
Supplementary information

Evidence from 33 countries challenges the assumption of unlimited wants

In the format provided by the
authors and unedited

Evidence from 33 countries challenges the assumption of unlimited wants

Bain & Bongiorno (2022)

in *Nature Sustainability*

Supplementary Information

Table of contents

S1. Example statements about unlimited wants in economics textbooks	2
S2. Materials and Methods	3
S2.1. Ethical approvals	3
S2.2. Data and materials availability	3
S2.3. Sampling overview and exclusion criteria	3
S2.4. Sample demographics and country information	4
S2.5. Measures	9
S3. Ideal life lottery responses by country (Supplementary Text)	13
S3.1. Study 1	13
S3.2. Study 2	14
S4. Country level associations and meta-analyses (Supplementary Text)	16
S4.1. Explanation of analytical approach	16
S4.2. Country level associations	17
S4.3. Meta-analyses	18
S4.4. Analysis of text responses for main use of wealth (Study 1)	22
S5. Explaining variation between those with limited wants (Supplementary Text)	27
S6. Supplementary Information references	31

S1. Example statements about unlimited wants in economics textbooks

Below are quotes from introductory textbooks on Economics or Microeconomics from major publishers describing unlimited wants as a basic human characteristic.

Source	Quote
Acemoglu, Laibson, & List. <i>Microeconomics</i> (Global Edition). (Pearson Education Limited, 2019).	Scarcity exists because people have unlimited wants in a world of limited resources. (p. 46)
Anderton (2000) <i>Economics</i> (3 rd Ed). (Pearson Education Limited, 2000).	People's needs are finite. However, no one would choose to live at the level of basic human needs if they could enjoy a higher standard of living. This is because human WANTS are unlimited. It doesn't matter whether the person is a peasant in China, a mystic in India, a manager in the UK or the richest individual in the world, there is always something which he or she wants more of.... Resources are scarce but wants are infinite. It is this which gives rise to The BASIC ECONOMIC PROBLEM... (p. 1)
McConnell, Brue, & Flynn. <i>Microeconomics: Principles, problems, and policies</i> (21 st Ed). (McGraw Hill, 2018).	For better or worse, most people have virtually unlimited wants (p. 7)
Parkin. <i>Economics</i> (Global Edition). (Pearson Education Limited, 2018).	Wants are the unlimited desires or wishes that people have for goods and services.... Scarcity guarantees that many— perhaps most— of our wants will never be satisfied. (p. 97)
Sloman, Garret, & Guest. <i>Economics</i> (Updated 10 th Edition). (Pearson Education Limited, 2020).	Ask people if they would like more money, and the vast majority would answer 'Yes'. But they don't want more money for its own sake. Rather they want to be able to buy more goods and services, either today or in the future...As countries get richer, human wants may change but they don't disappear. Wants are virtually unlimited.... So this is the fundamental economic problem: human wants are virtually unlimited, whereas the resources available to meet those wants are limited. (p. 7)

Table S1.

Example statements about unlimited wants in economics textbooks.

S2. Materials and Methods

S2.1 Ethical approvals

Study 1: Queensland University of Technology (Approval Number 1600000223).

Study 2: University of Queensland (Approval Number 2018001124).

S2.2 Data and materials availability:

Study 1: <https://osf.io/25398/> (publicly available)

Study 2: <https://osf.io/k3wdp/> (publicly available)

S2.3 Sampling overview and exclusion criteria

Study 1.

Participants were sourced through a commercial survey company (Survey Sampling International), who were contracted to provide 220 adult community participants per country (with an aim to obtain usable samples of 200 allowing for a 10% exclusion rate). These 12 countries were selected to span regions and to include both economically developed and developing countries (sometimes known as BRICS: Brazil, Russia, India, China, South Africa), up to the limit of the project budget. Data were collected in March 2018.

The majority of measures in the survey were focused on people's understanding of sustainable development (published in ¹). The ideal life lottery measure was presented near the end of the survey after measures of sustainable development goals, values, societal change, and future orientation.

Exclusions. Exclusions were based on responses to the longer survey. These were:

- (i) Missing data on the ratings of Sustainable Development Goals (SDGs) on sustainability domains;
- (ii) Pattern responding, evidenced by no variation in responses for all 17 SDGs when rating correspondence to sustainability domains (environmental, social, or economic); and
- (iii) Non-citizens who had lived in a country less than 5 years.

The first two exclusion criteria were the same as those used in Bain et al., 2019 ¹. The third criterion was added to make data from Study 1 more directly comparable with Study 2 (the rationale for this exclusion is explained in the description for Study 2 below).

Study 2

Participants were sourced through a commercial survey company (Dynata), who were contracted to provide 200 adult community participants representative on gender and age for each country. Including thirty countries allows for stronger tests of cross-country differences and was the limit of the project budget. The specific countries were chosen to provide a good distribution across geographical regions, levels of economic development, and country-level innovativeness as measured by the 2019 Global Innovation Index ². Data were collected in May-June 2020.

The majority of measures in the survey were focused on people's reactions to innovations. The ideal life lottery measure was presented near the end of the survey after rating these innovations, values, societal change beliefs, and self-reported innovativeness.

Countries in this study varied widely in citizenship laws and restrictions. We found that in United Arab Emirates and Saudi Arabia more than 50% of the sample were not citizens. However, we also measured how many years they had lived in the country and identified that many non-citizens were very long-term residents, and thus were reasonably likely to be embedded within the country and culture.

Rather than excluding the majority of participants from these countries, we decided to include non-citizens who were residents for a *minimum* of 5 years ("long-term" residents). After applying this criterion, the average years of residence for included non-citizens in United Arab Emirates was 14.9 ($SD = 8.5$), and in Saudi Arabia was 16.6 ($SD = 10.7$). We then applied this criterion consistently across all countries in both studies, and Tables S1 and S2 show how many non-citizens were included in each country using this criterion.

Exclusions. Exclusions were based on responses to the longer survey.

- (i) Pattern-responding. This was evidenced by no variation in ratings of the societal change or self-reported innovativeness measures;
- (ii) Attention check failure. An attention check item was included at the end of the values measure: "To confirm you are a human being, please select not at all like me for this item." Those who did not select this option were excluded; and
- (iii) Non-citizens who had lived in a country less than 5 years.

S2.4 Sample demographics and country information

Sample sizes and basic demographics before and after exclusions are shown in Table S2 (Study 1) and Table S3 (Study 2). These tables also show country-level data used in cross-country comparisons.

The rate of exclusions was higher in Study 1 (20.9%) than in Study 2 (6.5%), attributable to a higher level of pattern-responding. Where both studies obtained samples from the same country, the average age was always higher in Study 2 suggesting that the directive for representative sampling across age for Study 2 was successful in obtaining more older adults.

Sources of country-level indicators are provided below:

Development indicators:

HDI: Human Development Index; United Nations Development Programme (2019 values)³

GDP (PPP): GDP per capita adjusted for purchasing power parity, expressed in international dollars (World Bank 2019 figures:

<https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD>);

GINI inequality index (World Bank <https://data.worldbank.org/indicator/SI.POV.GINI>). We note that GINI data was not available for some countries.

Lottery experience:

These measures were a later addition in response to a reviewer's comment that cultural experience with lotteries may influence lottery choice.

We used figures from Garrett ⁴ to identify:

Lottery use: The countries that operated lotteries (89 countries, of which 25 countries were in our studies). The 8 countries not identified as using lotteries were Nicaragua, India, Indonesia, Vietnam, Ukraine, Uganda, UAE, Saudi Arabia.

%GDP spent on lotteries: For the 25 countries where lotteries were reported, lottery sales as a percentage of country GDP. This ranged from .004% (Russia) to 2.478% (Singapore).

Cultural indicators:

Cultural dimensions and scores were based on research by Hofstede and colleagues ⁵, where full descriptions are provided. However, we also provide brief descriptions below derived from this source. Long-term Orientation was a later addition to Hofstede's model, with few countries having scores on this dimension in Hofstede's original research. Therefore, we used scores from a more extensive investigation of this dimension using the World Values Survey ⁶. However, it can be seen in Tables S1 and S2 that cultural dimension scores are still not available for all countries in these studies.

Individualism(-Collectivism): Where individuals are focused on outcomes for themselves and their families (Individualism), versus a focus on the outcomes for the wider community (Collectivism). Sometimes describe as a difference in focus between "I" and "We".

Power Distance: The acceptance of power differentials in society. In high Power Distance countries there is acceptance that some people rightly have authority over others. In low Power Distance countries there is a focus on equality between people.

"Masculine-Feminine": A preference for achievement and assertiveness (Masculine) versus a preference for cooperation, modesty, and caring for others (Feminine). We place this term in quotation marks as objections have been raised to labeling cultures as "masculine" (or "feminine") based on gender stereotypes relating to achievement and power that are increasingly outdated ^{7,8}. However, we appreciate that this is the commonly used term for this dimension so retained it to avoid confusion.

Uncertainty Avoidance: A focus on achieving certainty and predictability, with strongly codified behavior, versus more flexible, context-dependent, and pragmatic expectations for behavior.

Long-term orientation: A focus on preparing for the challenges of the future through education, self-control, and self-reliance, versus preserving the present and the past with a focus on tradition and service to others.

Table S2 shows that the samples showed a good spread across demographic, development, and cultural dimensions. Table S3 shows greater regional variation, including countries in Africa and the Middle East, which are regions that have often been excluded in cross-cultural psychology

research. The countries also showed a good spread across levels of human/economic development and on cultural dimensions. We note that the ratio of females is much lower in the UAE and Saudi Arabia, but this reflects a true difference in gender ratio in these populations.

	Sample size (n)			Demographics		Development indicators			Cultural dimensions				
	Before exclusions	After exclusions	Non-citizens included	Age # M (SD)	Gender (% female)	HDI	GDP (PPP)	GINI	Individualism	Power-Distance	“Masculine-Feminine”	Uncertainty avoidance	Long-term orientation
Country													
North America													
USA	220	181	0	37.9 (13.5)	50	.93	65298	41.4	91	40	62	46	29
South America													
Brazil	222	146	1	36.5 (11.2)	47	.77	15300	53.9	38	69	49	76	65
Argentina	222	178	2	37.6 (12.8)	46	.85	23040	41.4	46	49	56	86	-
Asia													
China	220	188	0	32.7 (8.4)	49	.76	16830	38.5	20	80	66	40	118
India	221	186	2	32.5 (10.8)	49	.65	6997	37.8	48	77	56	40	61
South Korea	220	201	0	38.5 (10.9)	49	.92	43143	31.6	18	60	39	85	75
Europe													
Russia	216	177	0	39.2 (11.5)	47	.82	29181	37.5	-	-	-	-	-
Sweden	221	159	2	39.1 (14.2)	52	.95	55820	28.8	71	31	5	29	33
United Kingdom	220	168	7	42.6 (15.4)	48	.93	48698	34.8	89	35	66	35	25
France	231	172	1	39.9 (14.7)	54	.90	49435	31.6	71	68	43	86	-
Africa													
South Africa	243	190	8	36.2 (12.1)	53	.71	13034	63.0	65	49	63	49	-
Oceania													
Australia	215	166	7	45.7 (17.5)	49	.94	53469	34.4	90	36	61	51	31

Some people mistakenly wrote their year of birth (e.g., 1973) rather than age, and these were converted to ages using a birthdate of January 1 of the corresponding year. We deleted the age for one outlier case with an age well over 100 that we attributed to a typographic error.

Table S2:

Study 1 sample descriptions and country characteristics.

Country	Sample size (n)			Demographics		Development indicators			Cultural dimensions				
	Before exclusions	After exclusions	Non-citizens included	Age M (SD)	Gender (% female)	HDI	GDP (PPP)	GINI	Individualism	Power-Distance	Masculine-Feminine"	Uncertainty avoidance	Long-term orientation^
North America													
USA	202	175	11	47.8 (16.3)	50	.93	65281	41.4	91	40	62	46	39
Canada	205	188	6	45.9 (15.2)	52	.93	51342	33.8	-	-	-	-	45
Mexico	206	199	2	40.0 (15.1)	51	.78	20411	45.4	30	81	69	82	40
Nicaragua	201	195	0	34.5 (11.9)	51	.66	5631	46.2					
South America													
Brazil	207	204	1	39.7 (14.6)	52	.77	15259	53.9	38	69	49	76	-
Chile	207	186	3	41.7 (15.3)	50	.85	25155	44.4	23	63	28	86	47
Colombia	207	176	6	39.8 (15.0)	51	.77	15644	50.4	13	63	64	80	-
Asia													
China	205	200	0	40.3 (14.5)	49	.76	16785	38.5	20	80	66	40	91
India	205	194	4	39.4 (15.6)	48	.65	7034	37.8	48	77	56	40	66
Indonesia	203	199	0	38.3 (14.1)	50	.72	12302	39.0	14	78	46	48	67
Japan	204	188	0	48.6 (16.0)	52	.92	43236	32.9	46	54	95	92	99
Philippines	204	195	4	37.4 (14.3)	50	.72	9277	44.4	32	94	64	44	42
Singapore	204	188	15	43.9 (14.7)	49	.94	101376	-	20	74	48	8	75
Vietnam	207	193	0	36.9 (12.7)	51	.70	8374	35.7	-	-	-	-	75
Europe													
Russia	202	190	0	44.8 (15.8)	54	.82	29181	37.5	-	-	-	-	-
Sweden	204	195	7	47.7 (17.4)	49	.95	55815	28.8	71	31	5	29	37
United Kingdom	205	187	5	48.2 (16.7)	52	.93	48710	34.8	89	35	66	35	-
Hungary	205	196	1	46.4 (16.1)	54	.85	33979	30.6	55	46	88	82	-
Spain	208	200	7	47.5 (15.8)	52	.90	42214	34.7	51	57	42	86	46
Greece	204	202	2	43.0 (15.5)	50	.89	31399	34.4	35	60	57	112	-
Ukraine	205	194	6	32.0 (9.7)	55	.78	13341	26.1	-	-	-	-	-

Country	Sample size (n)			Demographics		Development indicators			Cultural dimensions				
	Before exclusions	After exclusions	Non-citizens included	Age M (SD)	Gender (% female)	HDI	GDP (PPP)	GINI	Individualism	Power-Distance	Masculine-Feminine"	Uncertainty avoidance	Long-term orientation^
<i>Africa/Middle East</i>													
South Africa	203	192	6	37.9 (15.0)	52	.71	12999	63.0	65	49	63	49	48
Kenya	205	204	0	30.1 (8.6)	50	.60	4509	40.8	27	64	41	52	-
Uganda	202	198	5	27.5 (7.2)	48	.54	2271	42.8	-	-	-	-	33
Tunisia	204	198	1	31.0 (9.0)	51	.74	11201	32.8	-	-	-	-	-
Morocco	208	196	3	37.4 (12.6)	52	.69	7826	39.5	-	-	-	-	-
UAE	203	149	62	35.5 (10.7)	26	.89	69901	32.5	38	80	52	68	-
Saudi Arabia	210	186	85	32.2 (9.7)	36	.85	48909	-	38	80	52	68	37
<i>Oceania</i>													
Australia	202	186	11	46.8 (16.1)	50	.94	53320	34.4	90	36	61	51	-
New Zealand	207	190	15	46.3 (16.1)	52	.93	43953	-	79	22	58	49	-

^ from World Values Survey as data is available from more countries than in Hofstede et al.'s research.

Table S3.

Study 2 sample descriptions and country characteristics.

S2.5 Measures

Translations

All surveys used back-translation, where the English language materials were translated by one translator, and independently translated back to English by a second translator. Discrepancies were discussed and resolved between translators to produce the final translated version. Translations are available from the first author upon request.

In Study 1 the following translations were used:

<i>Spanish-Latin</i> (Argentina)	<i>Russian</i> (Russia)
<i>Portuguese-Brazilian</i> (Brazil)	<i>Korean</i> (South Korea)
<i>Simplified Chinese</i> (China)	<i>Swedish</i> (Sweden)
<i>French</i> (France)	

In India and South Africa, which have multiple common languages, English versions of the survey were used on the recommendation of the survey company, as their panels comprised of people competent in English and experienced in completing English-language surveys.

In Study 2 the following translations were used:

<i>Modern Standard Arabic</i> (Morocco, Tunisia, United Arab Emirates, Saudi Arabia)	
<i>Spanish-Latin</i> (Chile, Colombia, Mexico, Nicaragua)	
<i>Portuguese-Brazilian</i> (Brazil)	<i>Swahili</i> (Kenya)
<i>Simplified Chinese</i> (China)	<i>Russian</i> (Russia)
<i>Greek</i> (Greece)	<i>Spanish-Castilian</i> (Spain)
<i>Hungarian</i> (Hungary)	<i>Ukrainian</i> (Ukraine)
<i>Indonesian</i> (Indonesia)	<i>Vietnamese</i> (Vietnam)
<i>Japanese</i> (Japan)	

In Canada, India, Philippines, Singapore, South Africa, and Uganda, which have multiple common languages, English versions of the survey were used on the recommendation of the survey company as their panels comprised of people competent in English and experienced in completing English-language surveys.

“Ideal life” lottery (both studies)

This measure is fully described in the main paper (Fig. 1).

US dollar amounts were converted to local currency in each country using an indicative conversion rate at the time of survey development, rounded to the nearest large number (see Tables S4 & S5).

We did not adjust lottery amounts for purchasing power parity across countries for two reasons. First, at high levels of wealth country borders largely no longer apply, e.g., in 2020 a US Green card can be obtained by investing less than 1 million US dollars in a US business, and with effectively no restriction on where to live in one’s ideal life, purchasing power in their current country is not a practical restriction. Second, the differences in magnitude between options far exceed relative purchasing power parity, and would be highly unlikely to affect the rank-order of the options selected.

The measure was presented on a single page, and we recorded the time participants viewed that page as a broad indicator of the extent to which they attended to the question. In Study 1 the page included an open-ended question about the most important change they would make in their life with the money.

Values

The measurement of values was based on the model of value content and structure developed by Schwartz ⁹, which has been used extensively across countries/cultures. The original and most widely used version of the model proposes ten value domains (short descriptions below, derived from ⁹), with each domain represented with a number of more specific values (e.g., the Conformity domain is represented by values such as obedience and self-discipline). Due to survey length constraints we used short measures of this value model.

Conformity: Upholding social expectations or norms, including restraining impulses and actions likely to upset others.

Tradition: Commitment to societal customs and traditions, including those derived from religion

Benevolence: Concern for the welfare of close others

Universalism: Concern for the welfare of all people and the environment

Self-direction: Independent thought and action, and freedom to follow one’s chosen path in life.

Stimulation: Variety and new experiences, focusing on excitement and novelty

Hedonism: Pleasure and gratification for oneself

Achievement: Demonstrating personal success according to prevailing social standards

Power: Dominance and control over people and resources, along with high social status

Security: Safety and harmony within relationships, family, and society as a whole

Study 1

We used the 10-item SSVS - Short Schwartz's Value Survey ¹⁰. This measure asks people to rate the 10 major value domains in Schwartz's model as life guiding principles, on a 9-point scale labeled 0 "Opposed to my values", 1 "Not important", 4 "Important", and 8 "Of supreme importance". Each value domain is described with a domain label, along with specific values that represent that domain, e.g., Achievement (success, capability, ambition, influence on people and events), Benevolence (helpfulness, honesty, forgiveness, loyalty, responsibility), or Power (social power, authority, wealth).

Study 2

One issue with the value measure in Study 1 is that the Power value domain explicitly uses wealth as example value, which may inflate correlations between Power and the lottery measure of desired wealth. For Study 2 we used the TIVI - Ten Item Value Inventory ¹¹ that does not have this issue. This measure is based on the Portrait Values Questionnaire ¹², a different approach to measuring Schwartz's value model to improve its applicability across cultures, especially in less developed nations. Instead of asking about values directly, participants read a description of a person that emphasizes a value, and rate how similar that person is to them. In the TIVI one description is provided per value domain, e.g., for Achievement – "Being very successful is important to this person. This person likes to impress other people", and for Power "It is important to this person to be in charge and tell others what to do. This person wants people to do what they say". These descriptions are rated on a 6-point scale labelled 1 "Not at all like me", 2 "Not like me" 3 "A little like me", 4 "Somewhat like me", 5 "Like me", and 6 "Very much like me".

Demographic measures

Study 1

Age: People wrote their age (whole years only) into a text box.

Gender: People selected from four options: Female; Male; I do not identify with either gender, I identify as [text box for response]; I prefer not to say. From the entire sample 15 participants did not identify as either gender, and 20 preferred not to say. As sample sizes for these latter options were not large enough to treat as categories for analysis, we focused just on comparing females and males.

Citizenship: Are you a citizen of [country]. Yes / No.

Years in country: How many years of your life have you lived in [country]? [text box for response, whole years only].

Liberal-Conservative: "In political matters, people sometimes talk about "liberals" and "conservatives." How would you place your views on this scale, generally speaking?" They selected from seven responses: Very liberal; Liberal; Slightly liberal; Moderate/Middle of the road; Slightly conservative; Moderately conservative; Very conservative.

Left-Right: In political matters, people sometimes talk about "left" and "right." How would you place your views on this scale, generally speaking? They selected an option on a 7-point bipolar scale bounded by "Left" and "Right".

Relative income: Based on recent statistics, the average annual income for households in [country] is approximately [amount in local currency from national statistics]. Considering all the sources of income of members of your household, is your income?” They selected from 7 responses: Very much above the average; Above the average; A little above the average; About average; A little below the average; Below the average; Very much below the average.

Rural-urban: “Do you live in a more urban/city area, or a more rural/country area?”. This was rated on a 5-point scale from Very rural/country to Very urban/city.

Other demographic information collected including religion/religiosity, and whether they were a university student.

Study 2

Age, Citizenship, Years in country, Liberal-Conservative, Left-Right, and Rural-Urban used identical measures to Study 1, although we were not permitted to include *Liberal-Conservative* or *Left-Right* items in the surveys for Tunisia and Morocco. *Relative income* from Study 1 was replaced with *Socio-economic status*. Religion/religiosity and student status was not measured. Below we describe the changes and new measures.

Gender: This measure was the same as Study 1 except the “I prefer not to say” option was not presented.

Socioeconomic status: We used the “ladder” measure of subjective socio-economic status¹³. They were presented an image of a ladder with 10 rungs, accompanied by this description: “Think of the ladder below as representing where people stand in your country. At the top of the ladder are the people who are the best off - those who have the most money, the most education and the most respected jobs. Those at the bottom of the ladder are the worst off - those who have the least money, least education and the least respected jobs or no job. The higher up you are on this ladder, the closer you are to the people at the very top; the lower you are on this ladder, the closer you are to those at the very bottom. Where would you place yourself on this ladder?” They then selected a number corresponding to a rung on the ladder, from 1 (the lowest rung) to 10 (the highest rung).

Years of education: About how many years of education have you completed, whether full-time or part-time? Please report these in full-time equivalents and include compulsory years of schooling. Responses were made in a text box using whole numbers only.

Additionally, as data was collected in 2020 during the worldwide Covid-19 pandemic, we included two items to assess the possible impact of the pandemic on responses.

Covid experience: Participants rated the statement: “Compared to the experiences of other people in your country, have your experiences of the COVID-19 pandemic, or policies to restrict spread of the virus, been:” using a 5 point scale labeled: A lot worse than average; A little worse than average; About average; A little better than average; A lot better than average. These responses were coded 1 to 5.

Covid wellbeing: Participants rated the statement: “How has the COVID-19 pandemic, or policies to restrict spread of the virus, affected your wellbeing?” using a 7-point scale labeled: Very negatively; Moderately negatively; Slightly negatively; No meaningful difference; Slightly positively; Moderately positively; Very positively. These responses were coded 1-7.

S3. Ideal life lottery responses by country (Supplementary Text)

The information displayed in Fig. 1 of the article is shown in Tables S3 (Study 1) and S4 (Study 2). For each country the mode (most common response) is boldfaced, and the median (point including the 50th percentile) is shaded.

While survey companies endeavored to achieve representative samples, sampling biases are still inherent in internet-based surveys using company survey panels, such as requiring access to the internet and a time/willingness to complete surveys for a small fee. So it is possible that the proportion of Unlimiteds in these populations is underestimated. However, we note that there was little evidence that lottery choice varied according to socio-economic status or income within these samples (See Section S4.3 below). Moreover, identifying that many people were Limiteds, even within somewhat restricted demographics, is evidence against the assumption that unlimited wants is a truism about human nature.

S3.1 Study 1

Table S4 shows that the USA appears to be an outlier, with the only median/mode above 10 million and where the maximum lottery value was the most common response (indicating the highest proportion of Unlimiteds). The most commonly chosen lottery across countries was 1 million, and the most common median was 10 million, indicating that the majority of participants wanted 10 million or less in their absolutely ideal lives, including 46% of US participants.

Country	Currency conversion rate	10 thousand	100 thousand	1 million	10 million	100 million	1 billion	10 billion	100 billion
North America									
USA	1	6	6	16	18	15	6	2	31.7
South America									
Brazil	3	8	12	25	27	12	4	1	11.6
Argentina	20	4	20	33	19	6	2	1	14.6
Asia									
China	5	8	11	30	25	15	3	2	8.1
India	50	5	14	33	17	9	2	1	19.4
South Korea	1000	7	6	24	27	8	3	1	22.4
Europe									
Russia	50	10	6	36	19	9	4	1	14.7
Sweden	10	3	11	32	23	4	6	1	20.3
United Kingdom	1	3	10	26	24	13	5	1	19.0
France	1	4	12	27	23	12	8	2	13.4
Africa									
South Africa	10	2	9	31	20	8	4	5	21.7
Oceania									
Australia	1	2	7	22	35	14	3	1	16.9

Table S4.

Percentage of people who chose each lottery amount in the ideal life lottery measure across countries (*US Dollar approximate equivalence, currency conversion rate shown*). For each country the modal response is boldfaced and the median is shaded.

S3.2 Study 2

Country	Currency conversion	10 thousand	100 thousand	1 million	10 million	100 million	1 billion	10 billion	100 billion
North America									
USA	1	6	5	18	27	14	5	2	24.6
Canada	1.5	1	6	20	34	9	6	1	23.9
Mexico	25	10	8	12	26	12	7	2	24.6
Nicaragua	30	9	13	19	21	10	1	5	22.1
South America									
Brazil	5	4	12	18	22	15	4	2	22.5
Chile	800	7	6	19	17	15	5	3	27.4
Colombia	4000	8	7	17	16	11	7	5	28.6
Asia									
China	7	4	9	33	23	11	3	1	15.0
India	80	12	9	31	18	8	4	3	15.5
Indonesia	15000	16	12	6	12	8	6	2	39.2
Japan	100	18	6	21	18	8	3	2	25.0
Philippines	50	10	13	22	13	9	4	2	27.2
Singapore	1.5	6	3	20	22	7	4	4	32.4
Vietnam	20000	10	16	13	17	17	8	3	17.1
Europe									
Russia	70	18	13	24	16	11	4	3	11.1
Sweden	10	5	10	37	16	8	5	2	16.4
United Kingdom	0.8	4	3	27	35	10	5	2	13.9
Hungary	300	5	14	17	19	18	4	1	20.9
Spain	0.9	6	7	13	25	13	8	3	24.0
Greece	0.9	2	8	22	26	9	5	2	24.3
Ukraine	30	8	15	21	18	9	4	3	21.6
Africa/Middle East									
South Africa	20	4	9	30	18	6	3	5	26.3
Kenya	100	13	10	17	12	11	2	4	30.4
Uganda	4000	13	15	13	9	5	9	3	33.8
Tunisia	3	8	11	11	15	12	6	4	33.8
Morocco	10	17	12	10	12	8	6	3	33.2
UAE	4	9	11	13	21	15	7	2	20.8
Saudi Arabia	4	12	8	16	18	6	5	5	30.1
Oceania									
Australia	1.5	5	5	26	33	11	3	0	16.1
New Zealand	1.5	2	4	17	42	11	4	2	18.9

Table S5.

Percentage of people who chose each lottery amount in the ideal life lottery measure across countries (*US Dollar approximate equivalence, currency conversion rate shown*). For each country the modal response is boldfaced and the median is shaded.

Table S5 shows that in the majority of countries in Study 2 most participants would be satisfied in their absolutely ideal lives with 10 million or less (medians of 10 million or lower), similar to Study 1. We note that those countries with higher medians (100 million) tended to be less economically developed (e.g., Colombia, Indonesia, Uganda), but so were the countries with the lowest medians of 1 million (Argentina, India, Russia), suggesting no systematic link between economic development and lottery selection. We examine links between Unlimited/Limited responses and country indicators more systematically below (Section S4.2).

Unlike Study 1, Table S5 shows that the most common modal response across countries was the maximum (100 billion), observed in 15 of the 30 countries. The context of each study may have contributed to the apparently higher incidence of Unlimited lottery selections in Study 2. In Study 1 the broader survey context was sustainable development, which may have influenced participants to think about living within constraints and adopting more moderate economic ideals. In contrast, in Study 2 the broader survey context was about innovation and new products, which may have influenced participants to think more about their capacity to consume new consumer products and technologies which may have increased the economic ideals for some people.

S4. Country-level associations and meta-analyses (Supplementary Text)

S4.1. Explanation of analytical approach

We conducted two types of analyses of the data, focusing on:

- (i) examining factors between countries (development and culture) that could explain why some countries had a higher proportion of Unlimiteds (who chose 100 billion) v Limiteds (who chose lower amounts in the lottery); and
- (ii) examining factors within countries (demographics and values) that could explain why some individuals were more likely to be Unlimiteds or Limiteds, using meta-analyses to identify whether these explanations were similar or different across countries.

We chose meta-analysis primarily because it is easier for people across diverse disciplines to understand compared to alternatives (e.g., logistic multilevel modeling), especially when examining simple relationships such as correlations (as is the case in this research). In meta-analysis, the overall effects across countries is just the (weighted) average correlation. This approach was used in previous research intended for a diverse scientific audience ¹⁴.

Meta-analysis allows for functionally similar tests to other techniques such as multilevel modeling. For those versed in multilevel modeling, this includes:

-Random slopes at Level 1 (individual-level): We used “random effects” meta-analysis which does not assume that there is a single “true” effect size being estimated, but rather that effect sizes may differ across samples, distributed as a random variable.

-Cross-level interactions: We used meta-regression to test whether country-level variables helped explain why correlations (effect sizes) differed across samples, often described as cross-level interaction (or in this case country-level moderation). We used “method of moments” meta-regression which represents a random-effects variable at level-2.

-Random intercepts at Level 2. To explain variation at Level 2 (country level), we used simple zero-order correlations between country level information and the proportion of Unlimiteds for each country.

Multi-level modeling is uniquely suited to complex models or when analyzing simultaneous/independent contributions of a large number of predictors, but for our study we were interested in simple relationships. Another advantage of multilevel modeling is the ability to easily compare the amount of variance explained at individual and group levels, but that was not a goal of this research.

Given our focus on unlimited wants, we aimed to understand what may account for differences in the proportion of Unlimiteds across countries.

We focused on Study 2 because of its superior distribution of countries across regions. However, we conducted robustness checks by adding data from Study 1, using different approaches to incorporating this data to account for the overlap of countries between studies. These were:

Study 2+: Study 2 data plus the three unique countries from Study 1 (Argentina, France, South Korea).

Both studies (averages): For the nine countries in both samples, we used the average proportion of Unlimited across both studies as the best estimate of the population value for that country.

Both studies (all samples): Every sample was used, leading to multiple samples from nine countries. We believe this a less justified way to combine studies for country-level correlations because for the repeated countries the data can only vary on one dimension (development indicators and cultural dimensions will be identical for both samples), influencing the degree of variation observed. However, we include it because we think it is nonetheless likely to be requested, especially because we treat each sample separately for meta-analyses of within-country associations, where multiple samples from the same country do not exhibit this problem.

S4.2 Country level associations

Table S6 shows these country-level correlations. The most robust finding was for Individualism-Collectivism, with a higher proportion of Unlimiteds observed in countries relatively more focused on community outcomes (higher Collectivism). One interpretation is that people in more collectivistic countries (low Individualism) may be more likely to think about the wider community benefits they could produce with unlimited wealth, whereas in countries high in Individualism people think more in terms of their own/family's needs, believing these could be satisfied with more limited wealth.

A positive but less robust relationship was found for Power Distance. This indicates that Unlimiteds were more common in countries with greater cultural acceptance of inequality.

Other indicators did not show relationships with the proportion of Unlimiteds.

		Development indicators			Lottery experience		Cultural dimensions				
		HDI	GDP (PPP)	GINI	Lottery use	%GDP spent on lotteries	Individualism (lower scores= Collectivism)	Power- Distance	“Masculine- Feminine”	Uncertainty avoidance	Long-term orientation
Study 2	<i>r</i>	-.34	-.15	.26	-.09	.10	-.60***	.44*	-.09	.12	-.22
	<i>n</i>	30	30	26	30	22	22	22	22	22	12
Robustness checks											
Study 2+	<i>r</i>	-.37*	-.17	.28	-.14	.09	-.58***	.40*	-.04	-.03	-.22
	<i>n</i>	33	33	30	33	25	25	25	25	25	16
Both studies (averages)	<i>r</i>	-.32	-.10	.18	-.16	.14	-.46*	.31	-.06	-.08	-.30
	<i>n</i>	33	33	30	33	25	25	25	25	25	16
Both studies (all samples)	<i>r</i>	.24	-.05	.16	-.16	.16	-.31	.20	-.03	.04	-.37
	<i>n</i>	42	42	39	42	33	33	33	33	33	21

* $p < .05$; *** $p < .005$

Table S6.

Country-level correlations between proportion of Unlimiteds and cultural-level variables

S4.3 Meta-analyses

In the main article we focus on meta-analyses using point-biserial correlations between a dichotomized lottery measure (1 = 100 billion [Unlimiteds]; 0 = all other values [Limiteds]). For the associations reported below, positive scores denote that those with higher scores on the variable or scale were more likely to be Unlimiteds. Due to the large number of meta-analyses and their exploratory nature, as well as the large overall sample sizes, we set a conservative criterion for significance: $p = .005$.

All meta-analyses were based on random-effects models using non-iterative method of moments, calculated using a macro designed for SPSS^{15,16}.

For each meta-analysis we report three statistics (plus **k** which indicates the number of samples):

Mean effect (and its significance): The average effect size across samples (correlation, weighted by sample sizes) and an indicator of whether this was significantly different from zero.

Q (and its significance): An index of variation in relationships across country, with an indicator of whether this was significantly greater than would be expected by chance

I²: This is a descriptive index of the percentage of variation between samples attributable to real differences rather than random variation.

Our focus was on Study 2 due to the larger and more representative sample of countries, especially in comparison to Study 1 which had too few countries to assess cross-country differences. However, in Tables S7 and S8 we report robustness checks (“Study 2+” and “All samples”). We do not report the “Both studies (averages)” robustness check because both studies contribute to the overall average effect in the “All samples” meta-analysis.

Table S7 shows associations between choosing the Unlimited/Limited lotteries with demographics and methodological variables. Two demographic indicators were significantly and robustly associated with lottery choice. While overall effects were objectively weak (average correlations of less than 0.1), the strongest association of all variables was with age, with younger people more likely to be Unlimiteds than older people. However, this varied significantly across countries, and below we use meta-regression to identify reasons for cross-country variation.

Table S7 also shows that those living in urban areas were more likely to be Unlimiteds than those living in rural areas, and this did not vary significantly across countries. We surmise that this is likely to be due to self-selection – cities tend to be where major corporations locate their offices, which gives people the best chances of working in high wealth-creating industries.

It is important to also consider where we did *not* find evidence of associations. Table S7 shows that Limited/Unlimited lottery choices were not significantly related to political orientation, socioeconomic status, or education, nor did these effects vary significantly across samples. Lottery choice was also not related to the time taken to answer the lottery question.

Covid did not appear to have had an overall impact on lottery choice, although the effect of experience of Covid did vary significantly across countries. Below we use meta-regression to examine whether this was related to country-level development and cultural indicators.

		Age	Gender (higher= female)	Liberal- Conservative^ (higher= Conservative)	Left- Right^ (higher= Right)	Socio- economic status	Rural- urban (higher = urban)	Years of education	Covid experience	Covid well- being	Lottery page time
Study 2	Mean effect	-.09***	.01	-.02	.01	.03	.06***	.02	.02	-.01	-.01
	Q	60.3***	30.9	18.6	39.9	40.7	32.3	31.7	52.4***	24.1	47.7
	I ²	52	6	0	27	29	10	8	45	0	39
	k	30	30	28	28	30	30	30	30	30	30
Robustness checks[#]											
Study 2+	Mean effect	-.09***	.01	-.02	.01	as	.06***	as	as	as	as
	Q	62.9***	31.2	21.9	42.4	above	36.1	above	above	above	above~
	I ²	49	0	0	29		11				
	k	33	33	31	31		33				
Both studies (all samples)	Mean effect	-.09***	.01	-.02	.00	as	.05***	as	as	as	as
	Q	87.3***	36.1	30.3	54.4	above	48.9	above	above	above	above~
	I ²	53	0	0	28		16				
	k	42	42	40	40		42				

*** $p < .005$

^Political orientation questions were not included in surveys for Tunisia or Morocco.

[#]Not all indicators were included in Study 1.

~Lottery page times are not comparable across studies because in Study 1 the page included an open-ended question about the most important change they would make with the money. However, in Study 1 the association with lottery page time showed no significant mean effect or cross-country variation, $M = .07$, $Q = 20.2$, $I^2 = 46$.

Table S7.

Random-effects meta-analyses for point-biserial correlations between higher lottery choice and demographic/methodological indicators.

Table S8 shows associations between choosing the Unlimited/Limited lotteries with values. Again, overall relationships were quite weak (overall correlations less than .08) but there were some significant and robust relationships that were relatively consistent across countries. Unlimiteds were more likely to hold stronger Openness to change values (Self-direction, Stimulation) and Self-Enhancement values (Hedonism, Achievement, Power), values categorized as having a personal focus¹⁷. However, Unlimiteds and Limiteds did not differ in the importance they placed on more socially-focused values relating to Conservation (Security, Conformity, Tradition) or Self-Transcendence (Benevolence, Universalism).

		Personal focus						Social focus			
	Value Quadrant	Openness to change		Self-Enhancement			Conservation		Self-Transcendence		
	Value Domain	Self-direction	Stimulation	Hedonism	Achievement	Power	Security	Conformity	Tradition	Benevolence	Universalism
Study 2 (k=30)	Mean effect	.07***	.06***	.06***	.07***	.06***	.02	-.01	-.02	.01	.04
	Q	34.1	29.1	33.9	20.4	40.7	38.2	44.0	15.2	32.8	42.4
	I²	15	0	14	0	29	24	34	0	11	32
Robustness checks											
Study 2+ (k=33)	Mean effect	.06***	.06***	.06***	.06***	.06***	.01	-.02	-.02	.01	.03
	Q	49.0	36.4	42.9	22.4	46.5	42.8	47.1	18.3	34.2	46.6
	I²	35	12	25	0	31	25	27	0	6	31
Both studies (all samples) (k=42)	Mean effect	.05***	.06***	.05***	.06***	.05***	.01	-.02	-.02	.01	.03
	Q	52.9	51.1	61.1	25.7	58.3	52.9	56.2	27.9	38.5	51.7
	I²	22	20	33	0	30	22	27	0	0	21

*** p < .005

Table S8.

Random-effects meta-analyses for point-biserial correlations between Limited-Unlimited lottery choice and values.

Explaining cross-country variation

Significant variation across countries/samples was identified for Age and Covid experience. To better understand reasons for this variation, we performed meta-regressions (random-effects) that examine associations between variation in these effects across countries and country-level indicators. Separate meta-regressions were used to understand the three development indicators: HDI, GDP(PPP), GINI; and the five cultural dimensions. As these were follow-ups to explain significant variation and are conducted at a country level (and hence a smaller dataset), we adopted a more conventional significance level of $p = .05$.

Age: Table S9 shows that two development indicators (HDI, GDP(PPP)) and one cultural dimension (Power Distance) were significant and robust predictors of variation in effect sizes of age on Unlimiteds lottery choices.

For HDI and GDP (PPP), this means in countries with higher levels of development younger people were more likely to make the Unlimited choice (e.g., Singapore, $r_{\text{age}} = -.30$ for HDI). In other words, in richer countries the young are more likely to have unlimited wants compared to the old. In less developed countries, Unlimiteds were more evenly distributed across the young and old (as correlations were close to 0, e.g., Uganda, $r_{\text{age}} = -.02$ for HDI).

For Power Distance, this means that in countries with greater acceptance of inequality in society older people were more likely to be Unlimiteds than younger people (e.g., Philippines, $r_{\text{age}} = .09$), whereas in countries with more focus on equality younger people were more likely to be Unlimiteds (e.g., Hungary, $r_{\text{age}} = -.20$).

	Development indicators			Cultural dimensions				
	HDI	GDP (PPP)	GINI	Individualism (lower scores= Collectivism)	Power-Distance	“Masculine-Feminine”	Uncertainty avoidance	Long-term orientation
Study 2	-.52***	-.52***	.20	-.25	.42*	.13	.06	-.08
Robustness checks								
Study 2+	-.50***	-.52***	.21	-.18	.39*	.13	.09	-.08
Both studies (all samples)	-.51***	-.51***	.30	-.22	.43**	.22	.12	-.01

* $p < .05$; ** $p < .01$; *** $p < .005$

Table S9.

Meta-regression (beta coefficients) predicting cross cultural variation in effect sizes between age and the Unlimited lottery choice.

Covid Experience: No country-level indicators explained significant cross-country variation for Covid experience. We note descriptively that those countries where the experience of Covid was most negatively related to the Unlimited lottery choice was in Japan ($r = -.13$), Mexico ($r = -.12$), and Indonesia ($r = -.12$), and was most positively related in India ($r = .24$), Sweden ($r = .21$), and UAE ($r = .16$).

S4.4. Analysis of text responses for main use of wealth (Study 1)

In Study 1, immediately below the lottery question was an open-ended text-box response question: “Briefly, what is the most important change you would make in your life with that money?”. Here we report our analysis of the written responses to this question.

We first note our impression that people interpreted this question in multiple ways. In particular, many people seemed to refer to their most immediate priority or the first thing they would do, rather than how they would use the majority of the prize amount. For instance, it was relatively common to write that they’d pay off their debts or mortgage, even for those who selected 100 billion (we assume their debts were not this large). While our coding below should be understood in this context, we do believe that these responses give a useful indication of the basic priorities people had for their money.

Four percent of participants (n=91) did not answer the question directly, providing only tangential commentary (e.g., “life is too expensive), or no interpretable text (no response or random letters). As most responses were short and these broad categories required only basic coding, Google Translate was considered adequate for translating non-English responses.

For those who provided codable responses (n=2043), we used the following four codes (responses could be coded in more than one category). Responses were coded independently by two coders (the authors). Inter-coder reliability was examined using Krippendorff’s α , where $\alpha > .8$ represents acceptable agreement¹⁸. As responses could span multiple codes, we calculated Krippendorff’s α for each code (reported with each code below), showing very good reliability. Disagreements were resolved through discussion.

1. **Personal** (79% of codable responses; $\alpha = .87$). This included resources for the person themselves and/or their families and friends (and occasionally pets). Typical examples were buying houses, paying debts, traveling, or investing for their children’s future (such as paying for their education or houses)
2. **Society** (21%; $\alpha = .90$). This included resources for local, regional or national communities, e.g., feeding the poor or housing the homeless
3. **World** (9%; $\alpha = .83$). This included resources for the non-human world such as caring for animals on the street, or environmental conservation such as cleaning the oceans
4. **Don’t know** (1%; $\alpha = .96$). We coded this separately to identify people indicating no clear idea about how they would use their ideal wealth (or chose to respond but were unwilling to disclose their uses). This included “don’t know”, and similar responses such as “no idea” or “not sure”.

There was also an “other” category (x%) for responses too ambiguous or general to code (e.g., everything; safe; lots). Most coding disagreements involved whether to use the focal codes or “other”. Our favorite “other” response was “Buy even more tickets” (from an Unlimited participant), nicely illustrating an Unlimited mindset.

Some common responses were ambiguous, and for these we used the following coding rules:

Charity/donations. Where the recipient of charity or donations was not specified (common) or could not be categorized (rare), we recorded codes for *both* Society and World.

Education. Responses typically referred to providing for the education of one’s children or grandchildren (coded Personal) or educating the poor (coded Society). Where the target of education was not specified (e.g., “Education”) we coded this as Society.

Employment. Some responses referred to using their wealth to provide employment to others or fight unemployment (coded Society). Where responses just referred to employment, we coded this as Society.

Finally, we highlight below some responses that provided insights into people at the lower level of Limited lottery choices:

“small thinking is low loss” (10 000)

“only want what is needed” (100 000)

“It’s enough” (1 million)

“would be nice but not greedy” (1 million)

“Get what I want without financial restrictions and give some to my children” (10 Million)

Comparing Unlimiteds and Limiteds.

In making comparisons between Unlimiteds and Limiteds in their intended uses, we coded each participant’s response into a single code. Drawing on work on moral expansiveness¹⁹, where a person’s response was coded in multiple categories we selected the code that reflected the greatest moral distance from the self (so the priority was World > Society > Personal). For example, responses coded as both Personal and World were coded as World. This means the codes were oriented towards reporting more altruistic uses of the prize.

For analyses, we initially used χ^2 to examine relationships between Limiteds/Unlimiteds and the three substantive codes (Personal, Society, World). However, the low number of responses for World meant treating this as a separate category led to all analyses severely failing χ^2 assumptions of an expected frequency of 5 per cell. Hence, we combined the Societal/World categories as they both represented altruistic uses.

Based on coded responses, the percentage of participants in each code in each country is shown in Table S10, with a χ^2 test to identify systematic differences in patterns of responses. The patterns were similar and significant for all countries except China. In general, Unlimiteds were significantly more than Limiteds likely to refer altruistic uses (Society/World). In China, the patterns were more consistent across Limiteds and Unlimiteds, with Personal uses much more prevalent in both groups.

Additionally, the number of “Don’t know” responses were too small for formal analysis, but we note that Unlimiteds provided 18% of the coded responses in Table S10 but accounted for 27% of “Don’t know” responses. Although only indicative, this suggests that a higher proportion of Unlimiteds than Limiteds did not have a clear impression of how the money would help them achieve their ideal lives. Instead, it may be that more people in this category treated this as a “default” (you should always want as much money as possible) without considering its uses.

Country	n	Limiteds		Unlimiteds		χ^2	p
		Personal %	Society/World %	Personal %	Society/World %		
North America							
USA	159	48	<u>18</u>	<u>19</u>	14	4.13	.042
South America							
Brazil	133	78	<u>11</u>	<u>7</u>	5	8.25^	.004
Argentina	174	64	<u>21</u>	<u>5</u>	10	16.85	<.001
Asia							
China	171	85	8	6	1	0.80^	.381
India	162	44	<u>36</u>	<u>6</u>	14	5.98	.014
South Korea	177	71	<u>7</u>	<u>16</u>	6	7.08	.008
Europe							
Russia	165	68	<u>18</u>	<u>7</u>	7	10.69	.001
Sweden	138	60	<u>21</u>	<u>10</u>	9	4.15	.042
United Kingdom	154	69	<u>10</u>	<u>13</u>	7	8.65	.003
France	145	71	<u>16</u>	<u>6</u>	7	11.10^	<.001
Africa							
South Africa	181	52	<u>26</u>	<u>6</u>	16	21.38	<.001
Oceania							
Australia	146	68	<u>14</u>	<u>10</u>	7	6.35	.012

Boldfaced numbers denote adjusted standardised residuals above +2.0 (more frequent than expected). Underlined numbers denote adjusted standardised residuals below -2.0 (less frequent than expected).

^ one cell had an expected value less than 5, failing to meet a typical χ^2 test assumption.

Table S10.

Percentage (of total country sample with coded responses) of Limiteds and Unlimiteds who wrote about personal or societal/world changes they would make with their chosen lottery prize.

S5. Explaining variation in limited wants

While our primary focus was on the distinction between those expressing Unlimited and Limited wants, a reviewer expressed interest in understanding differences between different degrees of Limited wants. We agree this is an interesting supplementary question and report these analyses below.

Our approach to the meta-analyses mirrors that used for the main meta-analyses reported in S4.3. We used Spearman rank-order correlations as the effect size metrics for these analyses in recognition of the ordinal nature of the lottery responses.

In summary, the relationships were similar to analyses comparing Limiteds and Unlimiteds. That is, the same factors that predicted who would choose the Unlimited lottery prize tended to also predict those who chose higher (but limited) lottery prizes.

Table S11 shows meta-analyses examining associations between Limiteds' lottery choices and demographic/methodological variables. While no overall effects were strong, choosing larger prizes was more likely for people who were younger, reported higher socioeconomic status, more urban and more educated. People who spend longer on the lottery question page were also more likely to select larger prizes. Where robustness checks could be performed (for age and rural/urban) these associations were robust. However, while effects of urban did not vary significantly across countries, effects of age did and explanations of this variation is reported later in this section.

Table S12 shows meta-analyses examining associations between Limiteds' lottery choices and values. Again, overall mean effects were not strong, but larger lottery choices were more likely for people with self-direction, stimulation, hedonism, achievement, and power values, reflecting the broader value orientation of Openness to Change and Self-enhancement. On contrast, lottery prize choice was not associated with values reflecting Conservation (security, conformity, tradition) nor Self-transcendence (benevolence, universalism). These effects persisted in the robustness checks, and in no analysis did we find evidence for significant cross-country variation.

		Age	Gender (higher= female)	Liberal- Conservative^ (higher= Conservative)	Left- Right^ (higher= Right)	Socio- economic status	Rural- urban (higher = urban)	Years of education	Covid experience	Covid well- being	Lottery page time
Study 2	Mean effect	-.08***	.02	-.03	.03	.08***	.05***	.06***	.02	-.01	.09***
	Q	75.8***	25.8	21.0	44.7	34.4	31.4	22.8	41.1	39.3	60.4***
	I ²	62	0	0	40	16	8	0	29	26	57
	k	30	30	28	28	30	30	30	30	30	27
Robustness checks[#]											
Study 2+	Mean effect	-.08****	.03	-.03	.03	as	.05***	as	as	as	as
	Q	78.4***	33.3	23.9	51.2	above	32.9	above	above	above	above
	I ²	59	4	0	41		3				
	k	33	33	31	31		33				
Both studies (all samples)	Mean effect	-.07***	.03	-.02	.04	as	.05***	as	as	as	as
	Q	110.0***	37.6	35.0	60.8	above	44.5	above	above	above	above
	I ²	63	0	0	36		8				
	k	42	42	40	40		42				

*** p < .005

^Political orientation questions were not included in surveys for Tunisia or Morocco.

Table S11.

Random-effects meta-analyses for Spearman rank-order correlations between Limiteds' lottery choices (higher number = larger prize) and demographic/methodological indicators.

		<i>Personal focus</i>						<i>Social focus</i>			
	Value Quadrant	Openness to change	Self-Enhancement			Conservation			Self-Transcendence		
	Value Domain	Self- direction	Stimulation	Hedonism	Achievement	Power	Security	Conformity	Tradition	Benevolence	Universalism
Study 2 (k=30)	Mean effect	.07***	.09***	.07***	.11***	.10***	.01	-.02	-.01	.02	-.01
	Q	26.4	42.4	33.3	51.2	38.6	31.4	29.8	47.9	27.7	29.5
	I ²	0	32	13	43	25	8	3	39	0	2
Robustness checks											
Study 2+ (k=33)	Mean effect	.07***	.09***	.07***	.11***	.10***	.01	-.02	-.01	.02	-.01
	Q	30.5	45.2	36.3	52.3	41.8	32.9	31.4	50.5	28.2	30.5
	I ²	0	29	12	39	23	3	0	37	0	0
Both studies (all samples) (k=42)	Mean effect	.07***	.08***	.07***	.10***	.09***	.03	-.01	-.01	.02	.00
	Q	35.8	49.0	41.1	61.7	49.0	57.4	39.4	61.3	32.3	41.0
	I ²	0	16	0	34	16	29	-4	33	0	0

*** $p < .005$

Table S12.

Random-effects meta-analyses for Spearman rank-order correlations between Limiteds' lottery choices (higher number = larger prize) and values.

To understand cultural variation in associations of age with Limiteds' lottery choices, we performed meta-regressions, with results in Table S13. Younger people were more likely to choose larger prizes in more developed countries (higher HDI) and in countries with more power-distance, and these were maintained in the robustness checks. Younger people were more likely to choose larger prizes in more individualist countries, although this did not withstand robustness checks. Finally, we note a possible divergence from the equivalent Limited/Unlimited meta-regressions, as here economic productivity (GDP) was not significantly associated with age effects whereas it was when comparing Unlimiteds to Limiteds.

	Development indicators			Cultural dimensions				
	HDI	GDP (PPP)	GINI	Individualism (lower scores= Collectivism)	Power- Distance	"Masculine- Feminine"	Uncertainty avoidance	Long-term orientation
Study 2	-.38*	-.27	.03	-.42*	.55***	.21	.13	.13
Robustness checks								
Study 2+	-.36*	-.25	.01	-.33	.55***	.19	.14	.13
Both studies (all samples)	-.34*	-.25	.12	-.29	.48***	.08	.14	.08

* $p < .05$; ** $p < .01$; *** $p < .005$

Table S13.

Meta-regression (beta coefficients) predicting cross cultural variation in effect sizes between age and the lottery choice for Limiteds.

S6. Supplementary Information References

- 1 Bain, P. G. *et al.* Public views of the Sustainable Development Goals across countries. *Nature Sustainability* **2**, 819-825, doi:10.1038/s41893-019-0365-4 (2019).
- 2 Cornell University, INSEAD & WIPO. The Global Innovation Index 2019: Creating Healthy Lives—The Future of Medical Innovation. (Ithaca, Fontainebleau, and Geneva, Ithaca, Fontainebleau, and Geneva, 2019).
- 3 United Nations Development Programme. Human Development Report 2020. (United Nations Development Programme, New York, NY, 2020).
- 4 Garrett, T. A. An international comparison and analysis of lotteries and the distribution of lottery expenditures. *International Review of Applied Economics* **15**, 213-227, doi:10.1080/02692170151137096 (2001).
- 5 Hofstede, G., Hofstede, G. J. & Minkov, M. *Cultures and organizations: Software of the mind*. (McGraw-Hill, 2010).
- 6 Minkov, M. & Hofstede, G. Hofstede's Fifth Dimension. *Journal of Cross-Cultural Psychology* **43**, 3-14, doi:10.1177/0022022110388567 (2010).
- 7 Twenge, J. M. Changes in masculine and feminine traits over time: A meta-analysis. *Sex Roles* **36**, 305-325 (1997).
- 8 Bain, P. G. & Bongiorno, R. Are Individualism and "Masculinity" related when controlling for regional proximity? A reappraisal of Barry (2015). *Journal of Cross Cultural Psychology* **46**, 1226–1231 (2015).
- 9 Schwartz, S. H. in *Advances in Experimental Social Psychology* Vol. 25 (ed Mark P. Zanna) 1-65 (Academic Press, 1992).
- 10 Lindeman, M. & Verkasalo, M. Measuring values with the short Schwartz's Value Survey. *Journal of Personality Assessment* **85**, 170-178 (2005).
- 11 Sandy, C. J., Gosling, S. D., Schwartz, S. H. & Koelkebeck, T. The development and validation of brief and ultrabrief measures of values. *Journal of Personality Assessment* **99**, 545-555, doi:10.1080/00223891.2016.1231115 (2017).
- 12 Schwartz, S. H. *et al.* Extending the cross-cultural validity of the theory of basic human values with a different method of measurement. *Journal of Cross-Cultural Psychology* **32**, 519-542 (2001).
- 13 Adler, N. E., Epel, E. S., Castellazzo, G. & Ickovics, J. R. Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy white women. *Health Psychology* **19**, 586-592 (2000).
- 14 Bain, P. G., Milfont, T. L., Kashima, Y. & *et al.* Co-benefits of addressing climate change can motivate action around the world. *Nature Climate Change* **6**, 154-157, doi:10.1038/NCLIMATE2814 (2016).
- 15 Lipsey, M. W. & Wilson, D. B. *Practical meta-analysis*. (Sage Publications, 2000).
- 16 Wilson, D. B. Meta-analysis macros for SAS, SPSS, and Stata. Retrieved October 28, 2011 from <http://mason.gmu.edu/~dwilsonb/ma.html> (2005).
- 17 Schwartz, S. H. *et al.* Refining the theory of basic individual values. *Journal of Personality and Social Psychology* **103**, 663-688, doi:10.1037/a0029393 (2012).
- 18 Hayes, A. F. & Krippendorff, K. Answering the call for a standard reliability measure for coding data. *Communication Methods and Measures* **1**, 77-89 (2007).
- 19 Crimston, C. R., Bain, P. G., Hornsey, M. J. & Bastian, B. Moral expansiveness: Examining variability in the extension of the moral world. *Journal of Personality and Social Psychology* **111**, 636-653, doi:10.1037/pspp0000086 (2016).