Supplementary Materials for

"Success stories cause false beliefs about success"

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Contents

S1 Experiment screenshots

The code to run the participant facing experiment is available on GitHub:

`https://github.com/CSSLab/success-stories-experiment.`

S1.1 Manipulation checks

Screenshots for the manipulation check questions given to participants are shown in SM Figures S1, S2, S3. The order of options for each question was randomized for each participant. The "Continue" button is disabled in these screenshots: this button was enabled 500ms after the last question in the page was responded to.

S1.2 Decision bet

Screenshots for the decision bet part of the experiment are shown in SM Figures S4, S5, S6. The order of the graduate/dropout options were randomized for each participant. The "Continue" button is disabled in these screenshots because the "Confirm" box was not checked. After being checked, the "Continue" button was enabled after a 3 second delay.

Predicting unicorns

Welcome to this HIT about predicting the success of startups.

A startup is a small, young company that is intended to grow rapidly and to become large and influential. They are typically backed by venture capital (V.C.) firms. The people who create startups are called founders. A "unicorn" is a startup that has achieved a valuation of 1 billion dollars or more.

Some people believe that a startup is more likely to become a unicorn if it is founded by someone who has graduated from college (that is, they did not drop out). Not everyone believes this, of course, and there are plenty of examples of unicorn startups whose founders dropped out of college. But here are some companies that we chose to show you because they are unicorns founded by college graduates.

Company	Co-founder	Graduated?
Uber	Garrett Camp	Yes
WhatsApp	Brian Acton	Yes
Twitter	Biz Stone	Yes
Facebook	Eduardo Saverin	Yes
Spotify	Martin Lorentzon	Yes

On the next page we are going to give you information about two other startups and ask you to predict which startup is more likely to be a unicorn. But first we have a few questions for you.

A unicorn is a startup that achieves:
- ● **a valuation of $1 billion or more**
- ○ a valuation of $100,000 or more

We showed you a table in which each row had a unicorn and a founder who:
- ● **Graduated from college**
- ○ Dropped out of college

Which of the following statements is **true**?
- ● **Not everyone believes that companies with graduate founders are more likely to become unicorns, and there have been unicorns with founders who dropped out of college.**
- ○ Everyone believes that companies with graduate founders are more likely to become unicorns, and there have not been unicorns with founders who dropped out of college.

The companies shown in the table above were selected because they are unicorns founded by college graduates:
- ● **True**
- ○ False

Continue

SM Figure S1: Manipulation checks in graduate data condition (correct answers are selected)

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People debate whether startup companies whose founders dropped out of college (that is, did not graduate) are more or less likely to become unicorns.

On the next page we are going to give you information about two other startups and ask you to predict which startup is more likely to be a unicorn. But first we have a few questions for you.

A unicorn is a startup that achieves:
- ● **a valuation of $1 billion or more**
- ○ a valuation of $100,000 or more

Which of the following statements is **true**?
- ● **Most people are not sure whether founders who dropped out of college or founders who graduated college are more likely to become founders of unicorn startups.**
- ○ It is quite certain to many people that either founders who dropped out of college or founders who graduated college are more likely to become founders of unicorn startups.

Continue

SM Figure S2: Manipulation checks in no data condition (correct answers are selected)

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Some people believe that a startup is more likely to become a unicorn if it is founded by someone who has dropped out of college (that is, they did not graduate). Not everyone believes this, of course, and there are plenty of examples of unicorn startups whose founders graduated from college. But here are some companies that we chose to show you because they are unicorns founded by college dropouts.

Company	Co-founder	Dropped out?
Uber	Travis Kalanick	Yes
Facebook	Mark Zuckerberg	Yes
Twitter	Jack Dorsey	Yes
WhatsApp	Jan Koum	Yes
Spotify	Daniel Ek	Yes

On the next page we are going to give you information about two other startups and ask you to predict which startup is more likely to be a unicorn. But first we have a few questions for you.

A unicorn is a startup that achieves:
- ● **a valuation of $1 billion or more**
- ○ a valuation of $100,000 or more

We showed you a table in which each row had a unicorn and a founder who:
- ● **Dropped out of college**
- ○ Graduated from college

Which of the following statements is **true**?
- ● **Not everyone believes that companies with dropout founders are more likely to become unicorns, and there have been unicorns with founders who graduated from college.**
- ○ Everyone believes that companies with dropout founders are more likely to become unicorns, and there have not been unicorns with founders who graduated from college.

The companies shown in the table above were selected because they are unicorns founded by college dropouts:
- ● **True**
- ○ False

Continue

SM Figure S3: Manipulation checks in dropout data condition (correct answers are selected)

Predicting unicorns

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Some people believe that a startup is more likely to become a unicorn if it is founded by someone who has graduated from college (that is, they did not drop out). Not everyone believes this, of course, and there are plenty of examples of unicorn startups whose founders dropped out of college. But here are some companies that we chose to show you because they are unicorns founded by college graduates.

Company	Co-founder	Graduated?
Spotify	Martin Lorentzon	Yes
WhatsApp	Brian Acton	Yes
Twitter	Biz Stone	Yes
Uber	Garrett Camp	Yes
Facebook	Eduardo Saverin	Yes

Now we are going to give you information about two other startups and ask you to predict which startup is more likely to be a unicorn. You may receive a HIT bonus of $1.00 based on your decision.

We have a database of all types of startup companies, with data about many features of the companies, and whether they became unicorns or not. We also have data on the founders of these companies, and whether or not these founders graduated or dropped out of college.

Now, completely at random, we will pick a company with a dropout founder from our database, and a company with a graduate founder from our database (excluding the companies in the table above).

You must decide to bet on one of these two companies. If the company you bet on is a unicorn then in addition to your HIT payment, you'll get a **bonus of $1.00** — if it is not a unicorn, you won't get a bonus.

> These two companies will be randomly sampled from our database, and do not include any of the companies we showed in the table above:
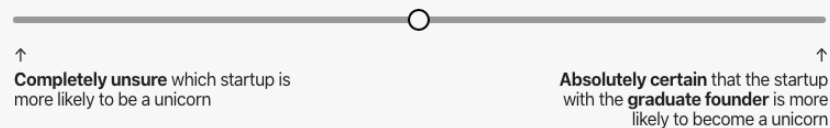> - ● **True**
> - ○ False

Which startup is more likely to be a unicorn?

> - ● **The startup with a graduate founder**
> - ○ The startup with a dropout founder

How confident are you in this decision?

> *You can change your response by dragging the slider.*
>
> ↑ **Completely unsure** which startup is more likely to be a unicorn   ↑ **Absolutely certain** that the startup with the **graduate founder** is more likely to become a unicorn

Your responses indicate that you would bet on the startup with the graduate founder and **you are fairly confident** that the startup with the graduate founder is more likely to become a unicorn.

> *Click "Confirm" below if this is what you want, or update your answer.*
> - ☐ Confirm

`Continue`

SM Figure S4: Decision bet screen in graduate data condition (slider shows a selected confidence value coded as 50)

Predicting unicorns

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People debate whether startup companies whose founders dropped out of college (that is, did not graduate) are more or less likely to become unicorns.

Now we are going to give you information about two startups and ask you to predict which startup is more likely to be a unicorn. You may receive a HIT bonus of $1.00 based on your decision.

We have a database of all types of startup companies, with data about many features of the companies, and whether they became unicorns or not. We also have data on the founders of these companies, and whether or not these founders graduated or dropped out of college.

Now, completely at random, we will pick a company with a dropout founder from our database, and a company with a graduate founder from our database.

You must decide to bet on one of these two companies. If the company you bet on is a unicorn then in addition to your HIT payment, you'll get a **bonus of $1.00** — if it is not a unicorn, you won't get a bonus.

> These two companies will be randomly sampled from our database:
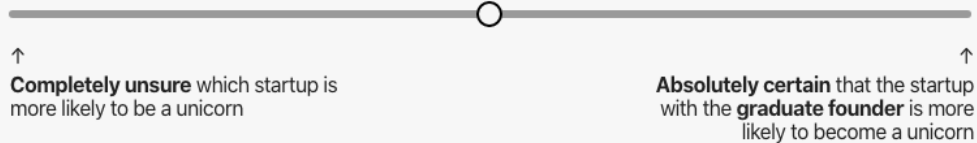> ● **True**
> ○ False

Which startup is more likely to be a unicorn?

> ● **The startup with a graduate founder**
> ○ The startup with a dropout founder

How confident are you in this decision?

> *You can change your response by dragging the slider.*
>
> ⟵————————○————————⟶
>
> ↑
> **Completely unsure** which startup is more likely to be a unicorn
>
> ↑
> **Absolutely certain** that the startup with the **graduate founder** is more likely to become a unicorn

Your responses indicate that you would bet on the startup with the graduate founder and **you are fairly confident** that the startup with the graduate founder is more likely to become a unicorn.

> *Click "Confirm" below if this is what you want, or update your answer.*
> ☐ Confirm

[Continue]

SM Figure S5: Decision bet screen in no data condition (slider shows a selected confidence value coded as 50)

Predicting unicorns

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Some people believe that a startup is more likely to become a unicorn if it is founded by someone who has dropped out of college (that is, they did not graduate). Not everyone believes this, of course, and there are plenty of examples of unicorn startups whose founders graduated from college. But here are some companies that we chose to show you because they are unicorns founded by college dropouts.

Company	Co-founder	Dropped out?
WhatsApp	Jan Koum	Yes
Facebook	Mark Zuckerberg	Yes
Spotify	Daniel Ek	Yes
Twitter	Jack Dorsey	Yes
Uber	Travis Kalanick	Yes

Now we are going to give you information about two other startups and ask you to predict which startup is more likely to be a unicorn. You may receive a HIT bonus of $1.00 based on your decision.

We have a database of all types of startup companies, with data about many features of the companies, and whether they became unicorns or not. We also have data on the founders of these companies, and whether or not these founders graduated or dropped out of college.

Now, completely at random, we will pick a company with a dropout founder from our database, and a company with a graduate founder from our database (excluding the companies in the table above).

You must decide to bet on one of these two companies. If the company you bet on is a unicorn then in addition to your HIT payment, you'll get a **bonus of $1.00** — if it is not a unicorn, you won't get a bonus.

> These two companies will be randomly sampled from our database, and do not include any of the companies we showed in the table above:
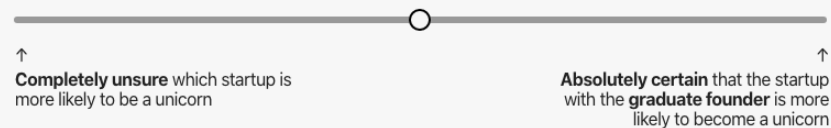> ● **True**
> ○ False

Which startup is more likely to be a unicorn?

> ● **The startup with a graduate founder**
> ○ The startup with a dropout founder

How confident are you in this decision?

> *You can change your response by dragging the slider.*
>
> ↑
> **Completely unsure** which startup is more likely to be a unicorn
>
> ↑
> **Absolutely certain** that the startup with the **graduate founder** is more likely to become a unicorn

Your responses indicate that you would bet on the startup with the graduate founder and **you are fairly confident** that the startup with the graduate founder is more likely to become a unicorn.

> *Click "Confirm" below if this is what you want, or update your answer.*
> ☐ Confirm

Continue

SM Figure S6: Decision bet screen in dropout data condition (slider shows a selected confidence value coded as 50)

S2   Primary results on full sample

Our main study was run with 1,650 participants. Following the pre-registered exclusion criteria[1], we are left with $N = 1,317$ responses in our final sample. In this section we reproduce the figures of betting behavior and confidence that appear in our main paper on the full study sample without our pre-registered exclusion criteria. We note that the qualitative results are similar to those observed in the primary study sample with exclusions applied.

Note: only the justifications provided by participants which were not excluded from the main analysis were coded by our independent raters, so we do not present analysis of coded justifications on this full study sample.

S2.1   Bets in favor of the graduate by condition

SM Figure S7 shows the betting behavior of participants in the full sample. Without excluding participants who failed the attention checks, the pattern of participants betting in favor of the type of founder they saw examples of is qualitatively similar to the main study sample with exclusions (main text).
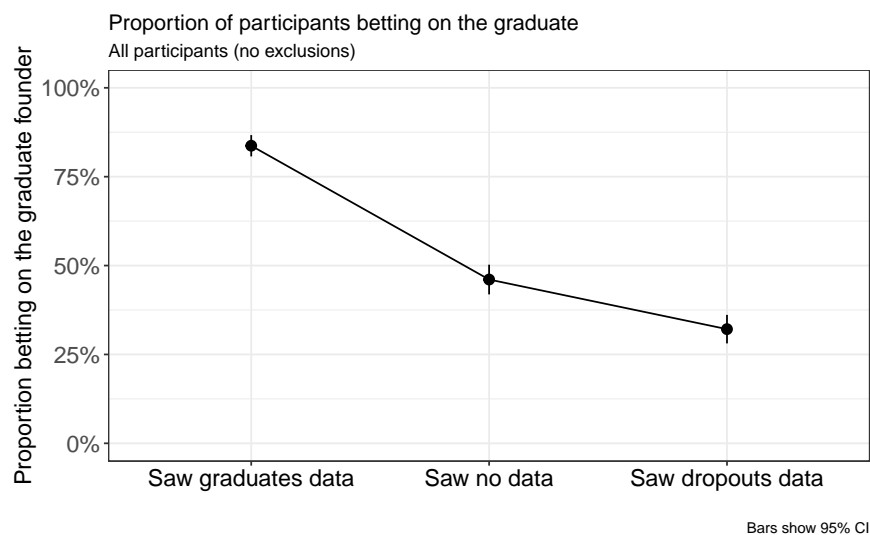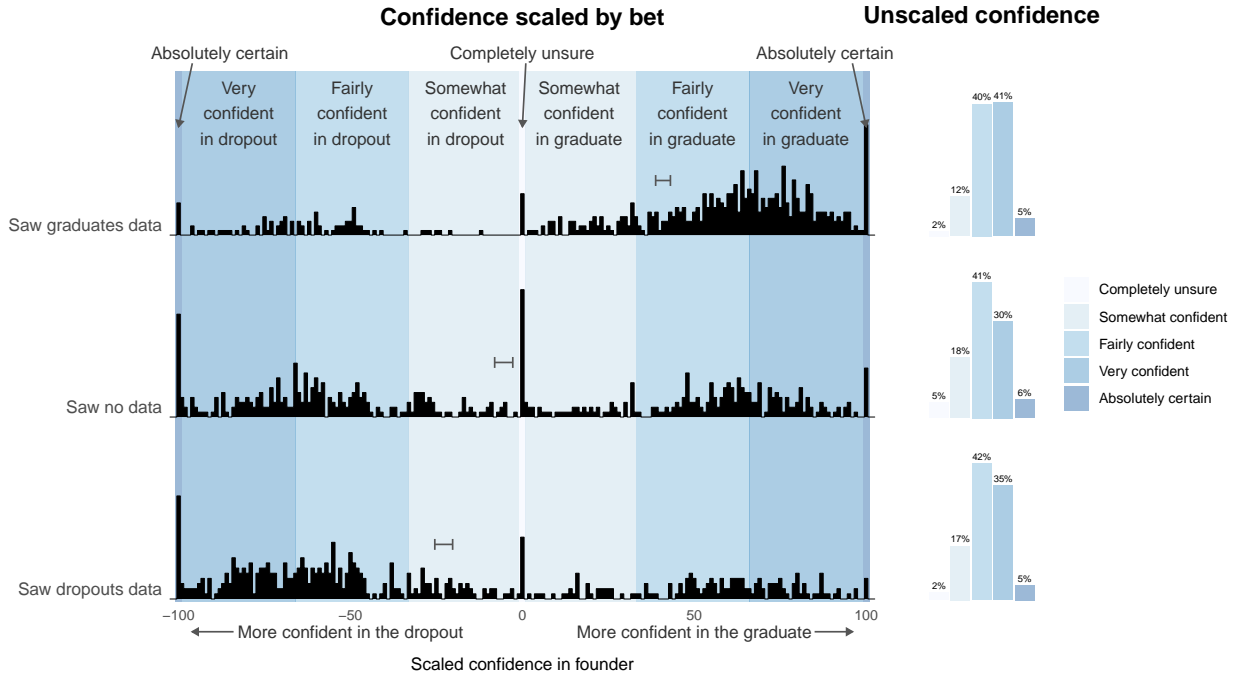

SM Figure S7: Main effect on full sample without participant exclusions (bars show 95% CI).

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[1] https://aspredicted.org/eq3hx.pdf

S2.2   Confidence

SM Figure S8 reproduces the confidence figure shown in the main text, but for the full sample without participant exclusions. The results are qualitatively similar to those in which the participant exclusions were applied.

SM Figure S8: Scaled confidence on full sample without participant exclusions (bars show standard error).

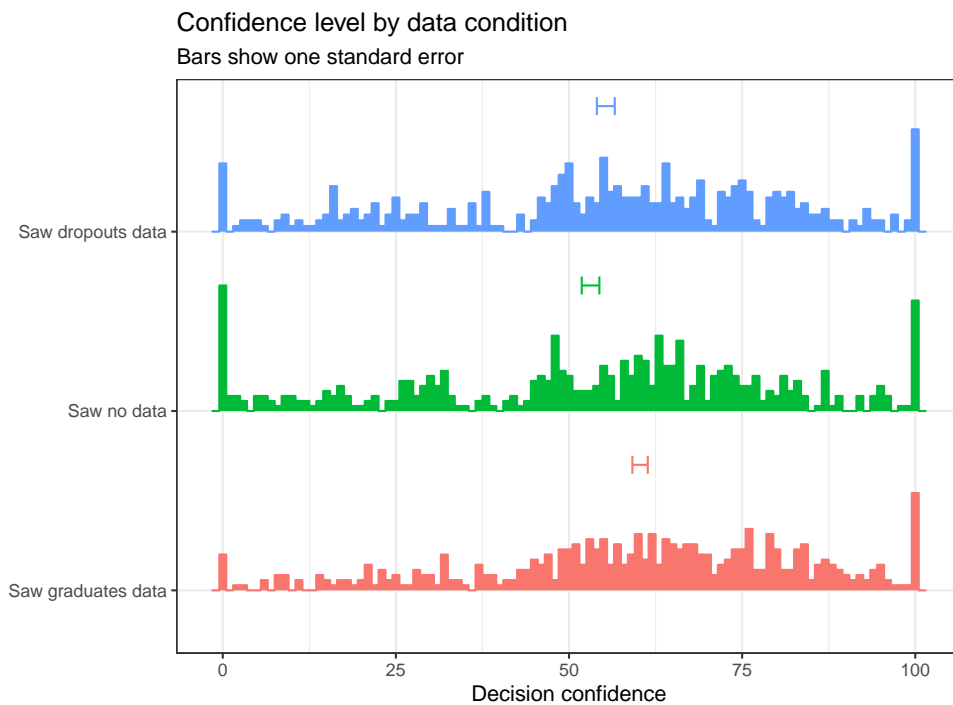# S3   Unscaled confidence distributions

As described in the main text, participants specified their confidence in their bet on a slider which did not have a default setting, and they did not see the exact numeric value of confidence that their slider value indicated. Instead, the numeric value specified by the slider was translated to a label displayed as a line of text in the experiment interface. These labels were computed from the indicated numeric slider value as follows: "completely unsure" (value of 0), "somewhat confident" (value from 1 to 32), "fairly confident" (value from 33 to 66), "very confident" (value from 67 to 99), "absolutely certain" (value of 100). We call the numeric value of the slider the *unscaled confidence*. We then applied a scaling transformation which accounts for the direction of the

decision that participants made: in this *scaled confidence value*, the sign of the numeric confidence value becomes negative if the participant bet on the dropout founder, and remains positive if they bet on the graduate founder.

In the main text we show the full distribution of *scaled* numeric confidence values along with the *unscaled* distribution of confidence responses falling within each label. Here we present the *full distribution* of unscaled confidence values, with error bars depicting mean and standard error.

## S3.1   Unscaled confidence within analysis sample

SM Figure S9 shows the distribution of the unscaled confidence values on the set of participants included in our analysis. Looking at the distribution of confidence values without our scaling transformation reveals that most participants indicated a relatively high degree of confidence, and that few participants appeared to guess when making their forced choice bet.

SM Figure S9: Unscaled confidence distribution on analysis sample, after applying exclusions (bars show standard error).

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S3.2   Unscaled confidence within full sample

We show the distribution of the unscaled confidence values on the full sample without participant exclusions in SM Figure S10. These results are qualitatively similar to the unscaled confidence values the participants included in our study analysis provided (cf. SM Figure S9).
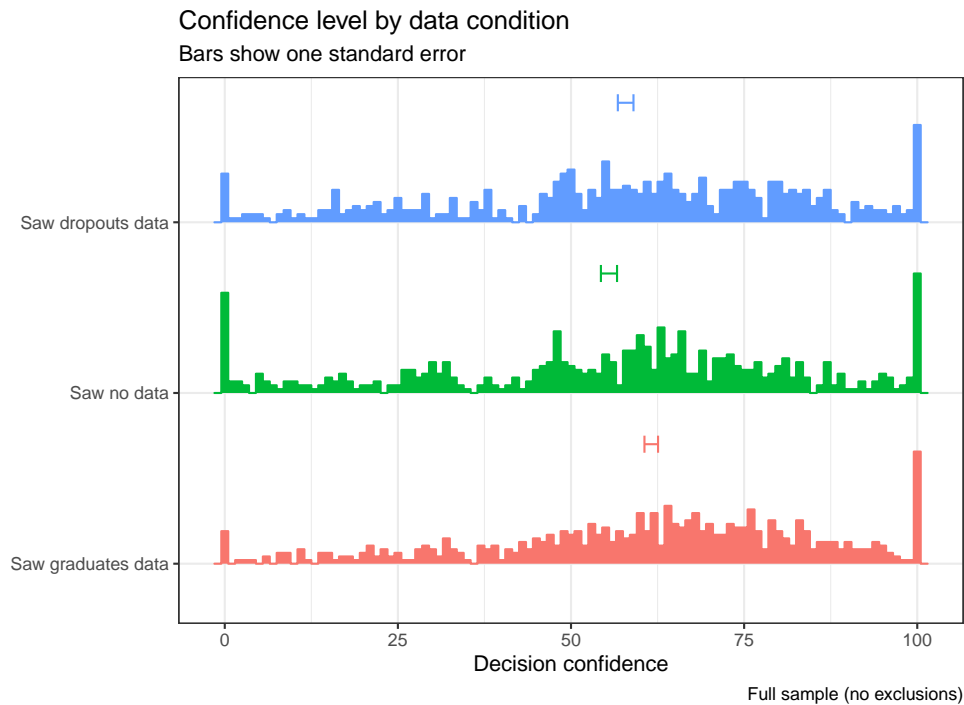
SM Figure S10: Unscaled confidence on full sample without participant exclusions (bars show standard error).

S4   Additional results

S4.1   Proportion of informative justifications by condition

The coded justifications were considered "informative" if they were coded as being either Associational or an Explanation of any type. In the main text we present the proportion of informative justifications across all conditions: in SM Table S1 we present the proportion of informative justifications occurring within each condition.

| Data condition	Proportion of "informative" justifications
Saw graduates data	93%
Saw no data	92%
Saw dropouts data	91%

SM Table S1: Proportion of justifications provided within each data condition coded as "informative".

Kappa score for grouped Associational codes
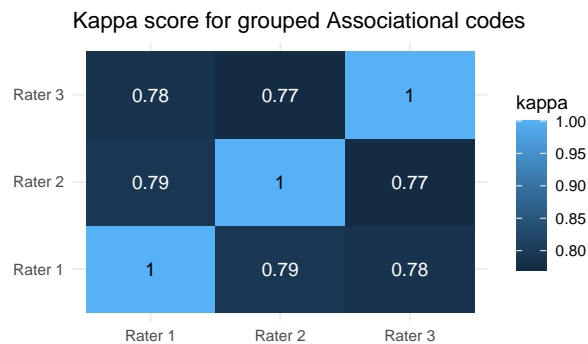
SM Figure S11: Kappa on the final codeset (grouped Associational, the codes used in the main analysis)

S4.2 Interrater agreement for coded justifications

Three raters coded all 1,299 justifications provided by participants who were not excluded by our preregistered exclusion criteria. As indicated in our pre-registration document, the set of "associational" codes that we use were grouped into a single code. As shown in SM Figure S11, interrater agreement on the set of grouped associational codes as measured by pairwise Cohen's Kappa coefficient ranges from 0.77-0.79, considered a "good" level of interrater agreement **?**. We also show interrater agreement on the untransformed set of codes in SM Figure S12. The pairwise Cohen's Kappa coefficient ranges from 0.66-0.71, which is also considered a "good" level of interrater agreement Mabmud (2012).
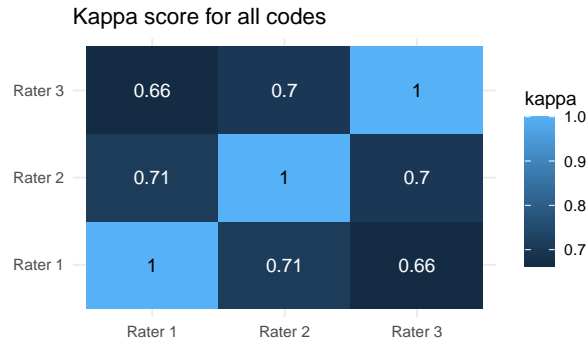
SM Figure S12: Kappa on the full codebook, not used in any analyses presented

References

Mabmud, S. M. (2012). Cohen's Kappa. In N. J. Salkind (Ed.), *Encyclopedia of Research Design* (pp. 188–189). Thousand Oaks: SAGE Publications, Inc.