

Persuading Teammates to Give: Systematic versus Heuristic Cues for Soliciting Loans

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CS 224C

Critical Reception for *Persuading Teammates to Give*

“I was shocked”

– Joel A. Johnson

“A fascinating and wildly innovative study”

– Alex Desronvil

“Able to restrain itself to text but still do so much”

– Muhammad Khattak

WORST PAPER... totally kidding

- Mike Hardy

How do **messages** persuade people to lend
in **teams** of a **philanthropic** site?

An Example



Funded

Total loan: \$1,200

Powered by 45 lenders

Victoria Isabel



El Alto, Bolivia / Food Stall

Find a new loan

A loan helped to purchase snacks at wholesale and to start a second economic activity with the profits.

[Kiva Link](#)

Victoria Isabel's story

Victoria is a 46-year-old woman. She is married and the mother of two children. Her business is selling snack foods.

Victoria is enterprising, responsible, independent, supportive, and very hardworking. She runs her business in the "16 de Julio" area, where according to the Instituto Nacional de Estadística [National Statistics Institute], 72.9% of the urban population lives in poverty. That represents the existence of 58,822 families without adequate access to services and basic supplies, education, healthcare, and/or shelter. Of those, 12% are indigent. The poverty of the population is manifested through insufficient income, risks of infant malnutrition, low academic performance, early withdrawal from school, untreated illnesses, child labor, etc.

Victoria is dark-complected and of medium stature. She has long, black, braided hair and dresses in the traditional way. Her native language is Aymara and she learned Spanish after arriving in the city for its commerce. Her business is the sale of snacks and soft drinks from a stand on the street, enduring the cold temperatures that characterize her city.

Victoria would like to expand her business by making a purchase of merchandise for a second business, and to increase her working capital in order to generate greater income and improve her quality of life. This is the reason that she is requesting a loan for the purchase of snacks at wholesale. With the profits, she will start a second economic activity.

Loan details

Field Partner: Emprender



Time on Kiva: 179 months

Kiva borrowers: 17,865

Total loans: \$10,420,375

Average cost to borrower: 32% PY

Profitability (return on assets): 0.0%

Average loan size (% of per capita income): N/A

Delinquency rate: 0.00%

Loans at risk rate: 0.00%

Default rate: 0.71%

Currency exchange loss rate: 0.00%

[More about Emprender](#)

[What is a Field Partner?](#)

An Example



<https://www.kiva.org/lend-classic/760221>

An Example

Jennifer



Sep 27, 2014 - 6:45 pm PDT

#360033



Victoria Isabel has only FOUR DAYS LEFT!

[Send a Kiva Card](#)

Joined
Aug 4, 2012

She's wearing a really nice hat, and standing next to an awesome wall painting.

I'm not sure why her loan is having such trouble--she's a food seller in Bolivia, 46-year-old mother of two, and the loan term is only 15 months. It's exactly the kind of thing that normally fills up quickly.

Can anyone help? www.kiva.org/lend/760221

An Example

Hannah 

Sep 20, 2014 - 9:21 pm PDT

#357682



@Victoria re: #357538

[Send a Kiva Card](#)

I jumped onto that one! She definitely looks great in that hat. :)

Joined
Jul 1, 2013

Irene 

Sep 18, 2014 - 6:56 am PDT

#356968



@Victoria re: #356747

[Send a Kiva Card](#)

Wonderful! I lent to Matluba's Cheshire Cow!

www.kiva.org/lend/761265

Joined
Mar 23,
2014



Matluba

Animal Sales

Tajikistan

Funded



An Example

Geeks2point0



Sep 17, 2014 - 9:37 pm PDT

#356910



@Victoria re: #356747

[Send a Kiva Card](#)

What a great find! I am still giggling. Thanks for sharing.

Joined
Jun 18, 2008

www.kiva.org/lend/756670



Armonía Group

Sewing

Bolivia

Funded

Kristina



Sep 17, 2014 - 6:34 pm PDT

#356845



The cow is OUTSTANDING! LOL

@Victoria re: #356747

[Send a Kiva Card](#)

Joined
Nov 11,
2013

Systematic

- Effortful, deep thinking
- Occurs when we evaluate:
 - Quality of the evidence
 - Coherence of the argument
- “Thinking slow”

Heuristic

- Instead of thinking deeply, use simple, inferential rules to decide
- “Thinking Fast”



Operationalizing Heuristic Processing

Theories of social influence

(Cialdini, Robert B., 1987)

- Authority
- Liking
- Social Identity
- **Emotion** *“if it makes me feel good, it must be right”*
- **Reciprocity** *“it is advocated by someone who did me a favor”*
- **Scarcity** *“if there are only a few left, it must be valuable”*
- **Social Proof** *“many people are doing it”*

Paper Structure

Building Features (17)

Systematic Cues (2)

NLP models for loan and borrower worthiness

Heuristic Cues (7)

Models for social proof, emotional language, etc.

Type of team (1)

Common identity, common interest, personal relation

Control (7)

Loan amount, borrower demographics, loan description worthiness

Reducing Features (11)

Combining features when they are conceptually linked + high internal consistency

Prediction Models (5)

Five tiered regression models to predict whether or not a team member loaned after being exposed to a message about it.

Systematic Features

1. 1000 Mechanical Turk Annotations
 - Loan and Borrower Worthiness
 - 1-3 Scale, 1=didn't mention, 3 = explicit justification for worthiness
2. NLP Models: Embeddings, Linguistic Style, POS, (Request Length)

	Loan		Borrower	
	Corr.	Squared Mean Error	Corr.	Squared Mean Error
Bag of Words	0.493	0.398	0.395	0.343
LIWC	0.436	0.425	0.455	0.322
Word Embedding	0.620	0.322	0.546	0.285
Part Of Speech	0.455	0.416	0.449	0.323
ALL	0.661	0.295	0.636	0.242

Table 1. Regression model performances for predicting the worthiness of the loan and the borrower.



Defining the Worthiness of the Loan

Level 1 does not mention any reasons for the loan

Level 2 mentions the reason, without additional justification

Level 3 mentions the reason, with substantial justification

e.g.,

This loan is set to expire in 1 day.

*Collecting scrap metal to sell to recycles.
Expiring later today.*

This loan is to finance school tuition for students whose families have low incomes ...

Systematic Processing Features

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Heuristic Processing Features

	Min	Max	Mean	Median
reciprocity	0	12428	3.79	0
# messages btw lender & advocate	0	1179	6.08	0
# team members loaned	0	153	3.23	1
(explicit) mention loaned	0	1	0.18	0
actual loaned or not	0	1	0.40	0
(explicit) mention scarcity	0	1	0.46	0
actual remain hours	0	1	0.43	0.30
is captain	0	1	0.314	0
messages of advocate	0	9810	563.85	94
negative emotion	0	1	0.01	0
(explicit) mention we words	0	0.667	0.01	0
team importance	0	1	0.38	0

Reciprocity

Liking

Social Proof

Scarcity

Authority

Emotional Language

Social Identity

Type of Team

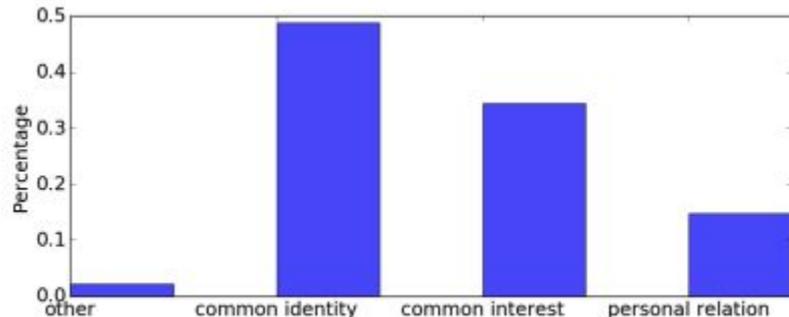


Fig. 3. Percentage of teams of different types. The total number of team is 1610.

“...the first author manually assigned each team into one of the above types, based on team name, description and “loan because” statement...”



Location:

Nerdfighteria

[Team website](#)

We loan because...

We aim to decrease world suck.

About us

We're Nerdfighters! We fight against suck; we fight for awesome! We fight using our brains, our hearts, our calculators, and our trombones.

Happy lending!

Short on time or need help finding a loan?

On the 17th of the month, a Deserving Dozen of team loans are featured on the Nerdfighters Message Board.

There is also a Nerdfighters Tienda, where a selection of loans are stocked on the shelves of this one-stop shop of team loans:

starfish.dynalias.org/starred/nerdfighters

Check it out!

Follow us on Twitter: twitter.com/KivaNerds

Ultimately: 11 Features

	Variables	Model 1	Model 2 Systematic	Model 3 Heuristic	Model 4 Systematic & Heuristic	Model 5 Team Type
Control Variables	team loan amount	1.458***	1.456***	1.494***	1.493***	1.179***
	borrower loan amount	1.170***	1.169***	1.190***	1.190***	1.255***
	lender tenure	0.324***	0.325***	0.343***	0.343***	0.329***
	lender loan amount	5.961***	5.982***	6.558***	6.559***	9.343***
	loan links per message	0.991	0.999	1.017**	1.021***	1.003
	borrower gender	0.971*	0.970**	0.964**	0.964***	0.972
	borrower smile	1.034*	1.032*	1.019	1.019	1.038*
	borrower age	0.976***	0.975***	0.976**	0.976***	0.952***
	loan description worthiness	0.948***	0.951***	0.955***	0.955***	0.942***
	Worthiness	request's worthiness		0.953***		0.990
Liking	liking btw lender & advocate			1.352***	1.352***	1.357***
Authority	authority			0.795***	0.797***	0.792***
Identity	mention we words			0.991	0.991	1.007
	team importance			1.598***	1.598***	1.626***
Scarcity	mention scarcity			0.964***	0.967***	0.964***
	actual remain hours			0.940***	0.941***	0.958***
Social Proof	mention loaned			0.974***	0.975***	0.982*
	actual loaned or not			1.047***	1.046***	1.031**
	#team members loaned			0.941***	0.943***	0.912***
Emotional	negative emotion			1.006	1.006	1.001
Team Type Interaction	relation-based (rb) team					0.647***
	liking x rb team					1.020
	authority x rb team					1.036
	team importance x rb team					1.047

Q&A with Professor Yang on Methodology

(Some) Results

- One standard deviation increase in the worthiness of the loan as described in the advocate's persuasive message was associated with 5% lower odds of potential lenders contributing to the loan (OR=0.953).
- A standard deviation increase in the advocates' authority was associated with 20% lower odds of other members' compliance with their requests.
- Lenders were substantially more likely to give in response to loan requests when the lender more strongly identified with the team. A standard deviation increase in (team importance) was associated with 60% higher odds of giving.
- Both the actual urgency of the loan (i.e., the time remaining until the request expired) and advocates explicitly mention the urgency of loans in their requests was associated with lower odds of persuading team members (OR=0.940 and 0.964 respectively).
- The worthiness of requests was not significantly predictive of persuading receivers to make loans.

What are possible explanations for:

- Inverse relationship between loan worthiness and success?
- That heuristic features were much more predictive of success?

Chloe Liu:

Another paper [which suggests] “changing context” is more effective than “changing mind” in altering human behavior... Heuristic factors might be superficial but they are also salient enough to catch people’s attention...

Axel Peytavin:

a bit sad too when you think about it, at least for introverts that spend a lot of time preparing an announce to have, in the end, money being loaned to those who just end up being likable. But in some sense, it checks out with our experience of real life I suppose :)

Xiaoyuan Ni:

the features collected for the systematic and heuristic processing are imbalanced.

Helen Minsi Gui

I wonder if this surprising relationship might be picking up on some unobserved factor: maybe loans with “worthier” descriptions are those where advocates felt that the likelihood of success on the basis of other factors was lower, resulting in the need to write characterize the loan as more “worthy” to improve perceived chances of success.

To what extent are these results generalizable? In what ways are the findings specific to Kiva, or platforms like Kiva?

For example, applicability to:

- Political campaigns targeting small-dollar donors with “Last Chance to Give” alerts (Alex Desrovi)
- GoFundMe, where investment is just a taxable gift (Joel A Johnson)
- Banking (Muhammad Khattak)
- Persuasion in online Q&A platforms (Chloe Liu)
- Fintech companies using AI for loan worthiness (Kay Ren)
- Crowdsourced venture capital (Joel A Johnson)

What are ways we could improve or extend this study?

Xinran Zhao

Feature sets can be improved, especially with current progress in the area of natural language processing.

Sophia Angelica Ramsey

I would have included positive emotions as well as negative emotions in the “emotional” category.

Adhitya Venkatraman

.. deepen the way that worthiness is defined. The authors use a three-tiered system for evaluating loan and borrower worthiness. This system is mostly based on categories of information provided, but does not investigate the information itself...

Hannah Rachel Levin

other data points such as if a lender likes an advocate such as common friends in their social network, physical attractiveness, and overall similarity between the individuals. However, there are ethical considerations of an algorithm measuring physical attractiveness.

Azure Siyi Zhou

Although facial recognition technologies have improved, we know that software like Face++ are less accurate for marginalized groups... more work is needed to understand how the identities of lenders and borrowers affect lending.