Look what I've done -
Signaling in online charitable giving

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Green charitable giving as a signal of status and prosociality

- Individuals are concerned about how they are perceived in their social interactions ➡ wealthy or generous and trustworthy?

  - *Asymmetric information: individuals have to send <u>informative signals (visible choices or communicative signals)</u> that allow revealing information about socially desirable personal motivations and traits.*

  - *Empirical evidence confirms: (behavioral) signals can influence others' perceptions about the signaler.*

- Does the desire to be perceived in a particular way, and, in particular, sending informative signals motivate individuals to display a particular behavior?

  - *General economic behavior: consumption* (cf. Duesenberry, 1949; Veblen, 1899)*, investment decisions* (Byrzyn, 2017; Riedl and Smeets, 2014; Bauer and Smeets, 2015)*, or voting* (e.g., Gerber et al., 2008; DellaVigna et al., 2016)*.*

  - *Pro-social behaviors* (e.g., Harbaugh, 1998; Andreoni and Bernheim, 2009; Ariely et al., 2009; Carpenter and Myers, 2010; Bursztyn and Jensen, 2017; Dannenberg et al., 2019)*.*

  - *Pro-environmental behavior* (Griskevicius et al., 2010; Sexton and Sexton, 2011;; Cecere et al., 2014; Friedrichsen and Engelmann, 2018; Welsch and Kühling 2019)*.*

We examine heterogeneity aspects in green signaling in an online context

- Although it is possible to draw some inferences from previous literature on the relation between (green) signaling as a means to attain a positive social image and green behavior, only a few attempts consider individual heterogeneity in (green) signaling.

  - *In particular, the idea that there are different determinants of signaling, and that the effects of signaling can be different depending on individual motivations and preferences and on the receiver of the signal, have not (sufficiently) been investigated.*

- Drawing on unique self-administered data from an online survey among visitors of a green crowdfunding platform in Germany, the paper aims to do just that.

  - *Against the background of recent interest in charitable giving via online platforms (e.g., Saxton and Wang, 2014; Meer, 2014, Castillo et al., 2014), we examine these questions within the context of (online) green crowdfunding.*

  - *Entrepreneurs, inventors, or creative people call for the provision of financial funds from a large group of (online) users ("crowd") raising rather small amounts of money (Belleflamme, 2014).*

Pro-social signaling is well understood, theoretically and …

- A variety of theoretical approaches within general economics address and an individual's desire to attain a positive social image.

  - *Underlying mechanisms: identity* (e.g., Akerlof and Kranton 2000, 2010), **norms** (e.g., Béenabou and Tirole 2011), **status goods** (e.g., Veblen 1899), **conformity** (e.g., Bernheim 1994), **and signaling** (e.g., Spence, 1973).

- With regard to pro-social behavior, several theoretical models directly consider social image concerns as motivations for pro-social behavior in the form of signaling status (Glazer and Konrad, 1996) or reputation and prestige (Harbourgh, 1998; Bénabou and Tirole, 2006; Ellingsen and Johannesson, 2008), competitive altruism (Hardy and Van Vugt, 2006; Van Vugt et al., 2007), conspicuous conservation (Griskevicius et al., 2010; Sexton and Sexton, 2011).

  - *Glazer and Konrad (1996) suggests that charitable giving is a way for donors to signal their wealth or income to other people.*

  - *Harbaugh (1998) argues that the donor experiences both "warm glow" and "prestige" through the act of donation.*

… empirically and experimentally. Signaling green behavior less!

- There is a large amount of empirical and experimental evidence for the relevance of social signaling for pro-social behavior, and especially for charitable giving (e.g., Harbaugh, 1998; Andreoni and Bernheim, 2009; Ariely et al., 2009; Carpenter and Myers, 2010; Bursztyn and Jensen, 2017; Dannenberg et al., 2019).

  - *Main focus on varying visibility / public recognition of the behavior and use the individual's response to it as an indicator of the desire to signal and, thus, social image concerns.*

- Within the field of pro-environmental behavior the concept is empirically addressed within the discussion of the adherence to (perceived) social norms, social comparison as well as a behavioral intervention: social approval concerns (Holländer, 1990).

- The direct analysis of signaling green behavior as a means to attain social image gained only recently momentum (Griskevicius et al., 2010; Sexton and Sexton, 2011; Ferrara and Missios, 2012; Cecere et al., 2014; Friedrichsen and Engelmann, 2018; Welsch and Kühling 2019).

  - *Main focus on behavioral signaling by making green consumption publicly visible.*

Charitable giving via crowdfunding becomes more important!

- The vast majority of studies, furthermore, address social image in an offline context, tough caring for one's own social image can be of considerable importance here (Chiang and Suen, 2015).

  - *Especially, crowdfunding platforms gain momentum for the funding of pro-social activities (e.g. Davies, 2015; Ansink et al., 2017; Hudik and Chovanculiak, 2017).*

- Only a limited number of studies focuses on the supply side.

  - *Focusing on backers' motivation, they show that funding decisions of backers are influenced by intrinsic motivations (e.g., Agraval et al.2011; Galak et al., 2011; Liu et al., 2012; Lin and Viswanathan, 2013; Bi et al., 2017) as well as social factors, such as social information on prior contributions (e.g., Burtch et al., 2013; Lin et al., 2014) and a backer's social network (e.g. Lin et al, 2014; Liu et al, 2015; Zvilichovsky, et al., 2015).*

  - *Only a few contributions examine reputational concerns (Burtch et al., 2013; Lin et al., 2014; Bretschneider and Leimeister, 2017; Cox, 2018).*

  - *No study on whether the contribution behavior is signaled by the donor.*

Green signaling and green charitable giving when contributions are small-sized in an online context considering different signal recipients

(1) Crowdfunding: small- and medium sized contributions in an online context

- *"status motive is often substantial for large charitable donations by rich people" (Dannenberg et al., 2019, p.6).*

- *As an innovative way of financing green charitable projects, green crowdfunding differs along two major lines from traditional forms of charitable giving to environmental organizations*

  I. *Decreases associated information asymmetries*

  II. *Recipient of the donation*

(2) Communicative signals

- *We use talks about the monetary contributions to crowdfunding campaigns as a communicative signal.*

- *Given the non-public nature of the crowdfunding decision, in order to enhance the social image, visitors' green giving behavior has to be made publicly accessible*

Green signaling and green charitable giving when contributions are small-sized in an online context considering different signal recipients

(3) Distinguishing between recipients of the communicative signal

- *Individuals interact with different social groups and thus also discuss their pro-social behavior, such as green giving, with different people such as their partner, their family, or friends, as reported by Videras et al. (2012).*

- *Individuals use different speech dimensions in different social frames, as findings from social-psychology on context-dependent communications shows* (e.g., Duck, 1994, Goldsmith and Baxter, 1998).

(4) Addressing interactions between intrinsic motivations and social image

- *This paper empirically investigates heterogeneous effects of social image concerns on green giving according to different moral motivations and environmental preferences* (Engelmann, 2018; Grossman, 2015; Cappelen et al., 2017).

Econometric model

(1) Who cares about green signaling?

$$Green\ signal_i = \begin{cases} 0 = \\ 1 = \\ 2 = \\ 3 = \end{cases} if\ the\ individual\ signals \begin{cases} to\ nobody \\ to\ the\ partner \\ to\ the\ family \\ to\ friends \end{cases}$$

- Question: "With whom do you share your financial commitment to a crowdfunding project?"
- The value zero is chosen as the base category.
- The probability that individual i chooses the jth alternative is:

$$p_{ij} = p(y_i = j) = \Phi(x_{ij}^* \beta) \qquad j = 0,1,2,3$$

(1) Multinomial Probit: Who cares about green signaling?

(2) Multivariate Probit: Does green signaling motivates charitable giving in the field of green crowdfunding and is this relation mitigated by different intrinsic motivations (interaction effect)?

- The probability that individual i contributes is given by

$$Pr(Contributed_i = 1 | Signaling_i, x_{it}) = \Phi(\alpha + \beta\, Signaling_i + \lambda\, x'_i).$$

- Description of explanatory variable

Empirical approach: Multinomial and multivariate probit models (3/3)

The vector x entails:	Description
Intrinsic motivations (Feeling responsible, Local identification, Warm glow feelings, Reward seeking)	1 if the respondent agreed rather strongly or very strongly to the statement, "I feel responsible for contributing to sustainable projects and startups", 0 otherwise. Five ordered response categories
Risk preferences	"Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Eleven ordered response categories.
NEP	Additive index based on six standardized statements the original NEP-Scale.
Social context (Behavior of context, Expectations of society)	1 if the respondent agreed rather strongly or very strongly to the statement "My environment (friends, family, colleagues) support sustainable projects and startups." Five ordered response categories.
Berlin network	1 if the respondent stem from Berlin, 0 otherwise.
Socio-economic controls	Age, Gender, Abi, Past crowdfunding.

"Push-in" survey combined with process-based information on green giving

- Data collection
  - *We collected unique data from an online survey among visitors of a green crowdfunding platform in Germany, which provides ecologically sustainable projects using a flexible funding approach.*
  - *Field phase: August 2018 - May 2019*
  - *"Push-in" survey*
  - *Participation in the survey took aprox. 10 min.*
  - *Reward: 5€.*
  - *The crowdfunding platform collected process-based information on whether the participants in our survey financially supported green projects on the platform.*
- Sample
  - *In sum, 1,367 visitors took part in the survey.*

Sample: low contribution rate, but strong signaling in general to partner and friends

Contributed?

Variable	Number of observations	Mean	Standard deviation	Min	Max
Contributed	1,367	0.0695	0.2544	0	1
Amount contributed	1,367	3.5530	30.5068	0	1000

Type of crowdfunding	Frequency	Percent	Cum.
None	1,272	93.05	93.05
Reward-based	41	3.00	96.05
Donation-based	54	3.95	100
Total	1,367	100	

Green signaling?

Green signaling	Frequency	Percent
Nobody	167	12.58
Partner	659	49.62
Family	147	11.07
Friends	355	26.73
Total	1,328	100

Sample: strong moral values, green, Berlin affinity and educated

Variable	Number of observations	Mean	Standard deviation	Min	Max
Intrinsic motivations					
Feeling responsible	1,367	0.7154	0.4514	0	1
Local identification	1,367	0.4960	0.5002	0	1
Warm glow feelings	1,367	0.8171	0.3867	0	1
Reward seeking	1,367	0.2385	0.4263	0	1

Sample: strong moral values, green, Berlin affinity and educated

Variable	Number of observations	Mean	Standard deviation	Min	Max
Intrinsic motivations					
Feeling responsible	1,367	0.7154	0.4514	0	1
Local identification	1,367	0.4960	0.5002	0	1
Warm glow feelings	1,367	0.8171	0.3867	0	1
Reward seeking	1,367	0.2385	0.4263	0	1
Individual preferences					
Risk trust	1,367	5.6269	2.2435	0	10
NEP-Score	1,367	4.9422	1.2471	0	6

Sample: strong moral values, green, Berlin affinity and educated

Variable	Number of observations	Mean	Standard deviation	Min	Max
Intrinsic motivations					
Feeling responsible	1,367	0.7154	0.4514	0	1
Local identification	1,367	0.4960	0.5002	0	1
Warm glow feelings	1,367	0.8171	0.3867	0	1
Reward seeking	1,367	0.2385	0.4263	0	1
Individual preferences					
Risk trust	1,367	5.6269	2.2435	0	10
NEP-Score	1,367	4.9422	1.2471	0	6
Social context					
Berlin network	1,367	0.1368	0.3438	0	1

Sample: strong moral values, green, Berlin affinity and educated

Variable	Number of observations	Mean	Standard deviation	Min	Max
Intrinsic motivations					
Feeling responsible	1,367	0.7154	0.4514	0	1
Local identification	1,367	0.4960	0.5002	0	1
Warm glow feelings	1,367	0.8171	0.3867	0	1
Reward seeking	1,367	0.2385	0.4263	0	1
Individual preferences					
Risk trust	1,367	5.6269	2.2435	0	10
NEP-Score	1,367	4.9422	1.2471	0	6
Social context					
Berlin network	1,367	0.1368	0.3438	0	1
Soccio-economic controls					
Age	1,367	42.8939	14.8794	12	86
Gender	1,367	0.5201	0.5213	0	2
Abitur	1,367	0.7535	0.4311	0	1
Crowdfunidng in 2017	1,367	0.4031	0.4907	0	1

We first empirically examine which individual characteristics are related to green signaling?

Who cares about green signaling?

Who cares, strongly depend on the social frame.

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	Full specification		
Base: Nobody	Partner	Family	Friends
Intrinsic motivations			
Feeling responsible	0.2334	0.1370	0.0543
Local identification	0.1432	0.0815	0.2585*
Warm glow feelings	0.2550	0.1805	0.1471
Reward seeking	-0.2408*	-0.2878*	-0.2206
Individual preferences			
Risk general	-0.0633*	-0.0257	0.0153
Risk trust	0.0100	-0.0439	0.0263
NEP-Score	0.1069**	-0.0262	0.0064

Number of observations: 1,328; * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Who cares, strongly depend on the social frame.

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Base: Nobody	Full specification		
	Partner	Family	Friends
Social context			
Number of close friends	0.0085	-0.0083	0.0104
Expectation society	0.1111	-0.1631	-0.0717
Behavior family and friends	0.1842	0.2708	0.3916***
Berlin network	0.0960	-0.0356	0.0911
Soccio-economic controls			
Age	0.0042	-0.0047	-0.0056
Gender - male	-0.1959	0.2590*	0.1421
Gender - other	-1.6509**	0.3934	0.5077
Abitur	0.2531*	-0.2525	0.1242
Crowdfunidng in 2017	-0.3159**	-0.3157**	-0.0074

Number of observations: 1,328; * p<0.1, ** p<0.05, *** p<0.01

Complementary relation: intrinsic motivations / individual preferences and signaling

- It seems that for somehow "positive" motivations, such as environmental concern or local identification, participants have an interest in letting others (at least partners and friends) know about their financial contribution

- Experiencing role models in the social environment (behavior of family and friends) and signaling contributions also tend to be rather described by a positive relationship.

- In contrast, for somehow "negative" motivations to contribute, such as reward-seeking, participants care less about letting others know about their financial contribution.

⇒ These findings suggest complementarities between intrinsic motives and signaling charitable contributions..

Does green signaling motivates charitable giving in the field of green crowdfunding?

What are the further main determinants?

Green signaling matters for green giving, but negatively!

	M1	M2	Full specification
Green signaling			
to the partner	-0.3166**	-0.3478**	-0.3423**
to the family	-0.3810*	-0.3989*	-0.3966*
to friends	-0.3410**	-0.3797**	-0.4008**

➢ M1: signaling, intrinsic motivations, individual preferences

➢ M2: + social context

➢ M3: + socio-demographic controls

➢ Individuals has been expected to anticipate the social benefits of signaling => positive relationship.

➢ Explanations for deviating results ?

  ➢ Anticipated social benefits might not be sufficient (platform not well-known?)

  ➢ Rather than social benefits, social loses are anticipated.

    – Green status signalers can be perceived as less prosocial and less trustworthy (Berger, 2017).

Number of observations: 1,328; * p<0.1, ** p<0.05, *** p<0.01

Green signaling matters for green giving, but negatively!

	M1	M2	Full specification
Green signaling			
to the partner	-0.3166**	-0.3478**	-0.3423**
to the family	-0.3810*	-0.3989*	-0.3966*
to friends	-0.3410**	-0.3797**	-0.4008**
Intrinsic motivations			
Feeling responsible	0.1614	0.2332*	0.2020
Local identification	-0.1148	-0.1953*	-0.1952*
Warm glow feelings	0.1610	0.1273	0.0941
Reward seeking	-0.1124	-0.0995	-0.1175

➢ Though our sample hold strong moral motivations, intrinsic moral motivations seem not to play an important role for green crowdfunding.

Number of observations: 1,328; * p<0.1, ** p<0.05, *** p<0.01

Green signaling matters for green giving, but negatively!

	M1	M2	Full specification
Green signaling			
to the partner	-0.3166**	-0.3478**	-0.3423**
to the family	-0.3810*	-0.3989*	-0.3966*
to friends	-0.3410**	-0.3797**	-0.4008**
Intrinsic motivations			
Feeling responsible	0.1614	0.2332*	0.2020
Local identification	-0.1148	-0.1953*	-0.1952*
Warm glow feelings	0.1610	0.1273	0.0941
Reward seeking	-0.1124	-0.0995	-0.1175
Individual preferences			
Risk general	-0.0697**	-0.0695**	-0.0647**
Risk trust	0.0669***	0.0598**	0.0513*
NEP-Score	-0.0492	-0.0711*	-0.0715*

➢ In contrast to moral motivations, individual preferences are found to be relevant for green crowdfunding.

Number of observations: 1,328; * p<0.1, ** p<0.05, *** p<0.01

Green signaling matters for green giving, but negatively!

	M1	M2	Full specification
Green signaling			
to the partner	-0.3166**	-0.3478**	-0.3423**
to the family	-0.3810*	-0.3989*	-0.3966*
to friends	-0.3410**	-0.3797**	-0.4008**
Intrinsic motivations			
Feeling responsible	0.1614	0.2332*	0.2020
Local identification	-0.1148	-0.1953*	-0.1952*
Warm glow feelings	0.1610	0.1273	0.0941
Reward seeking	-0.1124	-0.0995	-0.1175
Individual preferences			
Risk general	-0.0697**	-0.0695**	-0.0647**
Risk trust	0.0669***	0.0598**	0.0513*
NEP-Score	-0.0492	-0.0711*	-0.0715*
Social context			
Number of close friends		0.0064	0.0050
Expectation society		0.0309	0.0524
Behavior family and friends		0.0374	0.0390
Berlin network		0.7854***	0.7656***

Number of observations: 1,328; * p<0.1, ** p<0.05, *** p<0.01

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Is this relation between green signaling and charitable giving mitigated by different intrinsic motivations or individual preferences (interaction effect)?

Feeling responsible and not signaling are more likely to contribute.
Responsibility and signaling do not pay off.

	M1
Green signaling	
to the partner	0.3849
to the family	-0.1050
to friends	0.1845
Intrinsic motivations	
Feeling responsible	0.9216***
Signal to pratner- responsibl	-0.9610**
Signal to family- responsible	-0.3905
Signal to friends- responsible	-0.7635*

➤ We ask whether intrinsic moral motivations are moderators of the association between green signaling and green contributions.

➤ Signaling may matter most for donors with weak intrinsic moral motivations and / or green preferences, because these funders are likely to contribute only if doing so benefits their reputation.

Number of observations: 1,328; * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Feeling responsible and not signaling are significantly more likely to contribute. Responsibility and signaling do not pay off.

	M1
Green signaling	
to the partner	0.3849
to the family	-0.1050
to friends	0.1845
Intrinsic motivations	
Feeling responsible	0.9216***
Signal to pratner- responsibl	-0.9610**
Signal to family- responsible	-0.3905
Signal to friends- responsibl	-0.7635*

➤ First group are those signaling contributions holding weak feelings of responsibility (reputation matters).

➤ Second group are individuals with strong responsibility feelings, but no desire to signal (substitutional relationship).

➤ Third group are individuals with strong responsibility feelings and the desire to signal them (complementary relation) => deviation from expectation.

Number of observations: 1,328; * p<0.1, ** p<0.05, *** p<0.01

Individuals with strong local identity are less likely to contribute.

	M2
Green signaling	
to the partner	-0.5120***
to the family	-0.5943**
to friends	-0.4515**
Intrinsic motivations	
Local identification	-0.5162*
Signal to pratner- benefit reg	0.4437
Signal to family- benefit regi	0.5278
Signal to friends- benefit reg	0.1929

➢ First group are those signaling contributions holding weak local identity.

➢ Second group are individuals with strong local identity, but no desire to signal.

➢ Third group are individuals with strong local identity and the desire to signal them.

Number of observations: 1,328; * $p<0.1$, ** $p<0.05$, *** $p<0.01$

We focused the empirical analysis on the individual heterogeneity in (green) signaling.

- Association between green signaling and intrinsic motivations, individual preferences and social context
  - *People care differently about signaling, depending on the social frame.*
  - *In addition, for "positive" and "negative" intrinsic motivations we find a complementary relation to green signaling.*
- Signaling and green online charitable giving
  - *We found a negative association between green signaling and green giving.*
  - *While intrinsic moral motivations seem less important, individual preferences are found to be relevant for green crowdfunding.*
  - *Especially the strong Berlin network is associated to green crowdfunding.*
- Interaction relationships between intrinsic moral motivations and social image concerns
  - *No mitigation of social image by individual responsibility (might have been valuable for policy).*
  - *Individual feelings of responsibility were found to even enhance the effects of social image concerns.*

Concerns and constraints

- Is the "story" convincing? ➡ Suggestions?

- Puzzling results
  - *Contradicting to previous findings on the positive effect of signaling: signaling contributions is negatively related to green crowdfunding.*
  - *Green individuals give less to green crowdfunding than not green individuals.*

- *Confounding factors*
  - *Measurement errors in signaling (may also include information gathering)*
  - *What is exactly signaled?*
  - *Stated signaling instead of elicit social signaling in an incentive-compatible way => laboratory?*
- *Effects of the "Berlin" connection: strong network of participants*