

The Narcissism of Crowdfunding Entrepreneurs

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Abstract

The narcissism of established CEOs is known to affect corporate decisions and outcomes. We study the impact of crowdfunding entrepreneurs' narcissism on campaign design and campaign outcome, formulating hypotheses for both aspects. We distinguish between ego-defensive narcissism and grandiose/arrogant narcissism in the hypotheses for campaign design. We find that more narcissistic crowdfunding entrepreneurs set less ambitious goals, consistent with ego-defensive narcissism. We further document that more narcissistic entrepreneurs are less successful than other entrepreneurs, suggesting that crowdfunders recognize the narcissistic tendencies of entrepreneurs and are more reluctant to support them. Our results are consistent with recent conceptual research, suggesting that there are specific effects of narcissism in the early-stage entrepreneurial context.

Keywords: Entrepreneurial Finance, Crowdfunding, Narcissism

1. Introduction

Narcissism is known to affect managerial decisions and firm outcomes. A series of studies has demonstrated the impact of CEO narcissism on various characteristics of large firms (see, e.g., Chatterjee and Hambrick, 2007; Aktas et al., 2016 and Petrenko et al., 2016). One difficulty in studying the effects of narcissism in the large-firm context is that top managers typically have reputations built over the many years of their career. In contrast, crowdfunding entrepreneurs are largely an unknown quantity – they are typically novices and do not have a strong track record. It follows that investors base their decision to support projects on observable characteristics of newcomers, rather than on their previous performance or reputation. Crowdfunding therefore provides us with a relatively uncluttered context in which to examine the effects of narcissism on managerial decisions and project success.

Rewards-based crowdfunding in particular provides an ideal setting in which to examine the effects of narcissism. First, crowdfunded projects are typically small and under the direct control of the crowdfunding entrepreneur. That the success of the project hinges on the entrepreneur is therefore beyond dispute. This leaves him or her more exposed to the risk of being stigmatized by a failure (Burchell and Hughes, 2006; Landier, 2005; Simmons, Wiklund and Levie, 2014) and thus more concerned by how he/she is perceived by others. Second, perceptions of investors are likely to be more important in rewards-based crowdfunding projects, because campaign supporters are not interested in a monetary return on investment (at best, they may receive the product resulting from the project) but on the warm glow that comes with helping the underdog (McGinnis and Gentry, 2009). Finally, the entire campaign is conducted on the internet, affording opportunities for potential backers to assess the characteristics of the founder.

We define narcissism in the personality psychology tradition, which considers it to be a normal part of an individual's psychological makeup. Consistent with the prevailing view, we assume narcissism is a continuously-distributed personality trait (Campbell and Foster, 2007). Narcissism is usually associated with grandiose behaviors (American Psychiatric Association, 2013; Emmons, 1987). However, narcissists may also suffer from fragile self-esteem which causes them to engage in ego-defensive behaviors, consistent with approach-avoidance motivations (Foster and Brennan, 2011). We formulate alternative hypotheses for the effect of narcissism on campaign design. If grandiose narcissism is on average more prevalent among crowdfunding entrepreneurs, we expect higher goals and a greater probability of choosing the all-or-nothing (AON) funding model. If ego-defensive narcissism is prevalent on average, we would predict lower goals and a greater probability of keep-it-all (KIA) funding model. Previous research suggests that more narcissistic entrepreneurs are less successful (Navis and Ozbek, 2016; Klotz and Neubaum, 2015). Crowdfunding campaigns can be assimilated with early-stage entrepreneurial projects, in which narcissism has been described as particularly damaging (Tucker et al., 2016). We therefore posit that higher levels of narcissism are associated with less successful crowdfunding campaigns.

To test our hypotheses, we collect data on crowdfunding campaigns set up on Indiegogo, an internationally active rewards-based platform. We capture narcissism using patterns in first person pronoun usage. Prior research in psychology shows a positive (negative) correlation between first person singular (plural) pronouns and narcissistic personality inventory (NPI) scores. Following Chatterjee and Hambrick (2007) and Aktas et al. (2106), we estimate a narcissism score as the ratio of first person singular pronouns to total first person pronouns. We are able to estimate the score for crowdfunding entrepreneurs using the descriptive texts provided on Indiegogo. We restrict the sample to projects with at least two team members to ensure that the entrepreneur has a real choice between singular and plural pronouns. This

leaves us with a final sample of 14,125 unique campaigns from the very beginning of the platform launch until November 2013 covering a range of project categories and countries.

Our empirical analysis supports the ego-defensive narcissism hypothesis. Narcissistic entrepreneurs set lower funding goals. This reduces the exposure of the entrepreneur. A lower goal helps the entrepreneur to reach the stated objective and obtain funds, minimizing his/her risk of damaging his/her ego. More narcissistic entrepreneurs are also less successful in their campaign, despite the fact that they set lower funding goals. They are less likely to collect sufficient funds to achieve their set goal, attract fewer backers, and raise less funds in dollars. This finding supports the idea that more narcissistic entrepreneurs tend to be less successful than less narcissistic entrepreneurs and therefore that narcissism is a negative characteristic for nascent entrepreneurs.

Our paper makes several contributions to the existing literature. First, we contribute to the burgeoning literature on crowdfunding by examining how the personality traits of crowdfunding entrepreneurs affect campaign design and outcome. Some studies investigate other aspects such as gender, geographical distance and social capital (Agrawal, Catalini, and Goldfarb, 2015; Colombo, Franzoni, and Rossi-Lamastra, 2014; Hervé, Manthé, Sannajust and Schwienbacher, 2016; Marom, Robb and Sade, 2016; Mohammadi and Shafi, 2015; Mollick, 2014). Others examine the impact of signals and certification as well as funding dynamics (Ahlers, Cumming, Günther and Schweizer, 2015; Hornuf and Schwienbacher, 2015; Kuppuswamy and Bayus, 2014; Mollick, 2014; Ralcheva and Roosenboom, 2016; Vismara, 2015). To the best of our knowledge, our study is the first to investigate the narcissism of crowdfunding entrepreneurs. Second, we provide novel evidence for the effects of narcissism in very early stage ventures, lending support for the theoretical conclusions of Hayes et al. (2015) and Navis (2016). Finally, we implement a novel methodology enabling

us to capture the salient psychological trait of narcissism in a large sample of crowdfunding projects, obviating the need for a survey-based measure.

The remainder of this paper is structured as follows. The next section presents relevant literature and sets out our hypotheses. Section 3 describes the data and provides the main summary statistics of our sample of crowdfunding campaigns. Section 4 presents results. Finally, Section 5 concludes.

2. Literature and Hypotheses

2.1 Narcissism

In the psychology and psychiatry literature, there are two main approaches to narcissism. First, in its most extreme manifestations, it is a pathology described in the fifth edition of the Diagnostic and statistical manual of mental disorders (DSM V) (American Psychiatric Association, 2013). Individuals suffering from Narcissistic Personality Disorder (NPD) display impaired self and interpersonal functioning – they rely on others to maintain their self-esteem, yet lack empathy towards others. This manifests in emotional instability, difficulty in setting realistic goals and a superficial attitude towards others. In addition, NPD individuals display grandiose behaviors, with a strong sense of entitlement and attention-seeking behaviors. Second, narcissism can be considered as a personality trait. In this approach, narcissism is a normal aspect of the personality and can be captured in the general population using questionnaires such as the Narcissistic Personality Inventory or NPI (Emmons, 1987). The trait approach is typified by the work of Raskin and Hall (1979) and Emmons (1987), among others. If we consider narcissism to be a normal personality trait, "*narcissism should be thought of as neither entirely healthy nor unhealthy*" (Campbell and

Foster, 2007, p. 133). Narcissism may be beneficial to the individual but becomes problematic at higher levels because it has a negative effect on social relationships and because a lack of self-awareness affects decision-making (Campbell and Foster, 2007). In our study, we follow the second approach to narcissism and define it as a continuously-distributed normal personality trait, consistent with Campbell and Foster (2007).

2.2 Crowdfunding and Social Networks

Different forms of crowdfunding coexist (Mollick, 2014; Schwienbacher and Larralde, 2012). However, they are generally studied separately, since the way they operate affects the type of compensation obtained by participants and thereby the type of crowd participating in the campaigns. In rewards-based crowdfunding, backers donate a small amount of money in exchange for a pre-determined reward. The latter is often either a t-shirt (or any other type of goody) or the product resulting from the project. The crowd does not therefore base its decision on whether the entrepreneurial project is profitable *per se*, but rather whether they wish to sponsor the entrepreneur's project and "pre-purchase" the product. For instance, McGinnis and Gentry (2009) argue that warm glow crowdfunders may support a project out of empathy for the entrepreneur, as a way to help an underdog against market-dominant firms. Since the sponsoring component is important in any crowdfunding campaign, the crowd's perception of the entrepreneur, including his or her personality traits, is important.

Social networks are extensively used in crowdfunding campaigns (Agrawal, Catalini, and Goldfarb, 2015; Colombo, Franzoni, and Rossi-Lamastra, 2014; Mollick, 2014) - entrepreneurs need to interact with the crowd to attract backers and the entire campaign is run on the Internet. Colombo, Franzoni, and Rossi-Lamastra (2014) find that entrepreneurs' social capital (i.e., the extent of the social network on Facebook and LinkedIn) is crucial to attract the first backers, who affect the behavior of follow-up individuals during the campaign.

Social networks further help alleviate geographical distance between backers and entrepreneurs (Agrawal, Catalini, and Goldfarb, 2015) and help reduce information asymmetries (Lin, Prabhala and Viswanathan, 2013). Vismara (2016) finds that entrepreneurs with higher levels of social capital are more successful at raising the required funds, because those with a more extensive initial social network are more widely known, creating rapid hype for the campaign and generating more early contributions.

Studies in psychology support the idea that the communication used by entrepreneurs during the crowdfunding campaign is likely to be affected by the extent to which they are narcissistic and to provide the crowd with clues as to how narcissistic the entrepreneur is. Clifton (2011) cites research showing that some characteristics of social network communication are associated with narcissism, and that other users are able to detect narcissism based on these characteristics.

2.3 Hypothesis development – narcissism in the early-stage entrepreneurial context

In this section, we discuss characteristics of the narcissism personality trait which are salient for the crowdfunding context and review relevant papers from the entrepreneurship literature, to develop hypotheses about the effect of narcissism on crowdfunding campaign design and success. Hypotheses are summarized in Table 1.

Narcissism implies some behaviors which may appear inconsistent or even contradictory. The grandiose and arrogant side of narcissistic behavior is well-known and appears in both the DSM V (American Psychiatric Association, 2013) and the trait definitions underlying the NPI (Emmons, 1987). It leads highly narcissistic individuals to engage in seemingly risky behaviors and impulsive decision making (Foster et al., 2009; Vazire and Funder, 2006). Such actions are required to enhance their ego. On the other hand, narcissists may suffer from

fragile self-esteem – "...individuals with fragile high self-esteem are defensive and highly reactive to events that threaten their positive attitudes towards themselves" (Ziegler-Hill and Jordan, 2011; p. 105). They may take pre-emptive action and lower their sights if they detect a potential threat to their ego. This forms part of a self-regulatory strategy to protect their fragile self-esteem – "... narcissists seem to defuse potential harms to the self even when these are only potential and before they have had a chance to materialize" (Morf et al., 2011; p. 62). In the psychology literature, these opposing forces of narcissism are characterized as "approach-avoidance motivation" (Foster and Brennan, 2011), with a growing body of empirical evidence for both effects (Morf et al., 2011; Foster and Brennan, 2011).

Campaign design choices by crowdfunding entrepreneurs are likely to be affected differently depending on whether we observe, on average, grandiose/arrogant or ego-defensive narcissistic behaviors. In the former case, we would expect a higher goal to be set and an all-or-nothing campaign type – the arrogant narcissist would enhance his or her ego by taking more risk in the campaign, thereby showing off his/her higher expectations of success. In the latter case, we would expect a lower goal and a keep-it-all campaign type. This would protect the individual from a damaging shock to the ego, by increasing the probability of reaching the stated goal and enabling him/her to keep the funds raised, thereby providing something to show for his/her crowdfunding efforts, even if the project needs to be scaled down.

The hypothesized effects of narcissism on campaign design are consistent with the small number of studies in the entrepreneurship literature which refer to narcissism or related concepts. Baron (1998) references cognitive mechanisms rather than personality traits, but he suggests that some cognitive biases could cause entrepreneurs to make more overconfident predictions about future outcomes. This echoes the risk-taking among narcissists identified by Foster et al. (2009) and is consistent with our hypotheses 1A and 2A. Likewise, Mathieu and

St-Jean (2013) find that narcissism and risk-taking are positively correlated (consistent with Campbell et al., 2004), and that both are positively associated with the intention to start an entrepreneurial project. Haynes et al. (2015) discuss the effects of hubris in the entrepreneurial context. While hubris and narcissism are different concepts, there is some overlap, at least in the pathological dimensions (Owen and Davidson, 2009). Haynes et al. (2015) suggest that hubris translates into an underestimation of the resources required for the project, which would be consistent with our hypotheses 1B and 2B.

There are three requirements for credibly predicting the effect of narcissism on crowdfunding success. First, we need to provide evidence that narcissism is a determinant of the success of crowdfunding ventures. Second, internet users must credibly be able to recognize narcissism from online content. Finally, we need to show that entrepreneur personality is an investment criteria for campaign supporters.

The entrepreneurship literature mainly focuses on the five-factor model of personality, providing fairly consistent results for entrepreneurial propensity (for a review, see the meta-analysis by Zhao and Siebert, 2006), and somewhat mixed findings for entrepreneurial outcomes (Omoredede et al., 2014). The few studies focusing on narcissism are less equivocal and suggest that more narcissistic entrepreneurs are less successful in their entrepreneurial projects, especially in the early stages which concern us in the crowdfunding context. Tucker et al. (2016) discuss dark triad traits and entrepreneurship. They break down the dark triad into its component concepts (Machiavellianism, narcissism and psychopathy) and theoretically model the effect of each component on the different stages of the entrepreneurial process. The authors suggest that in the early stages of the project, narcissism has a negative influence on outcomes because the self-aggrandizing tendencies of highly narcissistic individuals tend to distort their recognition of the project's potential and their attempts to

protect their ego potentially alter their assessment of the project. Navis and Ozbek (2016) theoretically examine the links between psychological characteristics and entrepreneurial entry and success. They posit that more narcissistic entrepreneurs are less able to learn and are therefore less likely to successfully realize their projects. Other papers do not discuss narcissism directly, but consider related concepts. Klotz and Neubaum (2015) consider more generally the dark side of individuals' personality and the relationship with entrepreneurship. They state that "*entrepreneurs driven by more negative personality traits would likely drop out or give up quickly if they did not find immediate rewards*" (p. 9). The work of Haynes et al. (2015) on hubris and entrepreneurship suggests that hubristic individuals are less able to accurately assess the project or the resources required to bring it to fruition. This would potentially jeopardize the success of the project. Overall, the existing literature provides a strong case for the negative impact of narcissism on entrepreneurial success, which is even more pronounced in the early stages of the project.

Recent research in social psychology examines narcissism in the context of online social networks and, more broadly, the internet. More narcissistic individuals tend to post more online material and their social network content enables observers to identify them as more narcissistic (Clifton, 2011). They use the internet as a self-promotion tool and use online communities to explicitly and implicitly regulate their inflated self-concept (Buffardi, 2011). These findings are important to our study because they show that real world narcissistic behaviors, such as those documented in Buss and Chiodo (1991), transfer readily to the virtual world. In addition, Buffardi (2011) cites evidence that web users are able to accurately identify narcissism on the internet from the online content posted by individuals. It therefore seems reasonable to assume that crowdfunding sites provide strong clues about the narcissism of crowdfunding entrepreneurs. Crowdfunders are likely to be able to assess whether an

entrepreneur is narcissistic, based on the online interaction and information content he/she discloses.

We have been unable to find any papers on investor perceptions of the narcissism of crowdfunding entrepreneurs or even traditional entrepreneurs. However, related research on angel investing provides some clues as to how investors may perceive narcissists. In an empirical study, Murnieks et al. (2015) find that angel investors prefer emotional stability and perseverance – characteristics which are certainly not consistent with higher levels of narcissism. The scant evidence available suggests that narcissists are likely to be negatively perceived by potential investors, thereby reducing the likelihood of a successful crowdfunding campaign. We hypothesize that higher levels of narcissism are associated with less successful campaigns and the participation of fewer backers, because narcissists perform less well on entrepreneurial projects and because potential investors are likely to view narcissists with caution as they make their investment decision.

[Table I about here]

3. Data and Summary Statistics

3.1 Narcissism measure

We choose to measure narcissism using first person pronoun usage, estimated as the ratio of first person singular pronouns (I, me, my, mine, myself) to total first person pronouns (first person singular pronouns plus we, us, our, ours, ourselves). This measure is based on a study by Raskin and Shaw (1988), demonstrating a positive correlation between first person singular pronouns and narcissism, and a negative correlation between first person plural pronouns and narcissism.

The first person pronoun measure has four main advantages, both theoretical and empirical. First, its ancestry can be mapped back to founding works in psychology. Freud (1914/1986) defined narcissism following his observations in clinical practice. Over the following decades, a full clinical pattern emerged, now formalized in its latest incarnation in the DSM V (American Psychiatric Association, 2013). In the 1970s and 1980s, researchers developed a survey instrument, the NPI, to capture narcissism in the general population (see, e.g., Raskin and Hall, 1979 and Emmons, 1987). Finally, NPI scores were found to be correlated with observable characteristics such as speech patterns (Raskin and Shaw, 1988). Second, the measure relies on patterns in first person pronoun usage, which can be readily obtained from the texts that crowdfunding entrepreneurs post on their project webpage. Third, the first person pronoun measure is continuous, consistent with the prevailing view in psychology (Campbell and Foster, 2007). Finally, it is possible to estimate the first person pronoun measure using secondary data from the crowdfunding website, which obviates the need to administer questionnaires with the attendant advantages – mainly our ability to estimate the measure for a large number of crowdfunding projects (more than 14,000 observations). While the number of observations does not ensure empirical quality *per se*, we can reasonably assume that our findings are fully representative of crowdfunding entrepreneurs on our source website, and are not an artefact of a small sample size or a low response rate.

The first person pronoun indicator has already been used in samples of CEOs in the finance and strategic management literatures (see Aktas et al., 2016 and Chatterjee and Hambrick, 2007 respectively). It has, however, recently been cast into doubt by Carey et al. (2015) who claim they fail to replicate the original Raskin and Shaw (1988) study. However, closer reading of the Carey et al. (2015) study reveals that they focus only on first person singular pronouns: "*The focus of this paper is on first-person singular only given the strong lay perceptions about I-talk (but not we-talk) indicating narcissism and given that researchers*

have used I-talk (but not we-talk) as an operationalization of narcissism" (p. e8). In research on narcissism and internet usage, Buffardi (2011) cites a study which is consistent with Raskin and Shaw (1988). This evidence is particularly relevant to our study because we use texts from a crowdfunding platform to estimate our measure of narcissism.

3.2 Sample

The initial dataset used in this study is composed of 51,996 crowdfunding campaigns collected from Indiegogo, covering the period from June 2008 to November 2013. We apply some data screens to remain consistent with the existing literature and to avoid extreme values which may bias our analysis. We first drop all unfinished campaigns (4,857 projects) for which the final outcome is unknown. Since we use English language textual analysis, we next drop the 7,419 observations outside the US, Canada and Australia and 996 projects with either a very short descriptive text (less than 400 characters at the 1st percentile) or very large quantity of text (more than 14,270 characters, at the 99th percentile). We further exclude all social- and community-centered campaigns (8,511 projects), which include the following categories on Indiegogo: Health, Community, Animals, Politics and Religion. These types of projects are not centered on a product but on a person or on a group. The project description will therefore likely use pronouns in a specific way which could bias our measure of narcissism. For instance, in campaign centered on the illness of a person, which is a typical campaign in the "health" category, the individual describes his/her illness or his/her life experience in a highly personal way.

Following previous papers on rewards-based crowdfunding (Mollick, 2014; Cumming, Leboeuf and Schwienbacher, 2014), we also exclude campaigns with a funding goal higher than \$200,000 (which corresponds to the 99th percentile in our sample, or 310 projects), since they are generally atypical. Our narcissism measure implies that crowdfunding

entrepreneurs must effectively be able to choose whether to speak in the first person singular or plural. For solo campaigns, it seems difficult to imagine that the entrepreneur would choose to speak in the first person plural. We therefore limit our sample to team projects, which we define as including at least two entrepreneurs (reducing the sample by 15,594 projects). After removing the projects for which no first person pronouns were used at all (184 projects), this leaves us with a final sample of 14,125 observations. All currency amounts (the variables *Goal* and *Total Pledge*) not initially set in US dollars are converted using the semester average currency exchange rate. Variable descriptions are provided in Appendix Table I and further discussed in the next subsection.

3.3 Variables

For each entrepreneurial project, we extract a number of details about campaign design and outcomes. These include the goal, the campaign type (keep-it-all or KIA versus all-or-nothing or AON), the number of team members, the nature of the rewards, non-profit status, the length of the campaign, funds pledged and the number of backers. We are also able to extract soft information, such as texts describing the project, the number of photos, the presence of a video pitch and links to social networks.

Dependent variables:

We test hypotheses 1A/1B and 2A/2B on campaign design by focusing on two important decisions the entrepreneur makes on the Indiegogo platform: the funding goal, measured by $\ln(\textit{Goal})$; and the funding model, captured by the dummy variable *AON Dummy*. Both of these decisions affect the extent to which the entrepreneur bears risk in the campaign (Cumming, Leboeuf and Schwienbacher, 2014). A high funding goal makes success more difficult to achieve, as the entrepreneur needs to attract more backers. Predictions for the

impact of narcissism on the funding goal are provided in Hypotheses H1A and H1B. The AON funding model shifts the risk to the entrepreneur, away from the crowd. In an AON campaign, the crowd does not bear the risk of pledging money to a potentially underfunded project, which could be an outcome under the alternative KIA funding model. Predictions for the impact of narcissism on the funding model are provided in Hypotheses H2A and H2B.

We test Hypothesis H3 on campaign outcomes in three different ways: achievement of the funding goal (the binary variable *Success Dummy*), the total number of backers (the variable *Total Backers*) and the total amount of money pledged by backers (*Total Pledge*) at the end of the campaign.

Variable of interest:

We use texts to estimate a continuous measure of narcissism for team projects. We count the number of first person singular and plural pronouns in texts describing each project and estimate the crowdfunding entrepreneur's narcissism score as the ratio between first person singular pronouns and total first person pronouns in the text.

We create a dummy variable *High Narcissism*, which is equal to one if the narcissism score is greater than 0.5, and zero otherwise. The chosen cutoff of 0.5 has an intuitive interpretation. A value higher (lower) than 0.5 means that, on average, the entrepreneur uses first person singular pronouns more often (less often) than first person plural pronouns.

Control variables:

We add a series of control variables which are known to impact crowd behavior and project outcome. These control variables are classified into three categories: project characteristics, soft information and fixed effects.

The first category includes all measurable project characteristics available. We control for the size of the campaign team as the size of the group may impact the way the leader puts him- or herself forward in the project description. Projects by non-profit organizations tend to influence the behavior of backers, due to the associated tax deductions and an enhanced warm glow effect (Andreoni, 1990). Previous research shows that campaign duration and the number of reward levels offered to backers affect the funding process (Mollick, 2014), leading us to include control variables to capture these campaign characteristics.

The second category consists in measures related to the quantity of soft information provided by the entrepreneur to describe his or her campaign. Soft information reflects the effort that the entrepreneur makes to encourage the participation of potential backers and reduces information asymmetry with the participants. The information can be in the form of a video (*videopitch*), pictures (*gallery*) and a textual description of the project (*full text length*). We also capture the readability of the text using the Automated Readability Index (A.R.I., Senter and Smith, 1967), as a proxy for the ability of a larger crowd to understand the text. A higher A.R.I. value means that a higher level of education is needed to fully comprehend the text. Details of the estimation are provided in Appendix Table I.

For the third category, we include country, semester and category fixed effects. As the crowdfunding market evolves rapidly, the inclusion of semester fixed-effects is more appropriate than year fixed-effects.

To test our hypotheses, we use either OLS regressions or probit models depending on whether the left-hand side variable is a continuous or a binary variable. Robust standard errors are used throughout the analyses.

Descriptive statistics:

Summary statistics are presented in Table II for the full sample and for the subsamples of high and low values of narcissism, based on the cut-off value of a score of 0.5 in our *High Narc.* variable. The final column shows the result of a difference-in-means test between the two subsamples and provides some initial clues about differences between the campaigns of more and less narcissistic entrepreneurs. The mean narcissism score in the full sample is 0.202, meaning that on average there is about one first person singular pronoun used in the project description for five first person plural pronouns. This figure is close to the average narcissism score estimated using the same method in Chatterjee and Hambrick (2007) and Aktas et al. (2016). The range of values is also very broad, with a maximum of 1 and a minimum of 0. At the minimum value, the team leader only uses first person plural pronouns and does not self-reference. On the other hand, the maximum value of 1 means that the team leader only self-references and does not reference the team.

The average funding goal in the full sample is \$13,658, with a median of \$6,000. Consistent with our Hypothesis H1A, more narcissistic entrepreneurs set lower goals than less narcissistic ones (\$11,292 versus \$14,142), and the difference is statistically significant. Consistent with hypothesis H1B, more narcissistic entrepreneurs are more likely to select the AON funding model (4.33% of the campaigns as opposed to 3.58% for less narcissistic entrepreneurs), although the difference is only significant at the 10% level. More narcissistic entrepreneurs' campaigns are less likely to be non-profit oriented and project teams are smaller on average.

The last three rows in Table II show statistics for campaign outcome. The average success rate for meeting the funding goal is 32.6% in the full sample. There is no statistically nor economically meaningful difference between more and less narcissistic entrepreneurs (32.5%

as opposed to 32.6%). However, more narcissistic entrepreneurs raise less money (\$3,817 as opposed to \$5,472) and attract fewer backers (49.8 as opposed to 66.8). Both of these differences are statistically significant and economically meaningful, lending preliminary support for Hypothesis H3

[Table II About Here]

Correlations between the variables used in our analysis are presented in Table III. In line with Hypothesis H1B on ego-defensive narcissism, there is a negative and statistically significant correlation between our narcissism measures and the size of the crowdfunding campaign (*Goal*). While we observe a positive correlation between our continuous measure of narcissism and the AON funding model, it is not significant for our high narcissism dummy. There is no significant correlation between *Success Dummy* and *Narcissism*, but a negative and significant correlation exists when we look at the number of backers (*Backers*) and at the total money pledged in the project (*Pledged*), providing support for Hypothesis H3.

[Table III About Here]

4. Results

In this section, we formally test our hypotheses. Table IV shows the results for Hypotheses 1 and 2 on campaign design. Odd-numbered columns show results when the continuous measure *Narcissism* is included in the analysis, with even-numbered columns showing results for the dummy variable *High Narc.*

[Table IV About Here]

Consistent with Hypothesis H1B, more narcissistic entrepreneurs set a lower goal, estimated as the natural log of the dollar goal, than less narcissistic ones (Models (1) and (3)).

Unreported results for the dollar value of the funding goal give similar results. Our findings suggest that, on average, narcissistic crowdfunding entrepreneurs are more concerned with defending their egos. A lower goal preemptively reduces the risk of campaign failure, thereby protecting self-esteem, consistent with Morf et al. (2011). Based on Model (3), the difference between high and low levels of narcissism translates, *ceteris paribus*, into a difference in funding goals of \$420.

Models (2) and (4) show results for the effect of narcissism on the choice of funding model. Narcissism is not a significant predictor of the choice between AON and KIA. While Model (6) shows a significant result for the continuous measure of narcissism when soft information controls are excluded, this is not confirmed in Model (8) for the high narcissism dummy. We are therefore unable to distinguish between Hypotheses 2A and 2B. One reason for this could be the simultaneous nature of the choice between campaign goal and funding model.

Regarding our control variables, the soft information variables all have a positive and highly significant impact on funding goal, which is consistent with expectations (Michels, 2012).

Entrepreneurs with more advanced projects, for which it is possible to disclose more information and to show more pictures, request higher funds to pursue their project. Backers are reassured by the effort made by the entrepreneur, who can therefore reasonably expect to attain a higher goal. The more reward levels the entrepreneur is able to offer, the higher the possible funding goal. The number of reward levels can be interpreted as a signal of a more advanced project and/or the willingness to broaden the targeted crowd by offering multiple support levels (Gerber et al., 2012). Finally, consistent with Giudicci et al.'s (2013) finding

that bigger teams have larger network opportunities, the impact of team size on funding goal is positive and significant.

Table V provides results for Hypothesis 3 on the campaign outcome. Consistent with Hypothesis 3, campaigns of narcissistic crowdfunding entrepreneurs are less successful. First, they are less likely to achieve their desired goal (Models (1)-(2) and (5)-(6)). Consistent with our findings in Table IV for the effect of narcissism on campaign design, the result is only significant when we control for $\ln(\textit{Goal})$ and the funding model (Models (2) and (6)). Second, our results are confirmed when we refine our analysis to more specific performance variables. We find that more narcissistic entrepreneurs attract fewer backers and less funds. Our results for campaign outcome are consistent with prior studies on entrepreneurship and personality traits, which predict lower levels of success for narcissistic entrepreneurs, especially in the early stages of a project (Tucker et al., 2006; Navis and Ozbek, 2016). Our findings also echo those of Murnieks et al. (2015) – it appears that the crowd, like angel investors, avoids entrepreneurs with narcissistic tendencies. In terms of economic significance, an entrepreneur classified as highly narcissistic attracts 13.8 fewer backers and \$1,111.84 less funds than a low-level narcissist. These values are economically meaningful, given that the average campaign seeks to attract \$13,658 (mean *Goal* in the full sample; see Table II).

[Table V About Here]

5. Discussion and Concluding Remarks

This study sheds light on how the entrepreneur's personality affects the design and outcome of crowdfunding initiatives. It extends the literature on managerial narcissism from studies

which mostly focus on large firms to consider early stage ventures which are typically set up by novice entrepreneurs. The crowdfunding context has a number of attributes which enable us to test the effect of narcissism on campaign design and outcomes. Most notably, projects are small and under the full control of the project leader and perceptions of backers are highly important in the rewards-based crowdfunding under study. We can therefore reasonably attribute effects of narcissism on the crowdfunding project to the personality of the lead entrepreneur. Unlike for CEOs of large firms, prior reputation is not a confounding factor. In addition, the rewards-based project draws potential backers for whom the feel-good factor is important, leading them to focus on the entrepreneur's personality.

We find that more narcissistic entrepreneurs who launch a rewards-based crowdfunding campaign set lower funding goals. This result is consistent with the hypothesis that more narcissistic entrepreneurs seek to defend their ego, rather than engaging in grandiose actions one might more frequently associate with narcissism, consistent with an avoidance motivation as described in Foster and Brennan (2011). Although more narcissistic crowdfunding entrepreneurs set more modest targets, they are less likely to achieve their goals. The lower performance generated by more narcissistic project leaders is consistent with work in the entrepreneurship literature documenting the negative effects of narcissism in early-stage entrepreneurial projects (Tucker et al., 2016).

Recent conceptual papers show that the effect of narcissism or other negative personality traits may be context dependent. Navis (2016) differentiates the effects of narcissism observed in novel and familiar venture contexts. Haynes (2015) suggests that the effects of negative personality traits are different in start-ups, family firms and corporate ventures. According to Tuck et al. (2016), the impact of the dark triad traits is more or less positive / negative depending on the stage of the entrepreneurial process. Our current project opens the

door to a series of comparative projects by providing convincing evidence for the effect of narcissism on early-stage entrepreneurial ventures.

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Table I: Summary of hypotheses

	Campaign design		Campaign success
	Goal	Keep-it-all v. All-or-nothing	
Grandiose/arrogant narcissism	<i>Hypothesis 1A: More narcissistic entrepreneurs set a higher funding goal</i>	<i>Hypothesis 2A: More narcissistic entrepreneurs are more likely to choose AON</i>	<i>Hypothesis 3: More narcissistic entrepreneurs' campaigns are less successful</i>
Ego-defensive narcissism	<i>Hypothesis 1B: More narcissistic entrepreneurs set a lower funding goal</i>	<i>Hypothesis 2B: More narcissistic entrepreneurs are more likely to choose KIA</i>	

Table II: Summary statistics

*This table shows summary statistics for variables included in our database. All the variables are defined in Appendix Table I. We provide means, standard deviations, minimum, median and maximum for the full sample of 14,125 campaigns and for the two subsamples based on the level of narcissism. The last column provides a difference-in-mean tests between the two subsamples. Significance levels (p-value): * $p < 0.1$, ** $p < 0.05$ and *** $p < 0.01$.*

	Full Sample (14,125 obs.)					High Narcissism (>0.5) (2,402 obs.)					Low Narcissism (<=0.5) (11,723 obs.)					Mean Diff. Test
	Mean	Std.Dev.	Min.	Median	Max.	Mean	Std.Dev.	Min.	Median	Max.	Mean	Std.Dev.	Min.	Median	Max.	
Narcissism	0.202	0.303	0	0	1	0.798	0.157	0.507	0.822	1	0.0795	0.133	0	0	0.5	-0.72***
Project Characteristics																
Goal	13,658	21,135	500	6,000	197,000	11,292	16,484	500	5,136	150,000	14,142	21,937	500	6,000	197,000	2,850***
AON Dummy	0.0371	0.189	0	0	1	0.0433	0.204	0	0	1	0.0358	0.186	0	0	1	-0.007*
Team Size	3.52	1.98	2	3	10	3.08	1.67	2	2	10	3.61	2.03	2	3	10	0.53***
Verified Non-Profit	0.12	0.325	0	0	1	0.067	0.25	0	0	1	0.131	0.337	0	0	1	0.06***
Rewards Offered	7.75	3.22	0	8	30	7.57	3.2	0	7	24	7.79	3.23	0	8	30	0.22***
Duration	45.6	22.8	1	42	120	45.8	22.4	1	43	120	45.5	22.8	1	42	120	-0.23
Soft Information																
Desc. Length	107	41.9	0	116	172	110	41.2	0	119	172	107	42	0	115	167	-2.43***
Full Text Length	4,184	2,433	411	3,586	14,206	4,301	2,486	454	3,673	14,128	4,160	2,421	411	3,568	14,206	-141***
Gallery	6.83	10.5	0	4	350	6.69	10.2	0	3	166	6.86	10.6	0	4	350	0.17
Video Pitch	0.809	0.393	0	1	1	0.789	0.408	0	1	1	0.813	0.39	0	1	1	0.02***
Social Networks	3.01	2.02	0	3	27	3.02	2.09	0	3	19	3.01	2.01	0	3	27	-0.004
A.R.I.	15.2	3.07	4.92	14.9	98.9	14.3	3.16	6.36	14	67	15.4	3.02	4.92	15.1	98.9	1.05***
Outcome																
Success Dummy	0.326	0.469	0	0	1	0.325	0.469	0	0	1	0.326	0.469	0	0	1	0.0009
Backers	63.9	298	0	31	15,310	49.8	110	1	29	4,340	66.8	323	0	32	15,310	17.1**
Pledged	5,190	22,234	0	2,160	1,140,975	3,817	9,165	500	1,968	352,288	5,472	24,041	0	2,205	1,140,975	1,655***

Table III: Correlation matrix of main variables

This table shows pair-wise correlations between the main variables. All the variables are defined in Appendix Table I. Significance levels (p-value): * $p < 0.1$, ** $p < 0.05$ and *** $p < 0.01$.

	Narcissism	High Narc. (>0.5)	Goal	AON Dummy	Team Size	Verified Non-Profit	Rewards Offered	Duration
Narcissism	1.00							
High Narc. (>0.5)	0.89***	1.00						
Goal	-0.03***	-0.05***	1.00					
AON Dummy	0.02***	0.01*	0.12***	1.00				
Team Size	-0.1***	-0.1***	0.1***	-0.01	1.00			
Verified Non-Profit	-0.08***	-0.07***	0.03***	-0.07***	0.06***	1.00		
Rewards Offered	-0.01	-0.03***	0.25***	0.06***	0.13***	-0.01	1.00	
Duration	0.00	0.00	0.15***	-0.07***	0.05***	0.05***	0.01	1.00
Desc. Length	0.03**	0.02***	0.09***	0.04***	-0.01	0.02*	0.1***	-0.14***
Full Text Length	0.07**	0.02***	0.28***	0.09***	0.12***	0.01	0.32***	0.04***
Gallery	0.01	-0.01	0.12***	0.02***	0.17***	-0.00	0.18***	0.09***
Video Pitch	-0.02**	-0.02***	0.12***	0.03***	0.07***	0.04***	0.23***	0.02***
Social Networks	0.02*	0.00	0.17***	0.03***	0.11***	0.07***	0.26***	0.06***
A.R.I.	-0.6***	-0.13***	0.04***	-0.02***	0.05***	0.15***	-0.05***	0.04***
Success Dummy	-0.01	-0.00	-0.24***	0.08***	0.02*	-0.02***	-0.09***	-0.17***
Backers	-0.02**	-0.02**	0.16***	0.07***	0.06***	0.00	0.1***	-0.01
Pledged	-0.02***	-0.03***	0.22***	0.09***	0.07***	0.01	0.1***	0.01
	Desc. Length	Full Text Length	Gallery	Video Pitch	Social Networks	A.R.I.	Success Dummy	Backers
Desc. Length	1.00							
Full Text Length	0.13***	1.00						
Gallery	0.05***	0.2***	1.00					
Video Pitch	0.06***	0.13***	0.12***	1.00				
Social Networks	0.13***	0.2***	0.21***	0.19***	1.00			
A.R.I.	0.06***	0.13***	-0.00	-0.00	0.00	1.00		
Success Dummy	-0.02***	-0.08***	-0.02**	-0.05***	-0.09***	-0.03***	1.00	
Backers	0.03***	0.1***	0.08***	0.05***	0.04***	-0.01	0.12***	1.00
Pledged	0.04***	0.13***	0.12***	0.05***	0.05***	0.01	0.14***	0.78***

Table IV: Crowdfunding Campaign Design

*This table shows the impact of narcissism of the entrepreneur on the design of the crowdfunding campaign. The dependent variable is the natural log of the dollar goal in odd-numbered models and a binary variable equal to one if the funding model is All-Or Nothing (AON) in even-numbered models. Models 1,2,5 and 6 use the continuous measure of narcissism as variable of interest and model 3,4,7 and 8 use a dummy variable equal to 1 if the narcissism measure is higher than 0.5 and 0 otherwise (high narcissism). Models 1 to 4 include control variables for soft information. All models include sub-category, semester and country fixed effects. Standard errors are robust to heteroscedasticity. Significance levels (p-value): * $p < 0.1$, ** $p < 0.05$ and *** $p < 0.01$.*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ln(Goal)	AON Dummy	ln(Goal)	AON Dummy	ln(Goal)	AON Dummy	ln(Goal)	AON Dummy
Narcissism	-0.093***	0.008			-0.049*	0.012**		
High Narc. (>0.5)			-0.066***	0.005			-0.054**	0.007
Project Characteristics								
Team Size	0.031***	0.0004	0.031***	0.0003	0.049***	0.001	0.049***	0.001
Verified Non-profit	0.336***		0.337***		0.406***		0.405***	
Rewards Offered	0.088***	0.002***	0.089***	0.002***	0.122***	0.003***	0.122***	0.003***
Duration	0.011***	-0.001***	0.011***	-0.001***	0.013***	-0.001***	0.013***	-0.001***
Soft Information								
Catch Phrase								
Length	0.001***	-0.00002	0.001***	-0.00002				
Full Text Length	0.00008***	0.000003***	0.00008***	0.000003***				
Gallery's items	0.004***	-0.00005	0.004***	-0.00005				
Video Pitch								
Dummy	0.282***	0.011**	0.282***	0.011**				
Social Networks	0.051***	-0.002**	0.051***	-0.002**				
A.R. Index	0.013***	-0.001	0.013***	-0.001*				
Subcat./Semester/ Country F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14125	11449	14125	11449	14125	11449	14125	11449
Adj./Pseudo R ²	0.349	0.163	0.349	0.163	0.299	0.158	0.299	0.157

Table V: Crowdfunding Campaign Outcome

This table shows the impact of the narcissism of the entrepreneur on the outcome of the crowdfunding campaign. The dependent variable is a dummy equal to one if the goal is reached (models 1, 2, 5 and 6), the number of backers (models 3 and 7) and the total pledge in dollars (models 4 and 8). Models 1 to 4 use the continuous measure of narcissism as variable of interest and models 5 to 8 use a dummy variable equal to 1 if the narcissism measure is higher than 0.5 and 0 otherwise (high narcissism level). Standard errors are robust to heteroscedasticity. Significance levels (p -value): * $p < 0.1$, ** $p < 0.05$ and *** $p < 0.01$.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Success Dummy	Success Dummy	Total Backers	Total Pledge	Success Dummy	Success Dummy	Total Backers	Total Pledge
Narcissism	-0.010	-0.029**	-20.407***	-1617.008***				
High Narc. (>0.5)					-0.007	-0.019**	-13.809***	-1111.840***
Project Characteristics								
ln(Goal)		-0.187***	25.658***	2667.642***		-0.186***	25.700***	2670.814***
AON Dummy		0.256***	47.901	5441.823**		0.256***	47.756	5430.714**
Team Size	0.010***	0.016***	4.876***	395.152***	0.010***	0.017***	4.949***	400.698***
Verified Non-Profit	-0.041***	0.032***	1.55	682.331**	-0.041***	0.032***	1.659	690.084**
Rewards Offered	-0.009***	0.008***	2.415	28.448	-0.009***	0.008***	2.436	30.008
Duration	-0.004***	-0.001***	-0.404**	-24.970***	-0.004***	-0.001***	-0.405**	-25.029***
Soft Information								
Desc. Length	-0.0003***	-0.0001	0.048	2.589	-0.0003***	-0.0001	0.047	2.472
Full Text Length	-0.000005***	0.00001***	0.004**	0.415***	-0.000005***	0.00001***	0.004*	0.403***
Gallery	0.001***	0.002***	1.220***	159.492**	0.001***	0.002***	1.218***	159.357**
Video Pitch	-0.015	0.039***	3.971	-46.621	-0.015	0.039***	4.034	-41.817
Social Networks	-0.014***	-0.005**	-3.122**	-253.256***	-0.014***	-0.005**	-3.150**	-255.532***
A.R.I.	-0.003**	-0.0004	-1.678*	-67.237	-0.003*	-0.0003	-1.568*	-58.769
Subcat/Semester/ Country F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14125	14125	14125	14125	14125	14125	14125	14125
Adj/Pseudo R ²	0.052	0.191	0.038	0.069	0.052	0.191	0.037	0.068

Table VI

These tables present robustness checks on our narcissism measure and hypotheses. On a randomly selected subsample of 600 campaigns, we manually assessed the narcissistic nature of the video and of the pictures in order to replicate our analyses.

Panel A: Correlation of Measures

Significance levels (p-value): * $p < 0.1$, ** $p < 0.05$ and *** $p < 0.01$.

	Narcissism	High Narc. (>0.5)	Narcissistic Video
Narcissism	1		
High Narc. (>0.5)	0.89***	1	
Narcissistic Video	0.30***	0.25***	1
Narcissistic Pictures	0.31***	0.28***	0.45***

Panel B: Crowdfunding Campaign Design

	(1)	(2)	(3)	(4)
	ln(Goal)	AON Dummy	ln(Goal)	AON Dummy
Narcissistic Video	-0.091	0.019		
Narcissistic Pictures			0.119	-0.012
Project Characteristics				
Team Size	0.037	0.014**	0.038*	0.004
Verified Non-profit	-0.063		0.359**	
Rewards Offered	0.075***	0.005	0.079***	0.002
Duration	0.014***	-0.0002	0.011***	0.0002
Soft Information				
Catch Phrase Length	0.001	0.0003	0.001	0.001**
Full Text Length	0.000***	0.000001	0.0009***	0.000001
Gallery's items	0.001	-0.001	0.002	-0.001
Video Pitch Dummy	0.14	-0.043	0.225*	0.036
Social Networks	0.086***	-0.016*	0.095***	-0.007
A.R. Index	0.013	-0.001	0.004	-0.006
Subcat./Semester/ Country F.E.				
	Yes	Yes	Yes	Yes
Observations	417	249	457	267
Adj./Pseudo R ²	0.319	0.233	0.31	0.23

Panel C: Crowdfunding Campaign Outcome

	(1)	(2)	(3)	(4)	(5)	(6)
	Success Dummy	Total Backers	Total Pledges	Success Dummy	Total Backers	Total Pledges
Narcissistic Video	-0.152***	-6.169	205.702			
Narcissistic Pictures				-0.139*	-5.416	-160.305
Project Characteristics						
ln(Goal)	-0.182***	17.566***	1586.181***	-0.181***	16.121**	1576.864***
AON Dummy	0.037	-46.177*	-3505.626	0.062	-54.815**	-3905.93
Team Size	0.034***	0.345	71.144	0.024**	0.808	56.322
Verified Non-Profit	-0.118*	-8.909	-347.696	-0.059	-14.177	-1214.984
Rewards Offered	0.01	4.811**	354.626**	0.011*	4.187***	331.324**
Duration	-0.002*	-0.450*	-15.279	-0.002	-0.232	-10.154
Soft Information						
Desc. Length	-0.001	0.013	2.776	0.0001	-0.034	3.562
Full Text Length	0.00001	-0.005*	-0.208	0.000002	-0.003	-0.021
Gallery	0.004*	1.696**	157.089**	0.005**	1.352*	136.169**
Video Pitch	-0.149*	12.495	445.392	-0.037	11.883*	376.74
Social Networks	0.002	-0.408	76.606	-0.009	-0.16	66.43
A.R.I.	0.003	-0.614	103.482	0.002	-1.466	63.471
Subcat/Semester/ Country F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Observations	408	417	417	444	457	457
Adj/Pseudo R ²	0.291	0.136	0.128	0.227	0.105	0.109

Appendix Table I: Definition of Variables

Narcissism	Ratio of the number of first person singular pronouns (I, me, my, mine, myself) to first person pronouns (first person singular pronouns <i>plus</i> the pronouns we, us, our, ours, ourselves) used in the project description (following Raskin and Shaw (1988).
High Narc. (>0.5)	Dummy variable equal to 1 if the <i>Narcissism</i> variable is greater than 0.5, and 0 otherwise.
Narcissistic Video	Dummy variable equal to 1 if the video pitch is considered narcissistic, and 0 otherwise. The narcissist level of the video pitch was manually assessed. We consider that the video shows narcissistic characteristics if the team-leader speaks alone in front of the camera for more than 1/4 of the video duration.
Narcissistic Pictures	Dummy variable equal to 1 if the gallery is considered narcissistic, and 0 otherwise. The narcissist level of the gallery was manually assessed. We consider that the gallery shows narcissistic characteristics if the team-leader is present, alone, on more pictures than the other team members.
Goal	Funding goal in USD, set by the entrepreneur at the beginning of the crowdfunding campaign. If the funding goal was in another currency, the value is converted to USD using the semester average currency exchange rate.
Ln(Goal)	Natural logarithm of <i>Goal</i> .
AON Dummy	Dummy variable equal to 1 if the funding model of the campaign is All-Or-Nothing, and 0 if the funding model is Keep-It-All (following Cummings et al., 2016).
Team Size	Number of persons running the crowdfunding campaign.
Verified Non-Profit	Dummy variable equal to 1 if the campaign is set up by a US-registered 501(c) non-profit organization, and 0 otherwise.
Rewards Offered	Number of reward levels offered by the entrepreneur to backers. Each level corresponds to a different, pre-defined reward associated with a pre-defined pledge.
Duration	Duration of the crowdfunding campaign, in days.
Desc. Length	Length (in number of characters) of the project short description presented on the index page.
Full Text Length	Length (in number of characters) of the project full description presented on the project page.
Gallery	Number of items (pictures, graphics, figures ...) presented in the project gallery.
Video Pitch	Dummy variable equal to 1 if the project page shows a video introducing the project, and 0 otherwise.
Social Networks	Number of social network platforms or external websites where the project is also present (e.g., Facebook, Twitter, Instagram, and dedicated websites) and mentioned on the project description website.
A.R.I.	'Automated Readability Index' score of the project full description, as defined in Senter and Smith (1967). This score is computed as $ARI = 4.71 * (\text{total characters} / \text{total words}) + 0.5 * (\text{total words} / \text{total sentences}) - 21.43$. It aims to represent the US grade level needed to comprehend the text. A higher value of the index means the text is more difficult to understand.
Pledged	Total amount (in USD) pledged by the project backers at the end of the campaign.
Success Dummy	Dummy variable equal to 1 if the total amount pledged by all the backers is greater than or equal to the campaign goal (i.e., $Pledged / Goal \geq 1$), and 0 otherwise.
Backers	Number of backers participating in the project.