The Role of Information in Trust Situations

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Trust – an example:

> Ms. Mars wants to buy a used car. She knows that there are two kinds of used cars: Cars of good quality (peaches) and cars of bad quality (lemons) (Akerlof, 1970). Ms. Mars is no expert and so she is not able to evaluate which kind of quality the car has respectively if the expensive cars are that of good quality.

Ms. Mars has to trust the car dealer that he will sell her a car of good quality, even if it is beneficial for him to sell a car of bad quality for an expensive price.

→ **Opportunism problem in trust situations**

Ms. Mars has never bought a used car before, so she does not know the dealer and his reputation. If she knows somebody who has already bought a used car at this place, she could **collect information** about the quality of the cars sold by this dealer.

Solution of the game

- The solution of the game is to transform the (trust) game with incomplete information into a game with complete but imperfect information (Harsanyi 1967/68). The sub-perfect Nash Equilibrium is:

$$w > \frac{P_1 - S_1}{R_1 - S_1} =: w^*$$

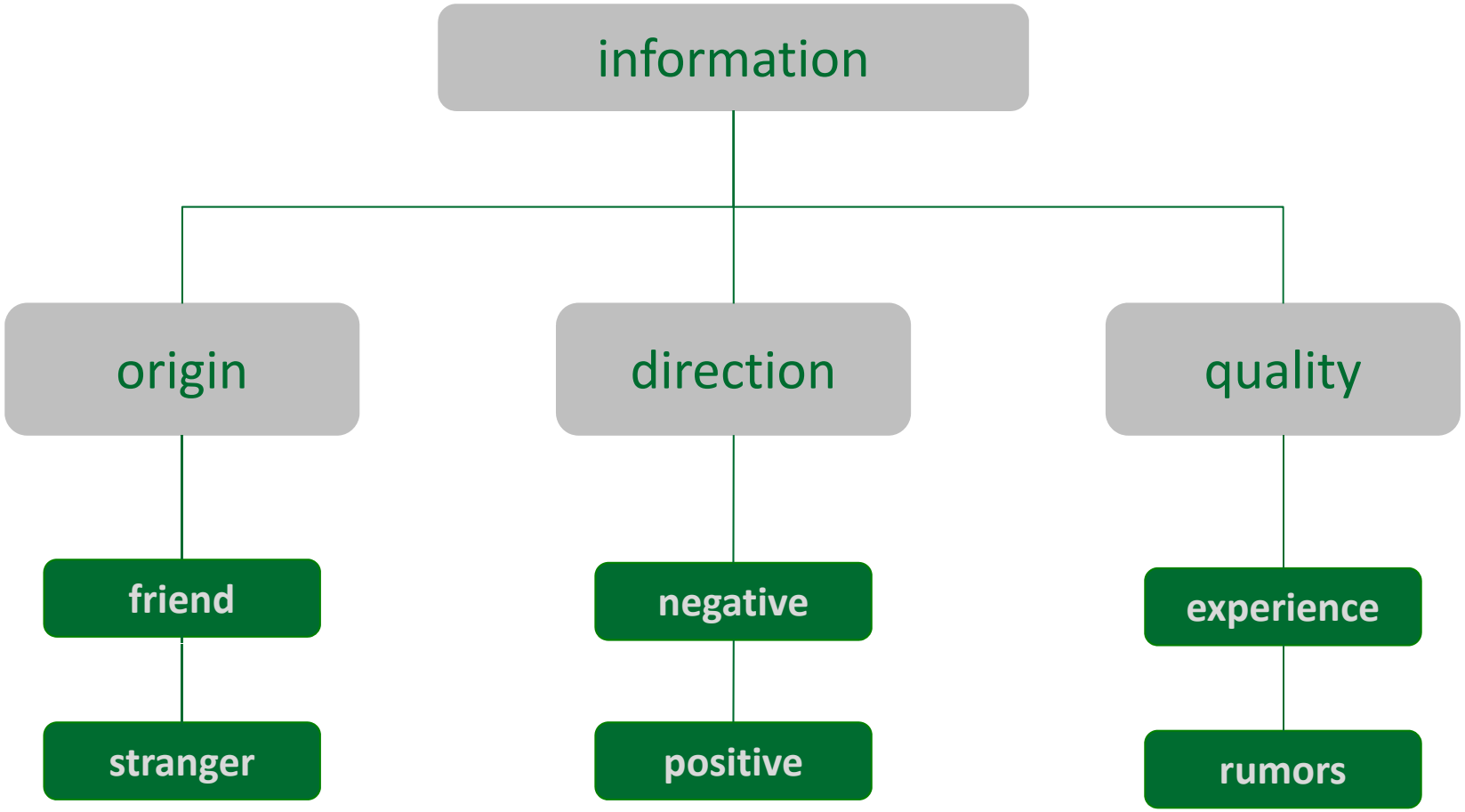
- Most studies on this topic have analyzed the trust decisions by varying the payoffs (cf. Buskens & Weesie 2000; Raub 1999; Blumberg 2001; Buskens & Raub 2008, Buskens 2002).
- Another possibility to receive different trust rates is to vary the evaluation of the trustee´s type, **w**, by collecting information about the trustee´s past behavior
- Information can influence the probability ***w*** (Coleman 1988: 103).

Social learning:

- It is well known that a trustor can learn from a third party. However, we have to take into account that the value of the information can differ.

- The more valuable an information is, the better ***w*** will be adapted.
- The higher ***w*** is, the easier it comes to a trust placement.

Third-Party information effects



A good reputation needs time (Blau, 1964: 94), but is easily destroyed (Dasgupta, 1988: 62).

- An untrustworthy trustee can defect and cooperate
- A trustworthy trustee can only cooperate
- A single defection uncovers the type of the trustee
- A single defection destroys the whole reputation

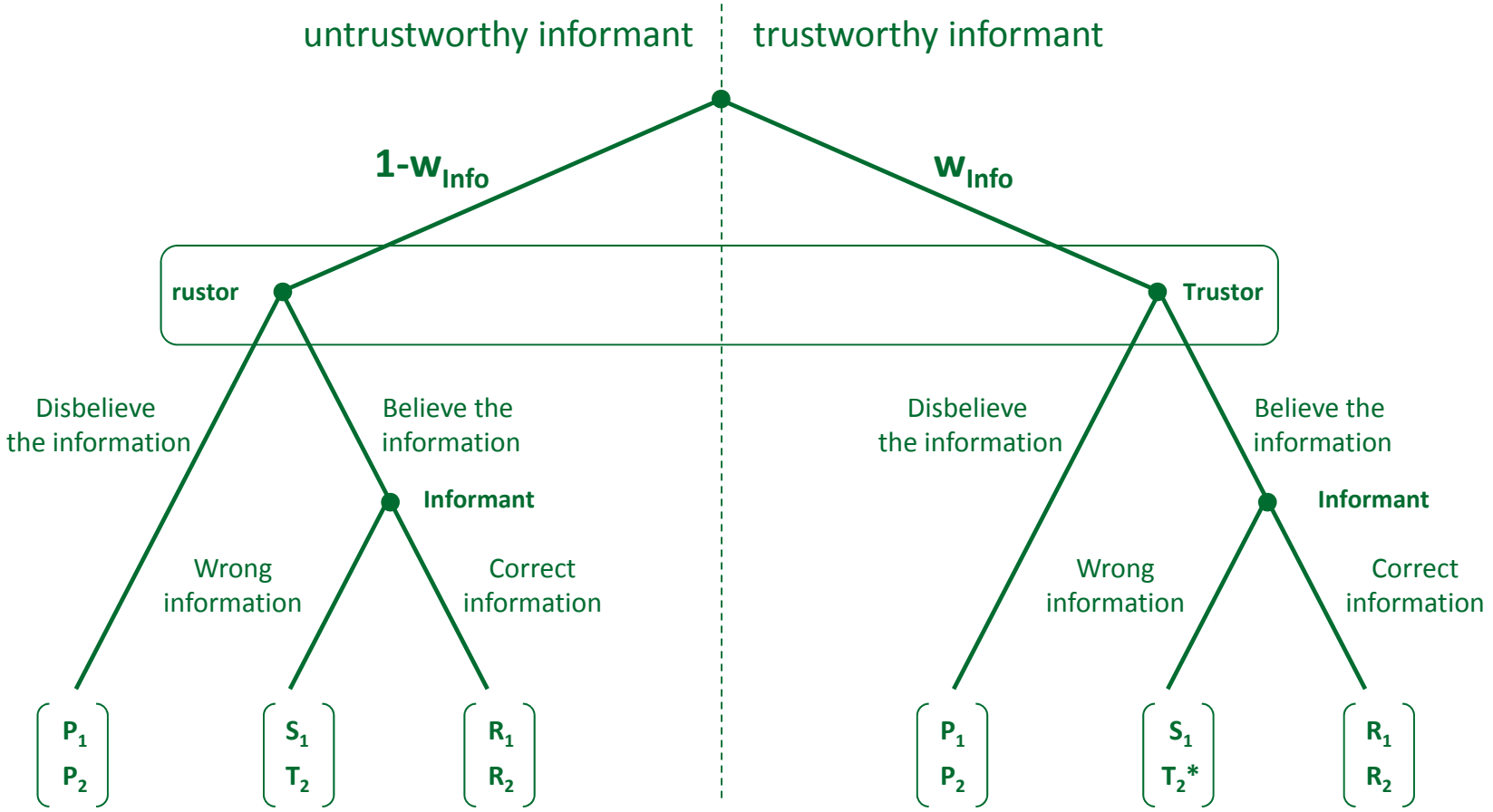
H_1: "*Negative information has a stronger effect on distrust than positive information on trust.*"

- The value of the information depends on its truth content. Unlike experience, rumors are much harder to verify.

- Granovetter (1985: 490):
  "Better than the statement that someone is known to be reliable is the information from a trusted informant that he has dealt with that individual and found him so. "

H_2: *"Experience have a stronger effect on trust than rumors"*

Origin: Trust Game with the informant



$R_1 > P_1 > S_1$ $T_2 > R_2 > P_2$ $R_2 > T_2^*$

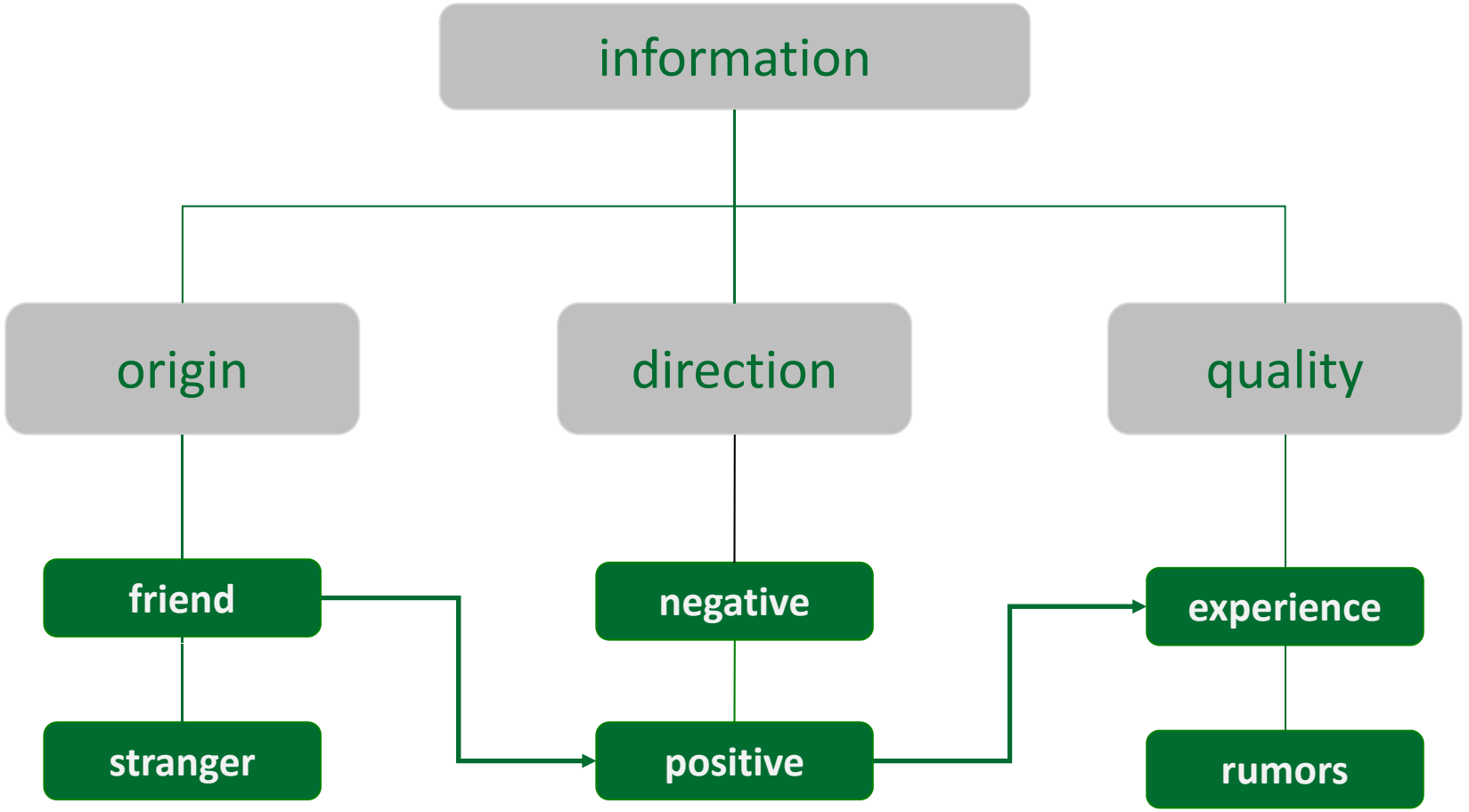
Origin: Trust Game with the informant

There are three **important differences** in the incentive structure of informative friends and strangers:

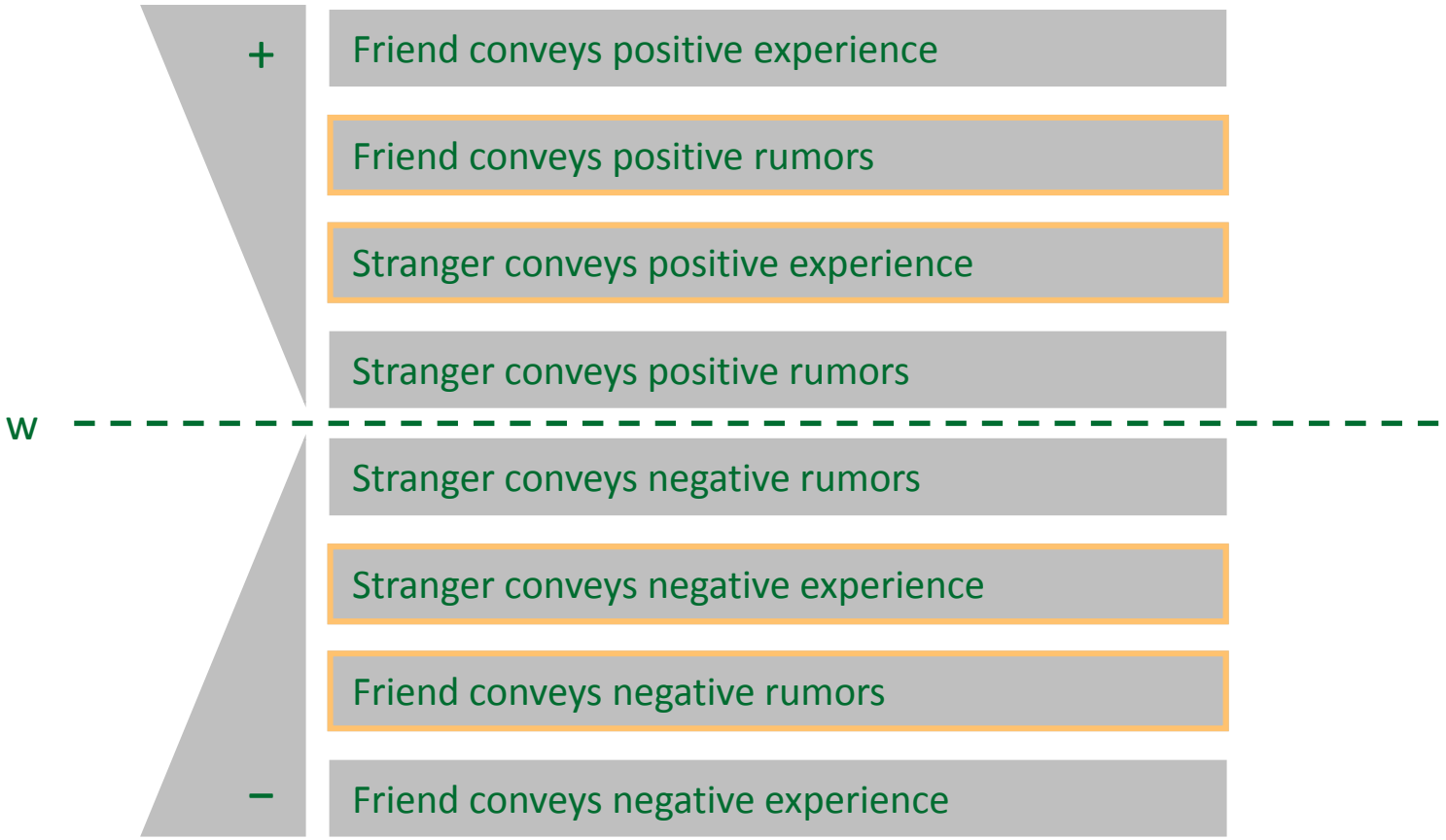
1. It is easier to evaluate $\mathbf{w_{info}}$ if a friend rather than a stranger is the informant.
2. The payoff $\mathbf{R_2}$ is bigger if a friend rather than a stranger is the informant.
3. The payoff $\mathbf{T_2}$* is smaller if a friend rather than a stranger is the informant.

H_3: *„A friend´s information has a stronger effect on trust than a stranger´s information.“*

Third-Party information effects



Hypotheses


+
Friend conveys positive experience
Friend conveys positive rumors
Stranger conveys positive experience
Stranger conveys positive rumors
w
Stranger conveys negative rumors
Stranger conveys negative experience
Friend conveys negative rumors
−
Friend conveys negative experience

Data collection: The factorial survey

Design:

- Subjects received an email invitation to an online questionnaire. The questionnaire contained a short description of the vignette setting.
- 9 Vignettes were randomly assigned to the subjects.

Subjects:

- 79 Students were recruited from the subject pool of the Institute for Empirical Research in Economics (University of Zurich).
- After completing the questionnaire, the subjects were paid (10 CHF).

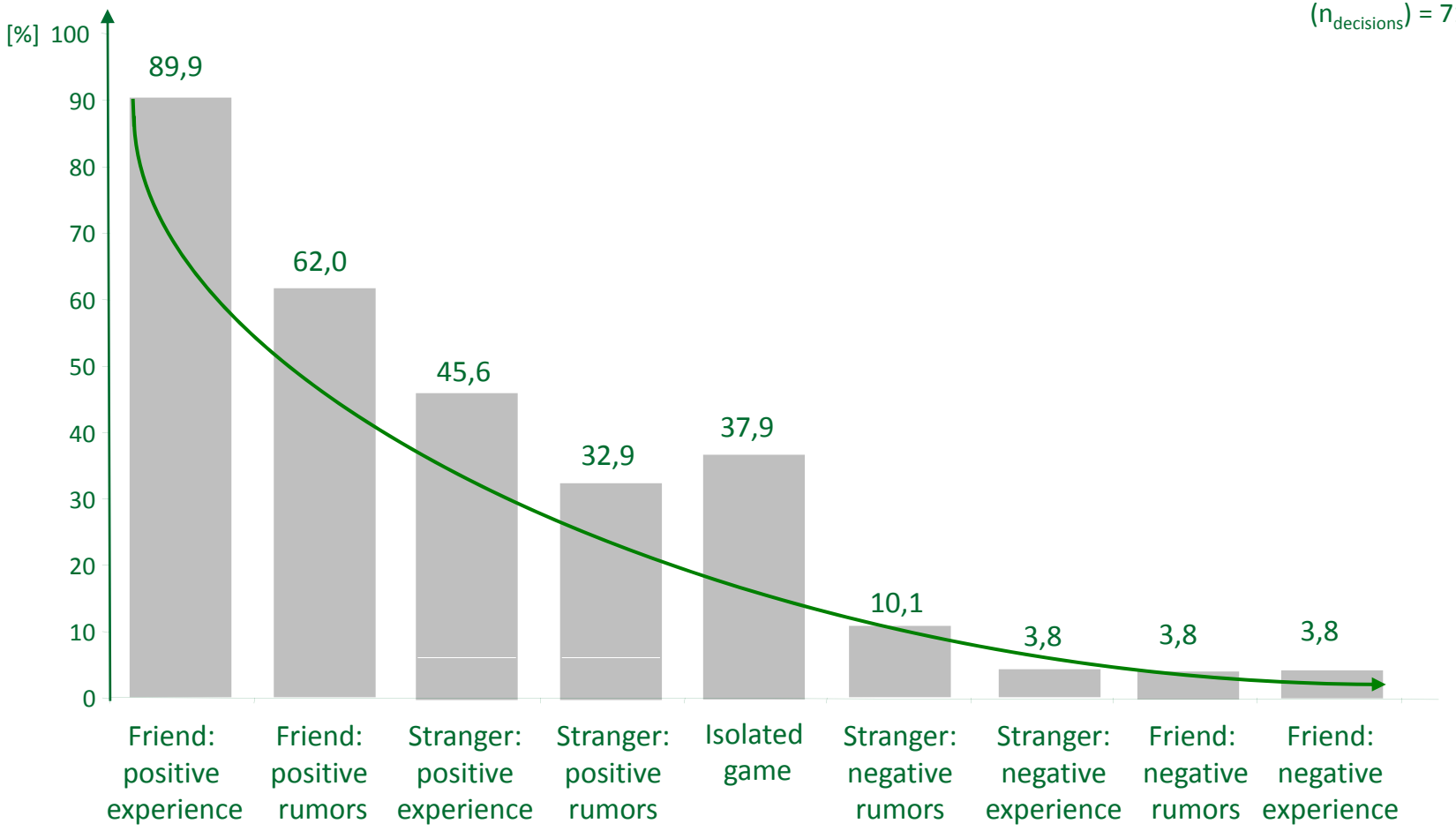
Visualization of the vignettes to optimize the subjects´ imagination:

Example with a stranger, who conveys negative experience:

22.10.09	
	Thread: Suche Konzertkarten für XXX
Du!	**Hallo, Ich suche noch zwei Karten für XXX. Wer kann mir helfen?**
22.10.09	
	Thread: Re: Suche Konzertkarten für XXX
A_Schmid	**Hallo, Ich habe noch zwei Karten übrig. Ich würde Dir die Karten umgehend per Post senden, sobald Du das Geld überwiesen hast. Gruß A_Schmid**
22.10.09	
	Thread: Re: Suche Konzertkarten für XXX
Anonymer Gast	**Hey, Ich habe bei A_Schmid schon einmal Karten gekauft. Die versprochenen Konzertkarten wurden nicht geschickt und das Geld behalten!**

Results

($n_{subjects}$=79)
($n_{decisions}$) = 711)



Results: Random Effects Logit Model

Y = Trust Decision	Random effects	
	Model 1	Model 2
Friend conveys positive experience	Reference	Reference
Friend conveys positive rumors	**- 2.65*** **	**- 2.57*** **
Stranger conveys positive experience	**-3.85*** **	**- 3.76*** **
Stranger conveys positive rumors	**- 4.84*** **	**- 4.76*** **
Isolated game	**- 4.43*** **	**- 4.34*** **
Already made experience with a similar situation	-	**4.47*** **
Risk-Willingness	-	0,09
Member of an online community	-	0.11
Number of friends	-	0.01
Sex (ref = women)	-	-0.11
Intercept	**3.60*** **	**2.47*** **

Model 2	
Number of obs	395
Number of groups	79
Prob > chi2 (Wald)	0.000
/lnsig2u	1.3
rho	0.53

Results: Random Effects Logit Model

Y = Trust Decision	Random Effects	
	Model 1	Model 2
Experience (ref = rumors)	**1.70*** **	**1.71*** **
Friend (ref = stranger)	**2.90*** **	**2.90*** **
Already made experience with an similar situation	-	**4.90*** **
Risk-Willingness	-	0.05
Member of an online community	-	-0.01
Number of friends	-	0.02
Sex (ref = women)	-	-0.17
Intercept	-1.60***	-2.40

Model 2	
Number of obs	316
Number of groups	79
Prob > chi2 (Wald)	0.000
/lnsig2u	1.2
rho	0,54

Summary and next steps

Summary

- Negative information influences the distrust rate stronger than positive information influences the trust rate. A critical point is reached when a stranger conveys negative experience.
- The strongest effect on trust is observable when a friend conveys positive experience.
- The expected hierarchy of the effects is supported by data only for positive information.
- The difference in the trust effect is bigger between friends and strangers than between experience and rumors.

Next steps:

- Vignettes are critical because they measure attitudes and not real behavior.
- Next step is to test these effects under laboratory conditions in an experimental setting.
- Furthermore, it is interesting to find out whether the results remain robust if tested in other cultures like Brazil and USA.

Thank you!

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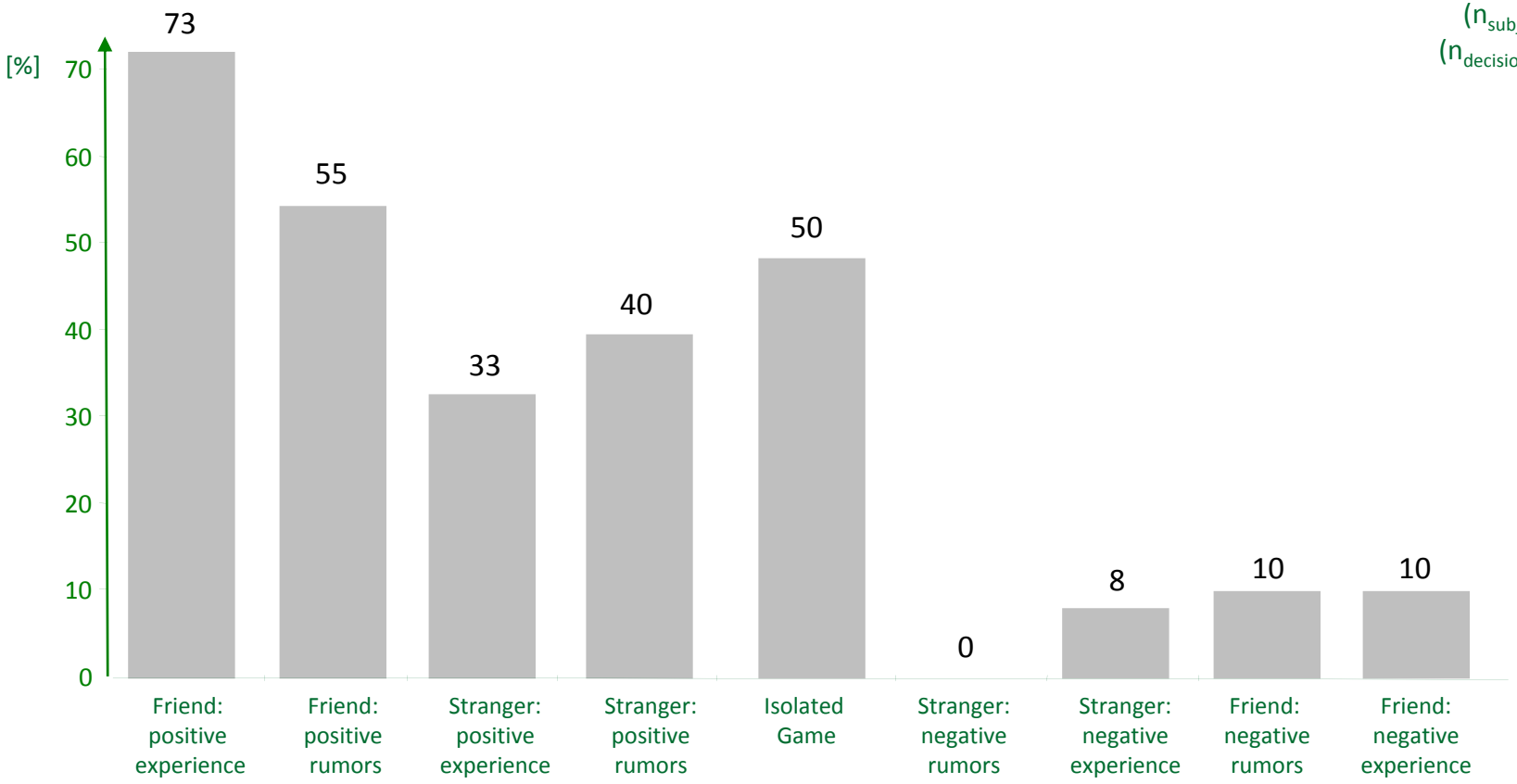
Descriptive Results of the Former Vignette Study (2006)

($n_{subjects}$= 82)
($n_{decisions}$) = 82)



Fixed effects models in the positive scope

Results: Fixed Effects Model

Y = trust decision	fixed effects model 1
Friend conveys positive experience	Reference
Friend conveys positive rumors	**- 2.00*** **
Stranger conveys positive experience	**-3.15*** **
Stranger conveys positive rumors	**- 4.30*** **
Isolated game	**- 3.82*** **

Number of obs	295
Number of groups	59
Prob > chi2 (LR)	0.000

Y = trust decision	fixed effects model 1
Experience (ref = rumors)	**1.81*** **
Friend (ref = stranger)	**2.87*** **

Number of obs	212
Number of groups	53
Prob > chi2 (LR)	0.000

Logistic regression models in the positive scope

Results: Logistic Regression

Y = Trust Decision	Model 1
Friend conveys positive experience	Reference
Friend conveys positive rumors	**- 1.76*** **
Stranger conveys positive experience	**- 2.50*** **
Stranger conveys positive rumors	**- 3.12*** **
Isolated game	**- 2.86*** **
Already made experience with an similar situation	**3.00*** **
Risk-Willingness	0,08
Member of an online community	-0.003
Number of friends	0.0006
Sex (ref = women)	-0.06
Intercept	**1.63*** **

Model 1	
Number of obs	395
Pseudo r2	0.22
Prob > chi2 (LR)	0.000

Results: Logistic Regression

Y = Trust Decision	Model 1
experience (ref = rumors)	**1.11*** **
Friends (ref = stranger)	**1.85*** **
Already made experience with an similar situation	**3.13*** **
Risk-Willingness	0.05
Member of an online community	-0.05
Number of friends	0.008
Sex (ref = women)	-0.08
Intercept	- 1.63

Model 1	
Number of obs	316
Pseudo r2	0.22
Prob > chi2 (LR)	0.000

Random effects, fixed effects and logit models with all variables

Results: Logistic Regression

Logistic regression

Log likelihood = -269.84724

Number of obs	= 711
LR chi2(13)	= 353.93
Prob > chi2	= 0.0000
Pseudo R2	= 0.3961

Vertrauen	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
freund_pos_G	-1.762983	.4469687	-3.94	0.000	-2.639026	-.8869406
fremder_po~E	-2.497161	.4470382	-5.59	0.000	-3.37334	-1.620982
fremder_po~G	-3.109643	.4589426	-6.78	0.000	-4.009154	-2.210132
iso	-2.852773	.4525888	-6.30	0.000	-3.739831	-1.965715
fremder_ne~G	-4.87178	.5694136	-8.56	0.000	-5.987811	-3.75575
fremder_ne~E	-6.061739	.7456413	-8.13	0.000	-7.523169	-4.600308
freund_neg_G	-6.061739	.7456413	-8.13	0.000	-7.523169	-4.600308
freund_neg_E	-6.061739	.7456413	-8.13	0.000	-7.523169	-4.600308
erlebt	2.43084	.3745066	6.49	0.000	1.69682	3.164859
risikobere~t	.1018874	.0529253	1.93	0.054	-.0018442	.2056191
mitglied_o~e	-.2345164	.2242859	-1.05	0.296	-.6741087	.2050759
anz_freunde	-.0075523	.0225244	-0.34	0.737	-.0516993	.0365946
sex	.1348949	.2310482	0.58	0.559	-.3179512	.5877411
_cons	1.640403	.4993983	3.28	0.001	.6616	2.619205

Results: Fixed Effects Model

Conditional fixed-effects logistic regression — Number of obs = 684
Group variable: lfdn — Number of groups = 76

Obs per group: min = 9
avg = 9.0
max = 9

LR chi2(8) = 366.68
Log likelihood = -97.621611 — Prob > chi2 = 0.0000

Vertrauen	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
freund_pos_G	-2.006982	.520023	-3.86	0.000	-3.026208	-.9877558
fremder_po~E	-3.132933	.5602116	-5.59	0.000	-4.230928	-2.034939
fremder_po~G	-4.200049	.6072203	-6.92	0.000	-5.390179	-3.009919
iso	-3.758142	.5882931	-6.39	0.000	-4.911175	-2.605109
fremder_ne~G	-6.482388	.7314823	-8.86	0.000	-7.916067	-5.048709
fremder_ne~E	-7.872118	.9094777	-8.66	0.000	-9.654662	-6.089575
freund_neg_G	-7.872118	.9094777	-8.66	0.000	-9.654662	-6.089575
freund_neg_E	-7.872118	.9094777	-8.66	0.000	-9.654662	-6.089575

Results: Random Effects Model

Random-effects logistic regression — Number of obs = 711
Group variable: lfdn — Number of groups = 79

Random effects u_i ~ Gaussian — Obs per group: min = 9, avg = 9.0, max = 9

Wald chi2(13) = 125.06
Log likelihood = -241.2212 — Prob > chi2 = 0.0000

Vertrauen	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
freund_pos_G	-2.454735	.5452009	-4.50	0.000	-3.523309	-1.386161
fremder_po~E	-3.568799	.5749305	-6.21	0.000	-4.695642	-2.441956
fremder_po~G	-4.494314	.6155113	-7.30	0.000	-5.700694	-3.287934
iso	-4.109279	.5971177	-6.88	0.000	-5.279608	-2.938949
fremder_ne~G	-6.906153	.7797634	-8.86	0.000	-8.434461	-5.377845
fremder_ne~E	-8.346005	.9586897	-8.71	0.000	-10.225	-6.467008
freund_neg_G	-8.346005	.9586897	-8.71	0.000	-10.225	-6.467008
freund_neg_E	-8.346005	.9586897	-8.71	0.000	-10.225	-6.467008
erlebt	3.318447	.7639172	4.34	0.000	1.821197	4.815697
risikobere~t	.1401414	.1143851	1.23	0.221	-.0840492	.3643321
mitglied_o~e	-.3509907	.4839055	-0.73	0.468	-1.299428	.5974467
anz_freunde	-.0068926	.0488657	-0.14	0.888	-.1026676	.0888824
sex	.1843302	.4976679	0.37	0.711	-.791081	1.159741
_cons	2.364194	.8826133	2.68	0.007	.6343042	4.094085
/lnsig2u	1.051623	.3026218			.4584952	1.644751
sigma_u	1.691831	.2559925			1.257653	2.2759
rho	.46525	.07529			.3246787	.6115669

Likelihood-ratio test of rho=0: chibar2(01) = 57.25 Prob >= chibar2 = 0.000

Results: Random Effects Model

Random-effects logistic regression — Number of obs = 711
Group variable: lfdn — Number of groups = 79

Random effects u_i ~ Gaussian — Obs per group: min = 9, avg = 9.0, max = 9

Wald chi2(8) = 125.72
Log likelihood = -252.03454 — Prob > chi2 = 0.0000

Vertrauen	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
freund_pos_G	-2.553831	.5600283	-4.56	0.000	-3.651466	-1.456195
fremder_po~E	-3.691075	.589854	-6.26	0.000	-4.847167	-2.534982
fremder_po~G	-4.612899	.6282588	-7.34	0.000	-5.844264	-3.381535
iso	-4.232235	.6110454	-6.93	0.000	-5.429862	-3.034608
fremder_ne~G	-6.939524	.7802395	-8.89	0.000	-8.468766	-5.410283
fremder_ne~E	-8.34442	.9577488	-8.71	0.000	-10.22157	-6.467267
freund_neg_G	-8.34442	.9577488	-8.71	0.000	-10.22157	-6.467267
freund_neg_E	-8.34442	.9577488	-8.71	0.000	-10.22157	-6.467267
_cons	3.429549	.5452726	6.29	0.000	2.360835	4.498264
/lnsig2u	1.446206	.2771309			.90304	1.989373
sigma_u	2.060819	.2855582			1.570698	2.703877
rho	.5634951	.0681654			.4285407	.689659

Likelihood-ratio test of rho=0: chibar2(01) = 94.86 Prob >= chibar2 = 0.000