distant-future generations as well. For one, temporal and social distance are processed similarly at both cognitive and neural levels (e.g., Gilead et al., 2020), suggesting biases that restrict prosociality to socially closer others may manifest analogously across the temporal dimension. Moreover, imaginative vividness, a cognitive capacity that promotes prosocial behavior (e.g., Bo O'Connor & Fowler, 2023), is weaker when imagining distant futures (Schacter & Addis, 2020; Tamir & Mitchell, 2011). Compounding their perceptual distance, future generations are perceived as distant across both time and social relatedness (Wade-Benzoni & Tost, 2009), and biases such as scope insensitivity and uncertainty avoidance may reduce sensitivity to the extensive and indeterminate nature of intergenerational challenges (Wade-Benzoni, 2008).

Collectively, the factors above suggest that the same biases hindering prosocial behavior toward distant others in the present likely persist—and may even intensify—when considering our intentions toward future populations perceived as abstract, distant, and unidentifiable collectives. Although people have been shown to conserve *some* resources for near-future generations, they conserve relatively more for those presently living (i.e., intergenerational discounting; Hauser et al., 2014; Wade-Benzoni, 2002). Whether this bias intensifies for more distal futures remains unexplored.

Toward a Psychological Science of IIB

Individual Variation in Future Thinking

Despite barriers to IC, people vary in how they consider their personal futures and the needs of near-future generations, predicting differences in behavior. Future self-continuity—the extent to which people feel connected to their future selves (Ersner-Hershfield et al., 2009)—and awareness of long-term consequences, measured by constructs such as consideration of future consequences (CFC, Strathman et al., 1994) and time perspective (Lalot et al., 2021), are linked to more far-sighted self-protective behaviors and better life outcomes. Similarly, people motivated to leave behind a better world, whether through legacy concerns (Zaval et al., 2015) or social

generativity (Magatti et al., 2019), are more likely to hold pro-future attitudes and engage in near-term pro-future actions (e.g., pro-environmentalism, social activism; Barnett et al., 2019; Syropoulos, Watkins, et al., 2023). However, most research focuses on either self-oriented future envisioning or concern for society's near-term future. Although biases favoring the present or near future are common, there may be individual differences in the ability to envision distant societal futures and extend impartial concern across temporal horizons. These differences remain largely unmeasured.

Insights From the Ethical Philosophy of Longtermism

The utilitarian philosophy of longtermism argues that all human suffering is ethically equivalent, regardless of whether it occurs in the present, near future, or distant future (MacAskill, 2022; Ord, 2021). Given expected population growth, longtermism contends we have a moral obligation to mitigate existential threats that would disproportionately harm these outsized future populations. Emerging from the effective altruism movement (Singer, 2015), which emphasizes impartial beneficence—prioritizing welfare maximization regardless of social or geographical distance (Kahane et al., 2018)—longtermism extends this principle to future generations. We term this “impartial intergenerational beneficence” or “IIB,” a prosocial concern for future generations that remains strong regardless of how far into the future they exist.

As both a philosophical framework and social movement, longtermism is gaining traction (Fenwick, 2023), influencing domestic and international policy (e.g., United Nations, 2021). Although present-oriented biases are common, the growing popularity of longtermism suggests that impartial concern for the distant future may be more widespread than assumed. Moreover, longtermism offers a conceptual framework to empirically assess variations in IC and measure endorsement of IIB.

Exploring Attitudes and Actions Linked to IC

In addition to measuring IC and IIB, we examine their relationship to four outcome categories to validate our approach. The first category includes outcomes rooted in longtermist philosophy (MacAskill, 2022). We expect higher IC and IIB to correlate with stronger endorsement of longtermist principles, self-identification as longtermists, and interest in the movement, providing convergent validity for our measure. Beyond philosophical alignment, safeguarding humanity's future requires concrete action. Thus, we also assess attitudes, beliefs, intentions, and behaviors linked to practical steps advocated by longtermism. These include beliefs about preventing human extinction, a sense of responsibility toward future generations, support for future-oriented policies, intentions to pledge income, and efforts to raise funds for future-oriented charities. We reason that higher IC and

IIB should predict stronger engagement in these actions, establishing the predictive validity and practical utility of our measure for identifying individuals committed to future-focused initiatives.

The second category includes future-oriented constructs that are well-established in the psychological literature. We hypothesize that individuals with higher IC and IIB will (a) engage more in self-oriented future thinking, reflected in higher scores on future self-continuity (FSC; Ersner-Hersfield et al., 2009), consideration of future consequences (CFC; Strathman et al., 1994), and time perspective (Lalot et al., 2021), and (b) show greater concern for the near-future welfare of others, measured by legacy motivation (Zaval et al., 2015) and social generativity (Morselli & Passini, 2015). Although these constructs differ from IC and IIB, they share a future-oriented focus, providing a basis to predict positive correlations, especially given research suggesting shared cognitive architecture for future thinking (Bo O'Connor & Fowler, 2023). However, we expect moderate correlations ($r < .70$, $R^2 < .50$; Cheung et al., 2024) to confirm that IC and IIB are related yet distinct constructs. Including these measures in validation reinforces the convergent and discriminant validity of IC and IIB as unique future-oriented tendencies that extend beyond personal or near-future concerns.

Third, since IC and IIB are grounded in the longtermist ethical framework, we expect them to align with the principles from utilitarianism and effective altruism, and philosophies that advocate impartial welfare maximization (MacAskill, 2022). Although utilitarianism and effective altruism focus on present welfare, they share with longtermism the principle of treating all beneficiaries equally, regardless of their social (utilitarianism and effective altruism) or intergenerational (longtermism) distance from benefactors. Research shows temporal and social distances are processed similarly (Gilead et al., 2020), and people perceive future generations as both temporally and socially distant (Wade-Benzoni & Tost, 2009). Thus, we hypothesize that individuals with higher IC and IIB will score higher on measures of altruistic impartiality, such as impartial beneficence on the Oxford Utilitarianism Scale (OUS; Kahane et al., 2018) and expansive altruism—the belief that resources should be allocated equally regardless of social distance—on the Proto-Effective Altruism Scale (PEAS; Schubert & Caviola, 2024). Both scales capture the impartial beneficence central to utilitarianism, effective altruism, and longtermism, providing further evidence for the convergent validity of IC and IIB.

However, utilitarianism, effective altruism, and longtermism also emphasize welfare maximization—prioritizing actions that achieve the greatest good (MacAskill, 2022; Singer, 2015). Although IC and IIB align with these philosophies in promoting altruistic impartiality, they do not inherently require prioritizing welfare-maximizing causes. Therefore, we expect IC and IIB to correlate positively with the OUS and PEAS subscales on impartial beneficence and expansive altruism, but not strongly with the PEAS subscale

on effectiveness, which focuses more on welfare maximization. In addition, utilitarianism justifies harm if it leads to greater welfare gains (instrumental harm; Kahane et al., 2018), a principle not consistently endorsed by effective altruism or longtermism. Thus, we hypothesize no association between IC/IIB and the OUS instrumental harm subscale. Including these assessments will further establish the discriminant validity of IC and IIB by highlighting their distinctions from principles of effectiveness and instrumental harm.

The fourth (and final) outcome examines the expansiveness of moral concern for both near- and distant-future generations, providing a critical test of IC and IIB's convergent and predictive validity. Moral concern, a key driver of prosocial behavior, typically diminishes as targets become more socially distant (Crimston et al., 2016; Waytz et al., 2019). However, since IC and IIB emphasize protecting all future generations regardless of intergenerational distance, we expect individuals with high IC and IIB to extend moral concern equally to near- and distant-future generations, whether moral concern is viewed as a zero-sum or positive-sum resource.

The Current Studies

Across eight studies, we establish a foundation for the psychological science of long-term IC and IIB. In three supplementary studies (S1a, S1b, S2), informed by the ethical philosophy of longtermism (MacAskill, 2022; Ord, 2021) and using ChatGPT 3.5, we develop and refine scale items to measure IC and enhance response variability to address initial ceiling effects. In Studies 1–4, we refine the Impartial Intergenerational Beneficence Inventory (IIBI) to measure IC across temporal distances. Starting with Study 2a, we use the finalized IIBI to achieve two goals: (a) capturing average IC across timeframes and (b) identifying individuals who maintain high, stable IC levels regardless of temporal distance (IIB). Therefore, the IIBI allows us to empirically assess overall IC and distinguish those with exceptional and temporally invariant levels of IC (IIB). Moreover, we also examine how IC and IIB relate to conceptually similar constructs. Although positively associated with many of these constructs, IC and IIB remain distinct, sharing no more than 50% of the variance with any single measure. Importantly, IC and IIB are strong predictors of future-oriented attitudes and behaviors, explaining unique variance in outcomes potentially critical for advancing humanity's long-term welfare.

All materials for all studies are available on the Open Science Framework: https://osf.io/bhzmmp/?view_only=0cb9bd76cb404b2ea835fccf3368f360. An overview of all studies is provided in Table 1.

Supplementary Studies 1a–1b

In Study S1a, we generated a pool of 20 items (see Supplemental Table S1) adapted from two key readings on longtermism (MacAskill, 2022; Ord, 2021). These items

Table 1. Sample Information for All Studies.

Study parameter	Study S1a	Study S1b	Study 1	Study S2	Study 2a	Study 2b	Study 3	Study 4
<i>N</i>	397	403	903	1,098	542	1,535	791	1,197
<i>N</i> _{Male}	195	194	441	543	268	756	387	589
<i>N</i> _{Female}	189	195	437	535	260	736	385	582
<i>N</i> _{White}	294	317	695	844	412	1,137	536	810
<i>N</i> _{Black/African}	45	32	97	111	70	160	138	204
American								
<i>N</i> _{Asian/Asian}	32	29	62	88	32	99	89	135
American								
<i>N</i> _{Democrat}	193	209	285	549	229	739	361	522
<i>N</i> _{Republican}	68	61	155	197	118	307	148	215
<i>N</i> _{Independent}	127	116	285	318	179	431	259	421
<i>M</i> _{age} (<i>SD</i> _{age})	37.63 (13.37)	42.18 (15.60)	41.48 (14.07)	40.56 (13.66)	40.09 (13.74)	39.22 (14.31)	41.36 (12.82)	40.05 (13.13)
Platform	Prolific	Prolific	Prolific	Prolific	Prolific	Prolific	Prolific	Prolific
Duration (min)	10	10	8	8	15	15	10	13
Payment	US\$2.00	US\$2.00	US\$1.40	US\$1.40	US\$2.90	US\$2.90	US\$2.00	US\$2.20
Factor analysis	EFA	EFA	CFA	CFA	CFA	CFA	CFA	CFA
Preregistered	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Note. EFA = Exploratory Factor Analysis; CFA = Confirmatory Factor Analysis.

targeted perceptions of the importance of intergenerational solutions to long-term existential threats, our duty to protect future generations, and the present's capacity to positively shape future welfare.¹ Exploratory Factor Analyses (EFAs; see Supplemental Tables S1 and S2) were used to assess this initial pool. In Study S1b, the remaining 17 items were then re-evaluated, along with additional items generated by ChatGPT 3.5. Specifically, we prompted the large language model to create 20 items capturing agreement with longtermist principles. However, 11 new items were added, bringing the total to 28 (see Supplemental Table S4). A second round of EFAs (see Supplemental Tables S5 and S7), along with convergent validity tests (see Supplemental Tables S6 and S8) and reliability assessments, indicated that the seven best-loading items were as reliable and predictive of key outcomes as the full 28-item set. In addition, psychometric analyses (model fit indices) showed the seven-item solution provided better fit to the data. These supplementary studies confirm that a concise seven-item solution performs well and offers a shorter format more suitable for surveys without causing participant fatigue. Further evidence from Confirmatory Factor Analyses (CFAs; see below for each study) and Graded Response Models (GRMs), conducted for Study 3, confirmed the seven-item solution's ability to effectively distinguish between individuals with low and high levels of the latent construct (IC) supporting its adoption (see Supplemental Table S34).

Study 1

We sought to formally validate the seven-item solution retained from our preliminary studies via CFA. Seeking to actively capture IIB—high and temporally insensitive levels

of IC—we measured responses to the seven items with respect to multiple timeframes in which future generations might exist. This study was preregistered at <https://aspre-dicted.org/gnhx-f4rt.pdf>.

Methods

Participants. An a priori power analysis for an analysis of variance (ANOVA) with four between- and four within-subjects factors (with no expected interaction), $f = .10$, $\alpha = .05$, power = .80, suggested a sample of 900 participants. Our total sample comprised 903 participants (3 participants completed the study without submitting for remuneration).

Measures. We captured IC with seven items. Table 2 displays standardized loadings obtained via CFA for Studies 1, 2a, 2b, and 3. Results broken down by timeframe are highly consistent across timeframes (see Supplemental Table S11). For Study 1, responses were captured on a seven-point Likert-type scales, ranging from 1 = *Strongly disagree* to 7 = *Strongly agree*. We manipulated the number of years in the future (100 vs. 500 vs. 1,000 vs. 10,000) participants considered when responding to the items. Participants completed the measure with all four timeframes shown in randomized order. We counterbalanced the first timeframe participants were shown, which allowed us to conduct between-subject comparisons across all the four timeframes.

Attitudes toward human extinction were captured on seven-point scales (1 = *Strongly disagree* to 7 = *Strongly agree*). Seven items captured negative attitudes (e.g., “Human extinction [i.e., the demise of all humans on earth] would be bad because it would prevent future people from having positive lives”; $\alpha = .87$) and six captured positive/

Table 2. Standardized Factor Loadings for the Seven Items Capturing IC for All Primary Studies.

Item	Study 1	Study 2a	Study 2b	Study 3	Study 4
We should act wisely because what we do today will influence an untold number of people in the future.	0.97*	0.89*	0.88*	0.93*	0.91*
It is important to consider the long-term consequences of our actions and decisions.	0.97*	0.92*	0.89*	0.93*	0.91*
Intergenerational cooperation is important for addressing long-term challenges.	0.95*	0.85*	0.84*	0.89*	0.85*
It is important that we reduce existential and extinction risks to humanity and promote sustainable development goals to ensure the long-term survival of future generations.	0.92*	0.86*	0.85*	0.89*	0.87*
We should always have in view not only the present but also future generations.	0.97*	0.89*	0.90*	0.94*	0.90*
There are things we can do to steer the long-term future to a better course.	0.93*	0.88*	0.85*	0.91*	0.88*
Positively influencing the long-term future is a key moral priority of our time.	0.92*	0.84*	0.85*	0.91*	0.86*

Note. * $p < .001$.

neutral attitudes (e.g., “Human extinction [i.e., the demise of all humans on earth] would be good or neutral because it would prevent further suffering for humans.”; $\alpha = .87$).

Participants also indicated the levels of personal concern regarding six extinction threats (climate change, Artificial General Intelligence, nuclear war, global pandemic, meteor or asteroid impact, volcanoes) on six-point scales (1 = *not at all concerned* to 6 = *extremely concerned*).

Results

CFA. Following our preregistration, we evaluated model fit based on three fit indices, as suggested in the work by Kline (2015): the Comparative Fit Index (CFI; scores $\geq .95$ indicate good fit), the Root Mean Square Error of Approximation (RMSEA; scores $\leq .08$ indicate good fit), and the Standardized Root Mean Squared Residual (SRMR; scores $\leq .08$ indicate good fit). We did not consider (but do report) the chi-square statistic, as our sample was large, rendering chi-square tests more susceptible to false positives. We observed good fit for the model at each of the scale’s four timeframes, with all items loading highly on one factor. Furthermore, for all timeframes considered together, the scale provided good fit, good composite reliability, and a high average amount of variance explained (see Supplemental Table S9). Table 3 parsimoniously provides results for CFA models across the four main studies. Importantly, each model included seven averages, with each representing the mean score of an item from Table 2 across the four timeframes. Item-specific results for each timeframe are reported in Supplemental Tables S9, S17, S19, and S24 for Studies 1, 2a, 2b, and 3, respectively.

Between-Subject Differences. Participants were randomly assigned to see one of the four timeframes first (100, 500, 1,000, or 10,000 years into the future). This allowed us to examine the between-subject differences in IC using a

Table 3. Model Fit Indexes for CFAs for Studies 1–4.

Parameter	Study 1	Study 2a	Study 2b	Study 3	Study 4
$\chi^2(df = 14)$	86.44**	37.58**	69.49**	22.09	33.83*
CFI	.99	.99	.99	.99	.99
RMSEA	.07	.06	.05	.03	.03
SRMR	.01	.01	.01	.01	.01
Cronbach’s α	.98	.96	.95	.97	.96
AVE	.90	.77	.75	.84	.83
CR	.98	.96	.95	.97	.97

Note. * $p < .01$, ** $p < .001$. CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Squared Residual; CR = Composite Reliability; AVE = Average Variance Explained. CFA models were estimated for a single-factor solution including seven averages, with each representing the mean score of an item from Table 2 across the four timeframes.

one-way ANOVA, comparing the averages of the seven items between groups for only the first timeframe shown. Contrary to our preregistered hypotheses, no significant difference was observed, $F(3, 898) = 0.30, p = .827, \eta^2_p = .001$. A close inspection of the means for each condition reveals two primary patterns. First, participants exhibit a ceiling effect, with the lowest average score for the most distant timeframe being higher than the midpoint. Second, presenting participants with the timeframes in a randomized order led to response bias, such that presenting distant timeframes first led participants to score higher for the distant timeframe without much variations across subsequently presented timeframes (see Table 4).

Within-Subject Differences. A significant effect was observed, $F(3, 2,700) = 126.12, p < .001, \eta^2_p = .123$. Post hoc comparisons with Bonferroni adjustments ($\alpha = .008$ for six tests) suggested that each timepoint significantly differed from one another, and the more temporally distant a timeframe was, the lower participants scored, supporting our preregistered

Table 4. Means and Standard Deviations for Each Timeframe for Each Condition in Study 1.

IC for	100 years first (N = 226)		500 years first (N = 226)		1,000 years first (N = 226)		10,000 years first (N = 224)	
	M	SD	M	SD	M	SD	M	SD
100 years	6.10	0.84	6.23	0.89	6.15	0.92	6.13	0.90
500 years	5.94	0.96	6.05	0.86	6.02	0.98	6.03	1.02
1,000 years	5.78	1.16	5.78	1.14	6.03	0.87	5.95	1.13
10,000 years	5.52	1.32	5.56	1.33	5.58	1.28	6.05	0.95

expectation. However, when participants saw a more temporally distant timeframe first, they failed to update their scores for temporally closer timeframes (see Table 4 and Supplemental Table S10).

IC Relates to Concern for Extinction Threats to Humanity. Associations were largely in line with our preregistered hypotheses. Regardless of timeframe, significant positive correlations were noted between IC with negative attitudes toward human extinction ($.35 \leq r_s \leq .39, p_s < .001$). Similarly, significant negative correlations were noted with positive/neutral attitudes owing to beliefs that “nothing matters anyway” ($-.17 \geq r_s \geq -.27, p_s < .001$) and “because we are doomed anyway (there’s nothing we can do to prevent human extinction)” ($-.19 \geq r_s \geq -.26, p_s < .001$). Significant correlations were noted for concern regarding extinction threats. Specifically, associations with concern for extinction owing to climate change were strong ($.41 \leq r_s \leq .50, p_s < .001$), moderate for nuclear war ($.23 \leq r_s \leq .25, p_s < .001$) and global pandemics ($.25 \leq r_s \leq .28, p_s < .001$), yet weak for meteors/asteroid impacts ($.11 \leq r_s \leq .17, p_s < .01$) and volcanoes ($.11 \leq r_s \leq .14, p_s < .01$; for the 100 years’ timeframe, the association was not significant: $r = .07, p > .05$). For more details see Supplemental Table S11.

Discussion

Study 1 attempted to capture beliefs about ICs. Promisingly, evidence for the validity and reliability of our measure was noted, as CFAs supported the structure of the measure, noting high reliability and good model fit. Providing initial evidence for convergent and predictive validity, we found that expressing greater concern for future generations related to greater concern for extinction threats, and negative rather than positive or neutral attitudes toward human extinction.

However, ceiling effects prevented us from assessing IIB in Study 1. Although these ceiling effects may owe to the items merely being easy to endorse or issues related to restriction in range (i.e., participants might only display diminished endorsement for more distant timeframes than those studied above), unexpected patterns observed across between-subjects conditions lend insight into an alternate possibility. Specifically, participants who reported their IC for distant timeframes before proximal ones tended to overestimate their initial levels

of concern without subsequently updating for timeframes closer to the present. A similar effect has been observed in recent research studying moral judgments of altruism (Law et al., 2022). When assessed in isolation, altruism benefiting socially distant (e.g., strangers) and socially close (e.g., family) recipients is rated as morally praiseworthy. Yet, in the context of joint evaluations, when participants are given the option to reflect on the relative value of each alternative beneficiary, socially distant altruism is rated considerably morally worse. More seminal work has noted that participants’ self-reports on psychometric scales can be biased in this manner depending on how a construct is construed in a participant’s mind, or the way a scale is anchored (e.g., Birnbaum, 1999). Thus, it may be the case that when we measure IC in isolation, without providing a more-proximal point of comparison, participants’ assessments of concern for distant timeframes become inflated.

We evaluated two strategies for addressing this phenomenon: (a) providing clear instructions to place participants on the same baseline estimate for a particular construct to correct for such biases (Supplementary Study 2) and (b) measuring concern in the context of joint evaluations for all timeframes simultaneously. We employed both approaches together in four separate studies (Studies 2a, 2b, 3, and 4).

Study 2a

We evaluated both means for addressing the response bias noted in Study 1. Providing detailed instructions stating that more distant or close timeframes might be displayed later in the survey proved unsuccessful in correcting this response bias on its own (see Supplementary Study 2). Notably, Study S2 was preregistered, <https://aspredicted.org/6x52-vnwk.pdf>, and offered support for the dimensionality, fit, and reliability of our novel instrument (Supplemental Table S13). Furthermore, participants who expressed greater IC also reported that collective ($r_s \geq .19, p_s < .001$) and technological ($r_s \geq .19, p_s < .001$) solutions to major extinction threats to humanity’s future can be reached, reported greater responsibility to ensure better lives for future people ($r_s \geq .40, p_s < .001$), and support for policies protecting future generations ($r_s \geq .48, p_s < .001$; Supplemental Table S15).

However, in Study 2a, we used detailed instructions and presented all possible timeframes simultaneously, which

successfully corrected the response bias noted in Study 1. This was successfully replicated in Studies 2b, 3, and 4. As such, employing this approach allowed us to examine differences between those who endorse impartial concern across all future timeframes (i.e., IIB) and distinguish these individuals from those with closer to average or temporally diminishing levels of concern. Study 2a was preregistered at <https://aspredicted.org/j783-7bhr.pdf>.

Methods

Participants. An a priori power analysis for a two-tailed correlation of $\rho = .15$, power = .90, and $\alpha = .05$ suggested 462 participants. To allow for exclusions and align with recommendations for samples of $N = 500$ for correlational designs (Schönbrodt & Perugini, 2013), we increased the target to 550. Sensitivity analyses indicated that this sample would also provide 90% power for effect sizes of $f = .05$ in a repeated measures ANOVA with four measurements. Our final sample included 548 participants; after excluding 8 with duplicate IP addresses and 1 who failed the attention check, 542 participants remained.

Measures

Intergenerational Concern. To capture IC (and IIB), the seven-item scale from Study 1 was used. To reduce ceiling effects and address response bias, we modified the scale in several ways. First, we modified the timeframes presented to include particularly distal points in time (1,000, 10,000, 100,000, and 1,000,000 years in the future). This decision was made to ensure variation between each timeframe. Moreover, we modified the wording of the scale items and instructions to allow for participants to complete each item for multiple timeframes at the same time. In this way, participants were presented with each of the seven items separately but responded to each with respect to generations existing at the four timeframes noted above simultaneously. See Figure 1 for an image showcasing this measurement approach.

Furthermore, since all timeframes were presented simultaneously, we created a composite score collapsing across them and ran additional analyses using the individual timeframe scores separately. Responses were captured on slider scales, ranging from 0 = *Strongly disagree* to 100 = *Strongly agree*.

Future Self-Continuity. We used the measure developed in the work by Ersner-Hershfield et al. (2009). This measure uses seven overlapping circles to highlight the degree to which an individual can envision and find similarities with their future self. Scores thus range from 1 to 7, with higher scores indicating more future self-continuity.

CFC. We reasoned that it would be important to distinguish between an individual's ability to consider the future consequences of their actions, from their expressed IC. To do that, we used the 12-item CFC scale (Strathman et al., 1994).

Responses were captured on a seven-point Likert-type scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Legacy Concerns. Research suggests that an individual's concern about how they are remembered by future generations, and their motivation to leave a lasting legacy are important drivers of near-term intergenerational reciprocity (Zaval et al., 2015). We included a three-item scale used in extant research to account for a person's concerns about their legacy. Responses were captured on a six-point Likert-type scale (1 = *Not at all*, 6 = *A great amount*).

Utilitarianism. Utilitarianism was measured with the five-item impartial beneficence and four-item instrumental harm subscales of the OUS developed by Kahane et al. (2018), captured on a seven-point Likert-type scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Effective Altruism. Effective altruism beliefs were measured with the six-item expansive altruism scale and six-item effectiveness focus scale developed by Schubert and Caviola (2024), captured on a seven-point Likert-type scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Longtermism-Related Behaviors and Behavioral Intentions. We adapted several items from work on effective altruism (Schubert & Caviola, 2024) to capture behavioral intentions relevant to the longtermism philosophy and social movement. Participants were first provided a short explanation of longtermism and its core tenants (see Supplementary Information for Study 2a in the Supplementary Online Materials [SOM]). Subsequently, they indicated the extent to which they endorsed longtermist principles (1 = *Strongly disagree*, 7 = *Strongly agree*), their level of interest in learning more about it (1 = *Not at all interested*, 5 = *Extremely interested*), whether they wished to sign up for a monthly newsletter related to the longtermism movement (1 = *yes*, 0 = *no*), whether they would like to be entered into a lottery to receive a free copy of *What We Owe The Future* (1 = *yes*, 0 = *no*), or if they, like many other longtermists, would commit to donating 10% of their incomes to future-oriented charities for the duration of their lives (1 = *yes*, 0 = *no*).

Results

CFA. We re-evaluated model fit based on the same criteria as our previous studies per our preregistration. Across all timeframes, the scale provided good fit to the data, good composite reliability, and a high average amount of variance explained (Supplemental Table S17). This was also the case when using items that reflected the average score across all timeframes (see Table 3).

Within-Subject Differences. Supporting our preregistered hypothesis, when looking at the overall change across the

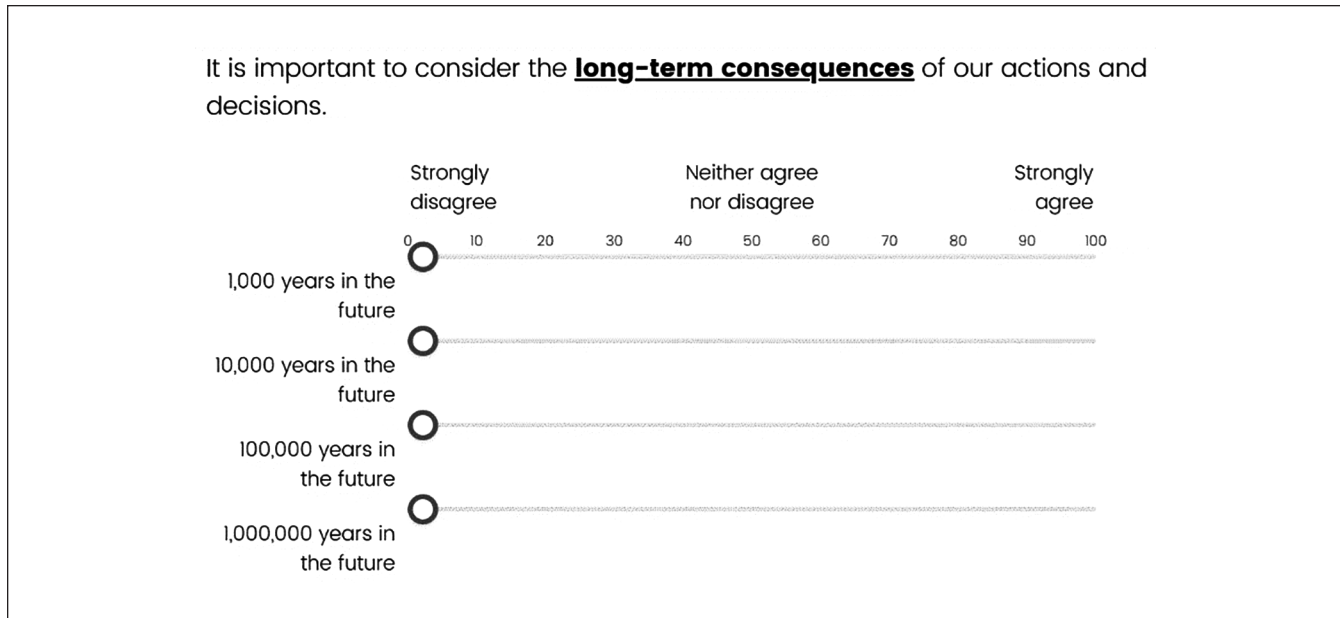


Figure 1. An Example Item in the Final Version of the IIBI.

four timeframes, a significant effect was observed, $F(3, 1,623) = 437.27, p < .001, \eta_p^2 = .447$. Post hoc comparisons using Bonferroni corrections ($\alpha = .008$ for six tests) suggested that each timepoint significantly differed from each other, and the further away in the future a timeframe was presented, the lower participants scored (See Supplemental Table S20 and Figure 2).

Correlations

As hypothesized, IC related positively to all outcomes, except for instrumental harm beliefs (see Table 5). Also as hypothesized, these correlations were not large in magnitude, suggesting that IC is distinct from but related to self-oriented and near-term other-oriented future-focused phenomena, and effective altruism and utilitarianism beliefs most centrally related to impartial prosociality across distance.

IC related to increased interest in longtermism ($\beta = 0.42, SE = 0.002, p < .001$), agreement with its principles ($\beta = 0.51, SE = 0.002, p < .001$), intention to donate 10% of one's outcome to a longtermist cause ($\beta = 0.19, SE = 0.003, p < .01$), interest in participating in a raffle for a book on longtermism ($\beta = 0.15, SE = 0.003, p < .001$), and interest in signing up for a longtermism newsletter ($\beta = 0.21, SE = 0.01, p < .001$).

Regressions Controlling for Other Measures of Future Concern

Additional and non-preregistered analyses were conducted to provide evidence for the predictive validity of the measure of IC as captured with the IIBI. Specifically, we wanted to rule out alternative self- and other-oriented future-focused

phenomena as predictors of the different behavioral and prosocial outcomes.

Overall, IC, even after controlling for future self-continuity, CFC, and legacy concerns, predicted increased impartial beneficence, expansive altruism, effectiveness focus, and greater longtermist behavioral intentions (the sum of the three binary outcomes capturing interest in and motivation to engage in longtermist behaviors) and greater interest in longtermism (see Table 6 and Supplemental Table S18).

Identifying IIB

Effectively capturing IIB would entail identifying participants who express high IC for all possible future generations. In an exploratory and non-preregistered fashion in this study, we considered IIB a pattern in which participants scored higher than the average score for the closest temporal timeframe (i.e., a score greater than $M = 78.83$) and did so consistently for all other timeframes. This left us with a total of 123 participants (23% of the sample). Figure 3 shows the pattern of responses for the IIBI for Studies 2a, 2b, and 3.

Comparing the 123 participants with the remainder of the sample ($N = 418$), we noted significant differences (with participants displaying the IIB pattern scoring higher) in IC, legacy concerns, future self-continuity, CFC, impartial beneficence, and expansive altruism (see Table 7). A sensitivity analysis for the comparison between the two groups suggests power = .80 for effect sizes as small as $d = .28$.

Discussion

To start, Study 2a provides evidence for the convergent, discriminant, and predictive validity of the IIBI. Moreover, in

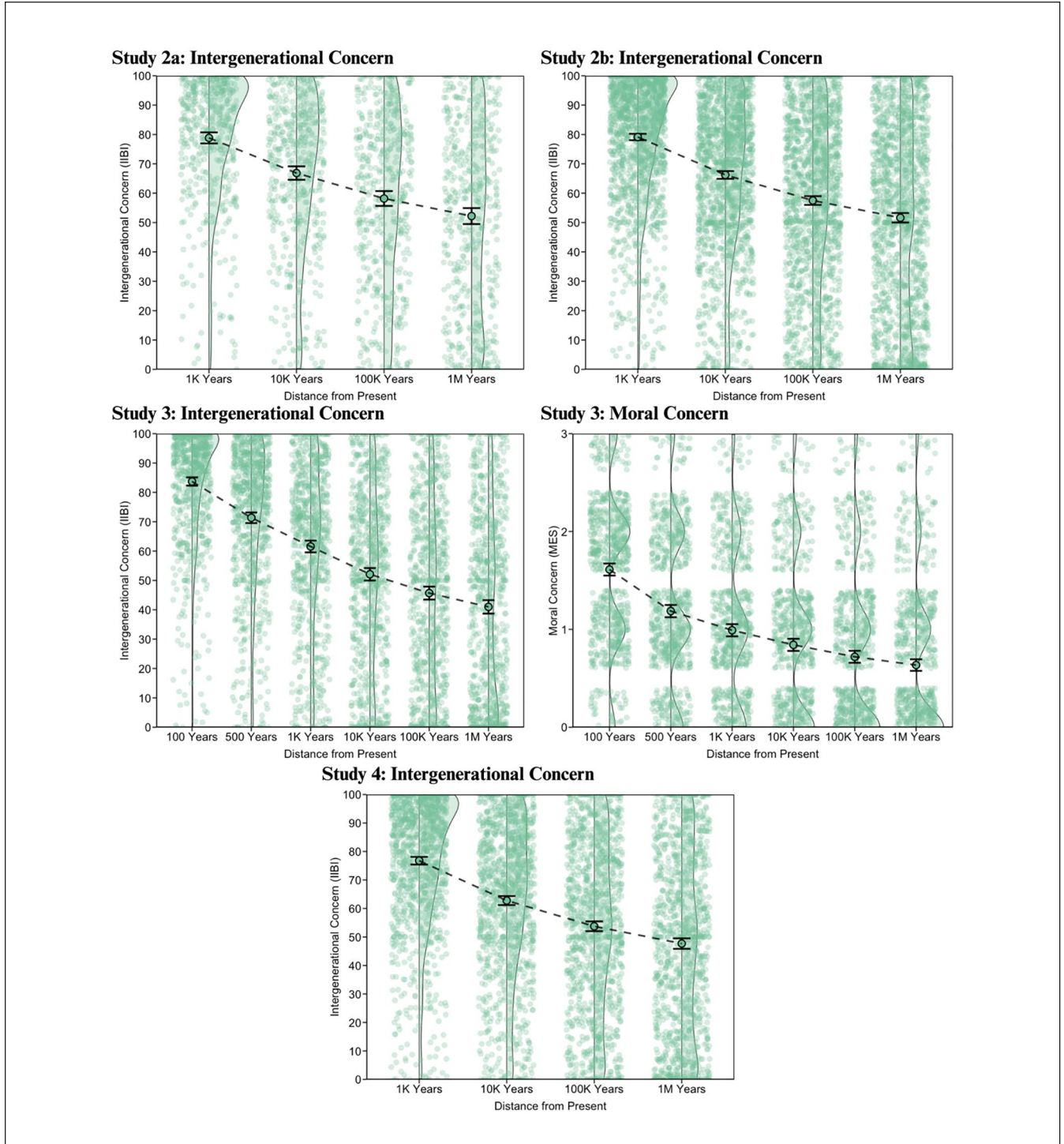


Figure 2. IC and Moral Concern (Moral Expansiveness Scale [MES]) Across Timeframes.

Note. Plots depicting differences across timeframes with jittered density, split violin plots, and means and error bars reflecting 95% confidence intervals.

line with research on intergenerational discounting (Wade-Benzoni & Tost, 2009), IIBI scores for farther timeframes were significantly lower, with most participants displaying this pattern. However, a small number of participants scored

high across all timeframes, showcasing high and temporally invariant levels of IC, thus displaying IIB. In an exploratory analysis (replicated in Studies 2b and 3), we found that participants who displayed IIB scored significantly higher on

Table 5. Bivariate Correlations Between All Measures for Study 2a.

Measures	1	2	3	4	5	6	7	8
1. Intergenerational concern	(.96)							
2. Legacy	.36**	(.89)						
3. FSC	.10*	.17**	–					
4. CFC	.23**	.29**	.27**	(.87)				
5. Effectiveness focus	.15**	.19**	.01	.07	(.83)			
6. Expansive altruism	.39**	.47**	.06	.24**	.30**	(.78)		
7. Instrumental harm	.01	.10	–.04	–.20**	.41**	.08	(.81)	
8. Impartial beneficence	.31**	.33**	.02	.06	.35**	.58**	.33**	(.77)

Note. * $p < .05$, ** $p < .001$. CFC = Consideration of Future Consequences; FSC = Future Self-Continuity. Cronbach's alpha values are reported in the diagonal.

Table 6. Linear Regressions With IC Predicting All Outcomes Controlling for Self and Other Oriented Future Concerns in Study 2a.

Impartial beneficence (adjusted $R^2 = .15$)	<i>b</i>	95% CI		β	<i>p</i>
Intergenerational concern	0.01	0.01	0.02	0.23	<.001
Legacy concerns	0.25	0.17	0.33	0.27	<.001
Future self-continuity	–0.03	–0.09	0.04	–0.03	.407
Considering future consequences	–0.09	–0.21	0.03	–0.06	.133
Instrumental harm (adjusted $R^2 = .06$)	<i>b</i>	95% CI		β	<i>p</i>
Intergenerational concern	<.001	–0.001	0.001	0.002	.969
Legacy concerns	0.16	0.08	0.25	0.17	<.001
Future self-continuity	<.001	–0.07	0.07	<.001	.996
Considering future consequences	–0.35	–0.48	–0.23	–0.24	<.001
Expansive altruism (adjusted $R^2 = .28$)	<i>b</i>	95% CI		β	<i>p</i>
Intergenerational concern	0.01	0.01	0.01	0.25	<.001
Legacy concerns	0.28	0.22	0.34	0.36	<.001
Future self-continuity	–0.03	–0.08	0.02	–0.05	.187
Considering future consequences	0.11	0.02	0.20	0.10	.014
Effectiveness focus (adjusted $R^2 = .04$)	<i>b</i>	95% CI		β	<i>p</i>
Intergenerational Concern	0.004	0.00	0.01	0.09	.040
Legacy concerns	0.13	0.05	0.20	0.16	<.001
Future self-continuity	–0.02	–0.08	0.04	–0.03	.554
Considering future consequences	0.01	–0.10	0.12	0.01	.813
Interest in longtermism (adjusted $R^2 = .30$)	<i>b</i>	95% CI		β	<i>p</i>
Intergenerational concern	0.01	0.01	0.02	0.27	<.001
Legacy concerns	0.29	0.22	0.36	0.35	<.001
Future self-continuity	–0.02	–0.07	0.03	–0.03	.377
Considering future consequences	0.13	0.04	0.23	0.11	.007
Longtermism behavioral intentions (adjusted $R^2 = .12$)	<i>b</i>	95% CI		β	<i>p</i>
Intergenerational concern	0.003	–0.0002	0.01	0.08	.073
Legacy concerns	0.15	0.08	0.21	0.20	<.001
Future self-continuity	0.01	–0.04	0.06	0.01	.730
Considering future consequences	0.21	0.11	0.30	0.18	<.001

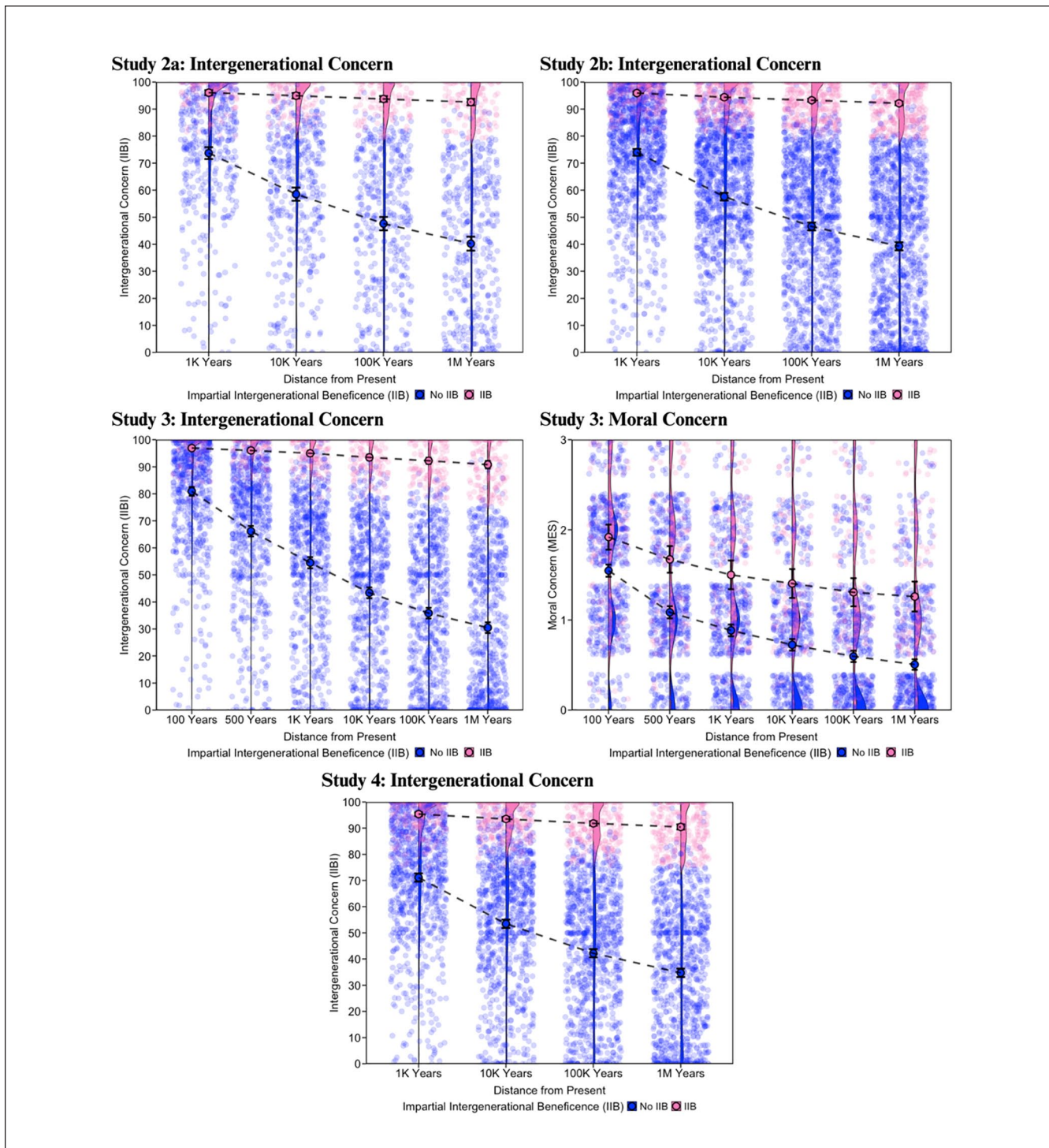


Figure 3. IC and Moral Concern (MES) Across Timeframes Split Between Those Who Endorse and Do Not Endorse IIB. Note. Plots depicting differences between those endorsing and not endorsing IIB across timeframes with jittered density, split violin plots, means and error bars reflecting 95% confidence intervals.

future-oriented constructs, expansive altruism, and impartial beneficence, suggesting that these individuals are both more concerned about their own futures, the futures of near-term others, and more impartial in their prosociality toward others in the present.

Study 2b

In our next study, we directly replicated the exploratory findings of Study 2a in a preregistered and highly powered study, <https://aspredicted.org/fsqk-km53.pdf>.

Table 7. Differences Between Participants Who Displayed IIB and Those Who Did Not (Non-IIB) in Study 2a.

Outcome	IIB		Non-IIB		<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Intergenerational concern ^a	94.33	5.46	55.03	22.51	32.60	528.40	<.001	2.40
Legacy concerns	4.57	1.25	3.79	1.33	5.80	540	<.001	.62
Expansive altruism	5.16	1.01	4.61	1.01	5.24	540	<.001	.54
Impartial beneficence	3.87	1.15	3.47	1.27	3.09	540	.002	.32
CFC	5.03	0.83	4.76	0.91	2.91	540	.004	.31
FSC	5.24	1.73	4.81	1.56	2.66	540	.008	.27
Effectiveness focus	4.52	1.02	4.39	1.12	1.21	540	.226	.13
Instrumental harm	3.03	1.23	3.03	1.33	0.02	540	.983	.01
Longtermism behavioral intentions	1.41	1.04	1.20	0.99	1.99	539	.047	.20
Longtermism interest	3.84	1.02	3.25	1.12	5.21	539	<.001	.52

CFC = Consideration of Future Consequences; FSC = Future Self-Continuity.

^aTests accounting for unequal variances between groups were estimated.

Methods

Participants. An a priori power analysis indicated 1,496 participants would be required to detect effect sizes as small as $d = .20$ with .80 power and $\alpha = .05$ for a between-subject comparison based on the expected ratio of participants who would versus would not display IIB. We rounded this number up to 1,550 to account for potential exclusions and 1,542 participants were retained after exclusion criteria were applied.

Materials and Procedure. The following measures were identical to Study 2a: IC, legacy concerns, future self-continuity, CFC, impartial beneficence, and expansive altruism. We retained the binary outcomes capturing interest in signing up for a longtermist newsletter, intentions to donate 10% of lifetime income to a longtermist cause and decisions to enter a raffle offering a free book on longtermism. We also presented participants with the same short description of longtermism before asking participants whether they self-identified as longtermists. Participants completed the IIBI first followed by all other outcomes in a randomized order.

Results

Re-examining the model fit of the IIBI, we confirmed it provided good fit to the data, had good reliability, and explained a high amount of variance (see Table 3 and Supplemental Table S19).

Within-Subject Differences. Replicating results from Study 2a, and supporting our preregistered hypothesis, a significant effect was observed, $F(3, 4,602) = 1,257.28, p < .001, \eta^2_p = .450$, with post hoc comparisons adjusted for six tests with a Bonferroni correction (see Supplemental Table S20) suggesting that IIBI scores at each timepoint significantly differed from each other and became lower as timepoints became further away in the future (see Figure 2).

Correlations. Replicating findings from Study 2a and consistent with the preregistered pattern of relationships, all correlations were in the expected direction, ranging from $r = .13$ to $r = .39$ ($ps < .001$; Supplemental Table S21). When examining the association between IC and responses for each of the longtermist behavioral intention outcomes, significant positive associations were noted for interest in donating 10% of lifetime income to a future-oriented charity ($\beta = 0.31, SE = 0.002, p < .001$), decisions to enter a raffle offering a book on longtermism ($\beta = .12, SE = 0.002, p < .001$), and interest in signing up for a longtermist newsletter ($\beta = .24, SE = .003, p < .001$).

Regressions Controlling for Other Measures of Future Concern

Additional non-preregistered analyses were conducted to provide evidence for the predictive validity of the measure of IC as captured with the IIBI. Specifically, we sought to rule out alternative self- and other-oriented future-focused phenomena as predictors of the different behavioral and prosocial outcomes.

Overall, IC—even after controlling for future self-continuity, CFC, and legacy concerns—predicted increased impartial beneficence, expansive altruism, longtermist behavioral intentions (the sum of the three binary outcomes capturing interest in and motivation to engage in longtermist behaviors), and longtermist self-identification (see Table 8 and Supplemental Table S23).

Differences Based on IIB

We preregistered that we would operationalize IIB as scoring above the mean for the most proximal timeframe (i.e., scores > 79.13) consistently for all timeframes. A total of 359 participants scored in this pattern (23% of the sample). Comparing this group to the rest of the sample replicated all

Table 8. Linear and Logistic Regressions With IC Predicting All Outcomes Controlling for Self and Other Oriented Future Concerns in Study 2b.

Impartial beneficence (adj. $R^2 = .18$)	<i>b</i>	95% CI		β	<i>p</i>
Intergenerational concern	0.01	0.01	0.01	0.19	<.001
Legacy	0.30	0.25	0.35	0.31	<.001
Future self-continuity	-0.02	-0.05	0.02	-0.03	.297
Considering future consequences	0.01	-0.06	0.08	0.01	.842
Expansive altruism (adj. $R^2 = .28$)	<i>b</i>	95% CI		β	<i>p</i>
Intergenerational concern	0.01	0.01	0.01	0.22	<.001
Legacy	0.25	0.21	0.29	0.31	<.001
Future self-continuity	-0.02	-0.05	0.00	-0.04	.093
Considering future consequences	0.22	0.16	0.27	0.19	<.001
Longtermism behavioral intentions (adj. $R^2 = .15$)	<i>b</i>	95% CI		β	<i>p</i>
Intergenerational concern	0.004	0.002	0.01	0.10	<.001
Legacy	0.19	0.15	0.23	0.24	<.001
Future self-continuity	0.01	-0.01	0.04	0.02	.314
Considering future consequences	0.16	0.11	0.22	0.15	<.001
Identifying as a longtermist ^a	<i>b</i>	OR	95% CI	β	<i>p</i>
Intergenerational concern	0.03	1.03	1.02, 1.03	0.40	<.001
Legacy	0.51	1.67	1.51, 1.86	0.37	<.001
Future self-continuity	0.14	1.15	1.06, 1.24	0.13	<.001
Considering future consequences	0.63	1.87	1.60, 2.20	0.31	<.001

Note. Adj = Adjusted; OR = Odds Ratio.

^aBinary outcome for which a logistic regression was estimated.

significant results from Study 2a (see Table 9). A sensitivity analysis for the comparison between the two groups suggests power = .80 for effect sizes as small as $d = .17$.

IIB Predicts Behavioral Intentions and Longtermist Self-Identification. Participants displaying IIB reported greater interest in donating 10% of their income to a future-oriented charity ($\beta = 0.17$, $SE = 0.12$, $p < .001$, $OR = 2.09$) were more likely to enter a raffle offering a book on longtermism ($\beta = 0.09$, $SE = 0.12$, $p = .001$, $OR = 1.49$) and reported increased interest in signing up for a longtermist newsletter ($\beta = 0.17$, $SE = 0.14$, $p = .001$, $OR = 2.04$). Although a total of 976 participants identified as longtermists (63% of the sample) after learning of its principles, participants who displayed IIB were 5.26 times more likely ($\beta = 0.39$, $SE = 0.17$, $p < .001$, $OR = 5.26$).

Discussion

Study 2b directly replicated all statistically significant findings from Study 2a in a preregistered and highly powered design. Further evidence of convergent validity was established by showcasing an increased likelihood self-identification as a longtermist and by replicating all differences with a longtermist self-identification method. So far, our

results suggest that IC and endorsing IIB predict higher prosociality—expressed as endorsement of utilitarianism and exceptional altruism—and greater concern for one’s personal future.

Study 3

Our third study had four goals. First, we sought to conceptually replicate the findings for differences on IC and IIB with alternative measures. Second, we included less temporally distant timeframes in our scale to ensure that our results are not explained by differences in levels of abstractions due to timeframes that are solely in the very distant future, thus ensuring that differences in a person’s temporal construal are not the primary reason behind noted differences (Trope & Liberman, 2010). Third, we examined whether the differences in prosociality noted in Studies 2a–2b are also observed in patterns of moral expansiveness. Specifically, we examined moral expansiveness as an unlimited or zero-sum resource, for present (ingroup, outgroups, nature) and future (future generations) entities. Finally, we sought to highlight potential mediators/underlying mechanisms of differences in moral expansiveness in line with other recent efforts (Syropoulos et al., 2024a). Study 3 was preregistered at <https://aspredicted.org/wtjm-t4jp.pdf>.

Table 9. Replication of Significant Differences Between Participants Who Displayed IIB and Those Who Did Not (Non-IIB) in Study 2b.

Outcome	IIB		Non-IIB		<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Intergenerational concern ^a	93.92	5.45	54.37	21.45	57.44	1,503.90	<.001	2.53
Expansive altruism	5.30	1.03	4.65	1.04	10.36	1,533	<.001	.63
CFC	5.15	0.86	4.60	0.89	10.43	1,533	<.001	.63
Legacy concerns	4.57	1.28	3.78	1.27	10.31	1,533	<.001	.62
Impartial beneficence	4.16	1.29	3.57	1.22	7.90	1,533	<.001	.47
FSC	5.17	1.62	4.52	1.64	6.58	1,532	<.001	.40

CFC = Consideration of Future Consequences; FSC = Future Self-Continuity.

^aTests accounting for unequal variances between groups were estimated.

Methods

Participants. We recruited 800 participants on Prolific. Based on an a priori power analysis (small effect size, $d = .20$, power = .80), this sample was adequately powered for correlations, *t*-tests between participants with and without IIB, and repeated measure ANOVAs. Two additional participants completed the survey without submitting for remuneration. After removing participants with duplicate IP addresses ($N = 3$), and those who failed the attention check ($N = 9$), 791 participants remained.

Materials and Procedure. IC was captured with the same seven-item measure used in Studies 2a–2b. The only difference was the addition of two timeframes (100 and 500 years in the future) for a total of six (100, 500, 1,000, 10,000, 100,000, and 1,000,000 years in the future). To set a standard precedent for future studies using the IIBI, we made an a priori decision to set our threshold for IIB at a score of 75, the midpoint between the anchors “neither agree nor disagree” and “strongly agree.” Thus, participants had to indicate agreement–scoring at a 75 or higher—for all six timeframes, no matter their distance.

To replicate our findings focusing on personal future concern and prosociality, we used the time perspective facet of the Future Consciousness Scale (Lalot et al., 2021); four items on a seven-point Likert-type scale (e.g., “I think about the consequences before I do something”) and the revised social generativity scale (Morselli & Passini, 2015); six items, on a seven-point Likert-type scale (e.g., “I have a personal responsibility to improve the area in which I live”).

Moral concern was measured in two ways. The first method used the Moral Expansiveness Scale (MES; Crimston et al., 2016), which assumes moral concern is limitless. Participants categorized entities into four moral boundaries, ranging from 0 = *Outside the Moral Boundary* (no moral concern or standing) to 3 = *Inner Circle of Moral Concern* (the highest level of moral concern or standing). We assessed moral concern for 14 entities: 2 ingroup members (e.g., “A family member”), 4 outgroup members (e.g., “A murderer”), 4 entities in nature (e.g., “A dolphin”), and 6 entities in future

generations (people spanning 100–1,000,000 years in the future at the same levels of distance as the IIBI). Our main preregistered hypothesis focused on the future generation entities, while the other categories were treated as exploratory.

We also used the MES to create an alternative method for identifying IIB, aiming to (a) replicate our findings using the IIBI’s classification of IIB with a different approach and (b) strengthen the construct and convergent validity of the IIBI by demonstrating alignment between the two classification methods. Since people typically reserve the inner and outer circles on the MES for socially close others (e.g., family, friends, ingroups; Crimston et al., 2016), we preregistered an operationalization of IIB on the MES as assigning high moral concern (at least a score of 2 out of 3) to all six future generation entities, consistent with holding these entities at least in the outer circle of moral concern, comprising “entities [that] deserve moderate moral concern and standing.” Prior research supports this approach (Syropoulos, Law, et al., 2023).

The second method used to capture moral concern was via a resource allocation task adapted from the work by Waytz et al. (2019). Participants were given 100 moral concern points that could be distributed to 12 different entities. Four entities focused on close others (e.g., immediate family). Two items focused on future generations (people living less than/more than 500 years in the future), two on outgroups (e.g., people you don’t know), three on animals/nature (e.g., all mammals), and one on non-living things. Our main outcome was moral expansiveness toward future generations (the sum of the two items). All other categories were treated as exploratory. Since all participants were given a total of 100 points to distribute across all entities, we estimated the sum score distributed across all items in each category.

Results

As highlighted in Table 3 and Supplemental Table S24, the IIBI demonstrated good psychometric properties and reliability based on our preregistered criteria for evaluating model fit.

Table 10. IC Relates to Increased Moral Expansiveness and Zero-Sum Moral Concern to Future People, Controlling for Alternative Measures of Personal and Other-Oriented Future Concern in Study 3.

Zero-sum MC to FG (adj. $R^2=.15$)	<i>b</i>	95% CI		β	<i>p</i>
Future time perspective	-0.46	-0.97	0.05	-0.07	.078
Social generativity	1.17	0.75	1.59	0.23	<.001
Intergenerational concern	0.06	0.04	0.08	0.25	<.001
MES to FG (adj. $R^2 = .24$)	<i>b</i>	95% CI		β	<i>p</i>
Future time perspective	-0.06	-0.12	0.001	-0.07	.052
Social generativity	0.14	0.09	0.19	0.22	<.001
Intergenerational concern	0.01	0.01	0.01	0.38	<.001

Note. MES = Moral Expansiveness; MC = Moral Concern; FG = Future Generations; Adj = Adjusted.

Within-Subject Differences. When looking at the overall change across the six timeframes, a significant effect was observed, both for the IC measure, $F(5, 3,950) = 1,057.42$, $p < .001$, $\eta_p^2 = .572$) and the moral expansiveness scale, $F(5, 3,895) = 435.78$, $p < .001$, $\eta_p^2 = .572$). Post hoc comparisons adjusted for six tests with a Bonferroni correction (see Supplemental Tables S25 and S26) suggested that each timepoint significantly differed from each other, and the further away in the future a timeframe was, the lower participants scored, supporting our preregistered hypothesis (see Figure 2).

Correlations With IC. As predicted, increased IC correlated significantly with social generativity, future time perspective, and moral concern to future generations (on both the MES and allocation task). Importantly, no correlation coefficient was large enough to imply that these measures share more than 50% of their variance and are thus potentially tautological in their degree of correlation. From exploratory analyses, of note is that IC correlated positively with moral concern toward outgroups and nature on the MES and allocation task (see Supplemental Table S27).

Regressions Controlling for Other Measures of Future Concern

We estimated two separate linear regression models, neither preregistered, in which IC, future time perspective and social generativity were treated as simultaneous predictors of moral expansiveness and zero-sum moral concern to future generations. Greater IC—controlling for future time perspective and social generativity—predicted greater moral concern to future generations on both the MES and zero-sum allocation task (see Table 10 and Supplemental Table S29).

Differences Based on IIB

With the addition of two closer timeframes (100 and 500 years), and to establish a consistent scoring procedure for

future studies, we preregistered that a score of 75 or higher for each timeframe would indicate IIB. A total of 138 participants (17% of the sample) displayed IIB based on these preregistered criteria. A sensitivity analysis for the comparison between the two groups suggests power = .80 for effect sizes as small as $d = .26$. Replicating Studies 2a–2b, we found that participants with IIB scored higher in future time perspective and social generativity, thus reflecting greater self and other-oriented future concerns (see Table 11). Participants with IIB also scored significantly higher in moral expansiveness to future generations. This was noted regardless of whether moral concern was operationalized as limitless (MES) or zero-sum (moral concern allocation task). Individuals with IIB also scored significantly higher on total MES, MES to outgroups, and MES to nature. When moral concern was conceptualized as zero sum, having IIB still predicted greater moral concern to nature and less to ingroup members, suggesting a re-allocation of points from ingroups to socially and temporally distant entities. However, no significant difference was noted for zero-sum moral concern for outgroups.

Crucially, and serving as evidence for convergent validity, results were highly similar when we used the MES to identify IIB. Participants who were identified as having IIB on the IIBI were 6.10 times more likely to be identified as having IIB with the MES ($\beta = 0.38$, $SE = 0.23$, $p < .001$, $OR = 6.10$ [3.84, 9.69]). All aforementioned significant differences, except for the effect on zero-sum moral concern to nature, were replicated (see Supplemental Table S30).

Study 4

Our final study had a single goal—to evaluate the power of the IIBI to predict real behavior to the best extent possible in an online survey. To that end, we adapted a validated task that captures people’s willingness to sacrifice their time and labor to engage in an effortful activity to accumulate financial benefits to an organization dedicated to protecting future generations. Study 4 was preregistered at <https://aspredicted.org/p753-mpdw.pdf>.

Table 11. Replication of Significant Differences Between Participants Who Displayed IIB and Those Who Did Not (Non-IIB) and of Correlations With IC in Study 3.

Outcome	r_{IC}	IIB		Non-IIB		t	df	p	d
		M	SD	M	SD				
Intergenerational concern ^a	–	94.07	5.34	51.88	21.84	43.59	777	<.001	2.65
MES to FG ^a	.47*	1.51	0.84	0.89	0.70	8.00	179	<.001	.93
MES to ingroup	.18*	2.73	0.38	2.67	0.39	1.76	787	.078	.16
MES to outgroups	.25*	1.81	0.66	1.56	0.61	4.37	787	<.001	.41
MES to nature	.33*	2.09	0.73	1.75	0.71	5.05	787	<.001	.47
Total moral expansiveness	.35*	2.10	0.51	1.85	0.48	5.43	789	<.001	.51
MES (zero sum) to FG ^a	.34*	8.36	7.58	4.26	5.45	6.03	168	<.001	.62
MES (zero sum) to ingroup	–.28*	61.02	19.18	69.95	20.26	–4.75	789	<.001	–.44
MES (zero sum) to outgroups	.13*	11.50	7.17	10.62	9.67	1.01	789	.314	.09
MES (zero sum) to nature	.17*	16.93	10.94	13.88	11.97	2.76	789	.006	.26
Future time perspective ^a	.33*	6.10	0.72	5.49	0.92	8.68	242	<.001	.75
Social generativity ^a	.50*	5.66	0.90	4.63	1.18	11.47	248	<.001	.98

Note. * $p < .001$. MES = Moral Expansiveness Scale. FG = Future Generations.

^aTests accounting for unequal variances between groups were estimated.

Methods

Participants. We recruited 1,200 participants from Prolific. Based on an a priori sensitivity analysis, the sample size was sufficient to detect a small effect ($d = .21$) with 80% power and an alpha of .05, assuming approximately 20% of the sample would endorse IIB and 80% would not. Three additional participants completed the survey but did not submit it for remuneration. Thus, from a total of 1,203 participants, after removing 6 with duplicate IP addresses, 1,197 were included in our analyses as per our preregistration.

Materials and Procedure. IC was captured with the same seven-item measure used in Studies 2a–2b. We made an a priori decision to set our threshold for IIB at a score of 75, following the decision outlined in Study 3. Thus, participants had to score at a 75 or higher for the most temporally proximal timeframe and do so consistently for all other timeframes. The same four timeframes used in Studies 2a–2b were used (to reduce survey time). A total of 278 participants (23% of the sample) displayed IIB.

After completing the IIBI, participants completed an adapted version of the Work for Environmental Protection Task (WEPT; Lange & Dewitte, 2022). In the original task, participants are instructed to complete a series of trials (pages) where they identify two-digit numbers with an odd first digit and an even second digit. They are instructed that only pages where 90% of answers are correct count toward successful completion. Completing each trial results in either US\$0.10, US\$0.20, or US\$0.30 being donated to a designated charity (participants cannot keep the money). We selected the Long-Term Future Fund, described as a “future-oriented non-profit organization that funds highly effective initiatives to safeguard the long-term future of humanity and

protect future generations.” Given this, we referred to the task as the Work for Future Protection Task (WFPT).

Each trial contained either 80, 120, or 160 numbers in total. After completing each trial, participants were asked if they were willing to persist for another. Scores were captured as the total number of trials participants completed (i.e., Min = 1, Max = 12; $\alpha = .91$). We opted to reduce the number of trials from 15 to 12, as previous research using this adapted version has found that 95% of subjects complete no more than 12 trials (see Syropoulos et al., 2024b). Ultimately, we selected this task to capture behavior in a controlled online setting without requiring participants to sacrifice their own potential payment (as would be the case in a standard donation task) due to emerging evidence noting that a (near) majority of participants’ behavior in such tasks is explained by their own financial need (Carlson & Crockett, 2024).

Results

We hypothesized that both IC and IIB would predict completing more trials. IC significantly predicted increased scores on the WFPT ($b = 0.03$, 95% CI = [0.02, 0.03], $\beta = 0.21$, $p < .001$, $adj R^2 = .04$). This association remained significant when controlling for preregistered demographic covariates (age, SES, and conservatism: $b = 0.03$, 95% CI = [0.02, 0.03], $\beta = 0.22$, $p < .001$, $adj R^2 = .06$).

A sensitivity analysis for the comparison between the two groups (participants with and without IIB) estimated on G*Power 3.1.9.7 suggests that we can detect effect sizes as small as $d = 0.19$ with power of .80. Participants endorsing IIB ($M = 3.25$, $SD = 3.91$) completed on average one additional trial, $t(382.21) = 4.60$, $p < .001$, $d = 0.33$, relative to participants who did not endorse IIB ($M = 2.08$, $SD = 3.02$). This effect remained significant when controlling for age,

SES, and conservatism ($b = 1.18$, 95% CI = [0.74, 1.61], $\beta = 0.15$, $p < .001$, adj $R^2 = 0.03$).

Discussion

Our final study provided concrete, behavioral evidence for the predictive validity of the IIBI. Participants who expressed greater IC and IIB scored higher on a task that captured willingness to engage in effortful action to benefit a longtermism-aligned charity, linking higher scores on the IIBI with actual behavior above and beyond mere self-reports.

General Discussion

Drawing on the ethical philosophy of longtermism (MacAskill, 2022), we develop and validate the IIBI to measure levels of long-term IC and quantify the endorsement of IIB among crowdsourced American samples. Past inquiry across psychology and behavioral economics has elucidated parochial biases that constrain present-oriented beneficence, the causes and consequences of self-oriented prospection, and limitations in other-oriented concern for near-term future generations. Building on this foundation, we devise a means to assess beneficent concern for the *distant*-future welfare of humanity, map how it wanes as future generations become more distant in time and identify individuals who extend high levels of concern for near- and distant-future generations alike. Across eight studies, we evaluate associations between scores on the IIBI with a host of established constructs, demonstrating the scale's robust convergent and discriminant validity and its power to uniquely predict attitudes, actions, and intentions aligned with safeguarding long-term societal welfare (see Supplemental Table S35 for an extensive overview of this evidence).

Prior research highlights biases favoring singular, socially close, and similar present-day beneficiaries over distant, dissimilar individuals, and collectives (e.g., Cikara et al., 2011). Similarly, we find that most adults exhibit a gradient decline in concern for future others as temporal distance increases. Moreover, we find that IC and IIB are positively associated with prosocial attitudes toward socially distant present-day others, such as impartial beneficence and expansive altruism. These findings, along with research on imagination (e.g., Gilead et al., 2020), suggests that temporal and social distance invoke similar cognitive processes. People across vast temporal distances—such as those across social or spatial distances—are harder to imagine (Meyer et al., 2019), and imagination supports prosociality by fostering vivid and affectively rich representations of others and their needs (Bo O'Connor & Fowler, 2023). However, these affective signals may weaken when beneficiaries exist in the distant future, impeding concern for generationally distant others. Behavioral economics research further demonstrates that even near-future generations are perceived as both temporally *and* socially distant (Wade-Benzoni & Tost, 2009),

compounding difficulties in vividly envisioning future others and their challenges—perhaps especially as temporal distance increases. Future research manipulating candidate imaginative mechanisms and measuring related processes through behavioral metrics, natural language processing, self-reports, and neuroimaging can illuminate the imaginative dynamics underlying long-term IC.

However, imaginative capacity alone is neither necessary nor sufficient to explain feelings of obligation to protect others' welfare (see Bo O'Connor & Fowler, 2023). Beyond imagination, intergenerational beneficence may challenge folk moral intuitions. Although prosocial behavior is generally seen as morally praiseworthy (e.g., Pizarro et al., 2003), judgments become less favorable when help benefits socially or geographically distant others, especially if it denies obligations to closer alternatives (Law et al., 2022). This holds even when distant prosociality yields greater utilitarian benefits or when resources are psychological (e.g., empathy; Fowler et al., 2021) rather than material (e.g., money). Beneficence toward the future could similarly be viewed as violating moral duties to those alive today, potentially reducing IC. We find that IC is positively associated with perceptions of moral obligation to protect future welfare and with expansive moral concern for distant present-day others, supporting this possibility. Future research assessing moral judgments of IC within explicit tradeoff contexts could further clarify this dynamic.

We also find that IC is positively associated with beliefs about the plausibility of mitigating extinction threats, suggesting uncertainty about future challenges or reduced self-efficacy regarding one's impact on far-future welfare may hinder IC. People's aversion to uncertainty in decision-making (e.g., Tversky & Kahneman, 1992) supports this interpretation. Further research is needed to examine how uncertainty and self-efficacy specifically influence long-term IC.

Although most subjects showed declining IC for more distal future generations, there was significant variability in this tendency. Notably, a sizable subset of participants—between 17% and 23% across studies—endorsed IIB as high levels of concern for *all* future generations without decline across temporal distance. We find that IC and IIB predict numerous attitudes and behaviors associated with protecting humanity from premature extinction. Those scoring higher on IC and who endorse IIB report heightened concern for extinction threats, from climate change and pandemic disease to unaligned AI, even when considering their impact on profoundly distant-future generations. In addition, these individuals perceive future existential threats to be more solvable, indicate greater support for profuture public policies, invest more time and effort to raise money for future-oriented causes, and perceive themselves, their nation's government, international governmental agencies, and everyone in the world to bear greater responsibility in ensuring long-term prosperity for humanity into the far future.

Considering these findings and amid rising concern over existential threats among academics, policy-makers, and society at large (e.g., Roose, 2023), we argue that measuring long-term IC can offer practical utility for identifying subsets of the general population who may be especially receptive to appeals and interventions promoting future-oriented action. One particularly promising finding from the present research is the invariance in IC across demographic variation in income, education, and age. Although conservative political ideology was negatively associated with IC, such associations were fairly weak across studies ($-.11 \geq r_s \geq -.34$), suggesting appeals to inspire expansive IC may be effective across demographic differences. Longitudinal research on the stability of IC and IIB over time could provide valuable insights into whether IC and IIB represent enduring traits or instead are more malleable and subject to change through targeted interventions.

Especially intriguing is that greater IC and endorsement of IIB are associated with capacities in self-oriented prospection, such as tendencies to perceive future self-continuity and to consider the future consequences of present behaviors, which reliably guide farsighted planning for brighter personal future outcomes. Analogously, we find that concern for society's future guides attitudes and actions consistent with planning for a brighter collective future. Similarly, we find that IC and IIB are positively associated with concern for others in the near-term future (e.g., legacy concerns, social generativity). Research on prospection has primarily concentrated on personal future thinking and has only recently started exploring how we envision the futures of our broader collectives (Szpunar & Szpunar, 2016). Furthermore, investigations into collective future thinking have thus far been limited to near-term contexts. Integrating research on self-oriented prospection and collective future thinking with the budding science of long-term intergenerational beneficence presents a ripe avenue for future inquiry to explore.

Finally, our findings hold implications for the long-termism philosophy and social movement and the objectives they promote. Scores on the IIBI predict a variety of attitudes, behavioral intentions, and behaviors directly associated with longtermist principles (e.g., self-identifying as longtermist, future-oriented donation intentions). These effects hold even when controlling for a host of related future-oriented and morally relevant attitudes. Actors within the longtermism movement and policy-makers applying its principles to combat future-oriented challenges (United Nations, 2021) might look to the emerging body of knowledge on long-term intergenerational beneficence to promote future welfare through collective action and policy reform.

Limitations and Future Directions

Beyond the many strengths of the present research, a few limitations are worth noting. First, in our initial studies

employing the scale, participants tended to report the greatest level of concern on the IIBI with respect to the first timeframe presented, even when this timeframe was the most distal. Nonetheless, we find that these unexpected patterns only appeared when IC was assessed at each timeframe individually versus simultaneously, suggesting that gradient differences in IC for the far future are most accurately assessed across multiple timeframes in tandem. Yet, these findings are still intriguing, and raise the possibility that intergenerational beneficence may be flexible and context-dependent. Perhaps one means to promote future-oriented action may be to divert attention away from temporally proximate alternatives in efforts to cultivate beneficence for temporally distant beneficiaries. Longtermism and effective altruism suggest that distant beneficence is best promoted through deliberative reasoning about differences in welfare gains between charitable alternatives benefiting proximal versus distal causes (MacAskill, 2022). Ironically, our findings and earlier ones (Law et al., 2022) suggest this strategy might backfire, diminishing rather than increasing prosociality toward distant targets by bringing into the foreground those closer in space or time whom we must deny aid as a consequence.

Going forward, experimental evidence is needed to establish causal evidence for the numerous associations observed in the current investigation and to explore candidate mechanisms which may underlie them. Finally, the present studies only addressed IC in WEIRD samples recruited through Prolific. However, extinction threats are global challenges requiring global solutions. Thus, prospective research employing the IIBI may seek to examine differences in intergenerational concern and impartial intergenerational beneficence across cultures, nations, and societies spanning the globe.

Conclusion

To protect humanity's long-term survival and prosperity from the rising risks associated with our present-day societal actions, we must prioritize caring about the welfare of distant future people. By bridging evidence from psychology and behavioral economics with insights from ethical philosophy, the current investigation lays the foundation for a psychological science of Impartial Intergenerational Beneficence (IIB). We establish a reliable and valid metric to capture Intergenerational Concern (IC) and classify individuals who endorse IIB—those who feel equally high levels of IC for near- and far-future generations. Moreover, we point toward numerous avenues for further research into the psychology of multigenerational ethics and highlight key practical implications for efforts to promote a brighter tomorrow.

Declaration of Conflicting Interests

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Ethics Approval Statement


This study received IRB approval from the Boston College Institutional Review Board (protocol no. 12.064.01).

Consent Statement

Participants voluntarily participated in all studies and provided consent at the beginning of each survey.

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Data Availability Statement

All materials for the studies are available on the Open Science Framework, https://osf.io/bhzmp/?view_only=8e32b2e19ed64443a79ed343ccddf2bd.

Supplemental Material

Supplemental material is available online with this article.

Note

1. Importantly, even though items were taken directly or adapted from popular writings, expert opinion was not consulted.

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