

(1.1) **Title**

Maintenance of unwarranted beliefs

(1.2) **Study type**

Research program

(1.3) **Division**

Social Health and Organisational Psychology

(1.4) **Start date**

01 April 2022

(1.5) **End date**

01 April 2024

Basic study information

(1) Name(s), position(s) and division(s) of the responsible researcher(s):

Name	Position	Division	E-mail
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Chris Harris			
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Assistant professor			
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SHOP			
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c.a.harris@uu.nl			
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(2) Name(s), position(s) and division(s) of the executive researcher(s):

Name	Position	Division	E-mail
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Chris Harris			
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Assistant professor			
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SHOP			
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c.a.harris@uu.nl			
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(3) Research area/discipline:

social cognition

(4) What is the study's main objective (hypothesis)?

The choices we make (e.g., exploitation of a supposedly best option or avoidance of a supposedly bad option) can result in distributions of evidence that can result in the maintenance of unwarranted beliefs even in the absence of cognitive biases

(5) Primary funder of the study:

Internal funding

(6) Does the study concern a multi-center project, e.g. in collaboration with other universities, a GGZ mental health care institution, or a university medical center?

☐ Yes

☒ No

(7) Where will the study (data collection) be conducted? If this is abroad, please note that you have to be sure of the local ethical codes of conducts and permissions

Studies will be run online or at Utrecht University

[Study details \(I\)](#)

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(1) Does your study exclusively concern the analysis of existing data, document or records? Where can the data be found?

☐ Yes

☒ No

(2) Are the sources of the existing data, documents or records publicly available?

☐ Yes

☐ No

☒ Not applicable

(3) Will the data be processed by the principal investigator in such a manner that participants can be identified either directly or indirectly (through identifiers (such as a code) linked to them)?

- ☐ Yes
☒ No

(4) If the study uses de-identified (or pseudonymized) data, does the responsible or executive researchers have access to the key to the code permitting re-identification of the person whose data are being studied?

- ☐ Yes
☐ No
☒ Not applicable

(5) The research will involve only the use of anonymous survey procedures, interview procedures or the observation of public behavior

- ☒ Yes
☐ No

(6) Will participants be asked to report their own or others' sexual experiences, alcohol or drug use, or suicidal thoughts, and will their identities be known to you?

- ☐ Yes
☒ No

(7) Are any participants confined in a correctional or detention facility?

- ☐ Yes
☒ No

(8) Will the research procedure harm or discomfort the individual in any way (e.g., research topic, or study activities)

- ☐ Yes
☒ No

Study details (II)

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(1) Will participants that are recruited be >16 years?

- ☒ Yes

☐ No

(2) Will participants that are recruited be mentally competent (wilsbekwaam in Dutch)?

☒ Yes

☐ No

(3) Will participants that are recruited provide active informed consent?

☒ Yes

☐ No

(4) Will the probability and magnitude of possible harm or discomfort anticipated in the research be greater than ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests?

☐ Yes

☒ No

(5) Does the participant population contain vulnerable persons? (e.g., incapacitated, children, mentally challenged, traumatized, pregnant), or a taboo subject (e.g., own or others' sexual activity, hard drug use, suicide thoughts, religious belief, political preference)

☐ Yes

☒ No

(6) Will participants be subjected to:

	Yes	No
Inquiries into their sexual behavior or orientation	<input type="radio"/>	<input checked="" type="radio"/>
Inquiries into drug use (also alcohol, smoking, soft drugs)	<input type="radio"/>	<input checked="" type="radio"/>
Assessment of delinquency	<input type="radio"/>	<input checked="" type="radio"/>
Inquiries relating to religious or philosophical belief	<input type="radio"/>	<input checked="" type="radio"/>
Inquiries relating to political opinions	<input type="radio"/>	<input checked="" type="radio"/>
Inquiries into ethnic origin	<input type="radio"/>	<input checked="" type="radio"/>
Inquiries into trade Union membership	<input type="radio"/>	<input checked="" type="radio"/>
Inquiries into violent experiences	<input type="radio"/>	<input checked="" type="radio"/>
Inquiries into personal health	<input type="radio"/>	<input checked="" type="radio"/>
Inquiries into criminal convictions and offences	<input type="radio"/>	<input checked="" type="radio"/>
Shocking images/videos	<input type="radio"/>	<input checked="" type="radio"/>
Deception (information letter does not state real study objective)	<input type="radio"/>	<input checked="" type="radio"/>
Physical pain (electrical/ thermal shocks, noise)	<input type="radio"/>	<input checked="" type="radio"/>

	Yes	No
Following orders behaviorally (by force, or outside the context of the lab with possible harmful consequences for the participant or his/her social environment?)	<input type="radio"/>	<input checked="" type="radio"/>
A new technique for data collection?	<input type="radio"/>	<input checked="" type="radio"/>

(7) Will data of the following categories be processed:

	Yes	No
Photo data	<input type="radio"/>	<input checked="" type="radio"/>
Video data	<input type="radio"/>	<input checked="" type="radio"/>
Biological material (buccal, blood, hair)	<input type="radio"/>	<input checked="" type="radio"/>
Genetic data	<input type="radio"/>	<input checked="" type="radio"/>
Biometric data (fingerprint, iris or retinal scan, voice recognition and face scan)	<input type="radio"/>	<input checked="" type="radio"/>
Directly identifying data (name, address, date of birth or a combination of those items)	<input type="radio"/>	<input checked="" type="radio"/>

[Study details \(III\)](#)

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(1) What is the study's theoretical and practical relevance? (500 words max.):

Extensive literatures speak to the many reasons why people might form biases. Often such biases are attenuated as further evidence is gathered, speaking to our overall remarkable sensitivity to covariation. However, at times such biases are maintained - despite plenty of opportunities to put one's beliefs to the test and even when we should be motivated to find and utilize a best option. We are interested in these cases and will investigate how sampling behavior can lead to distributions of evidence that seem to confirm the current choice strategy even in the absence of cognitive biases. Insights will help inform us on the influence of the experienced sample in decision-making and belief-updating and help strengthen and refine comprehensive theories. These insights will help exploring how people form and maintain unwarranted beliefs such as stereotypes and superstitions and how social bubbles can result in exaggerated or even false beliefs.

(2) What are the central hypotheses?

The questions answered by this research program are of empirical nature. Specifically, we will investigate how exploitation (vs. exploration) of supposedly best options or avoidance of supposedly worst options can result in over- or underrepresentation of some choice alternatives which will lead to the persistence of (initial) biases.

(3) What is the study's design and procedure? (500 words max.):

Participants will play multi-armed bandit tasks, meaning that they will make repeated choices between two or more choice alternatives with incentivized outcomes. We often manipulate the order of the first trials (the initial evidence) in the induction phase. For most trials, however, participants will be able to choose freely between the available options. Participants receive feedback on the outcome of their interaction. We may ask participants before and during the study for estimates regarding the perceived contingencies. We will always ask them afterwards for estimates of the perceived contingencies as well as for basic demographic information such as age, gender, and level of education.

(4) Optional attachments:

No files have been uploaded yet

(5) What data collection instruments, stimuli and/or manipulations will be used? If data are collected online, please specify the platform used.

Visual stimuli to support the cover story regarding the bandit task. That is, visual stimuli that represent the options to be chosen from as well as the outcomes. For example, two bags might represent the choice alternatives and balls of two different colors might represent the respective outcomes (wins and losses) or computer-generated faces might represent potential interaction partners among whom participants can choose whom to interact with. Most studies will be run online via SosciSurvey, with participant recruitment via Prolific Academic. SosciSurvey adheres to GDPR regulations and is hosted on servers that are placed in Germany. We often manipulate the order of the first trials (the initial evidence) in the induction phase.

(6) Optional attachments:

No files have been uploaded yet

(7) Please state which statistical procedures will be used.

Classic NHST and Bayesian analysis techniques (e.g. t-tests and the Bayesian equivalent) with a focus on mixed-effects modeling

(8) Will a method be used that may, by coincidence, lead to findings of which the participant should be informed? If so, what actions will be taken in the case of a coincidental finding?:

☐ Yes

☒ No

(5) What is the number of participants? Provide a power analysis and/or motivation for the number of participants. The current convention is a power of 0.80. If the study deviates from this power, the FERB would like you to justify why this is necessary :

An a priori power analysis for a difference from constant t-test using G*Power (Faul et al., 2007) based on measures in Experiment 2 of Harris et al. (2020) suggests a minimum sample size of at least 50 participants for an effect of choice in a condition with frequent positive outcomes for two equal options (that is, per cell). These calculations were based on a 5% alpha-level, 80% statistical power, and effect sizes between $d = .35$ and $d = .43$ as reported by Harris et al. (2020) for maintained biases in a condition with positive outcomes on 75% of trials. Follow-up studies using different distributions for the induction phase assumed to be weaker will use a larger sample size. We might also use Bayesian stopping rules (i.e., recruitment until $BF \geq 7$ or $N > 150$ per cell).

(7) How will the participants be recruited

Using Prolific Academic and the LangeveldLab at Utrecht University.

(8) Please state any specific in- and exclusion criteria and how these are tested.

Fluency in English and high approval ratings on Prolific. Both are applied using Prolific's internal filter system.

(9) How much time will the prospective participants have to decide as to whether they will indeed participate in the study?:

Until the sample size has been reached. For online studies this can be less than one hour.

(10) Are the participants fully free to participate and terminate their participation whenever they want and without stating their grounds for doing so?:

- ☒ Yes
☐ No

(11) Will the participants be in a dependent relationship with the researcher?:

- ☐ Yes
☒ No

(13) What time investment and effort will be requested from participants?

Completion of the task, that is, repeated choices and judgements thereof. Time investment should typically lie between 10-15minutes

(14) Will the participants be compensated for their efforts? How (financial reimbursement, travelling expenses, otherwise). What is the amount? How will the compensation be transferred to the participant?

- ☒ Yes
☐ No

Participants are financially reimbursed for their invested efforts. The amount is incentivized, that is, dependent on performance. In the online studies, participants will receive at least 6GBP/h in accordance with Prolific guidelines.

(15) Will this compensation depend on certain conditions, such as the completion of the study?

- ☒ Yes
☐ No

As emphasized in the instructions, performance will typically influence the exact amount received. While the framing may aim to be neutral (such that participants can earn more or less than the average payoff) those payoffs will be set so that the minimum earned still is in accordance to the amounts described under 14.

Datamanagement

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(1) Who will be responsible for managing access to the data?

Chris Harris

(2) What type of data will you collect or create? Please provide a brief description of the data, including the type, volume (if known), format and content.

Behavioral data (choices made), estimates of e.g. preferences or conditional probability assessments regarding the choice alternatives, necessary demographic data (e.g., age, gender).

(3) Will you be exchanging (personal) data with organizations/research partners outside the UU?

- ☒ Yes

☐ No

(4) If so, will a data processing agreement be made up?

☐ Yes

☒ No

☐ Not applicable

(5) Will standard minimum and maximum retention periods apply to the data?

☒ Yes

☐ No, namely:

(6) Will data be collected and stored according to FSBS protocol? For the current version of the protocol, please see this page: <https://ferb.sites.uu.nl/relevant-documents>. Please explain how data collection and storage will be organized.

☒ Yes

☐ No

(7) Is secondary use of your data is intended or foreseeable?

☒ Yes

☐ No

(8) If so, where will you make your data available?

Open Science Framework (OSF)

(9) If so, what access and usage conditions will apply?

Following open science practices, we will publish anonymized datasets and methods on OSF

[Attachments](#)

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(1) Text (advert) for the recruitment of participants (optional)

No files have been uploaded yet

(2) Information letter for participant (*required*)

[Information_letter.docx](#) deleted C.A. Harris 18 March 2022 - 15:10:33

(3) Consent form for participants (*required*)

[Consent_Statement.docx](#) deleted C.A. Harris 18 March 2022 - 15:10:33

(4) Written or oral feedback information (debriefing text) (optional)

No files have been uploaded yet

(5) (Descriptions of) questionnaires (optional)

No files have been uploaded yet

(6) (Descriptions of) measurement instruments (optional)

No files have been uploaded yet

(7) Consent form for participants (*optional*)

No files have been uploaded yet

(8) Miscellaneous documents e.g. data set description (optional)

No files have been uploaded yet

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