Preregistration information for "Attitudes towards science"

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I. Method

Qualtrics was contracted in June 2018 to deliver a quasi-representative sample of 1,000 U.S. residents. The Qualtrics soft quotas for recruitment were as follows:

Male	48.3
Female	51.7

Age	
18-24	11.30%
25-34	17.80%
35-44	17.30%
45-54	19.10%
55-64	16.50%
65+	18.00%

Income	
Under $15k	13
$15k-$25k	11.7
$25k-$35k	10.7
$35k-$50k	13.6
$50k-$75k	17.5
$75k-$100k	11.7
$100k-$150k	12.5
$150k-$200k	5
$200k+	4.5

This was compared to U.S. census data and found to be in sufficient agreement

(https://www.census.gov/popclock/data_tables.php?component=pyramid and

https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-hinc/hinc-06.html).

The exact survey used is appended on the subsequent pages.

Note the following:

1. Questions QC.1 through QG.5 were randomized for each participant.
2. Question QAC is an attention filter.
3. Questions Qage and Q4.2 taken together are attention filters (i.e. same response required to pass)

Consent Form

Study information and declaration of consent

Thank you very much for your interest in participating in our study "Attitudes Towards Society". This study is a research project of the Max Planck Institute (MPI) for Human Development, conducted by Jan K. Woike in collaboration with Stephan Lewandowsky (University of Bristol) and Klaus Oberauer (University of Zurich). The project was evaluated by the Institutional Review Board of the Max Planck Institute. By marking the checkboxes below, you agree that you have read the information presented and that you are willing to participate in the study.

1. Aim of the study

This study explores people's beliefs about a wide range of topics, ranging from scientific propositions to claims made in the media and on the internet. In addition, the survey is interested in participants' personal beliefs about the world, politics, religion, medicine, and issues confronting modern societies at the moment.

2. What will be done?

You will be asked to complete an internet survey consisting of around 40 questions. This should take no more than 20-30 minutes to complete at most. The questions target a wide range of issues, from your views on religion, to your evaluation of political values and your attitudes towards scientific findings.

3. Are there any risks involved?

No risks or discomforts are anticipated from taking part in this study.

4. What will happen to the information and data collected?

Your responses and data will be stored under a random number. We will NOT ask for your name, email address or contact information, but your IP address (and national code of your location, e.g. "US") might be saved. The only way to link your responses to your identity is through an arbitrary code number (we will not be able to make this link, only the panel provider has access to this information). This code number might be used to prevent participation in directly related studies in the future. For our analyses we will use a dataset that will not include the code number nor your IP address.

The survey data will be used solely for research purposes. The collected survey data may be shared with other researchers. At the end of the study, the data will be made "Open Access",

meaning that it will be stored in an online database so that it is publicly available to allow other scientists and members of the public to validate results and extend our analyses. This means that data could be passed on to third parties and we would not be able to control access. Any data that is passed on or published will be stripped of identifiers and location data (including IP address), so that it is impossible to link it to you.

5. Participation is voluntary

Participation in this study is entirely voluntary; you are free to withdraw your participation from this study at any time. If you do not want to continue further, you can simply close the browser window.

6. Consent

This document has informed you about participation in the survey "Attitudes Towards Society".

Contact Details:
Jan K. Woike (Max Planck Institute for Human Development)
woike@mpib-berlin.mpg.de

Click to write the question text

☐ I have read and understood the conditions outlined above.

☐ I consent to participate in the study and agree to the collection, storage, and use of my data as described above.

Demographics

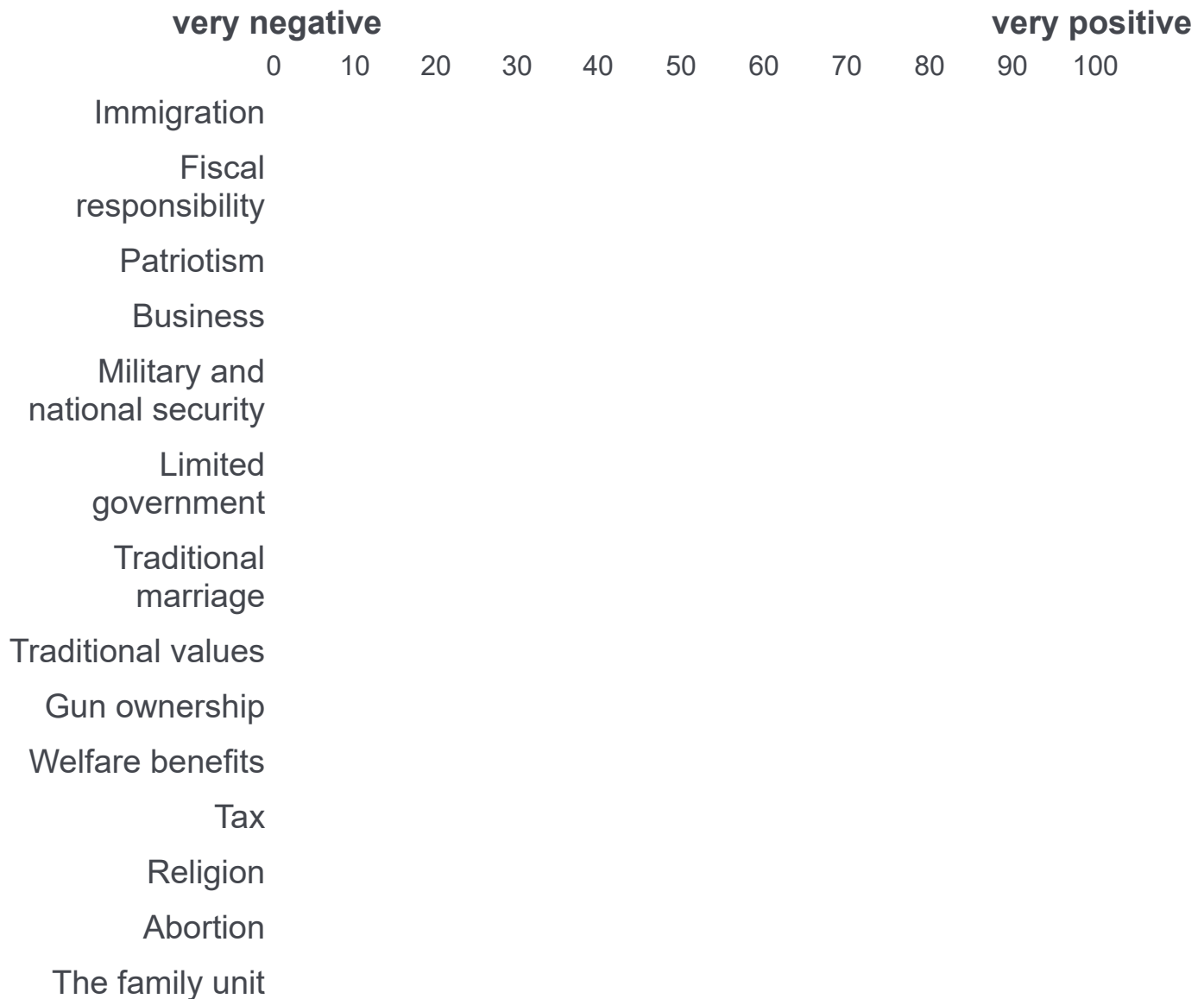What is your age?

[ ]

What is your gender?

○ Male

○ Female

When did you learn English?

○ As an infant (English is my native language)

○ In primary school

○ As an adolescent

○ As an adult

○ Less than 5 years ago

Australian radio shock jock Alan Jones has called global warming a "hoax", implying that green groups want an "armageddon on the way" so "they'll get money." What are your views on this statement?

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Liberal/conservatism

Please indicate the extent to which you feel positive or negative towards each issue. Scores of 0 indicate greater negativity, and scores of 100 indicate greater positivity. Scores of 50 indicate that you feel neutral about the issue.

	very negative									very positive
	0	10	20	30	40	50	60	70	80	90	100
Immigration											
Fiscal responsibility											
Patriotism											
Business											
Military and national security											
Limited government											
Traditional marriage											
Traditional values											
Gun ownership											
Welfare benefits											
Tax											
Religion											
Abortion											
The family unit											

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Main Questionnaire

An economic system based on free markets unrestrained by government interference automatically works best to meet human needs.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

The free market system may be efficient for resource allocation but it is limited in its capacity to promote social justice.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

The preservation of the free market system is more important than localized environmental concerns

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Free and unregulated markets pose important threats to sustainable development.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

The free market system is likely to promote unsustainable consumption.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I believe that animals have changed over time by a process of evolution .

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I accept evolution by natural selection as a well-supported scientific theory.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I believe that all species, including humans, have a common evolutionary origin.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I believe that species were created individually and do not change over time.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I believe that the theory of evolution by natural selection is in crisis and about to be overturned.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Complementary medicine can be dangerous in that it may prevent people getting proper treatment.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Complementary medicine builds up the body's own defenses, so leading to a permanent cure.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Homeopathy has been shown again and again to be ineffective as a cure for anything.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Complementary medicine has often saved the lives of patients who were already given up by conventional doctors.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Complementary medicine is superior to conventional medicine in treating chronic ailments such as allergies, headaches, and back pains.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Men and women evolved to be different and these biological differences cannot be overcome by education.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Evolutionary history has predisposed men more strongly than women towards violence.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Evolutionary history has predisposed women more strongly than men towards being helpful and nurturing.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

All human traits are the product of evolution and therefore resist change.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Thousands of years of evolution explain why differences between men and women are very difficult to overcome.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Men are naturally stronger than women and those differences cannot be overcome by education.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

It is the in the nature of men to be physically aggressive more often than women.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Women are naturally more caring and socially supportive than men.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

All human traits are part of our natural makeup and therefore very difficult to change.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Men and women are naturally different from each other and those differences are bound to stay, even if we try hard to overcome them.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Men and women are equally capable and powerful in all respects.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

All differences between men and women are created by society and can be eliminated if we change society.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Without the pressures of culture and society women would be as much in control as men.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

There are no biological or physical reasons that prevent a girl today to achieve as much as a boy.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

The categories "male" and "female" are primarily cultural inventions that have little basis in human nature.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Which of these is not an animal?

○ Grasshopper

○ Lion

○ Cat

○ Table

○ Moose

Do you agree with the following statement? "Religion gives me a great amount of comfort and security in my life."

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I believe in God.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I believe in some kind of afterlife.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I do not think religion can or should make claims about the natural world.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I do not consider myself a religious person.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I believe that vaccines are a safe and reliable way to help avert the spread of preventable diseases

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I believe that vaccines have negative side effects that outweigh the benefits of vaccination for children

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Vaccines are thoroughly tested in the laboratory and wouldn't be made available to the public unless it was known that they are safe

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

The risk of vaccinations to maim and kill children outweighs their health benefits

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Vaccinations are one of the most significant contributions to public health

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

CRT

A bat and a ball cost $1.10 in total. The bat costs a dollar more than the ball. How much does the ball cost?

[cents]

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If it takes 5 machines 5 min to make 5 widgets, how long would it take 100 machines to make 100 widgets?

[minutes]

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In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

[days]   [   ]

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Final Block

President Trump has said that "Global warming is a total, and very expensive, hoax!" that was "created by and for the Chinese in order to make U.S. manufacturing non-competitive". What are your views on this statement?

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

What is your age?

[   ]

Non-selected Items (not in survey flow)

Humans are the only living beings who are conscious.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

The Earth is the only planet in the universe that provides the conditions for intelligent life.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Humans are inherently rational.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Humans are just one of many million species of animals and we share most of our genes with other animals.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

There is a natural hierarchy of life forms on Earth and humans are on the top of that hierarchy.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Some problems are so big they can only be solved by all countries working together.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I enjoy talking to people from all around the world

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Every human must have an allegiance to one country and one country only.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I would prefer to go on holiday with people from my own country rather than with foreigners.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

A good thing about the internet is that we can get to know people from foreign countries

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

People coming from different cultures usually do not work together well.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I would rather donate to a charity working in my own country than to a charity that helps people in poor developing countries.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

When people differ in intelligence, it is mostly due to differences in their genetic endowment.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

When a child is adopted into a new family, its intelligence does not depend on the intelligence of its birth parents

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Intelligence is not inherited, it is acquired through education

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

A person's upbringing is more important to their intelligence than their genetic inheritance.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Identical twins separated shortly after birth and reared in different family environments will end up having similar intelligence

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

If you know the intelligence of parents, you can make a good guess about the intelligence of their children even if the children have been brought up by others.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

With a rich stimulating environment every healthy child can grow up to be smart enough to learn any profession.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

During the past year, how often have you experienced a feeling of religious reverence or devotion?

○ Almost daily

○ Frequently

○ Sometimes

○ Rarely

○ Never

How much influence would you say religion has on the way you choose to act and the way you choose to spend your time each day?

○ No influence

○ A small influence

○ Some influence

○ A fair amount of influence

○ A large influence

When you have a serious personal problem how often do you take religious advice or teaching into consideration?

○ Almost always

○ Usually

○ Sometimes

○ Rarely

○ Never

Which of the following best describes your practice of prayer or religious meditation?

○ Prayer is a regular part of my daily life

○ I usually pray in times of stress or need but rarely at any other time

○ I pray only during formal ceremonies

○ Prayer has little importance in my life

○ I never pray

Climate Items - NOT in survey flow

I believe that the climate is always changing and what we are currently observing is just natural fluctuation.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I believe that most of the warming over the last 50 years is due to the increase in greenhouse gas concentrations.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

I believe that the burning of fossil fuels over the last 50 years has caused serious damage to the planet's climate.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Human CO2 emissions cause climate change.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Humans are too insignificant to have an appreciable impact on global temperature.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

LastScreen- NOT in survey flow

Thank you for participating.

Item Storage - NOT in survey flow

Please enter your MTurk-ID.

[   ]

There is a problem with your location, it does not match your stated MTurk location or is not within an official US state.

Men are more willing to put themselves in danger to protect others.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Men will always fight to have greater control in society than women.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

A woman will never be truly fulfilled in life if she doesn't have a committed, long-term relationship with a man.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Women are gifted with a higher emotional intelligence than men..

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

It is not a woman's place to supervise men, because they lack the necessary qualities.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

If leadership positions are given out based on merit and potential, a large majority of leaders will certainly be men.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

It is not natural when a young woman decides never to become a mother.

○ Strongly agree

○ Agree

○ Somewhat agree

○ Neither agree nor disagree

○ Somewhat disagree

○ Disagree

○ Strongly disagree

Powered by Qualtrics

II. Analysis plan

All participants delivered by Qualtrics and deemed by them to have passed their quality control checks will be included in the analysis. All those participants will have passed the attention filters and there are no further exclusion criteria, except to catch potential exclusion oversights (i.e., participants that were not eliminated by Qualtrics).

Emphasis during analysis will be on relating the principal constructs (Free market endorsement [all items QC]; accept evolution [QE]; accept complementary and alternative medicine [QF]; men & women evolved differently [QH]; men & women differ in nature [QI]; men and women are the same [QJ]; religiosity [QD]; vaccination attitudes [QG]; political attitudes [QB]) to each other using multivariate analyses.

Structural equation models will be used to examine the factor structure among constructs. Because the study is exploratory, the candidate models of the factor structure cannot be anticipated.

Pilot testing has confirmed that the constructs are identifiable using the items in this survey. Structural equation models have been fitted successfully to some of the constructs used here.

To illustrate, a script that analyzed one of the pilot studies is enclosed below:

```
#analyze qualtrics conservatism and gender, MTurk sample
rm(list=ls())
library(lattice)
library(tidyr)
library(plyr)
library(dplyr)
library(lme4)
library(lavaan)

#function to fit and print a measurement model
fitMM <- function (humspecmod) {
  fithumspec <- sem(humspecmod, data=rgpilot2)
  summary(fithumspec, standardized=TRUE, fit.measures=TRUE)
  parameterEstimates(fithumspec, standardized=TRUE)
  mod_ind <- modificationindices(fithumspec)
  print(head(mod_ind[order(mod_ind$mi, decreasing=TRUE), ], 10))
}

#function to create and run a single indicator model and return omega and so on
#  indicators are provided in character vector
#  pairwise correlations are optionally provided as a list of pairwise character
vectors
singleindmodel <- function(indicators,paircorrs,dat) {
  pcs <- paste(unlist(lapply(paircorrs,FUN=function(x) paste(x[1], "~~", x[2],
"\n"))),collapse=" ")
  SImod <- paste("factor =~", paste(indicators, collapse=" + "), "\n",
                 pcs,
                 "phantfac <~", paste(paste("1*",indicators,sep=""), collapse=" +
"), "\n",
                 "factor ~~ 0*phantfac")

  fitSImod <- cfa(SImod, dat[,indicators], estimator="ML")
  ParSImod <- parameterEstimates(fitSImod, standardized=TRUE)
  LoadingsSImod <- ParSImod[1:length(indicators), "std.all"]
  ErrorvarSImod <- 1 - LoadingsSImod^2
  ImpliedCorrSImod <- lavTech(fitSImod, what='cor.lv')
```

```
  OmegaSImod <- ImpliedCorrSImod[[1]][1,2]^2          #Squared correlation
between factor and phantom variable
  varSImod <- var(apply(dat[,indicators], MARGIN=1, FUN=mean)) #variance of
composite
  eSImod <- (1-OmegaSImod)*varSImod        #error term of single indicator
  LbdSImod<- sqrt(varSImod-eSImod^2)     #loading = variance minus error variance
  return(listN(OmegaSImod,eSImod,LbdSImod))
}

#http://stackoverflow.com/questions/21011672/automatically-add-variable-names-to-
elements-of-a-list
listN <- function(...){
  anonList <- list(...)
  names(anonList) <- as.character(substitute(list(...)))[-1]
  anonList
}
revscore <- function (x,mm) {  #this reverse scores a scale for items of reversed
polarity
  return ((mm+1)-x)            #same as fixscore but to be conceptually clear it's
a separate function
  }
fixscore <- function (x,mm) {  #this fixes scale so SD=1 and SA=7 irrespective of
polarity
  return ((mm+1)-x)
  }

setwd("xxx")
rgpilot <- read.csv("xxx.csv",header=TRUE,row.names=NULL)
#row 2&3 (with verbose names) manually deleted from Q file.

rgpilot2 <- rgpilot %>% filter(Qage == Q4.2) %>%
                 filter(QAC == 4) %>%             #table is not an animal
                 filter(Q_TotalDuration<1801) %>%    #30 minutes should be ample
                 select(contains("Q")) %>%
                 select(-contains("Q_Tot"))         #drop the Q that ain't a q.


# first fix the Qualtrics-induced scale problems, so SD=1 and SA=7
rgpilot2 <- rgpilot2 %>% mutate_at(c(paste("QC.",c(1:5),sep=""),
                                 paste("QE.",c(1:5),sep=""),
                                 paste("QF.",c(1:5),sep=""),
                                 paste("QH.",c(1:5),sep=""),
                                 paste("QI.",c(1:5),sep=""),
                                 paste("QJ.",c(1:5),sep="")),fixscore,mm=14)

#reverse score such that polarity is:
# QC Free market endorsement
# QE accept evolution
# QF accept CAM
# QH men & women different evolved
# QI men & women different nature
# QJ men & women same
rgpilot2 <- rgpilot2 %>% mutate_at(c("QC.2","QC.4","QC.5",
                               "QE.4","QE.5",
                               "QF.1","QF.3"),revscore,mm=7)
#now reverse score the sliders
rgpilot2 <- rgpilot2 %>% mutate_at(c("QB_2","QB_3","QB_4"),revscore,mm=100)

#correlations for slider variables
rgpilot2 %>% select(paste("QB_",c(2,3,4,5,6,9,10,11,12),sep="")) %>%
cor(use="complete.obs")

#explore structure of sliders
slider <- rgpilot2 %>% select(paste("QB_",c(2,3,4,5,6,9,10,11,12),sep=""))
```

```
sliderpc <- prcomp(slider)
plot(sliderpc)
print(sliderpc)

# compute pairwise correlations within each cluster
for (cluster in c("C","E","F","H","I","J")) {
  rgpilot2 %>% select(num_range(paste("Q",cluster,".",sep=""),1:5)) %>%
cor(use="complete.obs") %>% print
}

# now compute measurement models for all constructs so we can use single-indicator
models later
freemarketvars <- paste("QC.",c(1:5),sep="")
fmmod <- c("fm =~ ",paste(freemarketvars,collapse=" + "),"QC.1 ~~ QC.3") #pairwise
correlation p~.06
fitMM (fmmod)

evovars <- paste("QE.",c(1:5),sep="")
evomod <- c("evo =~ ",paste(evovars,collapse=" + "),"QE.2 ~~ QE.4")
fitMM (evomod)

camvars <- paste("QF.",c(1:5),sep="")
cammod <- c("cam =~ ",paste(camvars,collapse=" + "),"QF.2 ~~ QF.4")
fitMM (cammod)

mwevovars <- paste("QH.",c(1:5),sep="")
mwevomod <- c("mwevo =~ ",paste(mwevovars,collapse=" + "),"QH.2 ~~ QH.3")
fitMM (mwevomod)

mwnaturevars <- paste("QI.",c(1:5),sep="")
mwnaturemod <- c("mwnature =~ ",paste(mwnaturevars,collapse=" + "),"QI.2 ~~ QI.3")
fitMM (mwnaturemod)

mwequalvars <- paste("QJ.",c(1:5),sep="")
mwequalmod <- c("mwequal =~ ",paste(mwequalvars,collapse=" + "),"QJ.4 ~~ QJ.5")
fitMM (mwequalmod)
```

Note that question numbers for the present survey may be different and that different models may be fit. However, the same approach to analysis will be followed.