

# The Small Predicts Large Effect in Crowdfunding

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Entrepreneurs are increasingly relying on online crowdfunding—the use of online platforms to raise money from a large number of people—to finance their ventures. This research explores the proposition that the amounts contributed by the majority of funders in the early stages of a crowdfunding campaign may have a counterintuitive influence on follow-up contributions and on the campaign's fundraising success. Findings from an analysis of real-world large-scale crowdfunding data and five experiments show that potential funders are more (vs. less) likely to contribute to a newly launched project when early contributions consist mainly of relatively small (vs. large) amounts. The results further show that this *Small Predicts Large* effect is driven by people's relationship inferences: when contributions made at the early stages of a crowdfunding campaign mainly comprise relatively large amounts, consumers tend to infer that those large contributions were made by the entrepreneur's friends or relatives. Because of this relationship inference, prospective funders perceive larger contributions as being less diagnostic of others' true opinions of the project and this perception negatively affects their willingness to contribute. However, if a crowdfunding campaign provides sufficient justification for the early-stage large contributions, this *Small Predicts Large* effect will be eliminated.

**Keywords:** crowdfunding, social influence, relationship inferences, contextual signaling, money giving

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Online crowdfunding—the use of Internet platforms to raise funds from large numbers of people—has become an important method for entrepreneurs to finance their ventures. In 2018, major global crowdfunding platforms such as Kickstarter.com and Indiegogo.com raised over \$5.3 billion (Statista 2019). It is further estimated that crowdfunding will reach \$96 billion per annum by 2025 (World Bank 2013).

The process of raising funds for a project on a crowdfunding platform generally proceeds as follows: the entrepreneur initiates a new campaign for that project on the platform, where she publishes project-related information (e.g., project description, fundraising goal, time limit). The typical campaign page also includes several contribution options (e.g., \$10, \$100) suggested by the entrepreneur, and real-time information about the fundraising progress (e.g., amount of money raised; number of funders who have contributed so far). Most crowdfunding platforms also provide information regarding individual funders'

contributions. For example, Indiegogo.com and GoFundMe.com show who contributed how much money to a project at what time, while Kickstarter.com shows the number of real-time funders who have selected each contribution option (e.g., 30 funders pledged \$10; 2 funders pledged \$100). Our research studies whether potential funders pay attention to other funders' contribution amounts, what inferences they make based on these amounts, and how such inference making affects their own subsequent contributions.

The following example illustrates the basic premise of our investigation: imagine two newly launched crowdfunding projects, project A and project B, that you, a potential funder, perceive as being equally desirable. Each project attracted contributions from 20 funders on the first day after the launch of its campaign. In project A, the majority of funders contributed relatively small amounts (e.g., \$10), whereas in project B the majority of funders contributed relatively large amounts (e.g., \$100). As a potential funder, which project would you be more willing to contribute to? Intuition might suggest that you would pick project B, because it has raised a greater total amount of money. Yet, herein, we show that people will actually be more willing to contribute to project A, whose early-stage contributions are mainly composed of small (rather than large) contributions (in our example, \$10 vs. \$100).

We propose that when contributions made early on in a crowdfunding campaign consist mainly of relatively large amounts, potential funders are more likely to infer that these large contributions were made by the entrepreneur's social connections (e.g., friends and relatives of the entrepreneur). We further suggest that when people make such social relationship inferences, they are less likely to interpret these large contributions as diagnostic signals about others' opinions toward the project. As a result, potential funders are less willing to contribute than they would be if the majority of the campaign's early contributions were smaller amounts. This counterintuitive prediction is supported by real-world large-scale crowdfunding data and five experiments. We term this the *Small Predicts Large* effect.

Our findings reveal that an entrepreneur's friends and relatives may have a negative role in crowdfunding outcomes. These findings run counter to both academic research (Agrawal, Catalini, and Goldfarb 2015; Kuppaswamy and Bayus 2015; Mollick 2014) and conventional wisdom of crowdfunding experts (De Witt 2012; Steinberg 2012), which have suggested that help from an entrepreneur's social network is crucial to crowdfunding success. Specifically, the "seed" money contributed by an entrepreneur's friends and relatives is assumed to build contribution momentum and attract subsequent support from strangers (Barnett 2014; DesMarais 2013; Kordova 2015). However, we show that such a strategy may jeopardize fundraising success if potential funders suspect "friendship giving" at the early stages of a crowdfunding campaign.

Our findings also contribute to the literature on humans' herding behavior in general (Banerjee 1992; Bikhchandani, Hirshleifer, and Welch 1992; Froot, Scharfstein, and Stein 1992; Raafat, Chater, and Frith 2009) and specifically to research that shows the positive effect of social connections on the likelihood to herd (Lee, Hosanagar, and Tan, 2015; Liu et al. 2015). In a crowdfunding context, we show that, at the early stages of a project, (inferred) social connections between existing funders and the entrepreneur may have a dampening effect on herding—as these connections diminish the diagnosticity of others' behavior.

Finally, our findings enable us to provide practical tips that might help entrepreneurs succeed in crowdfunding, and they have further implications for the design of crowdfunding websites. In the next section, we provide a detailed discussion of the rationale underlying the *Small Predicts Large* effect. We then test our hypotheses with both real-world large-scale crowdfunding field data and five experiments. We conclude with a discussion of the conceptual and managerial implications of our findings.

## THEORETICAL BACKGROUND

Our predictions are based on three building blocks: the factors that influence crowdfunding success, the differences between the contribution behavior of an entrepreneur's friends and relatives versus the contribution behavior of total strangers, and the likelihood of a potential funder being aware of friendship-giving practices in a crowdfunding context.

### Crowdfunding: Factors That Influence Fundraising Success

A number of factors can influence the fundraising success of a crowdfunding project. One category of factors is project features, such as the description of the project, the amount of information disclosed, and the ambitiousness of the fundraising goal (Herzenstein, Dholakia, and Andrews 2011; Marom and Sade 2013). Another category of factors is the characteristics of the entrepreneur, such as the funding outcomes of her previous crowdfunding projects, demographic information, geographic location, and social connections (Agrawal, Catalini, and Goldfarb 2014; Mollick 2013).

The latter factor—an entrepreneur's social connections—has been found to play a key role in the early stages of fundraising. Prior studies have shown that friends and relatives disproportionately contribute early in the funding cycle (Agrawal, Catalini, and Goldfarb 2011; Mollick 2014). These early financial contributions not only are valuable in themselves but also may serve as positive market signals for subsequent funders. This proposition is consistent with social psychology theories that suggest that people look for signals when making important decisions

and that others' behaviors often serve as diagnostic signals (Becker 1991; Berger and Heath 2007; Cialdini 1993; Miller 1984; Steinhart et al. 2014; Yamagishi and Sato 1986). Such signals may play a particularly important role in crowdfunding contexts, where potential funders make contribution decisions based on limited information posted on the crowdfunding platform. As the amount of accumulated capital increases and the number of funders expands, potential funders become more likely to infer that the project has the potential to meet its fundraising goal and that the risk associated with the project is low (Agrawal et al. 2015; Zhang and Liu 2012). As a result, they become more likely to contribute to the project (Agrawal et al. 2011; Herzenstein et al. 2011; Zhang and Liu 2012). Consistent with this reasoning, research has found that the number of an entrepreneur's social connections positively predicts the fundraising success of her project (Agrawal et al. 2015; Kuppaswamy and Bayus 2015; Mollick 2014).

One limitation of extant research on the signals embedded in crowdfunding contributions is that it tends to focus on the accumulated contribution amount and the total number of existing funders. As crowdfunding platforms also provide detailed information on individual funders' contribution amounts, our study zooms in to examine additional signals that may be embedded in the publicly observable behavior of individual funders. Specifically, we focus on individual funders' contribution amounts at early stages of a crowdfunding campaign and explore whether this approach might provide a more nuanced perspective on the role of an entrepreneur's social connections in crowdfunding success.

### Contributions to Crowdfunding: Friends versus Strangers

Prior research findings suggest that an entrepreneur's social connections (e.g., friends and relatives) are likely to demonstrate distinct contribution behaviors on a crowdfunding platform that differ from those of strangers. Specifically, an individual is likely to feel more motivated to help a friend as opposed to a total stranger, out of a sense of responsibility or obligation (Bar-Tal et al. 1977; Morgan and Sawyer 1979; Weinstein, Devaughan, and Wiley 1969). People also like their friends and relatives more than they like strangers and prefer to help friends and relatives when they are in need (Clark and Mills 1979; Nadler, Fisher, and Streufert 1974). Accordingly, we predict that when an entrepreneur needs help in crowdfunding, her friends and relatives will contribute larger amounts than strangers do.

We further propose that an entrepreneur's social connections tend to contribute earlier than strangers do. Contributing to a crowdfunding project is inherently risky because potential funders must rely on limited information to estimate the project's probability of success. Thus, we suggest that, especially at the early stages of a crowdfunding campaign, strangers are reluctant to contribute and

instead prefer to wait and use others' contributions as a signal of others' opinions toward the project. Compared with strangers, the entrepreneur's friends and relatives might perceive less risk in the contribution decision due to familiarity, or they may contribute simply out of desire to help the entrepreneur. Indeed, this reasoning is consistent with research findings that friends and relatives of entrepreneurs tend to disproportionately contribute early in the funding cycle, providing crucial "seed" money, as discussed above (Agrawal et al. 2011; Mollick 2014).

### Awareness of "Friendship-Giving" Practices on Crowdfunding

An interesting question that arises is whether potential funders are aware that entrepreneurs may use social connections as a source of initial funding for crowdfunding projects (friendship giving). We suggest three reasons that support this possibility.

First, as discussed above, the motivation to help one's friends (and expect reciprocation when need arises) is a social norm that is deeply rooted in human nature and that governs human behavior in various domains (Cialdini, Green, and Rusch 1992; Cialdini et al. 1975). Given that most people are likely to have personally experienced a desire to help their friends and to have observed others providing such help, we suggest that they are likely to assume that entrepreneurs would rely on their social connections to build critical funding momentum after launching a new campaign on a crowdfunding platform.

Second, although a crowdfunding platform rarely discloses the social relationships between the entrepreneurs and their funders, many crowdfunding platforms, such as Kickstarter and Indiegogo, are directly linked with social networks such as Facebook and Twitter, which makes it easy for the entrepreneurs to publicize their crowdfunding campaigns among their social connections. This will also facilitate people's awareness of "friendship-giving" practices.

Finally, modern consumers are constantly educated by the mass media and social media about the "norms" of crowdfunding. An article in *Forbes*, for example, recommends that entrepreneurs should engage their friends and family, preparing them to start funding the project on the first day of the crowdfunding campaign (Barnett 2014). Moreover, given the popularity of crowdfunding ventures, coupled with the fact that crowdfunding platforms explicitly encourage the use of social media as a promotional tool (Indiegogo), it seems likely that most social media users have, at some point, encountered posts by friends announcing their support for acquaintances' crowdfunding projects, or requesting contributions for their own campaigns. Thus, information disseminated in the mass media and on social media is likely to strengthen consumers' belief that an entrepreneur's social connections play a crucial role in crowdfunding success.

## The *Small Predicts Large* Effect

As discussed above, we propose that a prospective funder is likely to be aware of the potential for friendship-giving practices to take place on a crowdfunding platform and that large contributions at early stages of a crowdfunding campaign are especially indicative of such practices. Thus, when a potential funder observes that someone contributed a large amount immediately after the campaign was launched, she is likely to infer that this early funder is socially connected to the entrepreneur. As the entrepreneur's social connections are likely to be motivated by the desire to help a friend, regardless of their evaluations of the project itself, the diagnostic value of their contributions is expected to be lower than the diagnostic value of a stranger's contribution; that is, they cannot provide a market signal of the true opinions of others toward the project. Moreover, contributions from the entrepreneur's social connections might interfere with natural market signals, concealing people's true reactions to the campaign. Therefore, a potential funder who observes that early contributions to a project primarily include large individual amounts may be reluctant to contribute to the project.

In contrast, if a potential funder observes that the majority of early contributions are small amounts, she is less likely to infer that friendship-giving practices are taking place. That is, she is more likely to treat those contributions as if they came from total strangers who are like-minded individuals who were attracted by the campaign. As a result, she will perceive these contributions as diagnostic market signals of others' true opinions toward the project and will follow those early funders to contribute.

Therefore, we formally predict:

**H1:** A potential funder is more willing to contribute to a newly launched crowdfunding campaign when the majority of the existing contributions are relatively small (vs. large) amounts (the *Small Predicts Large* effect).

**H2:** The *Small Predicts Large* effect is mediated by potential funders' belief that those who make large contributions at early stages of a crowdfunding campaign are likely to be friends or relatives of the entrepreneur.

## OVERVIEW OF STUDIES

We carried out a field study and five experiments to accomplish several broad goals. First, we tested our hypotheses using real-world large-scale crowdfunding data on 902 projects to which 68,036 funders made contributions. This analysis shows that a crowdfunding campaign raises more money, attracts more funders, and is more likely to achieve its fundraising goal when the majority of early contributions are relatively small (rather than large). We also demonstrate that small early-stage contributions have a positive effect on subsequent individual funders' contributions. Our field data

further enabled us to access online social network connections between funders and entrepreneurs, making it possible to confirm that entrepreneurs' online friends contribute more money and contribute at earlier stages of the crowdfunding campaign than non-friends do.

Our five experiments enabled us to obtain more robust support for the *Small Predicts Large* effect and to explore the proposed underlying mechanism. Experiment 1 was an incentive-compatible experiment in which we adopted the presentation method used in a real crowdfunding website, Kickstarter.com, and offered participants real money to actually contribute to a crowdfunding project and get rewards. This experiment revealed, as expected, that potential funders are more likely to contribute and contribute more money, when the early-stage contributions comprise mostly relatively small rather than relatively large amounts. In experiment 2, we replicated the *Small Predicts Large* effect, demonstrated the role of relationship inference as the mediator of the effect, and ruled out several alternative explanations. Next, in experiment 3, we used recall questions to study people's attention to different types of information available on a crowdfunding website. An additional open-ended question enabled us to "tap into potential funders' thoughts" to obtain the evidence of social relationship inferences. In experiments 4 and 5, we further examined the role of relationship inference as the mediator of the *Small Predicts Large* effect, showing that this effect is attenuated when social relationship inferences are "corrected" (experiment 4) or when justifications for the majority-large contributions are provided (experiment 5). In all five experiments, we held constant the total fundraising goal, the number of funders, and the time at which the crowdfunding campaign was initiated.

## FIELD DATA

We first tested the hypothesized *Small Predicts Large* effect (hypothesis 1) using field data collected from a real-world large-scale crowdfunding platform, DemoHour, which was one of the largest crowdfunding platforms in China during the data collection period. DemoHour's setup (appendix A) is similar to that of other crowdfunding platforms such as Kickstarter.com and Indiegogo.com. Entrepreneurs create webpages on DemoHour to introduce their projects, set funding goals, and define the campaign's funding period (the period in which the funding goals must be met, typically 30–40 days). DemoHour publicizes individual funders' contribution information on the platform. A potential funder may read the project information, observe other individual funders' contributions (i.e., who contributed how much money to which project at what time), and make contribution decisions.



## Data Description

We collected data for all crowdfunding campaigns on DemoHour that were launched and concluded between July 31, 2011, and August 30, 2014. Our dataset comprised 902 projects with 116,153 contributions made by 68,036 funders. An average project in our dataset had a funding goal of US\$2,990, a funding period of 43 days, and 115 funders, who each contributed US\$31 on average. Fifty-six percent of the projects achieved their funding goals, with an average of US\$4,631 raised in total per project (see appendix B for descriptive statistics). The projects covered a wide range of categories, such as art, charity, design, music, and technology (see [web appendix A](#)). As DemoHour publicizes all individual funders' contributions on its website, our data contained detailed information of who (screenname) contributed how much money to what project at what time.

The DemoHour dataset provided us with two major advantages. First, it allowed us to test whether small early-stage contributions had a positive effect on a project's fundraising success. More interestingly, unlike many crowdfunding platforms, in which the relationship between entrepreneurs and funders is unobserved, at the time of data collection, DemoHour allowed entrepreneurs and funders to sign in with their social network accounts (i.e., Weibo.com, China's "Twitter"). As online social networks on Weibo.com are publicly observable, we were able to identify online friendships (or the lack thereof) between entrepreneurs and funders. Therefore, we were able to test whether our proposed relationship inferences reflected real-world behavior, that is, whether entrepreneurs' social connections indeed contributed more money than strangers did, and at earlier stages of the campaign.

## The Small Predicts Large Effect

*The Small Predicts Large Effect on Crowdfunding Success.* First, we tested whether campaigns in which the majority of early funders pledge small (as opposed to large) amounts ultimately obtain better fundraising outcomes (hypothesis 1). We tested the robustness of the effect using three fundraising outcomes as the dependent variables: total amount of money raised (model 1), total number of funders (model 2), and whether a campaign achieved its funding goal (model 3). In all three models, we focused on the same predictor—the percentage of small contributions on the first day of a campaign  $j$ 's launch ( $\text{SmallPer}_j$ ), that is,

$$\text{SmallPer}_j = \frac{\text{the number of small 1st day contributions in project } j}{\text{the total number of 1st day contributions in project } j}.$$

Three aspects of the definition of this variable warrant further discussion. First, because the average contribution

amounts differ significantly across campaigns, a contribution to campaign  $j$  was defined as "small" if the amount was below the campaign  $j$ 's average contribution amount. To test the robustness of our results, we used alternative definitions of "small contributions," including a median split (models 1a–3a) and a mean split after excluding extremely large individual contributions (as those outliers affect the average contribution amount) (models 1b–3b). Another potential problem with our definition of "small" is that it depends on the contribution amounts obtained from all funders over the course of the funding period—and prospective funders may not have access to this information. Thus, we carried out additional analyses in which we defined "small contributions" on the basis of the average of contribution options (e.g., \$1, \$5, \$100) that were listed on a campaign's webpage (models 1c–3c), as these contribution options are independent of how much money other funders contribute. We obtained consistent results across all models ([web appendix B](#)). Second, we focused on the *first day* of each campaign launch as a conservative indication of "the early stages of the campaign." Later we extended the "first day" to "first week" by examining the effect of small first-week contributions on fundraising outcomes and obtained similar results ([web appendix C](#)).

We ran regression analyses using model 1, in which the dependent variable was the total amount raised in project  $j$  (TotalAmount; log-transformed because of its highly skewed distribution: skewness = 9.83,  $p < .001$ ; Kurtosis = 115.36,  $p < .001$ ), and SmallPer was the independent variable. In addition, we controlled for project features (funding goal: Goal; fundraising campaign duration: Duration; total number of funders: TotalNoFunders; and project category: Art, Book, Charity, Design, Music, Tech, Video), first-day contributions (the amount of money raised on the first day: FirstAmount; the number of first-day funders: FirstFunder), and the time effect (dummies for day of the week of the campaign's first day of fundraising, i.e., Monday to Saturday:  $\rho$ ). The model was specified as follows.

$$\begin{aligned} \text{Log}(\text{TotalAmount}_j) = & \alpha + \beta \text{SmallPer}_j + \gamma_1 \text{Goal}_j \\ & + \gamma_2 \text{Duration}_j \\ & + \gamma_3 \text{TotalNoFunders}_j + \gamma_4 \text{Art}_j \\ & + \gamma_5 \text{Book}_j + \gamma_6 \text{Charity}_j \\ & + \gamma_7 \text{Design}_j + \gamma_8 \text{Music}_j + \gamma_9 \text{Tec}_j \\ & + \gamma_{10} \text{Video}_j + \delta_1 \log(\text{FirstAmount}_j) \\ & + \delta_2 \text{FirstFunder}_j + \rho_j + \varepsilon_j. \end{aligned}$$

We obtained a positive and significant coefficient for SmallPer ([table 1](#)), suggesting that a larger percentage of small first-day contributions was associated with a greater total amount raised.

Similar results were obtained for models 2 and 3, which used alternative fundraising outcomes as their dependent variables ([table 1](#)). For model 2, in which the dependent

TABLE 1  
FIELD DATA (MODELS 1–3)

Variables	(1) Total amount pledged	(2) Total number of funders	(3) Fundraising success <sup>a</sup>
SmallPer	1.40*** (0.10)	.96*** (0.09)	.77*** (0.18)
Goal	.00 (0.00)	-.00 (0.00)	-.00*** (0.00)
Duration	.01*** (0.00)	.01*** (0.00)	-.01** (0.00)
TotalNoFunders	.00*** (0.00)		.03*** (0.00)
Art	-.21 (0.28)	-.45* (0.26)	.02 (0.50)
Book	-.12 (0.25)	.00 (0.23)	-.11 (0.46)
Charity	.23 (0.23)	.24 (0.21)	.18 (0.42)
Design	-.19 (0.22)	-.22 (0.21)	-.07 (0.42)
Music	-.06 (0.28)	-.29 (0.26)	-.09 (0.52)
Technology	.28 (0.22)	-.28 (0.21)	.26 (0.42)
Video	.18 (0.25)	-.23 (0.23)	.26 (0.46)
FirstAmount	.70*** (0.02)	.44*** (0.02)	.38*** (0.05)
FirstFunder	-.01*** (0.00)	.00*** (0.00)	-.05*** (0.00)
Constant	2.76*** (0.34)	.30 (0.32)	-3.37*** (0.67)
<i>F</i>	144.35***	69.43***	603.32***
<i>R</i> -squared	.77	.61	.54
<i>N</i>	827	827	827

Notes: Standard errors in parentheses; \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ . The variable *TotalNoFunders* became the dependent variable rather than the control variable in model 2.

<sup>a</sup>As model 3 is a Probit model, we reported likelihood ratio chi-square test and pseudo *R*-squared.

variable was the total number of funders (log-transformed because of its highly skewed distribution: skewness = 8.91,  $p < .001$ ; Kurtosis = 100.26,  $p < .001$ ), we obtained a positive and significant coefficient for SmallPer, suggesting that a higher percentage of small contributions on the first day was associated with a greater total number of funders. Similarly, in model 3, which was a Probit model with a binary dependent variable of whether a project achieved its funding goal (1 if *yes* and 0 *otherwise*), the coefficient of SmallPer was again positive and significant, suggesting that if a project received a higher percentage of small contributions on the first day, it was more likely to achieve its fundraising goal. Taken together, the results of our analyses using models 1, 2 and 3 showed the positive effect of small first-day contributions on crowdfunding campaign success.

**Robustness of Model Results.** We carefully evaluated the robustness of the *Small Predicts Large* effect. First, we found it robust across project types (charity vs. noncharity projects) and project sizes (large vs. small funding goals). Second, the *Small Predicts Large* effect is observed not only with regard to project-level measurements but also

with regard to individual funders' contribution amounts. Finally, the results are also robust to alternative model specifications. We discuss the details of all the robustness results in [web appendix D](#).

## Real-Life Friendship-Giving Behavior

As noted above, our data provided us with the opportunity to examine whether the proposed friendship-giving inferences reflect real-life behaviors—that is, to observe whether, compared with strangers, entrepreneurs' social connections indeed contribute more money to a crowdfunding campaign, and at earlier stages of the campaign. To this end, we used the social network information available on Weibo.com to identify online friendships (or the lack thereof) between entrepreneurs and funders. Among 68,036 funders in our data, 11,726 funders were identified as online friends of 504 entrepreneurs.

*Did Online Friends Contribute More than Non-Friends?* On average, an entrepreneur's online friends contributed \$36, significantly more than non-friends (\$24,

$t(4354)=3.10, p < .001$ ). Similar results were obtained in a regression model (model specification in [web appendix E](#)) where the dependent variable was individual funder  $i$ 's contribution amount to project  $j$ , and the independent variable was a binary variable indicating an online friendship between the entrepreneur and funder  $i$ . The positive and significant coefficient of the online friendship variable suggested that an entrepreneur's online friends contributed more money than non-friends, a behavior consistent with friendship giving (model 4 in appendix C).

*Did Online Friends Contribute Earlier than Non-Friends?* As the duration of fundraising campaigns varies significantly, we measured "how early a contribution is made" as a function of campaign duration. For example, a contribution made on the 20th day after a campaign's launch may be considered a relatively early contribution if the project lasted for 60 days, but it may be considered a relatively late contribution if the project only lasted for 30 days. Therefore, following [Mallapragada and Narayan \(2017\)](#), our dependent variable—the timing of a contribution—was measured as the proportion of the funding window completed on the contributing day (e.g., if a project had a 30-day funding window and a funder contributed on the 15th day, this measure took the value of 0.50), where a smaller value of this measure indicated an earlier contribution time. The independent variable, control variables, and fixed effects in model 5 were the same as those in model 4. The results showed that the coefficient of online friendship was negative and significant, suggesting that an entrepreneur's friends contributed earlier than non-friends did (model 5 in appendix C).

As a robustness check, we used the time stamp of funders' contributions on the first day (or the first week) as an alternative dependent variable and tested if on the first day (or first week) online friends contributed earlier than non-friends did ([web appendix F](#)). The negative and significant coefficients of online friendship confirmed that an entrepreneur's friends did contribute earlier than non-friends did on the first day (or the first week).

To summarize, using field data collected from a real-world large-scale crowdfunding platform, we first found that crowdfunding projects with greater percentages of small contributions at their early stages raise more money in total, attract more funders, and are more likely to achieve their fundraising goals compared with projects with lower percentages of small contributions and also lead subsequent funders to contribute more money. These findings support hypothesis 1. Furthermore, by matching online social network data with our field data, we found that, compared with strangers, entrepreneurs' social connections indeed tend to contribute more money and to contribute earlier than strangers do. These findings support our expectation that people make social relationship inferences based on early-stage funders' contribution amounts. Finally, we

examined the time window when the *Small Predicts Large* effect holds. We used a panel data regression (see [web appendix G](#) for methodological details) and found that the *Small Predicts Large* effect is significant in the first week of a crowdfunding campaign and is not significant afterwards. In addition, a *Large Predicts Large* effect begins to be observed after the 13th day of a crowdfunding campaign (see results in table WH.1 in [web appendix H](#)). In other words, we found that the *Small Predicts Large* effect is significant in the early stages of a crowdfunding campaign and becomes insignificant or even becomes opposite in the late stages. These findings highlight the crucial role of early-stage funders' behavior in a project's success and help us reconcile the findings of our main analysis with prior research on herding behavior ([Zhang and Liu 2012](#)).

## EXPERIMENT 1

Experiment 1 aimed to replicate the *Small Predicts Large* effect in an incentive-compatible experiment. We designed a crowdfunding campaign based on a real product and manipulated the first-day contribution amounts (majority small vs. majority large). For this purpose, we designed a fictitious crowdfunding campaign webpage that resembled real crowdfunding websites (e.g., Kickstarter.com). Importantly, we offered participants real economic incentives to contribute to the project. Thus, the goal of experiment 1 was to test whether a potential funder is more willing to contribute to the project when the early-stage contributions comprised mostly relatively small rather than relatively large amounts.

### Method

We recruited 314 participants ( $M_{\text{age}} = 35.29$ ; 50% female) through an online panel in Israel in return for \$3 in local currency. We preselected participants who were familiar with crowdfunding and spoke English fluently. In this experiment and in all subsequent experiments, we used G\*Power to determine the sample size and targeted a sample size with 80% power to detect a moderate effect ( $f^2 = 0.25$ ). We randomly assigned each participant to one of the two prior-contribution conditions: majority-small versus majority-large contributions.

We first asked participants to read a detailed description of how crowdfunding works and then presented them with a crowdfunding project: SENSE, a smart sensor that learns about its user and the environment and pushes notifications containing useful information regarding temperature, humidity, etc. (see appendix D for the stimuli). The campaign webpage provided visual and verbal descriptions of the product. We told all participants that the campaign had 29 days (out of 30) to go until it ended. To make the site's design parallel to that of Kickstarter.com, we offered participants a choice of the following contribution

TABLE 2  
AMOUNT CONTRIBUTED

Contribution choices	Majority small		Majority large	
	Number of participants (percentage)	Amount contributed	Number of participants (percentage)	Amount contributed
a. Contribute \$0	50 (31.6)	\$0	72 (46.2)	\$0
b. Contribute self-defined amount (\$0–9)	19 (12)	\$99	25 (16)	\$148
c. Contribute \$10	66 (42)	\$660	37 (23.7)	\$370
d. Contribute \$100	23 (14.6)	\$2,300	22 (14.1)	\$2,200
Total	158	\$3,059	156	\$2,718

options: (a) not to contribute, (b) contribute any amount from \$0 to \$9 and get no reward, (c) contribute \$10 and get a thank-you letter, or (d) contribute \$100 and get one unit of SENSE as a reward. To make the experiment incentive compatible, we told participants that they would later enter a lottery to win \$100. The winners would make real contributions to the crowdfunding campaign in accordance with their decisions in the study. After the completion of the study, a real lottery was conducted and all four winners received their chosen reward and made the corresponding contributions.

To manipulate the first-day contribution situation (majority small vs. majority large), we created two versions of the SENSE webpage. In the majority-small condition, the webpage showed that 20 of 22 funders had pledged \$10 and that 2 of 22 funders had pledged \$100. The total amount raised in this condition was \$400. In the majority-large condition, the webpage showed that 2 of 22 funders had pledged \$10 and that 20 of 22 funders had pledged \$100. The total amount raised in this condition was \$2,020.

To check if our manipulation was successful, after all participants made their choices, we asked them to rate whether they perceived each contribution—\$10 and \$100—as a relatively small or large amount on two 7-point scales from 1 (not at all) to 7 (very much). Finally, participants answered some demographic questions.

## Results and Discussion

**Manipulation Check.** To test if our manipulation of small versus large amounts was successful, we conducted a repeated-measures analysis of participants' perceptions of the contribution amounts. Participants indeed perceived a contribution of \$100 ( $M = 5.24$ ,  $SD = 1.36$ ) as significantly larger than a contribution of \$10 ( $M = 2.42$ ,  $SD = 1.46$ ;  $F(1, 311) = 825.84$ ,  $p < .001$ ). These ratings were not influenced by prior-contribution condition ( $F(1, 311) = 1.48$ ,  $p = .225$ ).

**Main Analysis.** First, we conducted a chi-square test to examine whether participants' contribution decision (a = not to contribute, b = contribute any amount from \$0–9, c = contribute \$10, d = contribute \$100) changed as a function of prior-contribution condition (0 = majority small,

1 = majority large). As expected, this analysis yielded a significant difference in choice patterns in the majority-small and majority-large conditions ( $\chi^2(3) = 12.96$ ,  $p = .005$ ) (see table 2 for detailed distribution of choices).

Second, we recoded whether participants chose to contribute to the project into a binary variable (0 = not contribute, 1 = contribute). Thus, we integrated three contribution choices into a single measure. A logistic regression of the binary contribution decision as a function of prior-contribution condition revealed a significant effect (Wald (1) = 6.89,  $p = .009$ ): In the majority-small condition, 68.4% of participants chose to contribute to the project, compared with 53.8% of participants in the majority-large condition.

Finally, we compared the average contribution amounts between the two conditions. A Kolmogorov–Smirnov test showed that the distribution of contribution amounts deviated significantly from normal ( $D = .46$ ,  $p < .001$ ), so we log-transformed this measure in the subsequent analysis. As expected, an ANOVA showed that participants in the majority-small condition contributed significantly larger amounts ( $M = 0.81$ ,  $SD = 0.67$ ) than did participants in the majority-large condition ( $M = 0.65$ ,  $SD = 0.71$ ;  $F(1, 312) = 4.12$ ,  $p = .042$ ;  $\eta^2 = .013$ ).

To sum up, we replicated the *Small Predicts Large* effect in an incentive-compatible experiment. The results are consistent with those obtained from our field data, lending further support to hypothesis 1. Notably, the *Small Predicts Large* effect was observed despite the fact that the total amount raised in the majority-small condition was smaller than that in the majority-large condition, which suggested that negative influence of inferred social connections may offset the positive cue of total contribution amount at the early stages of a crowdfunding project.

## EXPERIMENT 2

Experiment 2 further tested the *Small Predicts Large* effect (hypothesis 1) and examined whether people rely on existing funders' contribution amounts to infer social relationships between those funders and the entrepreneur. Experiment 2 also investigated the mediating role of social



relationship inference in the *Small Predicts Large* effect (hypothesis 2) and aimed to rule out several alternative explanations for the effect: first, participants who observe that the majority of prior contributions are large may become less willing to contribute because they think that any subsequent contributions they provide will be insignificant and negligible by comparison. Second, the composition of early contribution amounts may influence potential funders' perceptions of the quality of the project, and thus their willingness to contribute. Finally, participants may be dubious about an entrepreneur who can raise a great number of large contributions at early stages of a campaign and subsequently adopt a negative attitude toward the entrepreneur, which in turn reduces their willingness to contribute.

## Method

One hundred seventy-seven participants were recruited through Amazon Mechanical Turk ( $M_{\text{age}} = 33.21$ ; 33% female). We randomly assigned each participant to one of the two prior-contribution conditions: majority-small versus majority-large contributions. In this and all subsequent experiments, we selected participants who were English speakers, aged between 18 and 70 years, and excluded participants who did not pass a set of comprehension check questions.

At the beginning of the study, all participants were told that their task was to read about a specific crowdfunding project and indicate their preferences. Before they saw the project, participants first read a short paragraph explaining how crowdfunding works and were informed that they may later be asked to recall the project details. Then, on the next page, participants saw the specific crowdfunding project, SORBO, a rechargeable battery with specialized built-in chips that perform various functions. Participants were told that this project had recently been posted on a (fictitious) crowdfunding website "Entrestarter.com" and were asked to review the project as if they were potential funders of this project.

The design of the webpage was very similar to the design used in experiment 1 (web appendix I). The campaign webpage provided visual and verbal descriptions of the product. We told all participants that the project had been created 1 day ago and that there were 29 days to go until the crowdfunding campaign ended. To manipulate the percentage of small and large contributions at the early stages of the project, we created two versions of this SORBO webpage. In the majority-small condition, 21 of 23 funders pledged \$10 and 2 of 23 funders pledged \$100. The total amount raised in this condition was \$410. In the majority-large condition, 2 of 23 funders pledged \$10 and 21 of 23 funders pledged \$100. The total amount raised in this condition was \$2,120. Participants were also told that, as a reward, they would receive four units of the SORBO battery in exchange for a pledge of \$10, or 40 units of the SORBO

battery in exchange for a pledge of \$100. Participants were also told that the products would be delivered in 5 months.

Next, we asked participants to rate (a) their willingness to participate in this crowdfunding project and (b) their willingness to pledge to this crowdfunding project, on a 7-point scale from 1 (not at all) to 7 (very much). These two items were highly correlated ( $r = .91$ ) and therefore were averaged to create an index of willingness to contribute. Participants also evaluated the likelihood that the funders who contributed \$100 were total strangers to the entrepreneur, on a scale from 1 (strongly disagree) to 7 (strongly agree).

Then, participants were asked to indicate, by rating 7-point Likert scales (1 = strongly disagree; 7 = strongly agree), their agreement with statements corresponding to the following categories: (1) their perceived help to the entrepreneur ("My personal contribution is helpful to the entrepreneur" and "My personal contribution is insignificant and negligible" [reverse-coded]) and (2) perceived project quality and the likelihood of project success ("I found the project to be of high quality" and "I believe in the success of the project"). Participants also reported their attitude toward the entrepreneur (negative-positive; bad-good; dislikeable-likeable; on a scale from 1 to 7). In addition, as a manipulation check (as in experiment 1), participants rated the extent to which they perceived each contribution amount (\$10 and \$100) as relatively small or large. Finally, participants responded to background questions.

## Results and Discussion

**Manipulation Check.** As in experiment 1, a repeated-measures analysis revealed that our prior-contribution manipulation was successful. Participants perceived a contribution of \$100 ( $M = 5.90$ ,  $SD = 1.18$ ) as significantly larger than a contribution of \$10 ( $M = 3.14$ ,  $SD = 1.48$ ;  $F(1, 175) = 385.58$ ,  $p < .001$ ). These ratings were not influenced by prior-contribution condition ( $F(1, 175) = .39$ ,  $p = .529$ ).

**Willingness to Contribute.** Participants in the majority-small contribution condition were more willing to contribute to the campaign ( $M = 4.25$ ,  $SD = 1.67$ ) than were participants in the majority-large contribution condition ( $M = 3.70$ ,  $SD = 1.79$ ,  $t(175) = 2.09$ ;  $p = .038$ ;  $\eta^2 = .024$ ). This finding confirms the *Small Predicts Large* effect, that is, the positive effect of small early-stage contributions on potential funders' willingness to contribute (hypothesis 1).

**Relationship Inferences.** We examined participants' beliefs about the social relationships between existing funders and the entrepreneur. As predicted, compared with participants in the majority-small contribution condition, those in the majority-large contribution condition assigned

lower ratings to the likelihood that the funders who had contributed \$100 were total strangers to the entrepreneur ( $M_{\text{majority-large}} = 3.26$ ,  $SD = 1.56$  vs.  $M_{\text{majority-small}} = 3.86$ ,  $SD = 1.75$ ,  $t(175) = 2.41$ ,  $p = .017$ ;  $\eta^2 = .032$ ).

**Mediation Analyses.** To check whether relationship inference mediated the influence of prior-contribution condition on participants' willingness to contribute, we conducted a mediation analysis following a bootstrapping procedure (model 4, Preacher, Rucker, and Hayes 2007). The analysis confirmed that the effect of prior-contribution condition (0 = majority-small contribution condition, 1 = majority-large contribution condition) on willingness to contribute was mediated by the belief that funders who had contributed \$100 were total strangers to the entrepreneur ( $b = -0.17$ ,  $SE = 0.09$ , 95% CI:  $-0.38$  to  $-0.04$ ).

**Alternative Accounts.** To rule out alternative explanations for the *Small Predicts Large* effect, we compared participants' ratings on the survey items corresponding to each explanation, as follows. First, we found no significant difference between the majority-small and majority-large conditions in terms of: (1) helpfulness of contribution:  $M_{\text{majority-small}} = 5.21$ ,  $SD = 1.19$  versus  $M_{\text{majority-large}} = 5.09$ ,  $SD = 1.28$ ,  $t(175) = .67$ ,  $p = .503$ ; (2) insignificance of help:  $M_{\text{majority-small}} = 3.51$ ,  $SD = 1.60$  versus  $M_{\text{majority-large}} = 3.17$ ,  $SD = 1.63$ ,  $t(175) = 1.37$ ,  $p = .174$ . Second, we found no significant difference in project quality perception in the two prior-contribution conditions ( $M_{\text{majority-small}} = 5.07$ ,  $SD = 1.31$ ;  $M_{\text{majority-large}} = 5.04$ ,  $SD = 1.37$ ;  $t(175) = .13$ ,  $p = .893$ ). Participants in the two conditions also assigned similar ratings to their belief in the success of the project ( $M_{\text{majority-small}} = 4.93$ ,  $SD = 1.49$ ;  $M_{\text{majority-large}} = 4.68$ ,  $SD = 1.57$ ;  $t(175) = 1.06$ ,  $p = .290$ ). In addition, the different dimensions of participants' attitudes toward the entrepreneur (negative–positive; bad–good; dislike–likeable; on a scale from 1 to 7) were highly correlated ( $\alpha = .90$ ) and therefore were averaged to create an attitude index. We found no difference between the two prior-contribution conditions in attitude toward the entrepreneur ( $M_{\text{majority-small}} = 5.44$ ,  $SD = 1.28$ ;  $M_{\text{majority-large}} = 5.34$ ,  $SD = 1.14$ ;  $t(175) = .54$ ,  $p = .588$ ). Finally, a parallel mediation analysis, including relationship inference and all alternative accounts as possible mediators (model 4, Preacher, et al. 2007), showed that the effect of prior-contribution condition on willingness to contribute was mediated only by relationship inference ( $b = -0.083$ ,  $SE = 0.059$ , 95% CI:  $-0.253$  to  $-0.0005$ ), but not by the other mediators ( $b_{\text{helpfulness of contribution}} = -0.008$ ,  $SE = 0.030$ , 95% CI:  $-0.116$  to  $0.025$ ;  $b_{\text{insignificance of help}} = 0.013$ ,  $SE = 0.029$ , 95% CI:  $-0.024$  to  $0.107$ ;  $b_{\text{perceived quality}} = -0.010$ ,  $SE = 0.085$ , 95% CI:  $-0.185$  to  $0.160$ ;  $b_{\text{success likelihood}} = -0.087$ ,  $SE = 0.089$ , 95% CI:  $-0.310$  to  $0.054$ ;  $b_{\text{attitude}} = 0.005$ ,  $SE = 0.031$ , 95% CI:  $-0.033$  to  $0.117$ ). These findings suggest that the influence of prior-

contribution condition on willingness to contribute cannot be explained by these alternative accounts.

Taken together, the results of experiment 2 show that in the early stages of a crowdfunding campaign, potential funders are more willing to contribute to the campaign when the majority of early contributions are small rather than large amounts. They further show that social relationship inference mediates the positive effect of small early-stage contributions on potential funders' willingness to contribute. Finally, our results indicate that the effect observed cannot be attributed to potential funders' perceptions of the extent to which their assistance to the entrepreneur will be impactful, their perceptions of the quality of the project, their perceptions that the crowdfunding project is likely to be successful, or their attitudes toward the entrepreneur.

### EXPERIMENT 3

Experiment 3 sought to obtain further support for the existence of the *Small Predicts Large* effect (hypothesis 1) while achieving the following additional objectives. First, we aimed to replicate the findings of experiments 1 and 2 with a different stimulus. Second, we explicitly examined whether potential funders naturally pay attention to existing funders' contribution information (our focal information) in a crowdfunding campaign. We further aimed to explore whether people indeed rely on existing funders' contribution amounts to infer the existence of social relationships between these funders and the entrepreneur. To this end, we used an open-ended question to examine whether potential funders spontaneously make social relationship inferences. We also measured social influence perceptions using Likert scale questions. We predicted that when the majority of early-stage contributions comprised large (vs. small) amounts, participants would infer that the early funders are more (vs. less) likely to be friends or relatives of the entrepreneurs. Finally, we examined the underlying mechanism of the *Small Predicts Large* effect. We predicted that, when a prospective funder infers that prior funders are likely to be friends or relatives of the entrepreneur, she will become less likely to interpret those funders' contributions as diagnostic signals and thus become less likely to contribute to the project.

### Method

We recruited 196 participants ( $M_{\text{age}} = 32.82$ ; 34% female) through MTurk and randomly assigned each participant to one of the two prior-contribution conditions: majority-small versus majority-large contributions.

The design of experiment 3 was similar to that of experiment 2, with the following differences. The product at the focus of the crowdfunding campaign was the Blockspy webcam cover, a webcam cover that prevents hackers from gaining access to cameras on personal computers,

smartphones, and tablets. Moreover, to increase the internal validity of the design, we changed the ratios between the numbers of people contributing small versus large amounts in the prior-contribution conditions (web appendix J). In the majority-small condition, the webpage showed that 20 of 24 funders had pledged \$10 and that 4 of 24 funders had pledged \$100. The total amount raised in this condition was \$600. In the majority-large condition, the webpage showed that 4 of 24 funders had pledged \$10 and that 20 of 24 funders had pledged \$100. The total amount raised in this condition was \$2,040. Participants were also told that, as a reward, they would receive 2 Blockspy webcam covers in exchange for a pledge of \$10 or 20 webcam covers in exchange for a pledge of \$100.

Next, all participants were asked to recall as many details as possible about the crowdfunding campaign. Specifically, they were asked to answer eight questions in separate textboxes: (1) What is the product? (2) How many people have contributed to the project? (3) How many people contributed \$10 to the project? (4) How many people contributed \$100 to the project? (5) How much money does the campaign want to raise? (6) When was the project launched on the crowdfunding website? (7) What reward could you get by contributing to the project? (8) When will the products be delivered to you? To motivate correct recall, we told participants before the recall questions that an additional \$0.05 would be given to them on top of their study payment for each correctly recalled item of information.

Then, participants saw the webpage again and answered an open question, "Please think about the potential reasons why a majority of the first-day contributors pledged \$10/\$100. In the following box, please write down as many thoughts as possible. It is important that you write full sentences and write each thought in a separate sentence."

After the thought-listing task and on a separate page, we checked whether the participants perceived a contribution of \$10 as a relatively small amount and a contribution of \$100 as a relatively large amount, as in our manipulation checks for experiments 1 and 2.

Participants were then asked to indicate their willingness to contribute to the project by choosing among three options in response to the question: "If you came across this project on the Internet and needed to make a decision, which option would you choose?" (Option A = contribute \$10; Option B = contribute \$100; Option C = do not contribute).

Next, we measured participants' social relationship perceptions: "In my opinion, it is likely that the majority of funders . . ." (1 = have a close social relationship with the project initiator, e.g., are friends, relatives, or acquaintances; 10 = are total strangers to the project initiator). To test the assumption that social relationship inferences would decrease the diagnosticity of other funders' behavior, we asked participants to indicate their agreement with the

following three statements, which measured perceived diagnosticity (1 = strongly disagree; 7 = strongly agree): (1) *other funders' contributions provide true market signals about the project's popularity*; (2) *I can derive valuable information from current funders' contributions*; and (3) *other funders' contributions can help me make my own decisions*. Finally, participants answered some demographic questions and were thanked for their participation.

## Results and Discussion

**Manipulation Check.** As in experiments 1 and 2, a repeated-measures analysis of perceptions of the contribution amounts revealed that the manipulation was successful. Participants perceived a \$100 contribution as significantly larger ( $M = 5.62$ ,  $SD = 1.33$ ) than a \$10 contribution ( $M = 2.53$ ,  $SD = 1.38$ ;  $F(1, 194) = 548.07$ ,  $p < .001$ ). These ratings were not influenced by prior-contribution conditions ( $F(1, 194) = .22$ ,  $p = .641$ ,  $\eta^2 = .74$ ).

**Recall.** To test whether people naturally attend to the contribution information of individual prior funders (our "focal information"), we examined participants' recall of the number of funders who contributed \$10 and the number of funders who contributed \$100. We expected that a decent amount of participants would correctly recall this information. Consistent with our expectation, both recall rates were higher than chance ( $ps < .001$ ). Fifty-seven percent of the participants correctly recalled the number of funders who contributed \$10, and 62% correctly recalled the number of funders who contributed \$100. We also calculated the average recall rate for the eight additional items of information about the crowdfunding campaign (60%). Participants' recall of the focal information was comparable to their average recall rate across the other items ( $ps > .3$ ). This finding suggests that participants naturally paid attention to prior contribution amounts just as they did to other items of information about the project.

**Thought Listing.** To explore whether people indeed rely on prior funders' contribution amounts to infer the existence of social relationships between these funders and the entrepreneur, we used a content analysis procedure to analyze participants' answers to the open thought question (Andrews and Shimp 1990; Celsi and Olson 1988). Two judges who were blind to the purpose of the research independently classified the thoughts into six categories, including comments on the nature of the relationship between the entrepreneur and existing funders, evaluations of the project, and the affordability of the amount contributed (see appendix E for a complete list of categories). The two judges agreed on 77% of the thought allocations, and they resolved disagreements through discussions.

We predicted that participants in the majority-large condition would be more likely to make social relationship



comments than those in the majority-small condition. Indeed, compared with participants in the majority-small condition (7%), those in the majority-large condition (34%) were significantly more likely to point out that the existing funders might be socially connected to the entrepreneur (e.g., “I think the first day contributors are most likely friends and family of the creators themselves” and “I feel like these are probably people who know the developers”;  $\chi^2(1) = 22.67, p < .001$ ).

Another difference in thought listing between the two conditions was in participants' likelihood of mentioning affordability or resource limitations. Specifically, compared with participants in the majority-large condition (4%), those in the majority-small condition (36%) were more likely to attribute small contributions to funders' limited financial resources (e.g., “The contributors who pledged \$10 could not afford to invest \$100”;  $\chi^2(1) = 30.32, p < .001$ ). No other differences in thought listing were found. Thus, in sum, the thought-listing procedure revealed that, compared with participants in the majority-small condition, those in the majority-large condition were more likely to infer social relationships between the funders and the entrepreneur and were less likely to attribute the contribution amounts to affordability considerations (for a complete analysis, see appendix E).

Finally, we examined whether participants' likelihood of listing social relationship thoughts was dependent on their recall of information on prior funders' contributions. We predicted that participants who correctly recalled the numbers of funders who had contributed large and small amounts (53% of all participants) would be more likely to mention social relationships than would participants who did not remember the information. As expected, the percentage of participants who listed social relationship thoughts was higher among those with correct recall than among those who failed to recall the information (26% vs. 13%,  $\chi^2(1) = 5.43, p = .020$ ). This finding further validates our theory in suggesting that social relationship inference is activated only when people pay attention to prior funders' information.

**Social Relationship Inferences.** An ANOVA on participants' responses to the item about social relationship perceptions showed that, as expected, participants in the majority-large condition were more likely than participants in the majority-small condition to infer that funders had a close social relationship with the entrepreneur ( $M_{\text{majority-large}} = 4.75, SD = 2.37, M_{\text{majority-small}} = 3.97, SD = 2.41, F(1, 194) = 5.18, p = .024; \eta^2 = .026$ ).

**Diagnosticity of Early-Stage Contribution Information.** To obtain support for our theory that social relationship inferences influence the diagnosticity of prior funders' contributions, we evaluated participants' responses to our diagnosticity measures, using the average across the three measures (Cronbach's  $\alpha = .834$ ). As

expected, an ANOVA revealed a significant difference in diagnosticity rating between the two conditions ( $F(1, 194) = 9.08, p = .003; \eta^2 = .045$ ). Compared with those in the majority-small condition ( $M = 4.16, SD = 1.37$ ), participants in the majority-large condition ( $M = 3.59, SD = 1.28$ ) perceived other funders' contributions as less diagnostic.

**Contribution Decision.** We examined participants' choices of contribution options (\$0 vs. \$10 vs. \$100), with the expectation that contribution rates in the majority-small condition would be higher than those in the majority-large condition. The percentages of participants who chose to contribute \$0, \$10, and \$100 were 66.0%, 25.5%, and 8.5%, respectively, in the majority-large condition and 51.0%, 41.2%, and 7.8%, respectively, in the majority-small condition ( $\chi^2(2) = 5.47, p = .065$ ). We further recoded participants' choices according to whether they chose to contribute (0 = not contribute, 1 = contribute). The results of a binary logistic regression analysis show that participants in the majority-small condition were significantly more likely to contribute than were those in the majority-large condition (49% vs. 34%,  $\chi^2(1) = 4.51, p = .034$ ).

**Mediation Analyses.** We conducted a series of mediation analyses to examine the psychological mechanism underlying the *Small Predicts Large* effect. First, a bootstrapping model (model 4, Preacher et al. 2007)—with prior-contribution condition as independent variable, binary contribution decision (contribute vs. not contribute) as dependent variable, and relationship inference as mediator—suggested that the effect of prior-contribution condition on contribution choice was mediated by participants' belief of whether early funders were likely to be the entrepreneur's friends, relatives, or acquaintances ( $b = 0.27, SE = 0.13, 95\% \text{ CI: } 0.04\text{--}0.56$ ). A second bootstrapping model with prior-contribution condition as independent variable, binary contribution choice as dependent variable, and perceived diagnosticity as mediator suggested that the effect of prior-contribution condition on contribution choices was also mediated by information diagnosticity ( $b = 0.39, SE = 0.14, 95\% \text{ CI: } 0.14\text{--}0.69$ ). Finally, a serial mediation analysis (PROCESS Model 6, Preacher et al. 2007) examining the mediational path of “prior-contribution condition—relationship inference—perceived information diagnosticity—contribution choice” was also significant and in line with our expectations ( $b = 0.106, SE = 0.058, 95\% \text{ CI: } 0.01\text{--}0.24$ ). Thus, the results of this analysis suggest that, when most prior funders have contributed large amounts to an early-stage crowdfunding campaign, people tend to infer that these funders have a close social relationship with the entrepreneur, which in turn decreases the diagnosticity of prior funders' behavior and discourages potential funders from contributing.



In sum, experiment 3 provides additional support to our conceptualization. First, using recall measures, we showed that participants naturally paid attention to the amounts of money other funders contributed to a crowdfunding project. Second, thought-listing results revealed that, compared with participants in the majority-small condition, those in the majority-large condition were more likely to infer social relationships between the entrepreneur and prior funders. Furthermore, we not only reconfirmed the *Small Predicts Large* effect but also identified an underlying mechanism. Specifically, the effect was mediated by social relationship inferences and consequent perceived diagnosticity of prior funders' contributions.

## EXPERIMENT 4

To further support our proposition that relationship inference mediates the *Small Predicts Large* effect, experiment 4 used a process-by-moderation approach (Spencer, Zanna, and Fong 2005), in which we directly manipulated the accessibility of relationship inference. Specifically, one group of participants was encouraged to "correct" their relationship inferences prior to their contribution decisions. We predicted that the *Small Predicts Large* effect would be attenuated when participants no longer used early contribution amounts to infer the relationships between the entrepreneur and existing funders. Finally, experiment 4 adopted a new stimulus and replicated the *Small Predicts Large* effect when the reward was nominal (e.g., thank-you notes) rather than tangible.

### Method

Two hundred thirty-five participants were recruited through MTurk ( $M_{\text{age}} = 35.91$ ; 46% female). We randomly assigned each participant to one of the four conditions: 2 (prior-contribution condition: majority-small contribution vs. majority-large contribution)  $\times$  2 (relationship inference correction condition: corrected vs. not corrected).

Participants read a detailed description of how crowdfunding works and then read about a specific crowdfunding campaign in which the entrepreneurs were raising funds to develop Travis, an instant translation smartphone application (web appendix K). We informed participants that the entrepreneurs were offering a personalized thank-you letter in exchange for a \$10 contribution and a personal acknowledgement in the application's "Special Thanks" section in exchange for a contribution of \$50 or more. Then, all participants read that the campaign had been launched on the crowdfunding website a day earlier and that, on the day of the launch, 100 funders had contributed to the project and 5% of the fundraising goal had been raised. In addition, participants in the majority-small contribution condition (vs. majority-large contribution condition) were told that a majority of all funders who had contributed to the

crowdfunding campaign on the day of its launch contributed a small amount of \$10 (vs. a large amount of \$50 or above).

Next, we manipulated relationship inferences. Participants in the relationship-inference-corrected condition were presented with a brief article about an academic study that had supposedly examined funders' identity in the early stages of crowdfunding campaigns. According to the article, the study had found that, contrary to people's belief that entrepreneurs ask their friends or relatives to "seed" investments in the early stages, the majority of early funders are actually *total strangers* to the entrepreneurs (appendix F). Participants in the relationship-inference-not-corrected condition, like participants in prior experiments, did not read this article.

To confirm that exposure to the article about funders' identity affected the extent to which participants relied on relationship inferences, we conducted a manipulation check using a separate pretest with 99 participants ( $M_{\text{age}} = 38.97$ ; 48% female), and a setup similar to that described for the current experiment. In this test, among participants who were not shown the article, participants in the majority-large condition were significantly less likely than participants in the majority-small condition to agree with the following statement: "The majority of the funders who have contributed \$10 (majority-small condition)/\$50 (majority-large condition) are most likely total strangers to the project initiators" ( $M_{\text{majority-small}} = 5.16$ ,  $SD = 1.93$  vs.  $M_{\text{majority-large}} = 3.87$ ,  $SD = 1.72$ ,  $F(1,95) = 8.75$ ,  $p = .001$ ). In contrast, among participants who were shown the article (i.e., participants in the relationship-inference-corrected condition), this difference was found to be only marginally significant ( $M_{\text{majority-small}} = 6.05$ ,  $SD = 0.95$  vs.  $M_{\text{majority-large}} = 5.23$ ,  $SD = 1.60$ ,  $F(1,95) = 2.82$ ,  $p = .096$ ).

Finally, we asked participants to indicate on a slider bar the amount they intended to contribute (\$0–\$100). All participants responded to background questions.

## Results and Discussion

**Contribution Amount.** We examined the amounts participants intended to contribute (ranged from \$0 to \$100;  $M = \$15.87$ ,  $SD = 22.24$ ) across conditions. We expected that the *Small Predicts Large* effect would be attenuated among participants who had been discouraged from using early contribution amounts to infer relationships between the entrepreneur and existing funders (relationship-inferences-corrected condition). First, a Kolmogorov–Smirnov test showed that the distribution of contribution amount deviated significantly from normal ( $D = .31$ ,  $p < .001$ ). Therefore, we log-transformed this measure in subsequent analyses. Then, a 2 (prior-contribution condition: majority-small contribution vs. majority-large contribution)  $\times$  2 (relationship inference correction condition: corrected vs.

uncorrected) Analysis of Variance (ANOVA) showed a significant interaction effect on the contribution amount ( $F(1, 231) = 3.99, p = .047; \eta^2 = .017$ ). Specifically, among participants in the relationship-inference-not-corrected condition, those in the majority-small-contribution condition offered larger contribution amounts ( $M = 0.93, SD = 0.61$ ) than did those in the majority-large-contribution condition ( $M = 0.70, SD = 0.69, F(1, 231) = 3.65, p = .057$ ), in line with prior experiments. In contrast, in the relationship-inference-corrected condition, the effect was attenuated: no significant difference was found in contribution amount between the majority-small contribution condition ( $M = 0.77, SD = 0.63$ ) and the majority-large contribution condition ( $M = 0.88, SD = 0.66, F(1, 231) = .83, p = .362$ ).

*Whether to Contribute.* To test the robustness of the attenuation of the *Small Predicts Large* effect, we further recoded that the amount participants were willing to contribute into a binary variable that reflected whether participants were willing to contribute (0 = zero amount [32%], 1 = nonzero amount [68%]). A binary logistic regression of the binary variable as a function of prior-contribution condition (0 = majority small, 1 = majority large) and relationship inference correction condition (1 = relationship inference corrected, 2 = relationship inference not corrected) revealed a significant two-way interaction (Wald = 5.19,  $p = .023$ ). Specifically, among participants in the relationship-inference-not-corrected condition, participants in the majority-small contribution condition were significantly more willing to contribute to the project (79%) than were participants in the majority-large contribution condition (56.40%) ( $\chi^2(1) = 6.93, p = .008$ ). In contrast, in the relationship-inference-corrected condition, the effect was attenuated: no significant difference was found in the contribution decision between the majority-small contribution condition (66.10%) and the majority-large contribution condition (71.20%) ( $\chi^2(1) = .35, p = .552$ ).

The results of experiment 4 confirm that a majority of small (rather than large) early-stage contributions can have a positive effect on the dollar amount potential funders are willing to contribute to a campaign and on potential funders' likelihood of contributing at all. More importantly, the findings provide direct evidence that the *Small Predicts Large* effect is driven by potential funders' inferences regarding the relationships between the entrepreneur and existing funders. When potential funders were explicitly informed that early funders of crowdfunding campaigns are likely to be strangers to the entrepreneur, the *Small Predicts Large* effect diminished. Interestingly, among participants in the relationship-inference-corrected condition, we did not observe a reversal of the *Small Predicts Large* effect: that is, though participants in the majority-large condition showed directionally higher willingness to contribute compared with participants in the majority-small

condition, the difference between conditions was not significant. This result may suggest that the article that participants read attenuated their social relationship inferences yet did not eliminate them altogether. Indeed, this idea is supported by the results of our separate manipulation check.

## EXPERIMENT 5

Previous experiments demonstrated the existence of the *Small Predicts Large* effect, as well as the mediating role of relationship inferences. Experiment 4 further showed that it is possible to attenuate the *Small Predicts Large* effect by "correcting" individuals' tendency to make such inferences. In experiment 5, we explored an alternative approach to diminish prospective funders' tendency to make social relationship inferences based on prior funders' contribution amounts. Specifically, we suggest that individuals might make such inferences because they provide an easily accessible explanation for why an individual would want to contribute a large amount of money to a newly launched project. If, however, another justification for large-amount contributions is available—such as the opportunity to receive a very appealing reward in exchange for contributing a large amount of money—people may become more likely to attribute large-amount contributions to prior funders' desire to receive a reward and will thus be less likely to infer social connections between the entrepreneur and those early funders. To test this proposal, in this experiment, we manipulated the presence or absence of an attractive reward in exchange for a large contribution. We predicted that the presence of such a reward would provide a readily available justification for large-amount contributions and thereby eliminate the *Small Predicts Large* effect. In addition, a factor that might influence the *Small Predicts Large* effect is participants' levels of familiarity with crowdfunding. In this study, we also tested whether the effect holds after controlling for participants' familiarity level.

## Method

Two hundred five participants were recruited through an online subject pool ( $M_{\text{age}} = 26.62$ ; 64% female). We randomly assigned each participant to one of the four conditions: 2 (prior contributions: majority-small contributions vs. majority-large contributions)  $\times$  2 (an attractive reward: absent vs. present).

We asked participants to read a detailed description of how crowdfunding works and then asked them to read about a specific crowdfunding campaign. All participants viewed a crowdfunding webpage for an independent film initiated by a group of young filmmakers. Participants were told that this project had recently been posted on a crowdfunding website and were asked to review the project as if they were potential funders.

The campaign webpage provided visual and verbal descriptions of the project. We told all participants that the project had been created 1 day ago and that there were 29 days to go until the crowdfunding campaign ended. In the attractive-reward-absent condition, participants were told that, in exchange for a pledge of \$20 (in local currency), they would receive a set of rewards including a password-protected link to the movie on its release date, a digital movie poster, and five digital movie stills. For a pledge of \$400 (local currency), they would receive a movie DVD, 5 digital posters, 20 digital stills, and special acknowledgement on the movie's website. Those in the attractive-reward-present condition, however, saw a highly attractive reward associated with a large-amount contribution. Specifically, for a pledge of \$20, participants were offered the same reward as those in the attractive-reward-absent condition; however, in exchange for a pledge of \$400, in addition to the reward in the attractive-reward-absent condition, participants would also receive two movie tickets and an invitation to visit the filming location and interact with the production team.

In the majority-small condition, the webpage showed that 5 of 6 funders had pledged \$2 and that 1 of 6 funders had pledged \$400 (total amount raised: \$500). In the majority-large condition, the webpage showed that 1 of 6 funders had pledged \$20 and that 5 of 6 funders had pledged \$400 (total amount raised: \$2,020). All participants were asked to carefully read the webpage and indicate their willingness to contribute to this crowdfunding project, on a 10-point scale from 1 (not at all) to 10 (very much). They also indicated their familiarity with the crowdfunding concept on a 7-point scale from 1 (not at all familiar) to 7 (very familiar). Finally, participants responded to background questions.

## Results and Discussion

**Manipulation Checks.** To confirm our manipulations of small versus large contributions and the attractiveness of a reward, we carried out a pretest involving an independent sample from the same participant pool. Participants ( $n = 143$ ;  $M_{\text{age}} = 27.07$ ; 64% female) were each randomly assigned to view the crowdfunding project in one of the four experimental conditions. Then, we used the same measures used in prior experiments to examine whether participants perceived a contribution of \$20 as a relatively small amount and a contribution of \$400 as a relatively large amount. To check whether the reward offered in the attractive-reward-present condition was indeed attractive, we asked participants to rate the attractiveness/interestingness/good-value-for-money of each reward associated with \$20 and \$400 contributions on 7-point scales from 1 (not at all) to 7 (very much). The ratings were highly correlated ( $\alpha_{20} = .92$ ;  $\alpha_{400} = .91$ ) and, therefore, were averaged to create an index of reward attractiveness

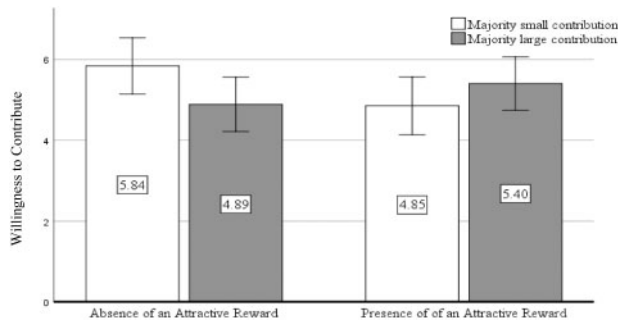
associated with the small and large contributions, respectively.

As expected, a repeated-measures analysis with the amount of contribution (\$20 vs. \$400) as within-subject variable, prior-contribution condition and the attractiveness of a reward as between-subject variable, and perceived size of the contribution as dependent variable revealed that participants perceived a contribution of \$400 ( $M = 5.81$ ,  $SD = 1.26$ ) as significantly larger than a contribution of \$20 ( $M = 2.59$ ,  $SD = 1.36$ ;  $F(1, 139) = 508.49$ ,  $p < .001$ ,  $\eta^2 = .79$ ). In addition, there was a significant interaction of contribution amount and prior-contribution condition ( $F(1, 139) = 6.17$ ,  $p = .014$ ,  $\eta^2 = .04$ ), such that participants in the majority-small condition perceived a \$400 contribution as larger than did participants in the majority-large condition ( $M_{\text{majority-small}} = 6.04$ ,  $SE = 0.14$ ;  $M_{\text{majority-large}} = 5.56$ ,  $SE = 0.15$ ;  $F(1, 139) = 5.27$ ,  $p = .023$ ,  $\eta^2 = .04$ ). No other significant effects were found. In addition, we carried out ANOVAs on the attractiveness of each reward as a function of prior-contribution condition and attractive-reward condition. We expected that, in the presence of an attractive reward, the rating of attractiveness would be higher. Indeed, ANOVA on participants' perceptions of the reward offered in exchange for the large amount revealed a significant main effect of attractive-reward condition ( $F(1, 139) = 4.42$ ,  $p = .037$ ,  $\eta^2 = .03$ ). Specifically, compared with participants in the attractive-reward-absent condition, participants in the attractive-reward-present condition reported that the reward offered for a pledge of \$400 were more attractive ( $M_{\text{attractive-reward-present}} = 4.93$ ,  $SE = 0.17$ ;  $M_{\text{attractive-reward-absent}} = 4.43$ ,  $SE = 0.17$ ). Neither the main effect of prior-contribution condition nor the interaction effect was significant. Moreover, in a separate ANOVA on participants' perceptions of the attractiveness of the reward offered in exchange for \$20, none of the main or interaction effects was significant ( $F_s < 1$ , NS). The pretest results thus confirm that our manipulations of contribution amount and justification were successful.

**Willingness to Contribute.** As discussed earlier, we predicted that the presence of attractive reward would provide a readily available justification for large-amount contributions and thereby eliminate the *Small Predicts Large* effect. To test it, we carried out an ANOVA in which willingness to contribute was the dependent variable, and prior-contribution condition and the presence of attractive-reward condition were predictors. In line with our predictions, only the interaction effect was significant ( $F(1, 201) = 4.67$ ,  $p = .032$ ;  $\eta^2 = .023$ ). As shown in figure 1, in the attractive-reward-absent condition, we replicated our prior findings: participants in the majority-small contribution condition were more willing to contribute ( $M = 5.84$ ,  $SE = 0.35$ ) than were participants in the majority-large contribution condition ( $M = 4.89$ ,  $SE = 0.34$ ,  $F(1, 201) = 3.79$ ,  $p = .053$ ,  $\eta^2 = .018$ ). In contrast, in the attractive-reward-

FIGURE 1

WILLINGNESS TO CONTRIBUTE AS A FUNCTION OF PRESENCE OF AN ATTRACTIVE REWARD



present condition, the effect was eliminated: we found no significant difference in willingness to contribute between the majority-small contribution condition ( $M = 4.85$ ,  $SE = 0.36$ ) and the majority-large contribution condition ( $M = 5.40$ ,  $SE = 0.34$ ,  $F(1, 201) = 1.24$ ;  $p = .267$ ). In addition, we ran an ANCOVA in which participants' familiarity level with the crowdfunding concept was included as a covariate. Familiarity level had a positive effect on willingness to contribute ( $M = 4.54$ ,  $SD = 1.60$ ;  $F(1, 200) = 4.98$ ,  $p = .027$ ;  $\eta^2 = .024$ ), such that those with higher familiarity were more prone to contribute to the project regardless of prior-contribution and attractive-reward conditions. Most importantly, as expected, the *Small Predicts Large* effect remained stable after controlling for participants' familiarity level ( $F(1, 200) = 5.21$ ,  $p = .023$ ;  $\eta^2 = .025$ ).

Taken together, the results of experiment 5 point to a boundary condition for the *Small Predicts Large* effect. Specifically, they suggest that the effect is likely to be observed when there is no obvious explanation for early funders' large-amount contributions, but that the effect is eliminated when a handy justification for these contributions is provided. These results suggest that potential funders who observe majority-large contributions at the early stages of a campaign seek out explanations for these contributions and that inferring a social relationship between the entrepreneur and prior funders provides an easily accessible explanation that funders are likely to rely on. Yet, when an alternative explanation is provided (in our case, a highly appealing reward for large contributions), participants are willing to accept that explanation instead and, thus, become less likely to infer that early large contributions are made by the entrepreneur's social connections.

Finally, in this study, we also found that the *Small Predicts Large* effect held even when we controlled for participants' familiarity with crowdfunding, suggesting that the effect is not restricted to people who are highly

familiar with crowdfunding. It is also possible, however, that the finding is due to the low variation in participants' experience. Among our participants, a majority (74%) reported high familiarity ( $>4$  out of 7) with crowdfunding, consistent with prior research findings on modern consumers' familiarity with crowdfunding platforms (Zvilichovsky, Danziger and Steinhart 2018).

## GENERAL DISCUSSION

Our research shows that people are more (vs. less) likely to contribute to a newly launched project when early contributions mainly comprise relatively small (vs. large) amounts. We obtained support for this *Small Predicts Large* effect from an analysis of real-world large-scale crowdfunding data and an incentive-compatible experiment in which we gave participants real money to contribute to a project and receive a reward in return. In four additional experiments, we showed that the *Small Predicts Large* effect is driven by potential funders' inferences regarding the social relationships between prior funders and the entrepreneur: When contributions made at the early stages of a crowdfunding campaign mainly comprise relatively large amounts, a potential funder is likely to infer that the contributions have come from the entrepreneur's friends or relatives and thus she becomes less likely to interpret these contributions as signals of others' true evaluations of the product. This decreased diagnosticity of prior contributions, in turn, reduces the potential funder's willingness to contribute. However, our findings suggest that, if the prevalence of large contributions can be easily justified, the *Small Predicts Large* effect will be eliminated.

Our experiments ruled out several alternative explanations for the *Small Predicts Large* effect. Specifically, we showed that the effect is not driven by potential funders' perceptions of the extent to which their help to the entrepreneur is impactful; nor is it driven by funders' perceptions of the quality of the project or of the likelihood that the project will achieve its fundraising goal, or by potential funders' attitudes toward the entrepreneur. In contrast, our mediation analysis (experiments 2 and 3) provided strong support for our conceptualization based on relationship inference making.

## Theoretical Contributions

From a theoretical perspective, our research contributes to a better understanding of the role of an entrepreneur's friends and family in crowdfunding success. Prior research suggests that contributions made by friends and family in the early stages of a crowdfunding campaign create positive fundraising momentum (Barnett 2014; DesMarais 2013; Kordova 2015). However, our study shows that an entrepreneur's reliance on friendship giving can trigger unexpected responses among potential funders. In particular,



we show that many potential funders are aware, to some extent, that entrepreneurs adopt this strategy and when faced with (presumed) evidence of friendship giving—specifically, when the majority of early contributions are large amounts—they infer that funders who made these contributions are socially connected to the entrepreneur and thus become less willing to contribute.

Second, our findings add to the literature on herding behavior. This line of research has shown that people generally tend to “follow the crowd,” such that they engage in similar behavior (Banerjee 1992; Bikhchandani et al. 1992; Froot et al. 1992; Raafat et al. 2009). Herding behavior is observed in the context of crowdfunding in particular; that is, people follow the crowd when they observe that a project has attracted a large number of funders and large cumulative contribution amounts (regardless of the behavior of the individual funders) (Agrawal et al. 2011; Herzenstein et al. 2011; Zhang and Liu 2012). However, our research suggests that people are quite prudent and reluctant to herd at the early stages of a crowdfunding project. Specifically, they carefully examine others’ contribution amounts, and if these contribution amounts send a signal of the funders’ relationship with the entrepreneur, people may choose not to herd, but as time goes by and more people contribute to the project, people become more likely to herd, probably because more diagnostic information about the crowdfunding campaign has become available, and, at the same time, the existing base of funders has presumably become more heterogeneous, which reduces the possibility that existing funders are socially connected to the entrepreneur.

Prior research has shown that people are more likely to follow a herd consisting of their own friends than to follow strangers (Lee et al. 2015; Liu et al. 2015). Our research suggests that, in a crowdfunding scenario, people are particularly reluctant to follow a herd that presumably consists of other people’s friends. This reluctance stems from the fact that, in such cases, “the herd’s” behavior no longer serves as a market signal of the project’s true value.

## Practical Implications

Nowadays, both the mass media and crowdfunding platforms encourage entrepreneurs to ask their friends and family for funding support, especially in the early stages of a crowdfunding campaign. However, our research suggests that entrepreneurs should be cautious in doing so. Specifically, entrepreneurs should refrain from asking for large-amount contributions from a small number of acquaintances, since, according to our findings, such friendship-giving behavior may be detected by potential funders and discourage them from contributing. Soliciting a large number of small contributions, in contrast, may be a more effective means of building early momentum.

Our finding that social relationship inferences triggered by early supporters’ behavior may negatively influence

others’ likelihood of supporting an online campaign may also have general implications for contexts other than crowdfunding. One example would be consumers’ online voting behavior. Nowadays many companies organize marketing activities such as photo competitions or crowdsourcing campaigns in which online users vote for a winner, who receives an attractive prize, but certain voting patterns, such as a sudden large influx of early votes for a specific candidate, or a large number of votes coming from the same geographic region, may lead consumers to infer that the voters have a social relationship with the candidate. The findings of our research suggest that this inference may demotivate other potential voters. Online auctions are another setting in which existing supporters might send negative signals. When the first bids are relatively large amounts (rather than small amounts), people may infer that friends of the bidding initiator may be trying to purposefully raise the bidding price and this assumption may negatively influence consequent bidding behaviors (e.g., the last price, number of bidders, sniping behavior).

In sum, our findings suggest that initiators and candidates of online campaigns should not only focus on gaining more support but also carefully consider the source of this support. In particular, they should seek support that is unlikely to trigger social relationship inferences, as such inferences might discourage others from providing future support.

Our analyses further indicate that funders of crowdfunding campaigns naturally pay attention to a variety of items of information on crowdfunding platforms, and that they make inferences based on this information. Our findings reveal that, in certain cases (e.g., at the early stages of the campaign), these inferences can hurt the crowdfunding project. Therefore, designers of crowdfunding platforms should be careful about the information disclosed on their platforms. For example, they should consider carefully which information to disclose publicly, and at which stages of the fundraising campaign. These issues constitute interesting directions for future research.

## Future Research Directions

Our research demonstrated that, in the early stages of a crowdfunding campaign, potential funders use individual funders’ contribution amounts as a basis for relationship inferences. Future research might investigate other potential relationship signals in crowdfunding contexts, such as fundraising pace (e.g., concentrated or sporadic) or the comments funders leave for the entrepreneur on the crowdfunding platform. Research might also identify which information items potential funders tend to focus on at different stages of a crowdfunding campaign. For example, entrepreneurs’ previous fundraising experience may serve as an important signal at the early stages of a crowdfunding

campaign, whereas updates regarding a project’s progress may become more important at later stages.

Future research may also provide further insights into the interplay between individual differences and social relationship inferences in affecting people’s willingness to contribute to a crowdfunding campaign. For example, the need for uniqueness (Snyder and Fromkin 1977, 1980) and power perception (Rucker, Galinsky, and Dubois 2012) may motivate consumers to manifest their differences relative to others and, therefore, be less likely to follow the behavior of early funders. Thus, it may be interesting to explore whether consumers’ individual differences moderate the *Small Predicts Large* effect.

Finally, our research used online social network data to show that entrepreneurs’ online friends contributed more money and contributed earlier than strangers contribute. However, the data did not allow us to test the causality between online friendship and crowdfunding contributions. Therefore, future research might further examine the role

of online friendship in motivating contributions to crowd-funding projects.

DATA COLLECTION INFORMATION

The first author collected data for the field study. The third author collected data for experiment 1. The second author and the third author collected data for experiments 2–4. The first author and the second author collected data for experiment 5. The field data were collected on a Chinese crowdfunding platform, DemoHour, between July 31, 2011, and August 30, 2014. Experiment 1 was conducted in 2019 in Israel. Experiments 2–4 were conducted in 2018, 2019, and 2017 respectively. The participants were US citizens from Amazon MTurk. Experiment 5 was conducted in 2019. The participants were Chinese participants from sojump.com. The three authors jointly conducted data analyses.

APPENDICES

APPENDIX A

APPENDIX B

FIGURE A.1

A PROJECT ON THE DEMOHOUR WEBSITE



**TABLE B.1**  
DESCRIPTIVE STATISTICS OF THE FIELD DATA (902 PROJECTS)

	Mean	Median	SD	Minimum	Maximum
Funded (1 = yes)	0.56	1	0.50	0	1
Funding goal (¥: RMB; \$: USD)	¥20,972.96 (\$2,990.03)	¥8,800 (\$1,254.58)	¥91,513.09 (\$13,046.65)	¥200 (\$28.51)	¥2,000,000 (\$285,100)
Total amount raised (¥: RMB; \$: USD)	¥32,482.65 (\$4,630.92)	¥4,182 (\$596.21)	¥125,507.10 (\$17,893.03)	¥0 (\$0)	¥1,715,688 (\$244,599)
Duration (days)	43	40	17.57	6	150
Total number of funders	115	36	339.09	0	5,258
Per funder contribution amount to a project (¥: RMB; \$: USD)	¥218.45 (\$31.14)	¥115.39 (\$16.45)	¥373.00 (\$53.18)	¥4.11 (\$0.59)	¥4,800 (\$684.32)

## APPENDIX C

**TABLE C.1**  
ONLINE FRIENDS' CONTRIBUTIONS

	4 Contribution amount	5 Timewindow
Friends	.267*** (0.02)	-.017*** (0.01)
Goal	-.000** (0.00)	.000*** (0.00)
Duration	.006*** (0.00)	-.003*** (0.00)
Art	.106 (0.10)	-.018 (0.02)
Books	.146* (0.08)	-.055*** (0.02)
Charity	-.277*** (0.07)	-.040** (0.02)
Design	.182** (0.07)	-.028 (0.02)
Music	-.203** (0.09)	-.093*** (0.02)
Technology	.405*** (0.08)	-.035* (0.02)
Video	.116 (0.08)	-.052** (0.02)
FirstAmount	.068*** (0.01)	-.105*** (0.00)
FirstFunder	-.001*** (0.00)	-.000*** (0.00)
DailyAmount	.018*** (0.00)	-.042*** (0.00)
AccuAmount	.097*** (0.01)	.192*** (0.00)
<i>F</i>	109.81***	664.67***
<i>R</i> -squared	.654	.694
<i>N</i>	13,338	13,338

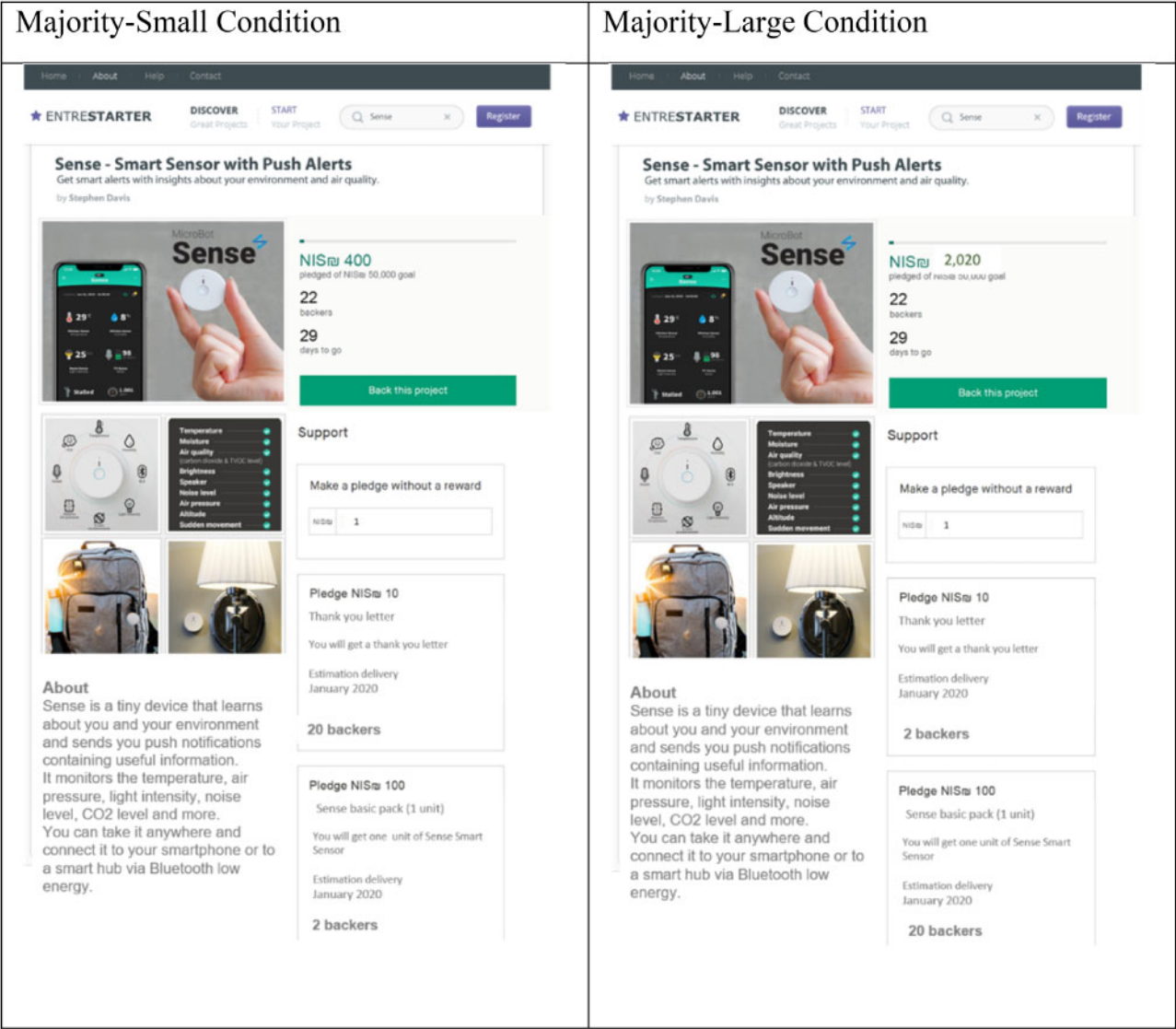
NOTES—Standard errors in parentheses. Models 4 and 5 are estimated with fixed effects, which are not reported to save space; \*\*\**p* < .01, \*\**p* < .05, \**p* < .1.

APPENDIX D

APPENDIX E

FIGURE D.1

EXPERIMENT 1—STIMULI





**TABLE E.1**  
CATEGORIES OF COMMENTS<sup>A</sup>

Categories	Majority-large condition (%)	Majority-small condition (%)	$\chi^2(1)$	p-Value
Comments on the social relationship between the existing funders and the entrepreneur (e.g., friends, relatives, or acquaintances)	34.04	6.86	22.67	<.001
Evaluation of the project (e.g., good/bad, likelihood of success)	46.81	50.00	.20	NS
Comments on the affordability of the amount contributed	4.26	36.27	30.32	<.001
Comments on the reward (e.g., attractiveness of the reward)	37.23	29.41	1.35	NS
The funders wanted to support the project	23.40	16.67	1.39	NS
Other comments	10.64	17.65	1.96	NS

<sup>A</sup>Because each thought might contain multiple meanings, the total percentage coding of the categories exceeds 100%.

## APPENDIX F: EXPERIMENT 4: STIMULI

### Some Truths about Crowdfunding Projects

In the most recent issue of the *Harvard Business Review*, marketing professors Anthony Taylor and Jane Ballard presented their research on donors/backers' identity in the early stages of crowdfunding projects. Their large-scale study shows that, despite people's lay belief that entrepreneurs ask their friends or families to "seed" investments in the early stages of crowdfunding projects, the majority of the initial donors are actually total strangers to the entrepreneur.

"When a new crowdfunding project is launched, entrepreneurs approach people with whom they do not have prior acquaintance to show support for the project," explained Prof. Taylor. "A lot of strangers invest in the project to show their support." Based on their findings, the researchers concluded that investments in the early stages of a crowdfunding project are most likely made by people who have no relationships with the entrepreneurs.

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