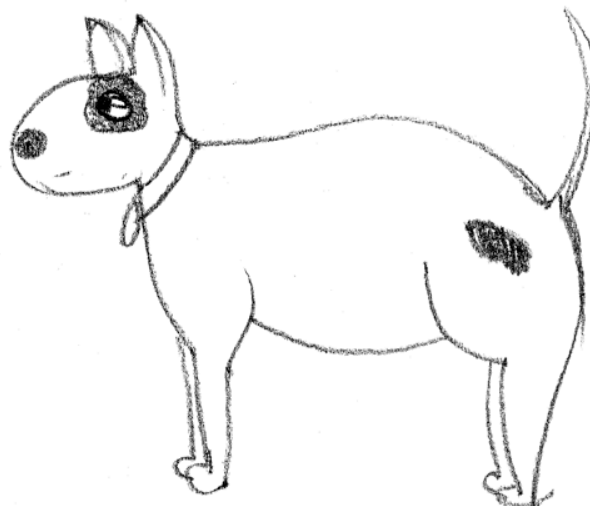# A computational approach to politeness
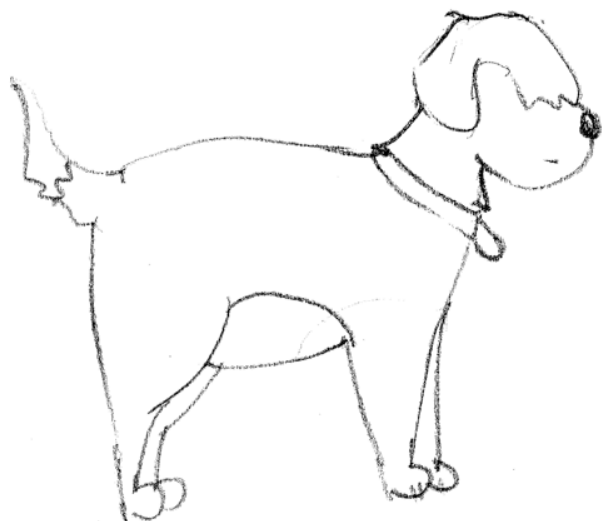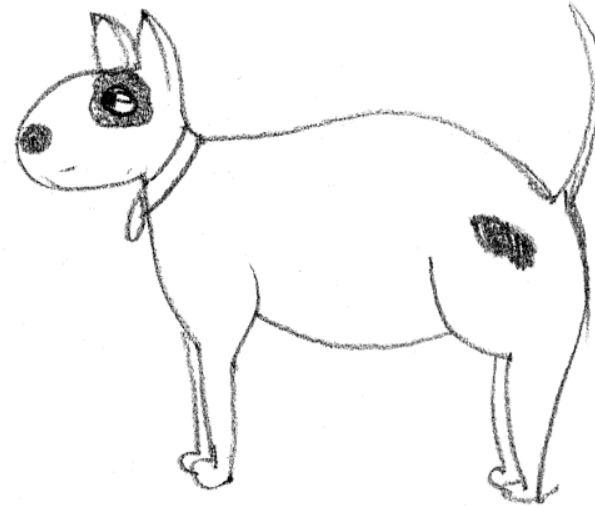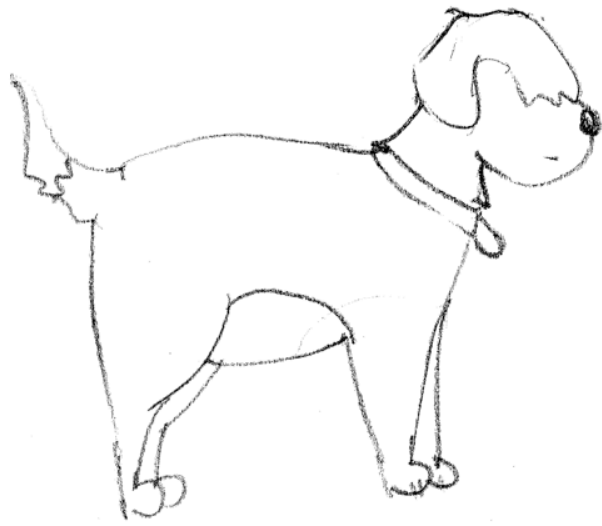## with applications to social factors

Cristian Danescu-Niculescu-Mizil
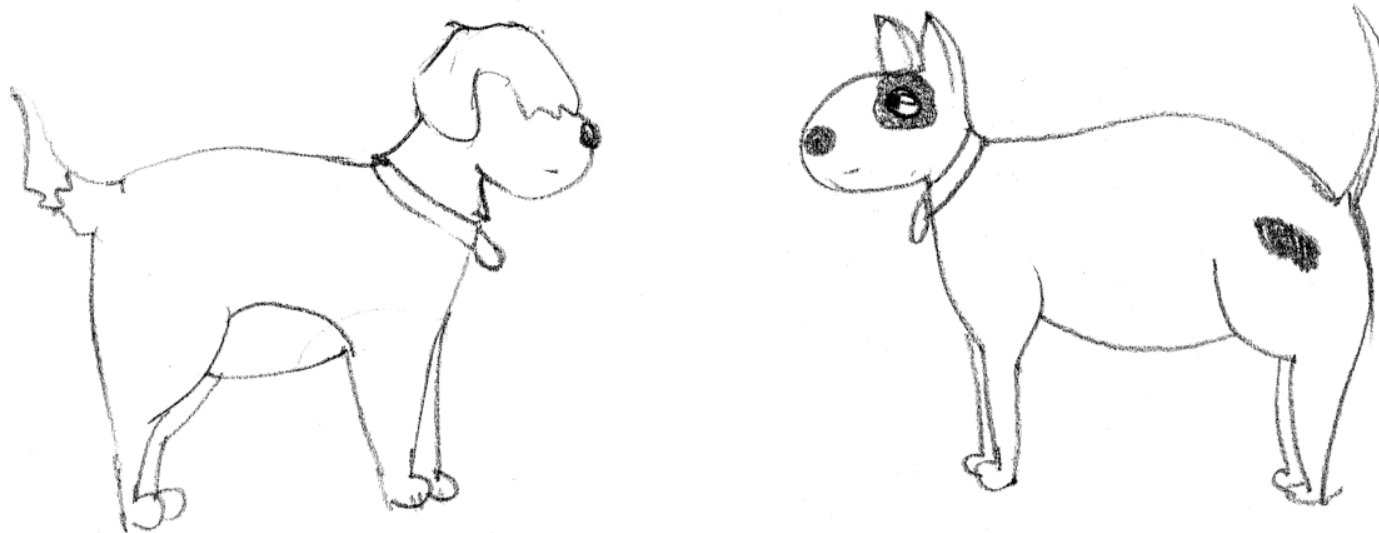Moritz Sudhof
Dan Jurafsky
Jure Leskovec
Christopher Potts
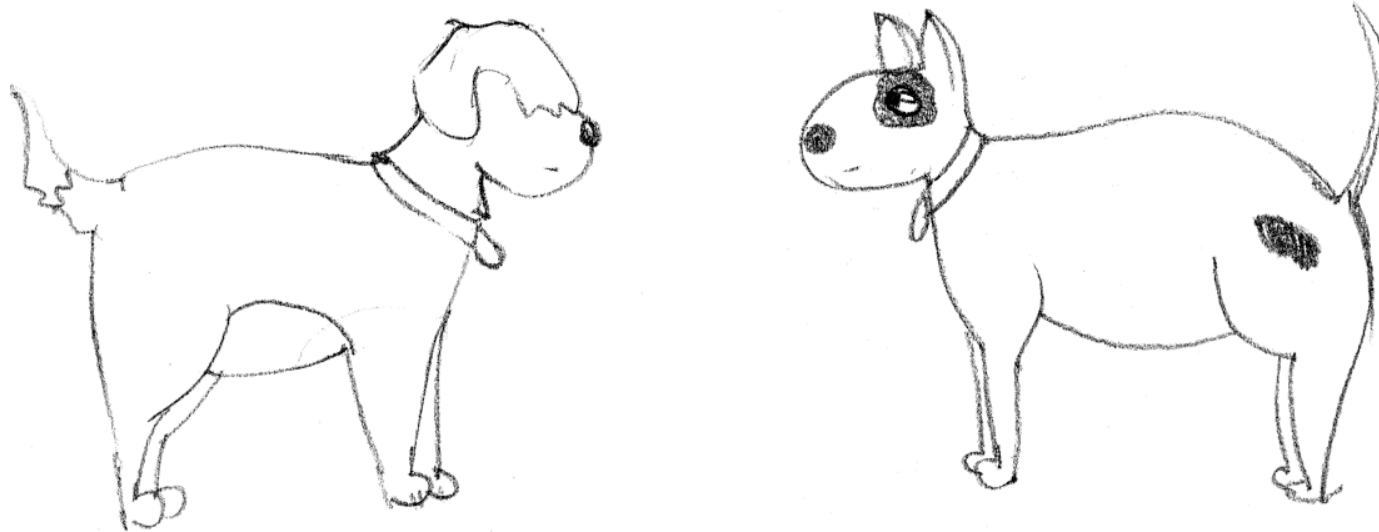
Stanford University
Max Planck Institute SWS

"I only sniffed his ass to be polite."

"We are sorry to inform you that submission nr. 100 was not selected by the program committee to appear at Conference X. [...] Due to time and space limitations, we could only choose a small number of the submitted papers to appear on the program."

"Your submission was not accepted at Conference X."

"We are sorry to inform you that submission nr. 100 was not selected by the program committee to appear at Conference X. [...] Due to time and space limitations, we could only choose a small number of the submitted papers to appear on the program."

Politeness

- important force shaping our language

- essential for NL understanding

Politeness

> important force shaping our language

> essential for NL understanding

This work:
a computational approach to politeness

› Detect and measure politeness (& rudeness)

› Refine sociolinguistic theories of politeness

› Relation between politeness and social factors

But what is politeness?

Politeness is subtle, far beyond "Please" and "Thanks"

But what is politeness?

Politeness is subtle, far beyond "Please" and "Thanks"

Option 1: "Do you have any code that we can look at?"

Option 2: "Any code? Or do I have to guess at how you did it?"
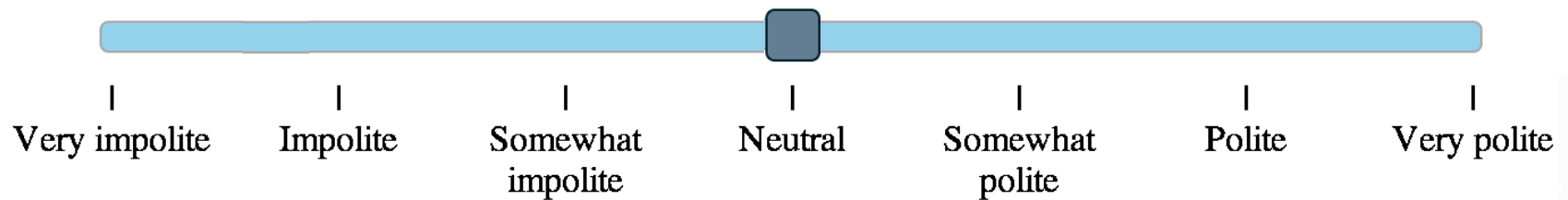
Politeness Corpus

WIKIPEDIA

35k requests on Wikipedia talk pages

StackExchange

373k requests on question-answer forums

Politeness Corpus

"Any code? or do we have to guess at how you did it?"

| Very impolite | Impolite | Somewhat impolite | Neutral | Somewhat polite | Polite | Very polite |

Politeness Corpus

"Any code? or do we have to guess at how you did it?"

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Politeness Corpus

"Any code? or do we have to guess at how you did it?"

Very impolite	Impolite	Somewhat impolite	Neutral	Somewhat polite	Polite	Very polite

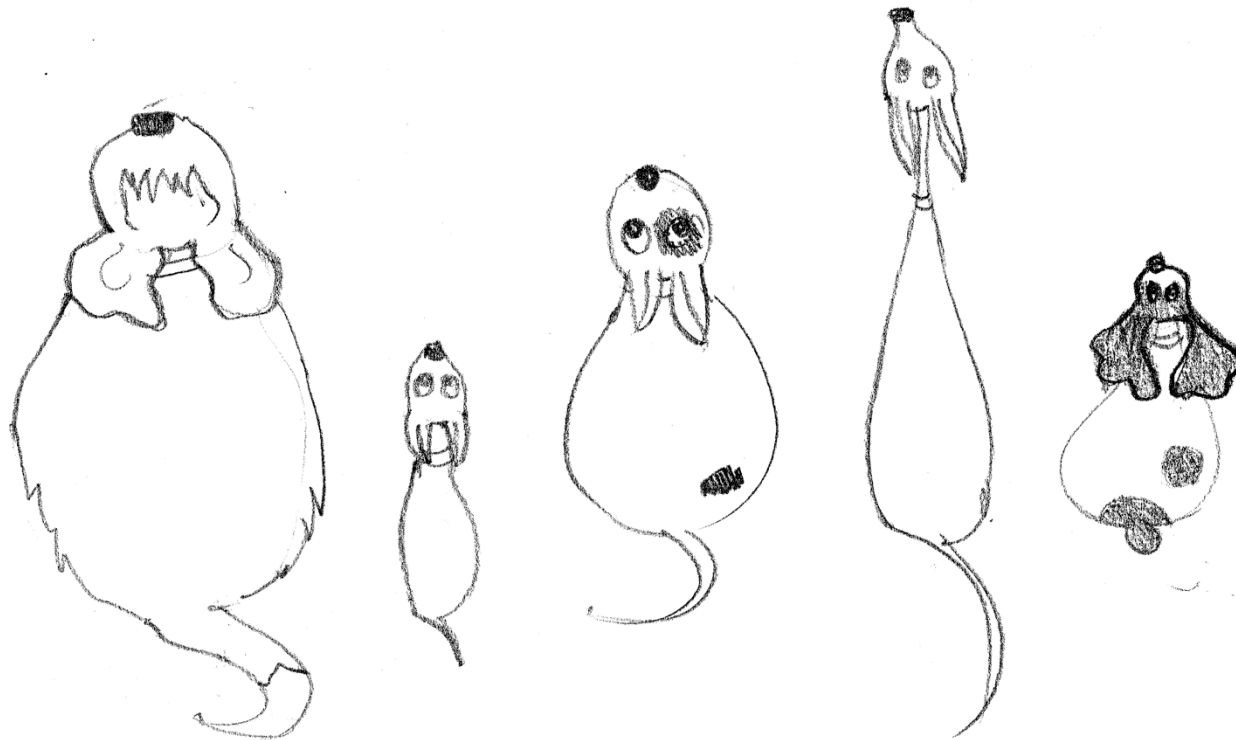# Politeness Corpus

"Any code? or do we have to guess at how you did it?"

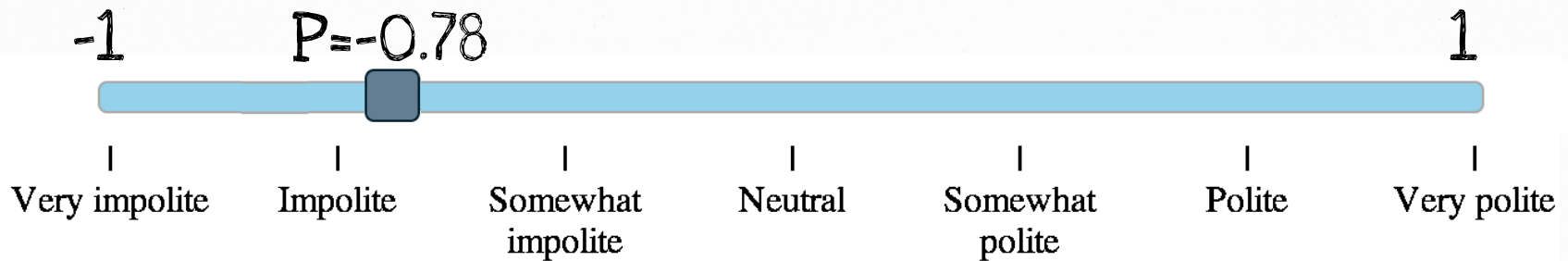-1 P=-0.78 1

| Very impolite | Impolite | Somewhat impolite | Neutral | Somewhat polite | Polite | Very polite |

Politeness Corpus

WIKIPEDIA

35k requests on Wikipedia talk pages
4.5k annotated, 219 annotators, 0.7 MPC

StackExchange

373k requests on question-answer forums
6.5k annotated, 212 annotators, 0.6 MPC

Politeness Corpus

WIKIPEDIA

35k requests on Wikipedia talk pages
4.5k annotated, 219 annotators, 0.7 MPC

+ meta-data

StackExchange

373k requests on question-answer forums
6.5k annotated, 212 annotators, 0.6 MPC

+ meta-data

Largest corpus with politeness annotations:
www.mpi-sws.org/~cristian/Politeness.html

Politeness strategies

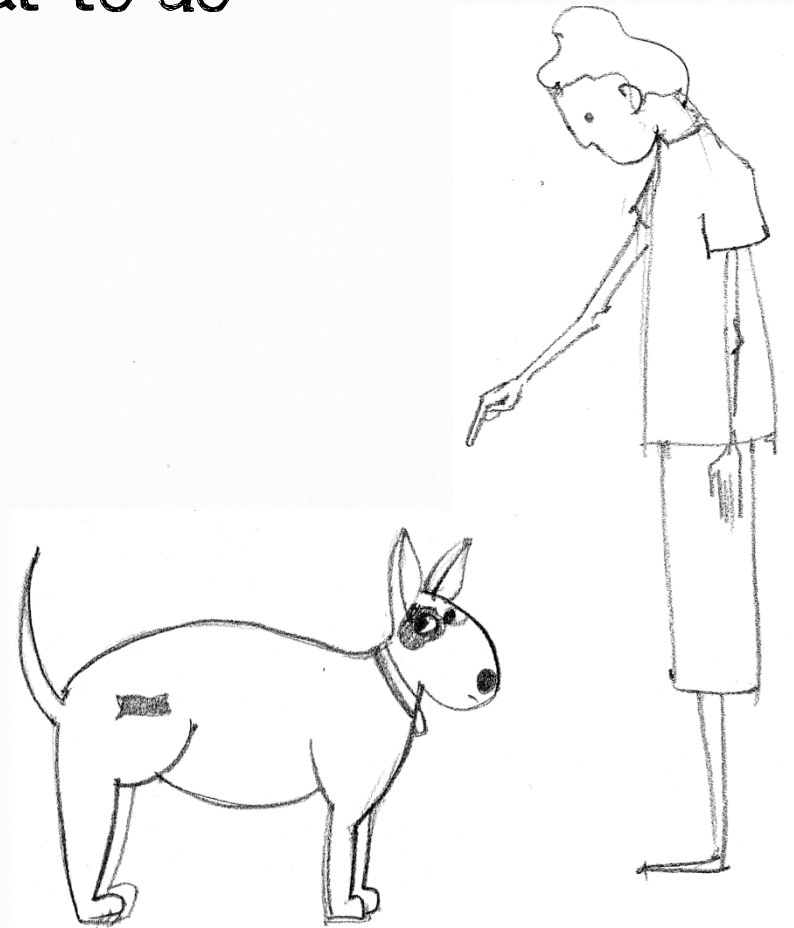Politeness addresses two basic desires:
[Brown and Levinson, 1978]

Politeness strategies

Politeness addresses two basic desires:
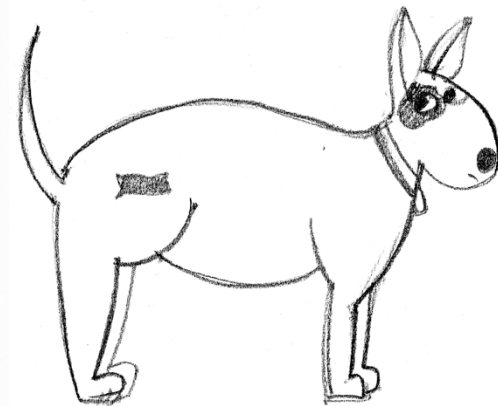[Brown and Levinson, 1978]

(1) Desire not to be told what to do

Politeness strategies

Politeness addresses two basic desires:
[Brown and Levinson, 1978]

(1) Desire not to be told what to do
    "You should focus on your thesis."

Politeness strategies

Politeness addresses two basic desires:
[Brown and Levinson, 1978]

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> "Negative Politeness"

Politeness strategies

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"I was thinking, maybe we could focus on the thesis."

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indirect

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indirect
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hedging
1st pers. (avoid 2nd pers.)

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counterfactual modals

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...

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"I was thinking, maybe we could focus on the thesis."

indirect
hedging
1st pers.
counterfactual

{
"I was thinking, maybe we could focus on,,,."
"by the way, you should rewrite this sentence."
...
...
...
"I am wondering if you can help with this."

Politeness strategies

Politeness addresses two basic desires:
[Brown and Levinson, 1978]

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> "Negative Politeness"

"I was thinking, maybe we could focus on the thesis."

indirect
hedging
1st pers.
counterfactual

0.91   "I was thinking, maybe we could focus on,,.."
-0.10   "by the way, you should rewrite this sentence."
...
...
0.30   "I am wondering if you can help with this."
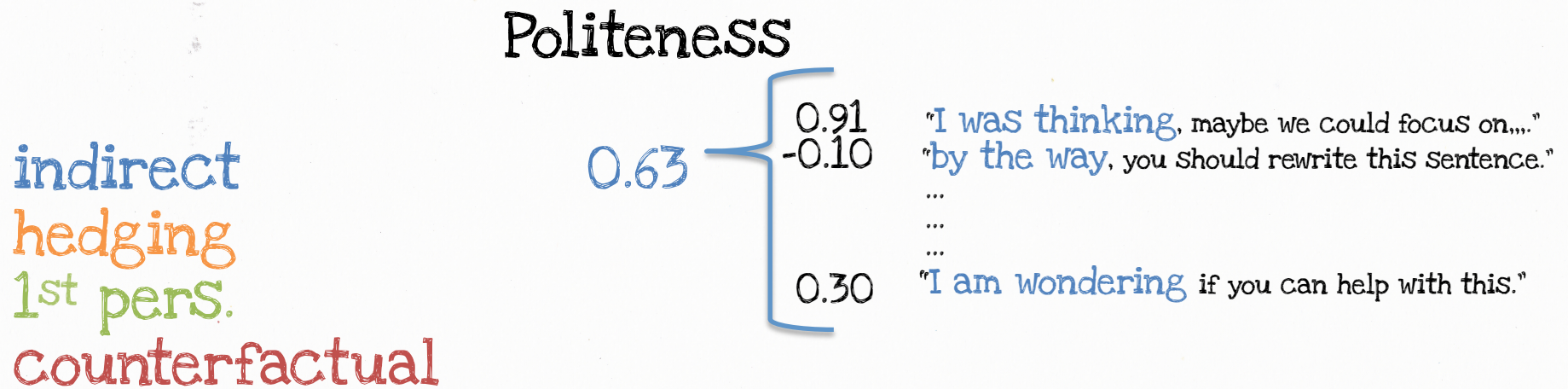
Politeness strategies

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"I was thinking, maybe we could focus on the thesis."

Politeness

indirect
hedging
1st pers.
counterfactual

$$0.63 \begin{cases} 0.91 & \text{"I was thinking, maybe we could focus on,,.."} \\ -0.10 & \text{"by the way, you should rewrite this sentence."} \\ \dots & \\ \dots & \\ 0.30 & \text{"I am wondering if you can help with this."} \end{cases}$$

Politeness strategies

Politeness addresses two basic desires:
[Brown and Levinson, 1978]

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> "Negative Politeness"

"I was thinking, maybe we could focus on the thesis."

	Politeness
random post	0.00
indirect	0.63***
hedging	
1st pers.	
counterfactual	

[***="p<0.001"]

Politeness strategies

Politeness addresses two basic desires:
[Brown and Levinson, 1978]

(1) Desire not to be told what to do

> "Negative Politeness"

"I was thinking, maybe we could focus on the thesis."

	Politeness	Converse strategy	
random post	0.00		
indirect	0.63***	-0.43***	direct
hedging			
1st pers.			
counterfactual			

[***="p<0.001"]

Politeness strategies

Politeness addresses two basic desires:
[Brown and Levinson, 1978]

(1) Desire not to be told what to do

> "Negative Politeness"

"I was thinking, maybe we could focus on the thesis."

	Politeness	Converse	Strategy
random post	0.00		
indirect	0.63★★★	-0.43★★★	direct
hedging	0.14★★★	-0.36★★★	factuality
1st pers.	0.12★★★	-0.30★★★	2nd pers.
counterfactual	0.47★★★	0.09	indicative

Politeness strategies

Politeness addresses two basic desires:
[Brown and Levinson, 1978]

(1) Desire not to be told what to do

> "Negative Politeness"

› new interactions between strategies and context

Politeness strategies

Politeness addresses two basic desires:
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(1) Desire not to be told what to do

> "Negative Politeness"

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"Please focus on your thesis."

Politeness strategies

Politeness addresses two basic desires:
[Brown and Levinson, 1978]

(1) Desire not to be told what to do

> "Negative Politeness"

> new interactions between strategies and context

"Please focus on your thesis."

Politeness

initial please   -0.30*   0.49***   medial please

Politeness strategies

Politeness addresses two basic desires:
[Brown and Levinson, 1978]

(2) Desire to be paid respect

> "Positive Politeness"

Politeness strategies

Politeness addresses two basic desires:
[Brown and Levinson, 1978]

(2) Desire to be paid respect

> "Positive Politeness"

"Hey, nice work on the abstract! Thanks!"

	Politeness
random post	0.00
greeting	0.43★★★
deference	0.78★★★
gratitude	0.87★★★
...	

Politeness classifier

A polite/impolite classifier.

Politeness classifier

A polite/impolite classifier. Why?

Politeness classifier

A polite/impolite classifier. Why?

> observations are robust and generalizable

> also in a cross-domain setting

> extend politeness labels to very large data

Politeness classifier

A polite/impolite classifier. Why?

> > observations are robust and generalizable

> > also in a cross-domain setting
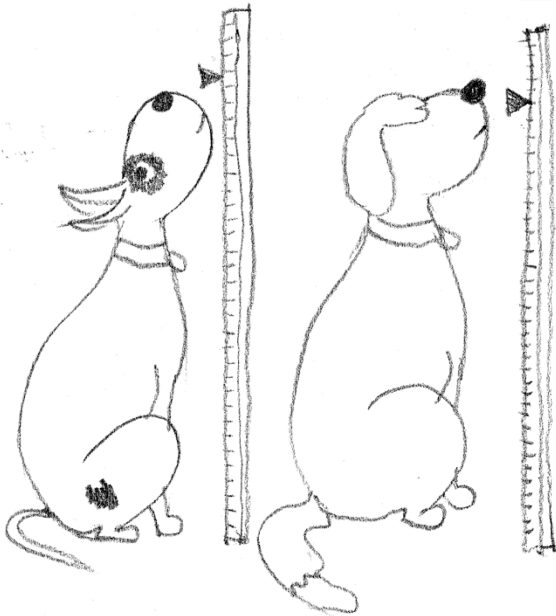
> > extend politeness labels to very large data

SVM classifier: polite vs. impolite
Features:
> > politeness strategies from dependency parses
> > bag of words

Politeness classifier

A polite/impolite classifier

v observations are robust and generalizable

Wiki

Linguistic	83.79%
BOW	79.84%
Random	50.00%

> also across multiple domains

> extend politeness labels to very large data

Politeness classifier

A polite/impolite classifier

   v observations are robust and generalizable

	Wiki	SE
Linguistic	83.79%	78.19%
BOW	79.84%	74.47%
Random	50.00%	50.00%

> also across multiple domains

> extend politeness labels to very large data

Politeness classifier

A polite/impolite classifier

  v observations are robust and generalizable

	Wiki	SE
Human	86.72%	80.89%
Linguistic	83.79%	78.19%
BOW	79.84%	74.47%
Random	50.00%	50.00%

> also across multiple domains

> extend politeness labels to very large data

Politeness classifier

A polite/impolite classifier

> observations are robust and generalizable

v also in a cross-domain setting

	Train on Wiki Test on SE	Train on SE Test on Wiki
Linguistic	67.53%	75.43%
BOW	64.23%	72.17%
Random	50.00%	50.00%

> extend politeness labels to very large data

Politeness classifier

A polite/impolite classifier

> observations are robust and generalizable

v also in a cross-domain setting

	Train on Wiki Test on SE	Train on SE Test on Wiki
Human	86.72%	80.89%
Linguistic	67.53%	75.43%
BOW	64.23%	72.17%
Random	50.00%	50.00%

> extend politeness labels to very large data

Politeness classifier

A polite/impolite classifier

> observations are robust and generalizable

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v extend politeness labels to very large data

› 400,000 requests annotated
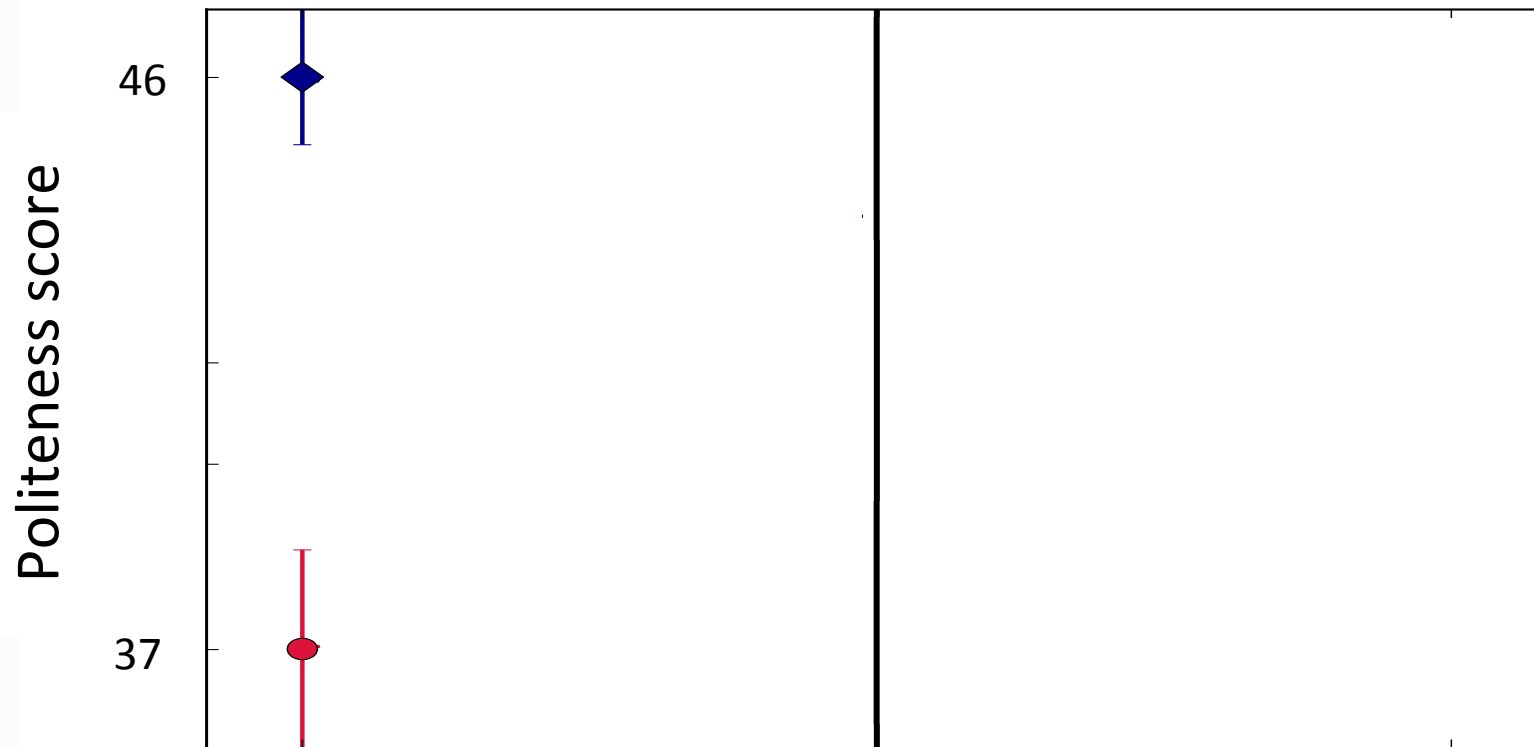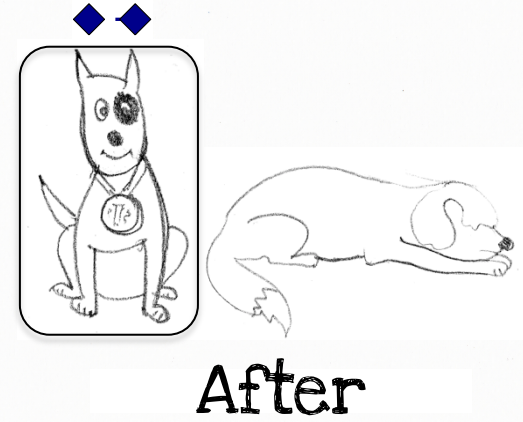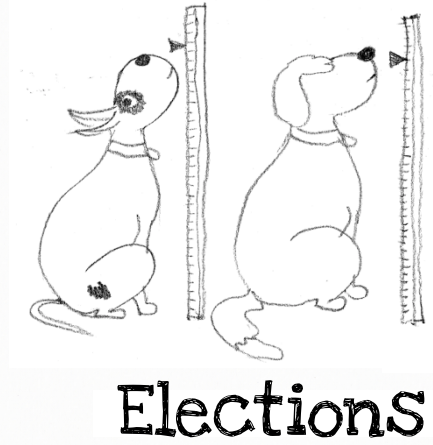› enables fine-grained analysis of interactions with social factors

Social factors

(1) Politeness is costly in terms of communication efficiency; does it pay off?

Social factors: eventual status

In the Wikipedia community,
editors gain high status through public elections.

Successful
(gains high status)

Elections

Failed
(keeps low status)

Social factors: eventual status
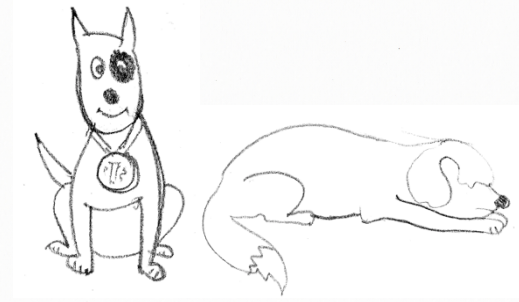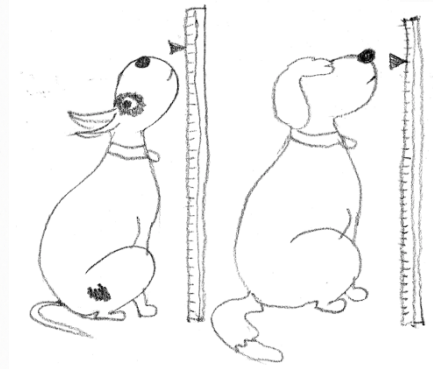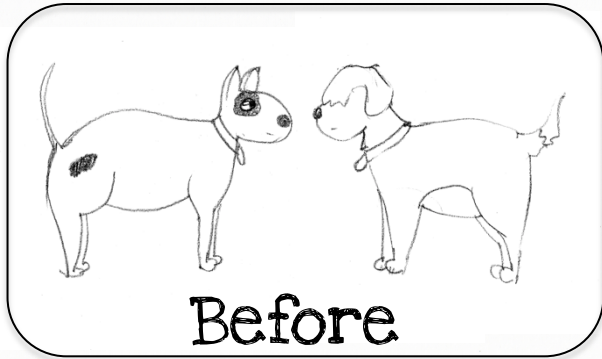
Before

Elections

After

Social factors: eventual status

Before

Elections

After

Politeness score

46

37

Social factors: eventual status

Before

Elections

After

Politeness score

46 — ◆ eventually successful

37 — ● eventually failed
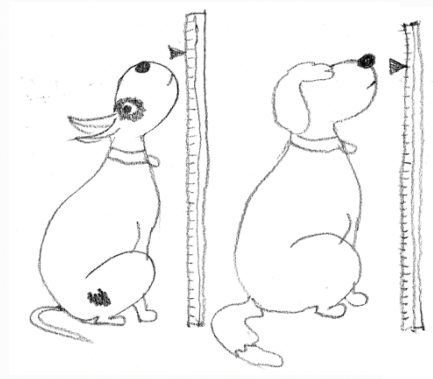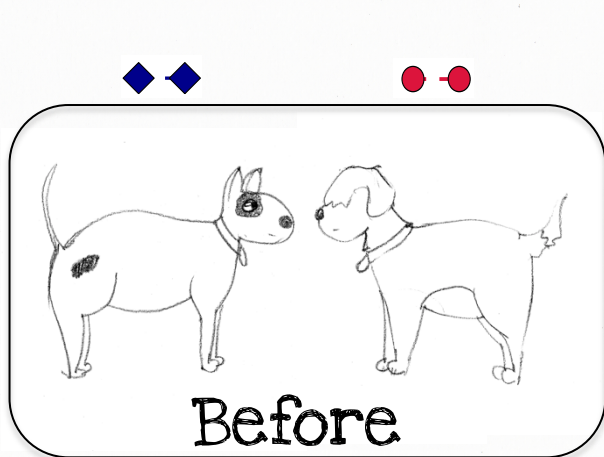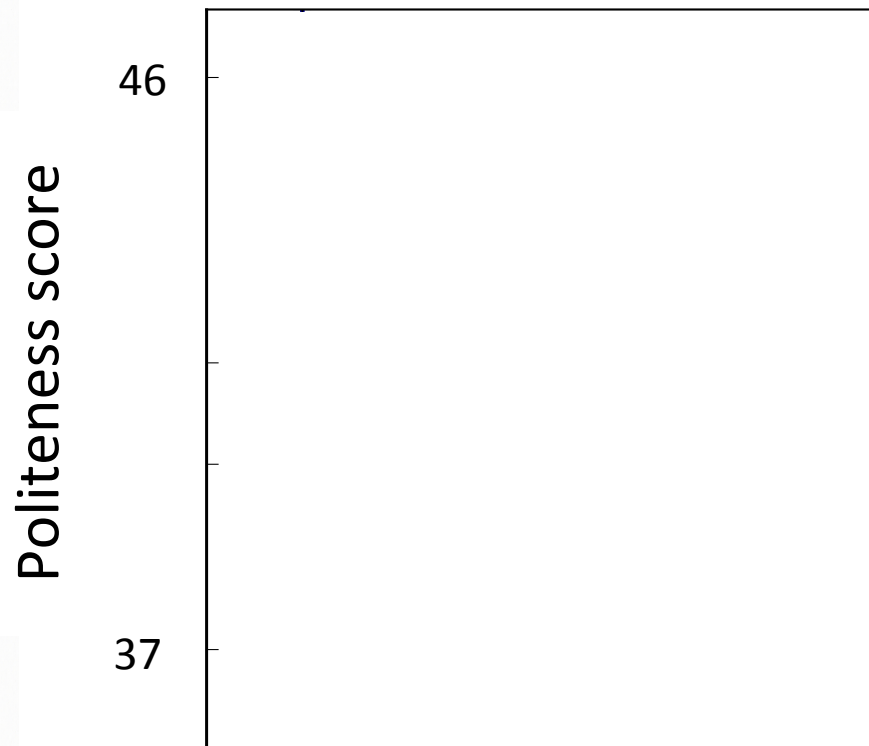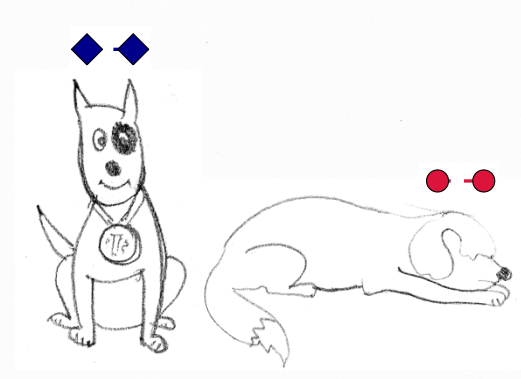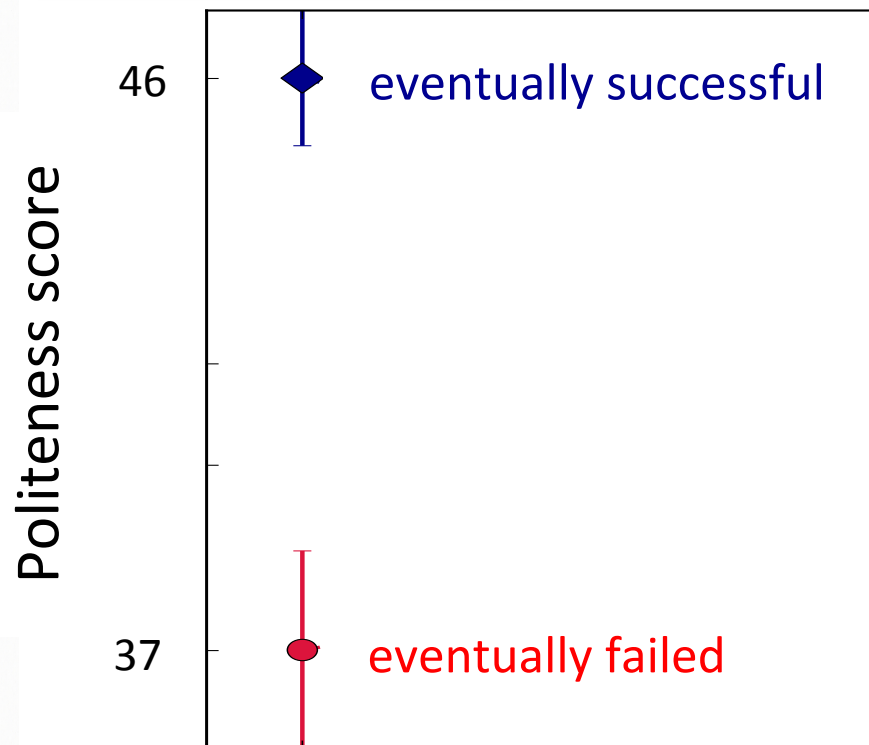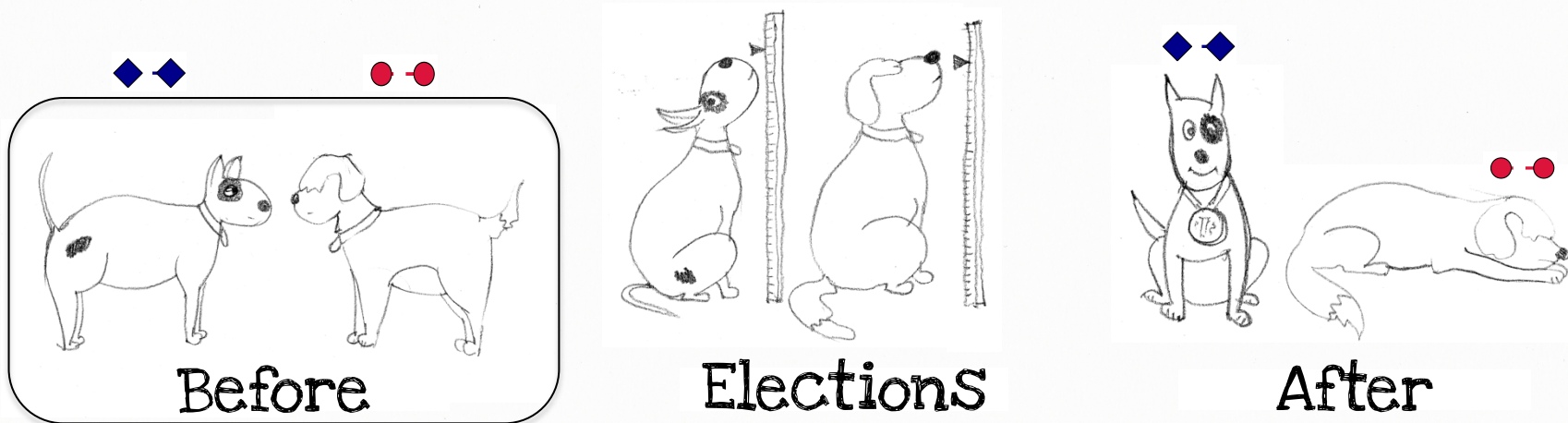
Social factors: eventual status

(1) Politeness is costly in terms of communication efficiency; does it pay off?

    > correlated with **future** social status.

Social factors

(1) Politeness is costly in terms of communication efficiency; does it pay off?

> correlated with <u>future</u> social status.
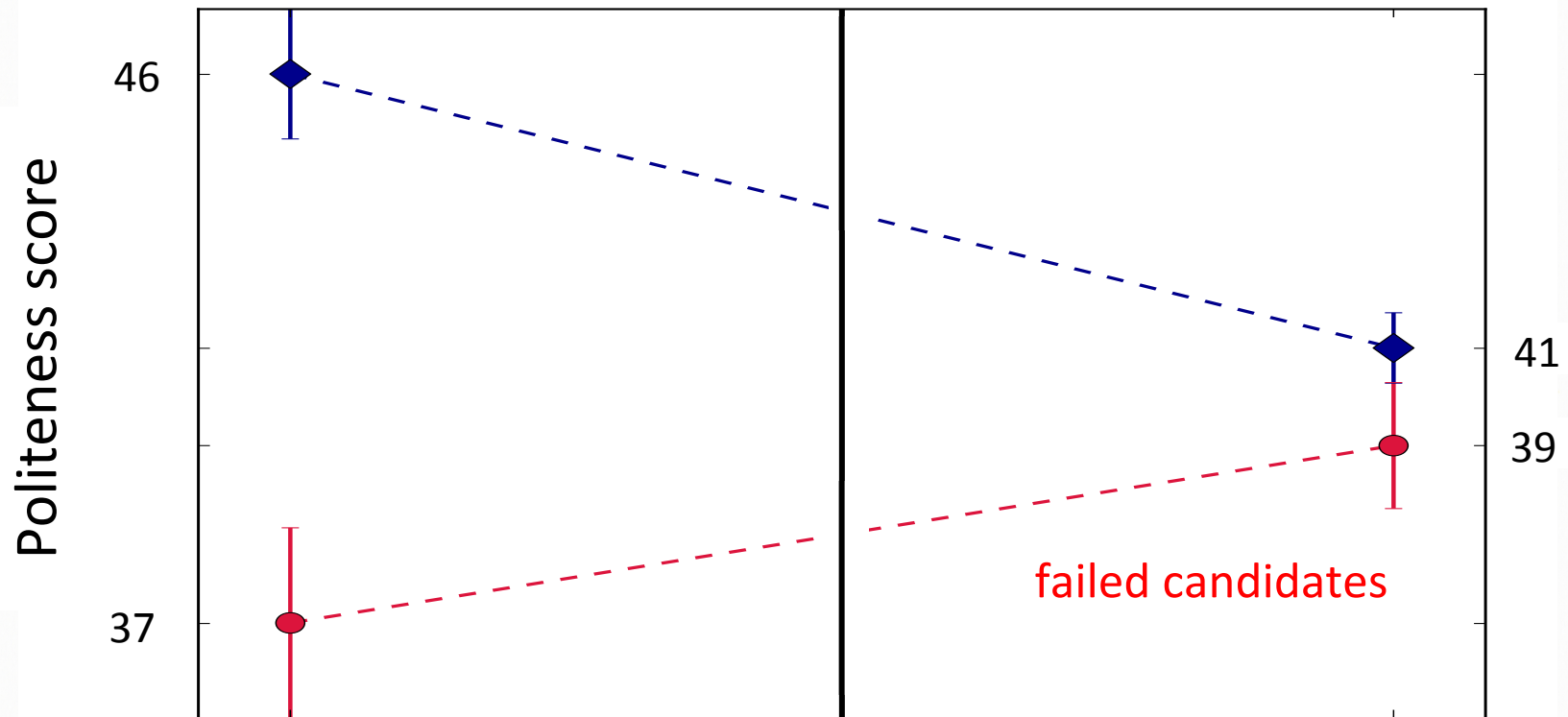
(2) How does politeness relate to **social status**?

Social factors: status change

Before   Elections   After

Politeness score

46 ◆

37 ●

Social factors: status change

Before   Elections   After

Politeness score

46

successful candidates

41

37

Social factors: status change

Before   Elections   After

Politeness score

46

41

39

37

failed candidates
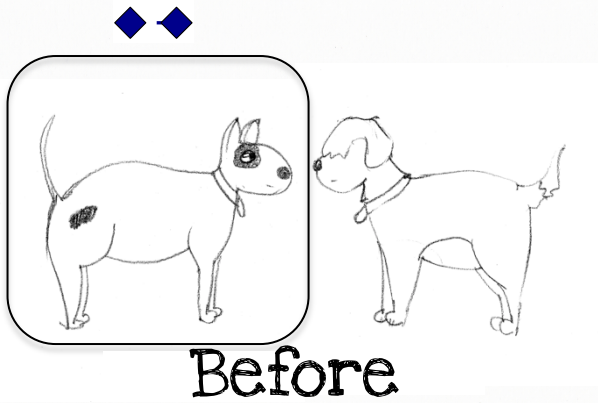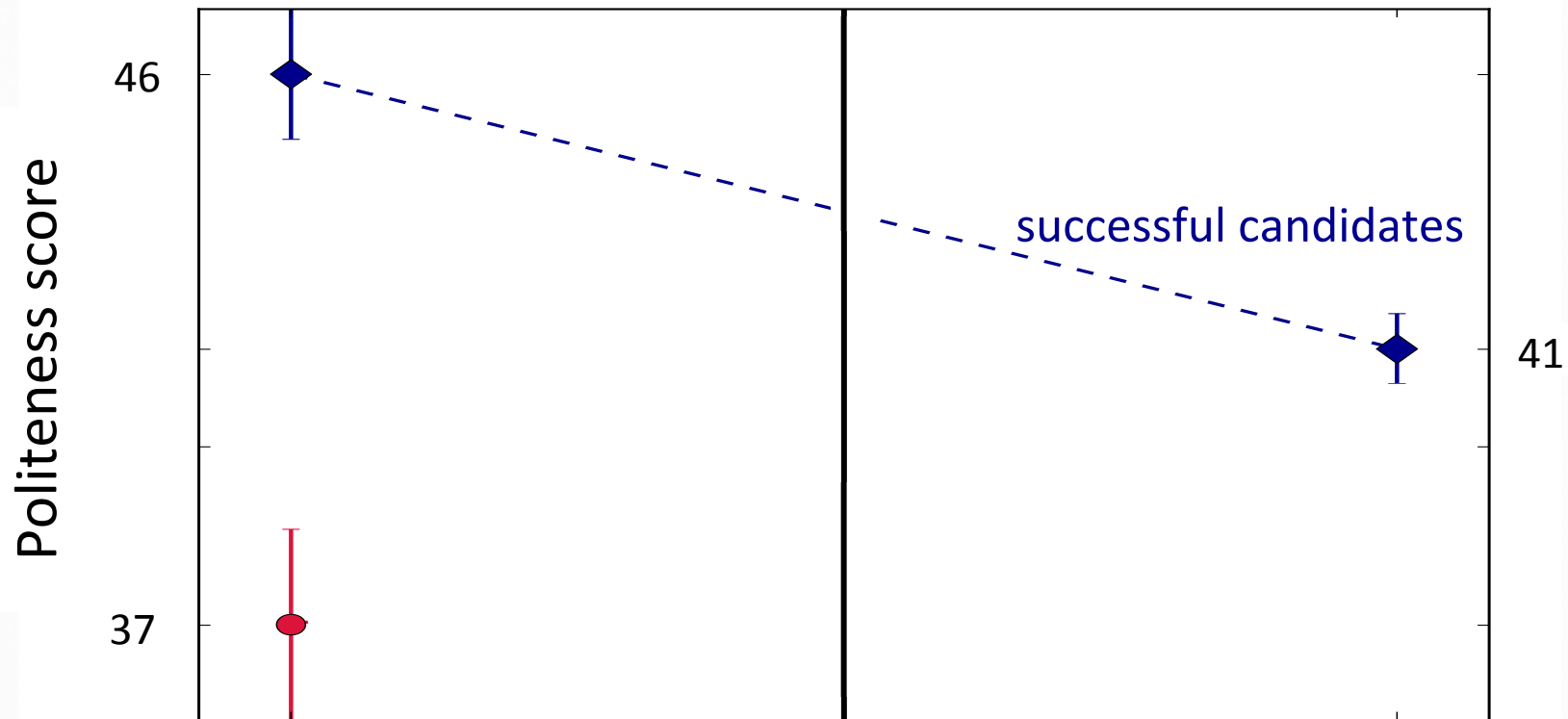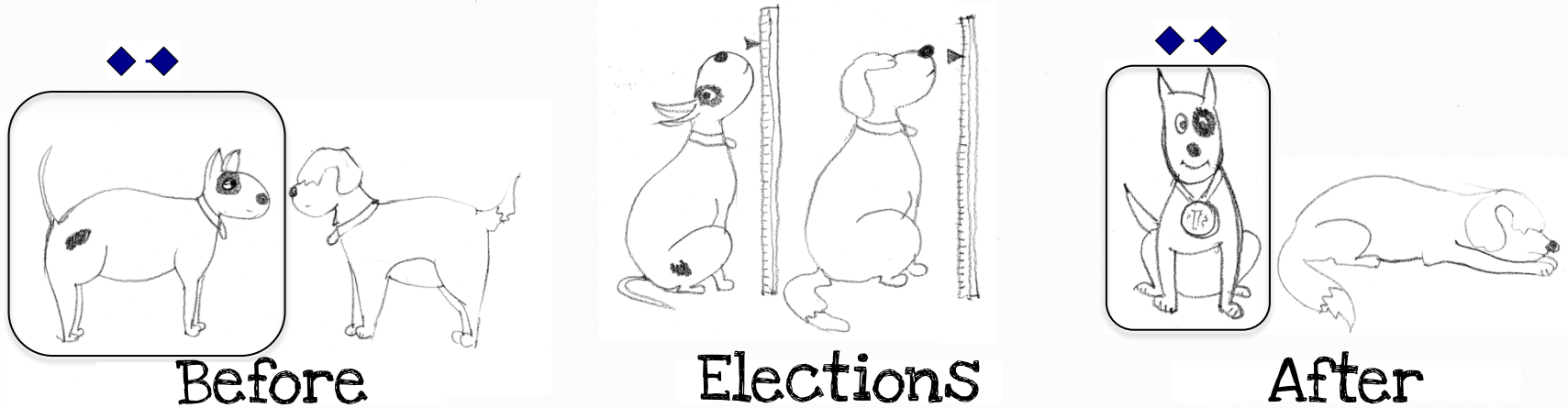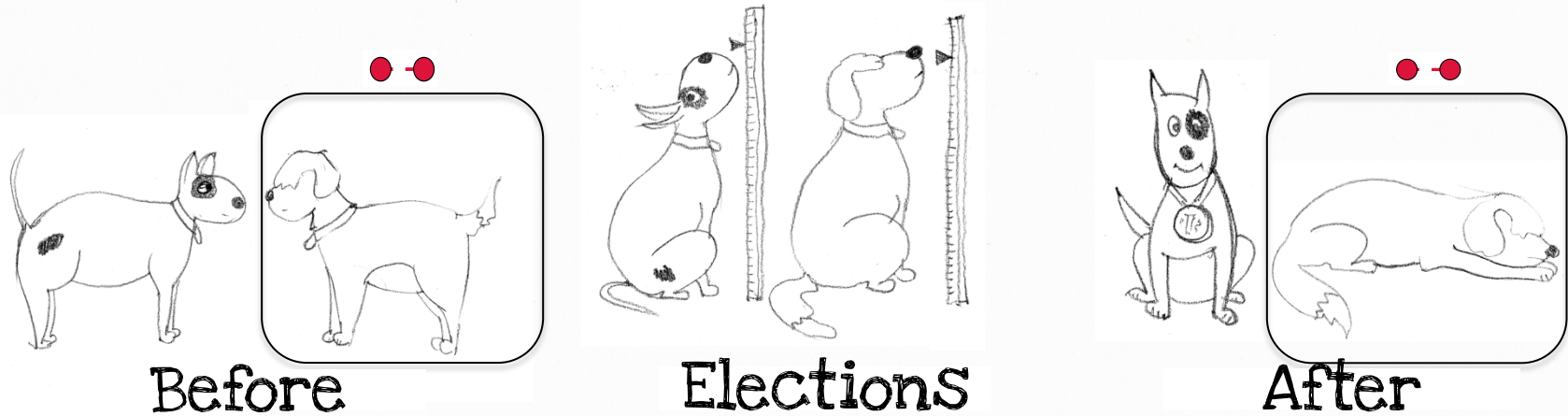
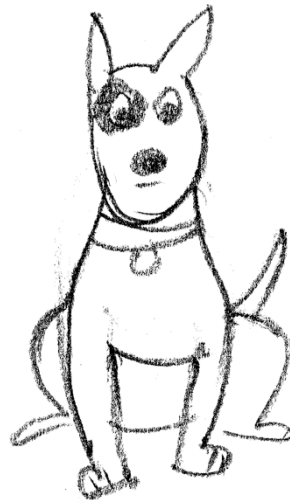# Social factors: reputation

Another type of status difference:

reputation scores on Stack Overflow

Politeness of
low-reputation
users
67

\>

Politeness of
mid-reputation
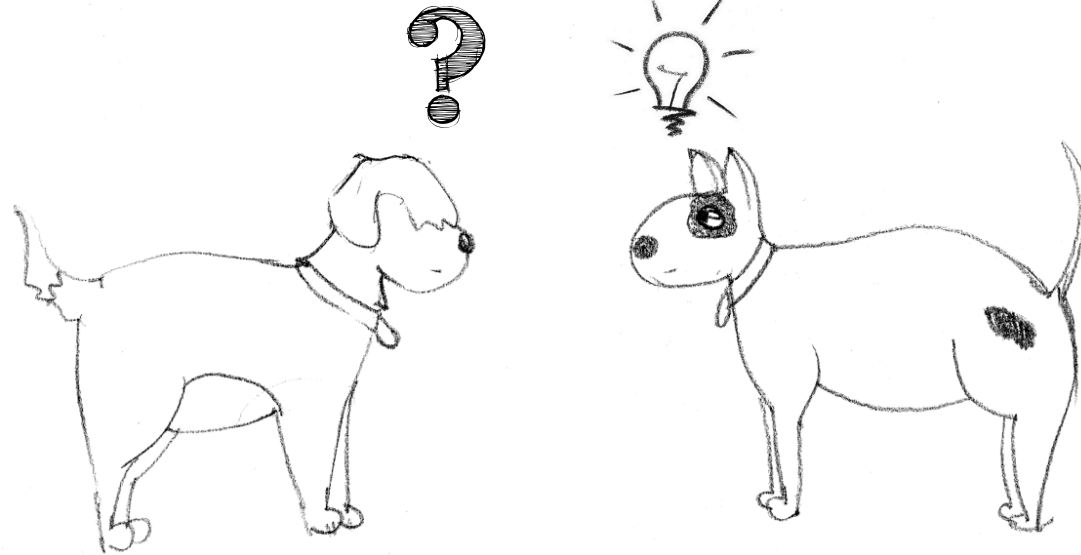users
65

\>

Politeness of
high-reputation
users
58

[p<0.001]

Social factors: situational power

Yet another type of status difference:

Situational power on Stack Overflow

Politeness
question-askers
65

\>

Politeness of
answer-givers
52

[p<0.001]

Social factors

(2) How does politeness relate to **social status**?

> inversely correlated with social status
(holds across different types of status)

Social factors

(1) Politeness is costly in terms of communication efficiency; does it pay off?

> correlated with **future** social status.

(2) How does politeness relate to social status?

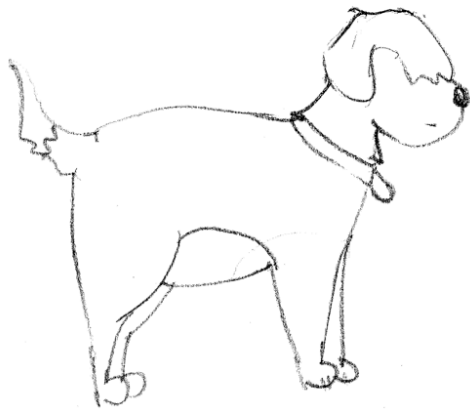> inversely correlated with social status
(holds across different types of status)

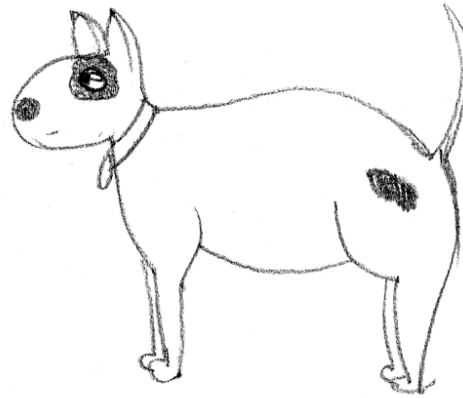(3) How politeness relates to group identity?
Anecdotal evidence

Social factors: group identity

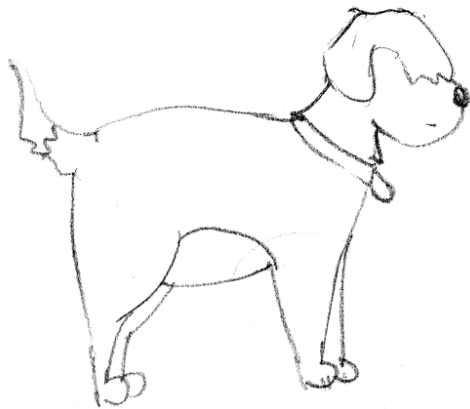Programing languages sub-communities
on Stack Overflow

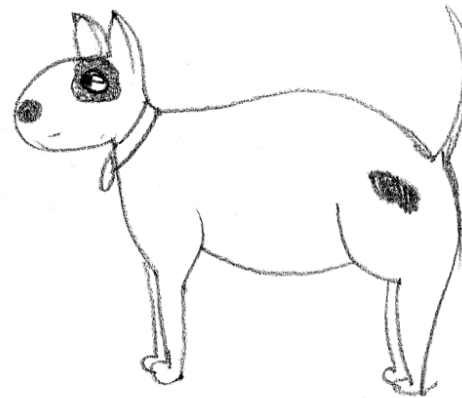puts "Hello Dog!"   print "Hello Dog!"

Social factors: group identity

Programing languages sub-communities
on Stack Overflow

puts "Hello Dog!"   print "Hello Dog!"

Politeness in the   Politeness in the
Ruby★   >   Python
Sub-community   Sub-community
59   47

★ "Ruby: A Programmer's Best Friend"   [p<0.001]

Social factors: group identity

Scripting languages communities

Python	47★★★
Perl	49
PHP	51
JavaScript	53★★
Ruby	59★★★

Social factors

(1) Politeness is costly in terms of communication efficiency; does it pay off?

> correlated with eventual social status.

(2) How does politeness relate to social status?

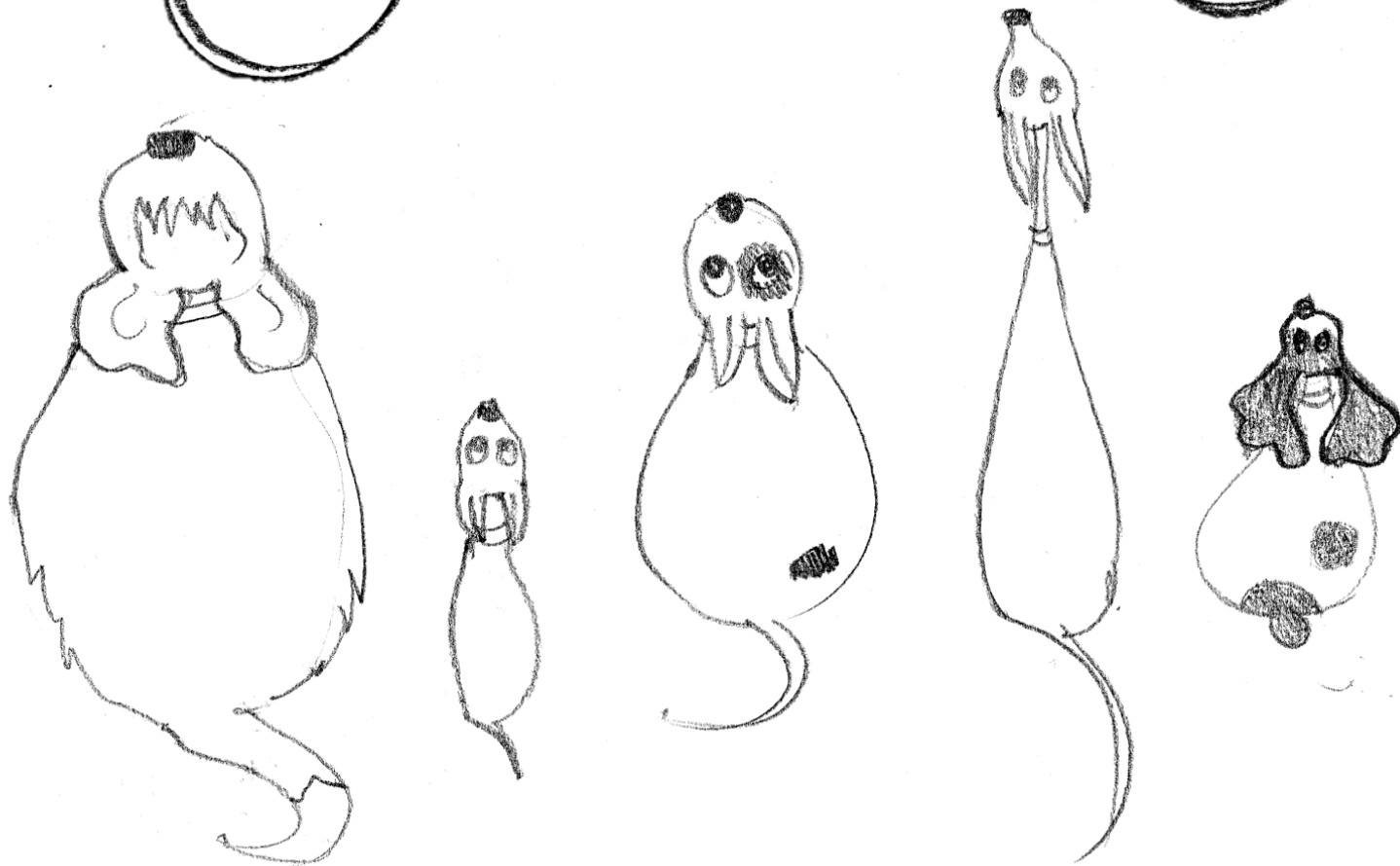> inversely correlated with social status

(3) How politeness relates to group identity?

> norms tied to community sub-cultures

Conclusions

» the Stanford Politeness Corpus

» evaluate & refine politeness theory

» effective politeness classifier

» new interactions with social factors

Thank you

The Stanford Politeness Corpus is available at: www.mpi-sws.org/~cristian/Politeness.html