
**Introduction**

The growth of crowdfunding as an alternative source of innovative financing has recently triggered great enthusiasm for its potential to enable a greater diversity of entrepreneurs access to important seed funds (Gerber & Hui, 2013; Sorenson, Assenova, Li, Boada, & Fleming, 2016). These arguments are embedded in the notion that consumers represent a different kind of investor (Assenova et al., 2016) and hence are driven by a wider range of motivations than traditional investors (Lehner, 2013). An important question relates to the conditions under which crowdfunding campaigns are successful. Empirical evidence to date has produced mixed results – while some studies suggest a social- or environmental value orientation of a given campaign to significantly increase its odds of receiving funding (Calic & Mosakowski, 2016; Lehner & Nicholls, 2014), other studies have found no such effect (Cholakova & Clarysse, 2015; Hörisch, 2015). Thus, despite enthusiasm from a range of actors, it is unclear what type of crowdfunding campaigns are successful in receiving funding. In this respect, the role of message framing has received little interest, despite its potential for shedding light on the question of crowdfunding campaign success (Vismara, 2019). Thus, the overarching research question we seek to examine in this paper is “How does founders’ framing of a crowdfunding message affect the mobilization of backers and what values are conveyed in successful reward-based crowdfunding efforts”

In order to answer the research question this paper builds on framing theory, as applied in social movement research as a means for observing the causation between crowdfunder behavior and their willingness to support a campaign. Social movement research has long emphasized the importance of value alignment in framing the movement, i.e. the relevance of linking the social movement to the personal values of potential followers (Snow, Rochford, Worden, & Benford, 1986). Personal values are conceptualized as important life goals or standards that serve as guiding principles in life and thus act as antecedents for predicting behavior (Rokeach, 1973; Schwartz et al., 2012;
In order to observe causality between value frames and individual pledging behavior the study employs an experiment as this allows for observing causal relationships not easily teased out with other methods (Colquitt, 2008; Trochim, 2001). We conducted a web-based experiment, which most closely resembles the reality of a crowdfunding campaign, thus enhancing the experiment’s external validity (Grégoire, Binder, & Rauch, 2019). More specifically, we investigate how the framing of crowdfunding messages as either egoistic, altruistic, or biospheric affects crowdfunding success. These three values – egoistic, altruistic and biospheric – respectively reflect considerations on “what is in it for me”, “what is in it for others”, and “what is in it for the environment” when purchasing a given product or service (de Groot & Steg, 2008). In practice these three values were used as a framing device in a series of product campaign descriptions (Tversky & Kahneman, 1981). By randomly assigning a range of products to one of the three values frame or a descriptive control we were thus able to observe how variations in these value frames influenced consumers’ willingness to support the respective product.

This study makes three contributions to the crowdfunding and entrepreneurship literature. First, we introduce framing theory and its application in social movement research as a relevant cross-disciplinary theoretical lens for studying resource mobilization in a crowdfunding context. Extant research has found divergent results when trying to explain what type of message attracts crowdfunders to engage in a campaign (Cholakova & Clarysse, 2015; Hörisch, 2015; Lehner & Nicholls, 2014). By incorporating insights from psychology and sociology, we are able to explore important interaction effects that were missing in past attempts to understand the dynamics of the multi-faceted phenomenon of crowdfunding.

Second, we show how the framing of a message as either emphasizing intrinsic or extrinsic benefits affects the willingness of crowdfunders to support the campaign. We make an important contribution to the crowdfunding literature by unraveling that the intrinsic benefits of altruistic and
biospheric gains need to be treated as separate variables in a crowdfunding context, as they result in significantly different outcomes. Accordingly, while we find an altruistic frame to increase funders’ willingness to pledge for the campaign, we find no such effect in the case of environmentally message framing.

Third, we shed light on the discrepancies discussed in the current crowdfunding literature by demonstrating the important, hitherto overlooked, interaction effect of value alignment. While crowdfunding has most frequently borrowed from marketing theories and the literature on consumer behavior, our insights gained from the social movement literature provide novel insights that highlight the importance of understanding crowdfunders’ personal values to successfully mobilize the crowd as an investor.

Crowdfunding

What differentiates crowdfunding from other sources of innovation finance is that the consumer is seen as representing “a different kind of investor” from the more traditional innovation financiers (Assenova et al., 2016; Short, Ketchen, McKenny, Allison, & Ireland, 2017). The emerging crowdfunding literature has thus sought to explore the strategies and factors associated with achieving funding success with this new kind of investor (Bruton, Khavul, Siegel, & Wright, 2015; Fleming & Sorenson, 2016). This literature broadly distinguishes between three actors involved in the crowdfunding process: capital seekers, capital providers, and intermediaries (Moritz & Block, 2016). The capital seekers represent the respective entrepreneurs that strive to entice consumers – i.e. the capital providers – to support their specific campaign. The interaction between the two is typically facilitated by an intermediary, platforms like IndieGoGo or Kickstarter, that serve to reduce information asymmetries and thus the risks involved for the participating parties (Burtch, Ghose, & Wattal, 2013). Given the studies’ focus on consumer willingness to pledge in certain campaigns, the
paper builds upon the earlier work focused on capital providers and their interaction with capital seekers, which Moritz and Block (2016) describe as three primary areas of research; social networks, signaling, and motives.

Firstly, the importance of social networks for ensuring the success of crowdfunding has been an area of significant research not only as it relates to achieving funding success (Freedman & Jin, 2008; M. Lin, Prabhala, & Viswanathan, 2012), but also in terms of ensuring peer-screening of the overall process in order to mitigate, for example, instances of fraud (Barasinska & Schäfer, 2014; Sun & Im, 2015). The work with social networks most commonly focuses on the antecedents for achieving a critical mass of capital providers.

Secondly, the behavior of peers has consistently been shown to signal to capital providers the trustworthiness of the given campaign (Ahlers et al., 2015; Burtch et al., 2013; Lehner & Nicholls, 2014). Capital providers both observe the direct contributions of other crowdfunders as a means of gauging the given project, but also use other social media sources and blog posts as means of validating observed peer behavior (Courtney et al., 2017; Ward & Ramachandran, 2010).

Finally, the motives of capital providers for engaging in crowdfunding have been subject of studies and found to be multifaceted and often depending on the respective crowdfunding model (Y. B. Lin, Fong, & Goh, 2014; Ordanini, Miceli, Pizzetti, & Parasuraman, 2011). In this regard, it is generally accepted that crowdfunders are not just financially motivated, but rather that social reputation and intrinsic motives play a significant role (Allison, Davis, Short, & Webb, 2015; Y. B. Lin et al., 2014). The literature thus suggests that “companies or projects with a social or non-profit oriented background have a higher probability of receiving crowdfunding” (Moritz & Block, 2016, p. 32). However, this proposition arguably remains empirically weakly grounded as exemplified by the diversity of insights emerging from the literature. Allison et al. (2015) and Calic & Mosakowski (2016), for example, find that capital providers are respectively drawn by intrinsic cues when seeking
to invest and that sustainability-orientation in projects positively influences funding success. However, Moss et al. (2015) and Hörisch (2015) counter these observations by observing that extrinsic cues play a central role in guiding investment behavior and that environmental ventures are not better placed to receive funding as compared to other campaign types. Accordingly, while researchers agree that the framing of a crowdfunding message critically affects the outcome of the campaign, the divergent insights with respect to what type of message leads to success calls for further examination of the phenomenon. To do so, this paper sets out to experimentally examining:

**RQ:** How does founders’ framing of a crowdfunding message affect the mobilization of backers and what values are conveyed in successful reward-based crowdfunding efforts?

**Framing Theory, Social Movements and Crowdfunders’ Investment Decision**

Framing theory is an influential construct in the organizational literature, providing an explanation for how individuals represent their environment, i.e. how they construct meaning in context (March & Simon, 1958). This is particularly important for our understanding of individual behavior and thus, for explaining individual decision-making (Gavetti & Levinthal, 2000; Walsh, 1995). At the core of the theory rests the assumption that individuals rely on mental shortcuts or knowledge schemas, which help to make sense of any given information (Bateson, 1972; Goffman, 1974). While much of the literature on framing in the organizational literature has focused on framing on an individual level (Cornelissen & Werner, 2014), a more nascent literature stream has thus studied how frames are co-constructed in social interaction with others (Dewulf et al., 2009; Nadkarni & Narayanan, 2007). This literature builds on early works by Goffman (1974), who claimed that individual sensemaking, is socially situated, i.e. is shaped and co-constructed in interaction with others. Following Kaplan (2008), we draw on framing as applied and conceptualized in social movement research (Benford & Snow, 2000). This is particularly pertinent for the phenomenon under
study because the process of mobilizing backers for a crowdfunding campaign shares many commonalities with mobilizing others around a specific cause. Indeed, our study explicitly heeds McKenny et al.’s (2017) call to examine “how resource mobilization theories regarding social movements (can) inform fundraising using crowdfunding?”.

Strategic Framing Affecting the Mobilization of Backers in Crowdfunding Campaigns

According to the social movement literature, framing processes may be distinguished as discursive, strategic, contested, or diffusive (Benford & Snow, 2000). Considering the phenomenon of interest, we will focus on strategic framing to explore the deliberate and outcome-oriented framing efforts of entrepreneurs to mobilize backers and to acquire resources (ibid). Our focus resonates with work by Vismara (2019), who suggests that framing could significantly influence collective decision-making in crowdfunding “where a large number of restricted investors make decisions based mainly on the presentation of campaigns, but with limited incentives to pursue due diligence or monitor and interact with the entrepreneurs”. The basic assumption is that the way a crowdfunding message is presented, commonly referred to as the “entrepreneurial narrative”, affects the interpretation of the message by its audience (Allison et al., 2013; Herzenstein et al., 2011; Martens et al., 2007).

In the context of social movements, Benford (1993) referred to “vocabularies of motives” to describe the framing activity by which movement actors provide meaning for their activity and compelling reasons for followers to engage in the movement. Accordingly, we would expect that varying the framing of a crowdfunding message affects the decision of consumers to get involved in the campaign. Initially proposed in the context of decision-making under risk (see Kahneman & Tversky, 1979), the framing effect refers to situations where decisions vary due to differences in the articulation of the choice as either a gain or a loss. However, framing effects are not limited to risky choices, but can be found in the processing of information absent of risk as well (Levin, Schneider,
& Gaeth, 1998). In this respect, attribute framing refers to a very basic form of strategic framing in which the manipulation of an attribute or characteristic is expected to influence the evaluation of information. In the context of the experiment we would therefore expect that a strategically framed campaign text, i.e. a message that transmits specific meaning and value for the audience by using vocabular of motives (Benford, 1993), attracts potential backers and increases their willingness to support the campaign. Therefore:

H1: Campaigns employing a strategic framing will receive more pledges as compared to campaigns that frame their message in a purely descriptive manner

Type of Values Affecting Crowdfunders’ Investment Decision

One of the most thoroughly studied phenomena of strategic framing in social movements investigates how the frame relates to existing value or belief systems (Skillington, 1997). This research finds that most social movements rely on an amplification of existing values as a way to better relate to the mindset of their audience (Benford & Snow, 2000). We may thus assume that in varying the respective value frames of the campaign text and observing the causal effect we will observe that the type of values framed in a crowdfunding message will influence consumers’ willingness to support the given campaign.

One particularly relevant type of strategic framing in this context relates to message framing in terms of financial versus prosocial gains (Allison et al., 2015). Interestingly, extant research on this topic has produced mixed results: while Allison et al (2015) and Calic & Mosakowski (2016) find intrinsic rewards as well as prosocial cues to affect the successful outcome of a crowdfunding campaign, Moss et al. (2015) and Hörisch (2015) counter these findings by highlighting that extrinsic rewards and financial cues are deterministic for the outcome of a campaign. To resolve the confusion in the crowdfunding literature, we seek to experimentally examine whether it is indeed the strategic
framing of a message in terms of individualistic benefits (i.e. financial gains) that leads to the mobilization of backers for the campaign, or rather the framing in terms of collective benefits (i.e. altruistic or environmental gains). More specifically, we explore whether a framing that emphasizes self-enhancement values, i.e. individualistic motivations along with a prioritization of outcomes that optimize individual utility (financial gains), or a framing that emphasizes self-transcendence values, i.e. intrinsic rewards, collectivistic motivation, as well as altruistic or biospheric cues, attract more pledges in a crowdfunding campaign (Parks et al. 2013; Stern, 2000; Van Lange et al. 2013). Given the mixed results in the crowdfunding literature, we rely once again on research on social movements (Hirsch, 1990; Polletta & Jasper, 2001) to propose that an emphasis on collective interests and benefits will have a positive effect on the mobilization of backers for a crowdfunding campaign. Thus:

H2: Campaigns emphasizing collective benefits will receive more pledges as compared to campaigns that emphasize individualistic benefits

The Role of Frame Alignment in Crowdfunders’ Investment Decision

Already in 1986, Snow et al. emphasized the importance of frame alignment for participation in social movements. The basic premise of frame alignment is that in order to mobilize followers, there needs to be an overlap between the values as articulated in the social movement frame with the personal values of the target audience (Snow et al., 1986; Stern, Dietz, Abel, Guagnano, & Kalof, 1999). It follows then, that in order to mobilize backers for a crowdfunding campaign, entrepreneurs should seek for complementarity between the values they articulate in their campaign frame with the personal values of their aspired target group.

The role of personal values in shaping behavior has been empirically explored by a diversity of research disciplines and is widely recognized as a key antecedent for behavior (Rokeach, 1979;
Schwartz, 1992). Therefore, we would assume a correlation between pledging behavior and the individuals’ own stated values (Snelgar, 2006; Stern & Dietz, 1994). The most agreed upon conception of personal values stems from the work of Shalom Schwartz (1994, p. 21) who defined personal values as “a desirable transsituational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity”. Thus, values firstly reflect a desired end-state, secondly remain abstract and transcend specific situations, thirdly serve as a guiding principle for, in this case, individual action, and finally are ordered in a system of priorities. As individuals hold a relatively stable and small number of values, the personal values framework provides an efficient instrument for explaining similarities and differences in behavior and decision making (Rokeach, 1973). To avoid forms of cognitive dissonance and distress, individuals are expected to act in ways that are consistent with their identity and values. When faced with competing values the individuals’ choice is therefore based on the value considered most relevant to act on (de Groot & Steg, 2008). Hence the study of values allows for theoretically reasoned and empirically validated mechanisms for predicting attitudes and behaviors (Stern & Dietz, 1994).

The expectation would therefore be that we will observe a correlation between campaign value frames and personal value orientation resulting in higher pledges. For example, a person self-reporting highly within the self-enhancement category would therefore be expected to pledge significantly more towards egoistically framed campaigns, while a person high in self-transcendence should be more willing to support campaigns framed in an altruistic or biospheric manner. Thus:

H3: Alignment between personal values and values framed in the crowdfunding message will lead to more pledges as compared to campaign where no such alignment exists
Research Methodology

Experimental Design

The vast majority of the literature on crowdfunding to-date has employed publicly available datasets (see Yu et al. 2017) to study for example backer behavior and while this method has significantly advanced our knowledge of the phenomenon they also have their respective drawbacks especially when seeking to observe the effect of values on behavior (Falk & Szech, 2013). For example, individual product campaigns only have one pitch and thus it not possible to ascertain how the same campaign would have performed with an alternatively framed pitch. They thus lack counterfactual conditions that allow for the establishment of causality (Colquitt, 2008; Trochim, 2001). Comparing the effect of expressed value frames on success implies comparing multiple campaigns and even platforms at the same time with unknown and possible interacting features. For example, campaign success is dependent on a range of observed and unobserved features, which renders the isolation of the effect of “values” across contexts extremely difficult. Drawing on the work of Stevenson et al (2019) within the domain of equity-based crowdfunding we therefore employed an experimental design in order to observe causal effect of value frames on outcomes.

In order to observe the causality between individual pledging behavior and the value frame inherent with the campaign pitch, the study adopted a web experiment method inspired by past online experimental designs (see Camilleri & Larrick 2013; Oulasvirta et al. 2014). The campaigns varied in their framing of the campaign texts, emphasizing different values as well as a descriptive control. Each respondent was subsequently allocated the same fictive sum (200$ per round over two rounds) which they were free to use (or not use) to back one or more campaigns. Respondents were asked to support campaigns as they would in reality for example by making it clear that they were not obligated to pledge anything if they so pleased. This is also reflected in the data where the majority of the sample (65 pct.) utilized less than the full sum available to them. All respondents faced the same
campaigns (a total of eight respective products), but the campaign text (or pitch) itself was randomly framed. By finally randomly combining the respective value frames within a specific campaign we could thereby observe how variations in a value frame for the respective campaign influences pledging behaviour. The application of an experiment thus allows us to observe how variations in values influenced pledging behavior towards those products. In this way, we tackled the research question by providing causal insights into under which circumstances and to what extent entrepreneurs can reliably garner support from consumers. In addition, the web-based nature of the experiment allowed for a better representation of how a crowdfunding website would look like, as opposed to e.g. a traditional public goods game used previously to study crowdfunding (Corazzini, Cotton, & Valbonesi, 2015), thus overcoming a common criticism of experiments as being mundane and unrealistic (Stevenson et al., 2019). Finally, the online nature of our experiment allowed us to employ a more diverse sample than the typical college sophomore sample (see Reynolds 2010; Cooper et al. 2010). The sample was collected utilizing the survey provider Qualtrics who employed a simple random sample\textsuperscript{1} of the US.

Measures

**Dependent variable.** The dependent variable “pledges” is measured in relative percentage terms where the study observes each pledge as a pct. of the total sum pledged by the given individual. The study adopts a relative rather than absolute sum in order to account for the fact that 65.2 pct. of the sample pledged only part of their total allocated budget. A relative percentage of the total sum pledged was therefore seen to provide a more accurate account of pledging behaviour with regards to respective effects of the value frames. Accordingly, if subject A spent 50 dollars on campaign X and

\textsuperscript{1} Simple random sample compiled using overall demographic quotas based on census percentages for representation: age, sex, ethnicity, household income, and census region.
respectively 25 dollars on product Y and Z the respective relative pledge would be 50 pct., 25 pct. and 25 pct.

**Independent variables.** Much of extant literature differentiates values as either self-transcendence or self-enhancement values as a means of understanding individual behavior where self-transcendence values are commonly associated with prosocial or collective-oriented behavior including pro-environmental behavior, while self-enhancement values result in a prioritization of outcomes that optimize individual utility often at a cost to the commons (Parks et al., 2013; Van Lange et al., 2013). These two value dimensions have, however, been criticized as lacking when studying issues of sustainability leading to calls for a third value emphasizing the value of nature (Axelrod, 1994; Stern, 2000). The altruistic value focuses on a social good, while the biospheric value is focused on an environmental good. To better observe the nuances of different value framings, we employed the three *value frames* (*egoistic, altruistic, biospheric*) each of which serve to frame the respective campaign texts available to the respondents. In practice then a product with an egoistic value frame would reflect the benefits that given product provides in terms of the individual utility (e.g. design and personalization, individual monetary savings, individual health benefits). While an altruistic and biospheric frame would respectively have a strong focus on the benefits of the given product in terms of social utility (e.g. good labour conditions) or benefits of the given product in terms of environmental utility (e.g. recycled materials). As a control the paper opted for a descriptive “frame” as it represented the best available option for creating a control variable on which the impact of the respective other three value frames could be measured. These value frames were included both within the text itself and represented by the subtitle teaser text for the campaign. The inclusion of both a text and subtitle teaser was employed to identify potential simplification strategies that respondents may adopt in scanning campaigns. This approach also better mimics an actual crowdfunding website.
where campaign subtitle teasers play a key initial role in the selection of campaigns. For the sake of simplicity, the control is referred to as the descriptive value frame.

In order to account for the effect that personal values may have on individual pledging behaviour and to assess the role of value alignment in crowdfunders’ decision making, the study employed de Groot and Steg’s (2008) personal value orientation scale (PVO). In line with Schwartz (1994), respondents were asked to rate on a 9 point Likert scale\(^2\) the importance of the 12 value orientations “as a guiding principle in their lives”. Each of the three personal values orientation (egoistic, altruistic and biospheric) measured using four subsets. Mean scores were computed on items included in each scale. Cronbach’s alpha was .78 for the egoistic PVO, .81 for the altruistic PVO and .91 for the biospheric PVO (M = 1.11, SD = .23). In order to account for scale use biases at individual level we employed Lindeman & Verkasalo (2005) approach where each of the respective PVOs were obtained by dividing the sum of the appropriate items by the personal mean of all items multiplied by the number of items on the scale. For example, the score of value egoistic PVO was counted as follows: Egoistic = (social power + wealth + authority + influence)/(4 × personal mean of all items).

In order to account for the effect that products may have on individual pledging behavior the experiment sought to minimize differences between products in terms of price, popularity, and sex specific preferences. Table 1 provides an overview of the eight products included in the web experiment.

\(^2\) 7 ‘extremely important’ to 0 ‘not important’, -1 opposed to my values. Respondents will be encouraged to vary the scores and to rate only a few values as extremely important
Table 1. Overview of the eight products

<table>
<thead>
<tr>
<th>Round</th>
<th>Product</th>
<th>General product description</th>
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<tbody>
<tr>
<td>Round 1</td>
<td>Powercell (PC)</td>
<td>Thin sleeve that slips over battery to extend lifespan</td>
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<tr>
<td></td>
<td>Vacuum (VM)</td>
<td>A vacuum-based food container</td>
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<tr>
<td></td>
<td>Dora Bars (DB)</td>
<td>A nutritious snack bar</td>
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<tr>
<td></td>
<td>Advensac (AS)</td>
<td>A travel sack with adaptable split storage</td>
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<tr>
<td>Round 2</td>
<td>Smartimeter (SM)</td>
<td>Wireless “smart” thermostat</td>
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<tr>
<td></td>
<td>Ebuds (EB)</td>
<td>Wireless earbuds designed to fit every type of ear</td>
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<tr>
<td></td>
<td>Gazelle (GZ)</td>
<td>Personalized tailored sportswear</td>
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<tr>
<td></td>
<td>Vulcan (VC)</td>
<td>Temperature Adjustable Mug</td>
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</table>

Firstly, products were selected to be within the same price range within the two respective rounds of the experiment; where products in round 1 were priced between 20 and 25 US dollars, products in round 2 were priced between 115 and 130 US dollars. These price differences in products were also implemented in order to observe the potential effect of price on the influence of the three campaign value frames. Secondly, the products themselves were inspired by past successful reward-based crowdfunding campaigns in order to ensure that all products were attractive to consumers and to increase the external validity of our experiment (Grégoire et al., 2019). Finally, the products themselves were screened in smaller group discussions in order to confirm that they had a broad appeal and were as gender neutral as possible.

The study also employed Zaichkowsky’s (1994) Personal Involvement Inventory (PII) as post-test to account for the individuals’ respective interest in the eight different products presented, where the respective individuals’ final PII score was indicated on a scale from 10 to 70 their respective level of interest in that product. The Cronbach’s alpha for the PII again also exceeded the 0.7 threshold\(^3\). Appendix A & B includes an overview of respectively de Groot and Steg’s (2008) PVO scale and Zaichkowsky’s (1994) Personal Involvement Inventory.

\(^3\) Cronbach’s alpha was for the respective products was between 0.93 and 0.98.
Control variables. The control parameters for all models included age (years), education (years), income (categories), seven dummy variables labelled “sex(female)”, “married”, “retired”, “unemployed”, “full invst”\(^4\), “Price”, “Knowledge of CF” and “Participated in CF”. Knowledge of and participation in crowdfunding were measured based on filter questions starting with Yes/No answers. Respondents answering yes to both proceeded onto questions regarding the type of crowdfunding supported and number of times (s)he had supported a campaign within a six-month period. Answering no to the initial questions regarding knowledge of and participation in crowdfunding resulted in respondents moving onto the next section of the experiment. Finally, seven dummy variables for seven of the eight products were included in order to account for respective individual effect of the products themselves. Product 8 – Vulcan – was used as the reference category. Table 2 provides an overview of the descriptive statistics and correlation matrix for the individual variables introduced above – not including the campaign value frames, price or products themselves as these variables are present independent of individual choice and hence equally distributed.

\(^4\) Dummy coded variable for respondents who used their total allocated budget.
Table 2. Descriptive statistics and correlation matrix.

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<th>M</th>
<th>SD</th>
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<th>15</th>
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<tbody>
<tr>
<td>1. Relative pledge</td>
<td>12.10</td>
<td>14.18</td>
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<td>2. Egoistic PVO</td>
<td>0.68</td>
<td>0.28</td>
<td>-0.01</td>
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<td>3. Altruistic PVO</td>
<td>1.21</td>
<td>0.21</td>
<td>0.01</td>
<td>-0.56</td>
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<tr>
<td>4. Biospheric PVO</td>
<td>1.11</td>
<td>0.23</td>
<td>0.01</td>
<td>-0.88</td>
<td>-0.19</td>
<td>1</td>
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<tr>
<td>5. Self-transcendent PVO</td>
<td>1.16</td>
<td>0.14</td>
<td>0.01</td>
<td>-0.97</td>
<td>0.56</td>
<td>0.67</td>
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<td>6. Sex (Female) *</td>
<td>0.59</td>
<td>0.49</td>
<td>0.02</td>
<td>-0.16</td>
<td>0.11</td>
<td>0.09</td>
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<td>7. Age</td>
<td>51.02</td>
<td>15.68</td>
<td>0.02</td>
<td>-0.13</td>
<td>0.11</td>
<td>0.07</td>
<td>0.14</td>
<td>-0.14</td>
<td>1</td>
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<tr>
<td>8. Years of Education</td>
<td>3.51</td>
<td>1.20</td>
<td>0.00</td>
<td>0.05</td>
<td>-0.04</td>
<td>-0.02</td>
<td>-0.05</td>
<td>-0.12</td>
<td>-0.03</td>
<td>1</td>
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<td>9. Income range ²</td>
<td>5.38</td>
<td>3.38</td>
<td>-0.01</td>
<td>0.17</td>
<td>-0.10</td>
<td>-0.12</td>
<td>-0.17</td>
<td>-0.18</td>
<td>0.09</td>
<td>0.30</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Married *</td>
<td>0.61</td>
<td>0.49</td>
<td>-0.01</td>
<td>0.10</td>
<td>-0.08</td>
<td>-0.01</td>
<td>-0.08</td>
<td>0.02</td>
<td>-0.03</td>
<td>0.05</td>
<td>0.37</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Unemployed *</td>
<td>0.10</td>
<td>0.30</td>
<td>0.00</td>
<td>-0.07</td>
<td>0.07</td>
<td>0.02</td>
<td>0.05</td>
<td>0.04</td>
<td>-0.11</td>
<td>-0.08</td>
<td>-0.26</td>
<td>-0.18</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Retired *</td>
<td>0.26</td>
<td>0.44</td>
<td>0.01</td>
<td>-0.18</td>
<td>0.13</td>
<td>0.10</td>
<td>0.17</td>
<td>-0.13</td>
<td>0.58</td>
<td>-0.07</td>
<td>0.03</td>
<td>-0.06</td>
<td>-0.19</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Full investment *</td>
<td>0.25</td>
<td>0.44</td>
<td>0.02</td>
<td>0.02</td>
<td>-0.03</td>
<td>0.00</td>
<td>-0.03</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.00</td>
<td>0.04</td>
<td>0.04</td>
<td>-0.05</td>
<td>0.02</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Knowledge of CF *</td>
<td>1.44</td>
<td>0.50</td>
<td>-0.01</td>
<td>0.10</td>
<td>-0.08</td>
<td>-0.05</td>
<td>-0.09</td>
<td>0.08</td>
<td>0.09</td>
<td>-0.20</td>
<td>-0.05</td>
<td>0.03</td>
<td>0.01</td>
<td>0.11</td>
<td>-0.05</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>15. Participation in CF *</td>
<td>1.04</td>
<td>0.94</td>
<td>0.01</td>
<td>-0.11</td>
<td>0.09</td>
<td>0.05</td>
<td>0.10</td>
<td>-0.08</td>
<td>-0.06</td>
<td>0.18</td>
<td>0.02</td>
<td>-0.03</td>
<td>0.00</td>
<td>-0.09</td>
<td>0.04</td>
<td>-0.93</td>
<td>1</td>
</tr>
</tbody>
</table>

* Dummy variable | ² Ordinal variable | * p < 0.05
Sample

Utilizing the survey provider Qualtrics, the web experiment was circulated to a representative national sample within the United States (US). The US represents a leading country within crowdfunding and given this strong presence it seemed as a natural first point of departure for studying the phenomena (Mollick, 2014). The subjects were collected utilizing a simple random sample of the US population compiled using overall demographic quotas based on census percentages for representation: age, female, ethnicity, household income, and census region. In total, 977 valid web-based experiments were completed (response rate 51%). Table 3 illustrates the main summary statistics for the sample composition.
In addition the study also sought to observe respondents knowledge of and participation in crowdfunding as detailed in Table 4.

**Table 4. Knowledge of and participation in crowdfunding. (n=976)**

<table>
<thead>
<tr>
<th>Focus</th>
<th>Question</th>
<th>Answer</th>
<th>Current Study</th>
<th>Smith N=1215</th>
<th>Zhang N=2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of CF</td>
<td>Had you ever heard of the term 'crowdfunding' before you participated in this study?</td>
<td>Yes</td>
<td>56.3%</td>
<td>64%</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>43.7%</td>
<td>36%</td>
<td>42%</td>
</tr>
<tr>
<td>Participation in CF</td>
<td>Have you ever financially supported a crowdfunding campaign?</td>
<td>Yes</td>
<td>10.8%</td>
<td>22%</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>89.2%</td>
<td>78%</td>
<td>86%</td>
</tr>
</tbody>
</table>
To this date there is only a limited literature on the demographic makeup of those who participate in crowdfunding and thus the degree to which this study captures a representative sample of these individuals remains difficult to ascertain. Smith (2016) and Zhang et al. (2014), who focus on respectively the US and UK crowdfunding market, provide some insights that suggest that the sample may underrepresents the number of people who partake in crowdfunding. It should, however, be noted that the study finds no observable effect of either knowledge of, or participation in, crowdfunding in any of the models run. Furthermore because of crowdfunding’s rapid expansion it is further difficult to ascertain who will or will not crowdfund in future and thus the study sought a representative sample rather than a difficult to ascertain subset of individuals.

**Design**

To investigate our hypotheses our study employed a 4 (three values frame and control) x 4 (four products) between-subject experimental design. The respondents faced two rounds of this 4x4 design, facing four new products in round two of the experiment. The front-end of the experiment was designed utilizing HTML5 with a number of back-end embedded surveys. The HTML-code served to create a realistic interface while the embedded surveys served to record and correlate the specific pledge with the given product and subsequent value frame. Finally, the respondents’ IP-address served to connect the specific individual investments to the specific product and value-frame. Each round of the experiment included a main index page – providing the respondent with an overview of all four campaigns including a value framed subtitled teaser text – and four sub-pages linked to the main index page for each of the four products. In addition to the two rounds the web experiment was preceded by an explanatory introduction and after the first round a product evaluation of four initial products (Powercell, Vacuum, Dora Bars, Advensac) was conducted. Finally, after
round 2 another product evaluation was conducted on the final four products in addition to a questionnaire on a number of personal characteristics.

Ideally, for the design, real money would have been used, instead of a fictive allocated sum; however, in practice the implementation of such an approach would been unfeasible given the web-based nature of the experiment barrier including the amount of personal information and not least resources needed to execute properly. In addition, the products were hypothetical in order to reasonably apply each of the three value frames and could therefore not be purchased. It was therefore deemed unfeasible to utilize real money. We also argue that the vast majority of reward-based crowdfunding platforms pledges are not a direct purchase. Rather they represent the crowdfundingers’ backing, or willingness to support a campaign, if it reaches its funding goal. Hence like in this experiment, backing a campaign is not the same as actual purchase – it represents a willingness to purchase by the individual, but not the action itself. Nonetheless a component of social desirability is expected to emerge from the results given this limitation. This limitation is regrettable, but necessary in order to run an experiment that provides both causal insights, while not relying on a student sample that would significantly diminish its external validity.

**Results**

The hypotheses were tested using Stata 15 utilizing a mixed-effects linear regression in order to account for the fact that observations at individual level are correlated to the two respective rounds in the experiment and thus cluster\(^5\). In some contexts where only parts of the data were analysed (see sections 6.4) we utilized a linear regression clustered at the individual level, because the model was

\(^5\) A single linear regression could and was also employed with similar results. The study however opted for mixed-effects linear regression in order to account for the noted clustering at the individual level
no longer nested when only parts of the data was employed. All models include the noted control variables.

**Hypotheses 1**

Models 1 in Table 5 relates to the testing of Hypotheses 1 where we observe that all campaign value frames have a significant positive effect on relative pledges as compared to the descriptive control and we can thus reject the null hypothesis.

**Table 5. Effects of campaign value frame on pledges (n=973)**

<table>
<thead>
<tr>
<th></th>
<th>Model 1 Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egoistic campaign value frame</td>
<td>1.2195***</td>
</tr>
<tr>
<td></td>
<td>(0.455)</td>
</tr>
<tr>
<td>Altruistic campaign value frame</td>
<td>2.1320***</td>
</tr>
<tr>
<td></td>
<td>(0.453)</td>
</tr>
<tr>
<td>Biospheric campaign value frame</td>
<td>1.4588**</td>
</tr>
<tr>
<td></td>
<td>(0.455)</td>
</tr>
<tr>
<td>Control</td>
<td>Constant</td>
</tr>
<tr>
<td>Product 1: Powercell (PC)*</td>
<td>4.4511***</td>
</tr>
<tr>
<td></td>
<td>(0.642)</td>
</tr>
<tr>
<td>Product 2: Vacuum (VM)*</td>
<td>-2.2812***</td>
</tr>
<tr>
<td></td>
<td>(0.643)</td>
</tr>
<tr>
<td>Product 3: Dora Bars (DB)*</td>
<td>-7.8813***</td>
</tr>
<tr>
<td></td>
<td>(0.619)</td>
</tr>
<tr>
<td>Product 4: Advansac (AS)*</td>
<td>-7.7168***</td>
</tr>
<tr>
<td></td>
<td>(0.643)</td>
</tr>
<tr>
<td>Product 6: Ebuds (EB)*</td>
<td>-5.5682***</td>
</tr>
<tr>
<td></td>
<td>(0.643)</td>
</tr>
<tr>
<td>Product 7: Gazelle (GZ)*</td>
<td>-5.6682***</td>
</tr>
<tr>
<td></td>
<td>(0.643)</td>
</tr>
</tbody>
</table>

*N = 7784

* p < 0.05, ** p < 0.01, *** p < 0.001

Mixed-effects linear regression coefficients. Robust standard errors in parentheses

Insignificant control variables: Egoistic PVO (ordinal), Altruistic PVO (ordinal), Biospheric PVO (ordinal), Sex (dummy), Age (years), Married (dummy), Full investment (dummy), Income (categories), Education (years), Unemployed (dummy), Retired (dummy), KnowledgeICT (dummy), ParticipationICT (dummy) and Product 5: Smartmeter (SM)

**Hypotheses 2**

In order to test Hypothesis 2, Model 2 observes how the respective value frames compare to one another by respectively holding the egoistic and altruistic value frame constant. This allows us to observe, one, whether the effect of respectively the self-transcendent values differ significantly from self-enhancement value and two, whether the self-transcendent values differ significantly from one another. As illustrated in Table 6 and Figure 1 we can only partially reject the null of Hypothesis 2 as it appears that only one of the two self-transcendent values (altruistic) has a significant positive
effect on pledges as compared to egoistic control. Thus, there appear to be significant differences with regards to the effect on behaviour on whether a self-transcendent message is oriented towards human well-being (altruisic) or the environment (biospheric) as compared to egoistic value frame.

Table 6. Effects of campaign value frame on pledges (n=973)

<table>
<thead>
<tr>
<th></th>
<th>Model 1 Control</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Egoistic</td>
<td>Altruistic</td>
</tr>
<tr>
<td>Egoistic campaign value frame</td>
<td>1.2195***</td>
<td>-0.9125*</td>
</tr>
<tr>
<td></td>
<td>(0.455)</td>
<td>(0.455)</td>
</tr>
<tr>
<td>Altruistic campaign value frame</td>
<td>2.1320***</td>
<td>0.9125*</td>
</tr>
<tr>
<td></td>
<td>(0.455)</td>
<td>(0.455)</td>
</tr>
<tr>
<td>Biospheric campaign value frame</td>
<td>1.4858**</td>
<td>0.2663</td>
</tr>
<tr>
<td></td>
<td>(0.455)</td>
<td>(0.455)</td>
</tr>
<tr>
<td>Control</td>
<td>Constant</td>
<td>Constant</td>
</tr>
<tr>
<td></td>
<td>-1.2195**</td>
<td>-2.1320***</td>
</tr>
<tr>
<td></td>
<td>(0.455)</td>
<td>(0.455)</td>
</tr>
</tbody>
</table>

| Product 1: Powercell (PC) | 4.4511***       |
| Product 2: Vacuum (VM)   | -2.2812***      |
| Product 3: Dora Bars (DB)| -7.8813***      |
| Product 4: Adven sac (AS) | -7.7168***     |
| Product 6: Ebuds (EB)    | -1.8963**       |
| Product 7: Gazelle (GZ)  | -5.6682***      |

N = 7784

*p < 0.05, **p < 0.01, ***p < 0.001
Mixed-effects linear regression coefficients. Robust standard errors in parentheses
Insignificant control variables: Same as table 5

* Reference Category Product 8: Vulcan (VC)
Hypotheses 3

Models 3 reported in Figure 2 test Hypotheses 3 that reports on the effect of value alignment between the egoistic, biospheric and altruistic values conceptualised by de Groot & Steg (2008).
Figure 2. Interaction effect between campaign value frame and personal value orientation (n=898)
As illustrated in Figure 2 there is a significant positive relationship between PVO and campaign value frame (interaction effect table available in the Appendix C). Model 3 confirms that egoistic, altruistic and biospheric PVO have significant positive effect on pledges towards respectively campaigns with an egoistic, altruistic biospheric campaign value frame. We can thus reject the null hypothesis for Hypothesis 3.

**Discussion**

Crowdfunding is an increasingly important financing alternative particularly for new ventures, and has started to establish itself alongside more traditional small business funding sources like friends & families, bank loans, Angel or Venture Capital investments (Short et al., 2017). Given the increased relevance of crowd funded capital for entrepreneurs and small business owners, it is hardly surprising that the question about the antecedents of a successful crowdfunding campaign has attracted much research attention (Mollick, 2014). One of the unresolved puzzles in this literature is why some researchers find crowdfunding campaigns that highlight intrinsic motives and collective benefits to be an antecedent for success (e.g. Allison et al. 2015; Calic & Mosakowski 2016), while others find the opposite effect, namely extrinsic motives and individualistic benefits to increase the chances of a successful campaign outcome (e.g. Cholakova & Clarysse 2015; Hörisch 2015). Given the discrepancies in answering this highly critical question, we conducted an experiment to contribute reliable evidence on the underlying causal effects that fuel this on-going debate. Building on framing theory and borrowing insights from the social movement literature, we unravel the importance of strategic campaign framing as affecting the successful mobilization of resources from a crowd. The most interesting outcome of our study relates to two findings that help to shed light on the opposing results of extant literature: the separation of intrinsic value frames into altruistic and biospheric values, as well as the important, yet overlooked, role of value alignment.
First, our results reveal that all messages employing a value attribute, independent of the type of value, are perceived as more attractive by crowdfunders than messages that are framed in a purely descriptive manner. This finding suggests that both views, the intrinsic as well as the extrinsic value perspective, have some validity. Reward-based crowdfunding therefore appears to enable a great diversity of entrepreneurs access to funding: from traditional entrepreneurs pursuing an economic bottom-line, to social and environmental entrepreneurs pursuing respectively an economic and social/environmental bottom-line (Belz & Binder, 2017; Lenox & York, 2012; Shah & Tripsas, 2007).

However, our further analysis reveals a more nuanced picture. Accordingly, we find a significant difference within the category of intrinsic value frames. While we could not find support for our assumption that an emphasis on intrinsic values (i.e. the combination of altruistic and environmental values) increases consumers’ willingness to support a campaign, we observe that, when analyzed separately, altruistically framed campaigns receive significantly higher pledges than both, egoistic as well as biospheric value frames. Our findings partially support the study by Calic and Mosakowski (2016) who distinguished between the social- and environmental-orientation of a campaign and found both types of sustainability to increase the number of pledges – with the exception of the film – and video industry where only social orientation led to higher pledges. Our findings challenge these authors’ observations by showing that an altruistic frame leads to significantly higher pledges than either a biospheric or egoistic frame – across industries. Furthermore, our study provides support for the results of Hörisch (2015), who found no positive relationship between environmental orientation and funding success, as well as those studies that find campaigns emphasizing social values well positioned to receive funding (Allison et al., 2015). Taken together then, our observations suggest that even though social and environmental entrepreneurship share many similarities (Belz & Binder, 2017; Thompson, Alvy, & Lees, 2000), in the context of crowdfunding, a
differentiation between social and environmental entrepreneurship is highly critical for our understanding of the dynamics at play. Altruistic and biospheric value frames rather than correlating, as we would have expected, result in significantly different pledging behavior.

The second and most intriguing insight relates to the criticality of value alignment between values communicated in a crowdfunding campaign and values of the targeted backers. While our results confirm a heterogeneity of backers’ values as observed by Vasileiadou et al. (2016), we critically extend these authors’ insights by showing that consumers seek value alignment when deciding to support a crowdfunding campaign. We derived our assumption that value alignment might be an important missing puzzle piece from the social movement literature, where the successful mobilization of a crowd has been linked to movement leaders’ ability to link the movement to followers’ existing values and beliefs (Snow et al., 1986; Stern et al., 1999; Zuo & Benford, 1995). Indeed, our results depict a significant interaction effect between personal value orientation and campaign value frames, which provides us with an important additional lens to interpret extant literature. More specifically, this might explain some of the variation regarding crowdfunders’ preference for intrinsic versus extrinsic cues, as past research has not controlled for crowdfunders’ personal values. The finding that consumers seek to support crowdfunding campaigns that align with their own values is further intriguing as the literature on ethical and green consumer behavior has repeatedly observed an “attitude-behavior gap”, i.e. consumers’ ethical intentions not leading to actual purchasing decision (e.g. Chatzidakis et al. 2007; Newholm & Shaw 2007; Szmigin et al. 2009), thereby contradicting well-established theories (Ajzen, 1991; Schwartz et al., 2012). Our findings imply that borrowing from the social movement literature could provide a relevant lens and fresh insights into our understanding of the phenomenon. The literature on framing in social movements, for example, provides a useful and empirical validated framework for understanding resource mobilization. In turn our findings both confirm the significant impact that value alignment has
on mobilizing others while testing these theories in a different context. Our findings thereby provide relevant insights for this literature to better understand the dynamics of social movement mobilization in online settings (Kelly Garrett, 2006; Van Laer & Van Aelst, 2010).

**Limitations and Future Research Opportunities**

Our findings should be viewed in light of some limitations of this study that give rise to opportunities for further research. Firstly, the experiment, despite seeking to recreate an authentic crowdfunding website, only recreated aspects of the actual crowdfunding experience not including the ability to screen and communicate with the founders of the campaign, see the actions of others, or share experiences via social media. The simplification of the process was necessary in order to observe meaningful causal connections between variables. However, this approach also removes complexity and thus runs the risk of oversimplifying or missing out on key causal influences on decision-making. Replication studies and not least studies that seek to build upon and extend our observations would be highly encouraged. For example, exploring how different models of crowdfunding (reward vs. equity) may be influenced differently by value frames would be an interesting focus area. As reward-based crowdfunding is more strongly connected to consumer decision making and equity-based crowdfunding to investor decision making, it would be interesting to test whether our observations can be replicated in an equity crowdfunding context as well.

Secondly, the hypothetical nature of the experiment could have created skewed observations due to social desirability. In order to overcome this issue, one could introduce real costs to respondent behaviour. This could be achieved by employing a similar design as in our study, but with real products that can be framed in various ways and then stating that a certain number of participants drawn at random will be given the products they purchase in addition to the left-over budget. Alternatively, one could construct a closed public-good experiment
where campaigns that hit a certain level of funding will result in the participants being rewarded, while the ones that fail to reach their funding goals will lose.

In this study we employed a framing theory lens as applied in the literature on social movements to better understand the role of values in crowdfunding campaigns. We thereby respond to calls for adopting a cross-disciplinary approach to crowdfunding research (McKenny et al., 2017). Future research might further extend our work by considering other models from the social movement and collective action literature. The research on collective identity, for example, has been found to be a relevant lens for explaining the dynamics of resource mobilization in social movements (see overview article of Polletta & Jasper 2001). Considering the recent upsurge in the application of identity theories to entrepreneurial phenomena (Fauchart & Gruber, 2011; Mathias & Williams, 2014), the notion of collective identity formation, as well as the relationship between founder identity and crowdfunders’ collective identity (identity alignment) might be a particularly promising avenue for future research.

Implications for Practice

The results provide fresh insights into an emerging debate relating to the potential of crowdfunding to support entrepreneurship. Firstly, our findings show that while some consumers respond positively to campaigns emphasizing intrinsic benefits, an emphasis on such collective benefits cannot be seen as a silver bullet to crowdfunding success. Indeed, while we find that an emphasis on altruistic benefits leads to an overall higher willingness to support the campaign, we find no such effect in the case of products emphasizing the benefits for the environment, but rather that the attractiveness of a crowdfunding campaign is dependent on the values of the respective target audience.
Thus, secondly, when seeking to garner funding via a crowd, the importance of customer segmentation and a thorough understanding of these customers’ values and expectations remains the most relevant task before designing and launching the crowdfunding campaign. Our results clearly show that the willingness to invest in a campaign largely depends on the alignment between backers’ values with the values transmitted in the campaign. Aligning the campaign to the values and expectations of the target audience is even more important than when trying to attract professional investors with the crowdfunding campaign, as their expectations differ considerably from that of the consumer (Roma, Messeni Petruzelli, & Perrone, 2017).

Finally, the findings provide implication for sustainable entrepreneurs, for whom crowdfunding has been emphasized to provide a relevant fundraising opportunity (Testa, Nielsen, Bogers, & Cincotti, 2018). On the one hand, the fact that crowdfunding is driven largely by consumers rather than professional investors does not in itself change consumer demands; demands which more often than not fail to correlate with sustainable behavior (Sheeran, 2002; Webb & Sheeran, 2006). While one may argue that the motivations of funders for pledging towards a campaign may be different from those of a professional investor, our results seem to confirm that consumers seek to satisfy their own values when deciding to invest in a crowdfunding campaign. On the other hand, this does not imply a lack of significant potential for sustainable entrepreneurs’ success in reward-based crowdfunding. Considering the increasing concern for sustainability and because of our finding that value alignment has a particularly high potential in a crowdfunding context, sustainable campaigns focusing on a clearly delineated target group have a high likelihood to reach their aspired funding goal.
Conclusion

As consumers become an increasingly common source of innovation finance for entrepreneurs, lingering questions on the difference between them and for example professional investors and venture capitalists are common themes for discussion (Sorenson et al., 2016; Vismara, 2019). Especially their willingness to support campaigns espousing not only extrinsic rewards, but also intrinsic values has garnered significant attention as crowdfunding is increasingly seen as a potentially significant source of alternative finance for entrepreneurs (Testa et al., 2018). By applying the cross-disciplinary lens of framing theory in social movement research, we find that intrinsic values conceptualized, as either altruistic or biospheric value frames, have significantly different effects on behaviour. Accordingly, we find that while emphasizing altruistic values leads to higher pledges, emphasizing biospheric values does not significantly differ from campaigns highlighting egoistic values. This insight can help reconcile and nuance conflicting empirical evidence relating to the relationship between extrinsic and intrinsic values on pledging success. Even more importantly, we unravel the effect of the respective value frames as moderated by the backers own personal values orientation. This finding implies that message framing needs to be aligned with the personal values of the backers to be truly effective. Exemplifying the need to look beyond single actors (platform, campaigns, and crowdfunders) and instead observe how the process overall shaped both by the single actors, but also their co-dependent (Nielsen, 2018).
References


Appendices

Appendix A: Personal value orientation scale

<table>
<thead>
<tr>
<th>Value item</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Egoistic value orientations</strong></td>
</tr>
<tr>
<td>1. Social power: control over others, dominance</td>
</tr>
<tr>
<td>2. Wealth: material possessions, money</td>
</tr>
<tr>
<td>3. Authority: the right to lead or command</td>
</tr>
<tr>
<td>4. Influential: having an impact on people and events</td>
</tr>
<tr>
<td><strong>Altruistic value orientations</strong></td>
</tr>
<tr>
<td>1. Equality: equal opportunity for all</td>
</tr>
<tr>
<td>2. A world at peace: free of war and conflict</td>
</tr>
<tr>
<td>3. Social justice: correcting injustice, care for the weak</td>
</tr>
<tr>
<td>4. Helpful: working for the welfare of others</td>
</tr>
<tr>
<td><strong>Biospheric value orientations</strong></td>
</tr>
<tr>
<td>1. Preventing pollution: protecting natural resources</td>
</tr>
<tr>
<td>2. Respecting the earth: harmony with other species</td>
</tr>
<tr>
<td>3. Unity with nature: fitting into nature</td>
</tr>
<tr>
<td>4. Protecting the environment: preserving nature</td>
</tr>
</tbody>
</table>

Source: de Groot & Steg (2008)

Appendix B: Personal Involvement Inventory

To me (object to be judged) is:

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
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<th>10.</th>
<th>11.</th>
</tr>
</thead>
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<tr>
<td>Important</td>
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<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o*</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Boring</td>
<td>o</td>
<td>o</td>
<td>o</td>
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* indicates item is reverse scored

Source: Zaichkowski (1994)
### Appendix C. Interaction effect between campaign value frame and personal value orientation (n=973)

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* p < 0.05, ** p < 0.01, *** p < 0.001

Mixed-effects linear regression coefficients. Robust standard errors in parentheses.

Insignificant control variables: Sex (dummy), Age (years), Married (dummy), Full investment (dummy), Income categories, Education (years), Unemployed (dummy), Retired (dummy), Knowledge of CF (dummy), Participation in CF (dummy) and Product 5: Smartmeter (SM)

² Reference Category
Product 8: Vulcan (VC)