



I'm simply the best, better than all the rest: Narcissistic leaders and corporate fundraising success

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ABSTRACT

We examine the relationship between leader grandiose narcissism, composed of admiration and rivalry, and corporate fundraising success in a sample of 2377 organizational leaders. To examine a large sample of leaders, we applied a machine-learning algorithm to predict leaders' personality scores based on leaders' Twitter profiles. We found that admiration was positively related to - while rivalry was negatively related to corporate fundraising success (in '000s). Analyses also showed that leader gender does not moderate this relationship, unlike initially expected. We discuss and compare our findings to previous work on narcissism and crowdfunding.

1. Introduction

Perhaps no other personality trait exhibits more contradictions than narcissism. Narcissism is an exaggerated sense of self-importance or influence and is typically associated with a preoccupation with success, competitiveness, authority seeking, and patterns of grandiose thinking (Rosenthal & Pittinsky, 2006; Wales, Patel, & Lumpkin, 2013). As a dark trait, narcissism has some bright sides as well (Smith, Hill, Wallace, Recendes, & Judge, 2018). Hence, while narcissism negatively relates to transformational leadership (Khoo & Burch, 2008), narcissism is also positively associated with self-confidence and the ability to inspire others. Indeed, a "solid dose of narcissism" is often seen as a requirement for anyone seeking the mantle of organizational or political leadership (de Vries & Balazs, 2010: 389). Put differently, narcissistic individuals often seek and are selected for leadership positions, but still act in their self-interest over the needs and interests of others (McCleskey, 2013; Smith et al., 2018). Hence, the ultimate question of whether narcissism is positive or negative for organizational success remains unanswered.

In this study, we explore the relationship between leader grandiose narcissism and one particular aspect of organizational success, namely corporate fundraising. Corporate fundraising provides a unique avenue for exploration in the context of narcissism since fundraising success aligns narcissistic leaders' interest in self-glorification with organizational interests in the successful acquisition of funding for future

growth. And although the relationship between leader narcissism and fundraising has been previously explored in a crowdfunding context (Bollaert, Leboeuf, & Schwienbacher, 2019; Buttice & Rovelli, 2020), the relationship between leader narcissism and corporate fundraising remains elusive.

Therefore, in this study, we explore the relationship between grandiose narcissism and corporate fundraising. We do so using a machine-learning algorithm to predict 2377 organizational leaders' personality scores based on the behavioral residue on their Twitter profiles. We also account for leaders' Big Five personality traits as well as organization size and the number of completed funding rounds.

2. Narcissism and leadership

Maccoby (2000) suggested that narcissistic leaders fulfill the image that people have for great leaders because they supply their followers with a compelling vision and because they are especially gifted at attracting large numbers of followers. Tucker, Lowman, and Marino (2016) posited that narcissistic leaders are more likely to succeed in the early exploitation stage of entrepreneurship because they are visionary and able to inspire followers. Narcissistic leaders claim and often achieve high status, formal leadership positions, and short-term popularity (Rauthmann & Kolar, 2012). In addition, Grijalva, Harms, Newman, Gaddis, and Fraley (2015) found that a) narcissism is positively related to leadership emergence but not related to leadership

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effectiveness and b) narcissism's positive effect on leadership is related to the Big Five Personality trait extraversion. As the study of leadership and narcissism matured, researchers noticed that narcissism may be more than just a univariate personality construct.

2.1. Grandiose narcissism and leadership

Current literature recognizes two broad categories of narcissism, grandiose narcissism, and vulnerable narcissism (Malesza & Kaczmarek, 2018). Grandiose narcissism is associated with dominance, self-assurance, and entitlement, while vulnerable narcissism is associated with low self-esteem, emotional instability, hostility, and need for recognition. Both grandiose narcissism and vulnerable narcissism share traits of self-delusions, entitlement, and a willingness to exploit followers for one's own gain (Malesza & Kaczmarek, 2018).¹ For this study, we limited our focus to grandiose narcissism.

Back et al. (2013) suggested that grandiose narcissism is composed of two subdimensions, namely admiration and rivalry. This model is also referred to as the Narcissistic Admiration and Rivalry Concept (NARC; Kwiatkowska, Jułkowski, Rogoza, Żemojtel-Piotrowska, & Fatfouta, 2019). Admiration reflects the grandiose fantasies, uniqueness, and charismatic aspects of the narcissist personality, while rivalry reflects aggression, hostility, and the derogatory treatment of others (Leckelt et al., 2018).

Wetzel, Leckelt, Gerlach, and Back (2016) also found that there are two groups of narcissists, those that are mainly driven by agentic aspects (i.e., admiration) and those who are driven by both agentic as well as antagonistic aspects (i.e., admiration and rivalry). Narcissistic individuals driven by both the admiration and rivalry pathway "fail to maintain their grandiose self solely via the admiration pathway and instead may have to activate the rivalry pathway in addition, in order to achieve their goal" (Wetzel et al., 2016: 13). Put differently, whenever self-promoting strategies fail (i.e., admiration), due to an apparent lack of interpersonal resources and distrust in others, self-defense strategies are activated (i.e., rivalry); such individuals are referred to as failed narcissists. Those narcissistic individuals who are mainly driven by the admiration pathway can be considered successful narcissists (see Maccoby, 2000). Hence, admiration can help explain possible positive outcomes of narcissistic leadership. One such positive outcome might constitute corporate fundraising success.

3. Narcissism and corporate fundraising

Corporate fundraising includes funds raised from venture capital, seed funding, government grants, initial public offerings, etc. Corporate fundraising might be one of the few strategic organizational activities in which the interests of highly narcissistic leaders and their organizations are aligned. That is because successfully raising funds a) contributes to narcissistic leaders' self-interests and further enhances their confidence and hubris, and also b) benefits the respective firm directly as it provides the organization the opportunity to grow more quickly and gain market share. For example, Wales et al. (2013) found that CEO narcissism related positively to firm performance, which might be a result of narcissistic leaders' strong expectations of above-average firm performance and a desire to impress followers. Hence, we hypothesize the following:

H1. Grandiose narcissism positively relates to corporate fundraising success.

¹ It is worth noting the distinction between subclinical narcissism and the clinical narcissism described in the *Diagnostic and Statistical Manual of Mental Disorder-IV* which serves a diagnostic purpose and is not the subject of this study (Furnham, Crump, & Ritchie, 2013; Martinsen, Arnulf, Furnham, & Lang-Ree, 2019).

Based on research on crowdfunding, this relationship might be more complex. Previous work has found a u-shaped relationship between narcissistic rhetoric and crowdfunding performance instead (Anglin, Wolfe, Short, McKenny, & Pidduck, 2018) or mixed results (Butticè & Rovelli, 2020). However, neither of these previous studies examined grandiose narcissism separately from vulnerable narcissism. And it is precisely grandiose narcissism, in particular its subdimension admiration, that is likely to be key in positively predicting corporate fundraising success in the case of narcissistic leaders.

H2. a: Admiration positively relates to corporate fundraising success. b: Admiration more positively relates to corporate fundraising success than rivalry.

Arguing from a social role perspective, Anglin et al. (2018) suggested that successful entrepreneurs are expected to be somewhat narcissistic. This aligns with previous research suggesting that people hold stereotypical views of leadership as comprised of masculine traits through a role congruity prejudice toward female leaders (Johnson, Murphy, Zewdie, & Reichard, 2008). Prior studies also suggested that successful entrepreneurs have characteristics perceived as predominantly masculine (Gupta, Turban, Wasti, & Sikdar, 2009). De Hoogh, Den Hartog, and Nevicka (2015) also stated that gender influences the degree to which narcissistic leaders are perceived as effective and competent, and both the gender of the leader and the gender of the follower impact the outcome. Hence, leader gender might be a possible moderator of the relationship between leader narcissism and fundraising success (Anglin et al., 2018). Therefore, we examined a possible moderation effect of gender as well.

H3. Gender moderates the relationship between grandiose narcissism and corporate fundraising, in that male narcissistic leaders are more likely to raise more funds than female narcissistic leaders.

4. Methodology

The outlined methodology is mainly based on content analysis to detect leaders' personality traits. For this purpose, we employ a personality prediction model using a machine learning process. Our methodology comprises two main phases, namely the machine learning process (Phase 1) and dataset building (Phase 2).

Participants were recruited on Amazon Mechanical Turk. Two hundred and forty-three (243) participants provided their corresponding Twitter (public) account, excluding all private, inactive profiles, and false accounts. After excluding participants for failing various attention check questions (Meade & Craig, 2012), the final sample comprised 229 participants (125 males). Participants were on average 39.11 years old ($SD = 11.07$) and had 15.40 years of work experience on average ($SD = 10.36$). In total, 60,907 tweets were obtained.

4.1. Measures

4.1.1. Narcissism

Narcissism was measured using the shortened NARQ(-S) scale (Leckelt et al., 2018). The scale is composed of six-items in total, measuring admiration (three items, $\alpha = 0.74$) and rivalry (three items, $\alpha = 0.74$), respectively, on a 6-point (1 = "Not Agree at All" to 6 = "Agree Completely") Likert scale.

4.1.2. Personality (Big Five)

Participants completed the mini-IPIP scale (Donnellan, Oswald, Baird, & Lucas, 2006). The mini-IPIP scale is composed of 20 items in total, measuring openness to experience ($\alpha = 0.73$), conscientiousness ($\alpha = 0.80$), extraversion ($\alpha = 0.88$), agreeableness ($\alpha = 0.82$) and neuroticism ($\alpha = 0.85$) on a 5-point (1 = "Very inaccurate" to 5 = "Very accurate") point Likert scale.

Table 1
Correlations among the main variables.

		M	SD	1	2	3	4	5	6	7	8
1	Narcissism	2.94	1.29	(0.80)							
2	Admiration	3.14	1.52	0.89***	(0.74)						
3	Rivalry	2.74	1.41	0.87***	0.54***	(0.74)					
4	Openness	4.10	0.78	-0.02	0.10	-0.15*	(0.73)				
5	Conscientiousness	3.72	0.88	-0.05	0.05	-0.14*	0.12	(0.80)			
6	Extraversion	2.69	1.09	0.20**	0.30***	0.04	0.24***	0.25***	(0.88)		
7	Agreeableness	3.88	0.86	-0.15*	0.00	-0.28***	0.44***	0.04	0.27***	(0.82)	
8	Neuroticism	2.45	1.06	0.21**	0.08	0.30***	-0.23***	-0.52***	-0.41***	-0.17*	(0.85)

Note: Reported correlations refer to traits considered for our ground truth dataset; admiration and rivalry are facets of the trait grandiose narcissism above; $n = 229$.

*** $p < .001$.

** $p < .01$.

* $p < .05$.

4.2. Phase 1: machine learning process

To calculate the personality scores of leaders, we developed and used a machine-learning algorithm. The algorithm was based on self-report personality trait test scores as well as our participants' social media data history. Evidence (e.g., Bollaert et al., 2019) suggested that narcissism can be successfully measured in online contexts and other studies have utilized social media posts to predict personality traits (Gruda & Hasan, 2019; Park et al., 2015; Schwartz et al., 2013). Based on a pre-annotated dataset with personality scores of our 229 participants, relevant behavioral features were extracted from users' textual content as well as profile metrics. Zero-order correlations of main variables are reflected in Table 1.

Punctuations, digits, and Unicode characters were removed, along with a set of “stop words” such as “the”, “at”, “where”, “that” etc. Mentions, retweet identifiers, and external links (URLs) were filtered out. Subsequently, we applied tokenization (i.e., a “bag of words model”), a process in which the initial text is divided into individual chunks of single words to analyze each word separately and part-of-speech tagging to extract word-use features. Part-of-speech (POS) tagging refers to the process of classifying each word into a part of speech, based on both its definition and its context. Overall, the model is trained with features extracted by Twitter attributes and features based on platform metrics or extracted from tweets that reflect users' behavior and the description of self. A list of considered features is provided as supplementary material.

Language expression, e.g., vocabulary usage and phrases adoption, was included as a predictive feature for the prediction of personality scores. We applied an open vocabulary approach built on real text allowing unexpected language discovery, by utilizing Tf-Idf and Ngram vectors, to be independent of predefined lexicons. Term frequency-inverse document frequency (Tf-Idf) is a commonly used term weighting methods in information mining systems and reflects the importance of a word to a document in a collection, i.e., it calculates word frequency. The more often a word appears in a document, the more it is considered to be significant (Aizawa, 2003). On the other hand, N-grams represent phrasal language expression offering rich and powerful features as they produce a frequency vector of word sequences. In the field of computational linguistics, an Ngram is any sequence of (contiguous) words in a text. For example, the 3-gram sequences that arise from the sentence “Twitter is a microblogging platform” are (Twitter, is, a), (is, a, microblogging), (a, microblogging platform).

To adopt the best-performing model, we split the original dataset into train and test sets, while keeping 80% of the data for training and 20% for testing purposes. We followed a 10 fold cross-validation scheme to produce an accurate personality prediction model. Among the various models we experimented with, Regression Chains performed best. A Regressor Chain is a multi-label model that arranges regressions into a chain, where each model serves as a predictor, in the

order specified by the chain, using available features provided to the model plus the predictions of models earlier in the chain. As a result, a single multi-label model is produced that is capable of exploiting intercorrelations between targets, in this case, personality dimensions and narcissism (Spyromitros-Xioufis, Tsoumakas, Groves, & Vlahavas, 2012).

We adopt Random Forest as a base estimator for Regression Chains. This produces a meta-estimator that improves predictive accuracy and controls possible over-fitting (Breiman, 2001). Random Forest is an ensemble learning method; it generates many decision tree classifiers or regressors (Rokach & Maimon, 2005) fitted on various subsamples of the dataset and aggregates their results, i.e., the final model is a meta-estimator. Important model parameters are the number of estimators and the max depth of the trees. The number of estimators is crucial because a lot of trees are necessary to obtain a stable model (Liaw & Wiener, 2002) while controlling for maximum depth and size of the trees to avoid overfitting and high model complexity. The final predictive model is an Ensemble of Regression Chains, an ensemble schema in which differently ordered chains are built on bootstrap samples of the training set with k folds, while final predictions are based on majority voting. Moreover, to avoid high model complexity, we applied dimensionality reduction by selecting only the best features for the model.

Mean Squared Error (MSE), the average squared error for the predicted target was employed as a consistent measure of estimator quality incorporating the model's variance and bias. This was done by calculating the average square differences between predictions and the target personality scores. The MSE achieved by our model was 0.066 in the range [0–1]. This indicates that our model would be able to predict personality scores on similar datasets with high accuracy.

$$MSE = \frac{1}{N} \sum_{i=1}^N (Z_{y_i} - \hat{Z}_{\hat{y}_i})^2$$

where y_i = the actual expected output; \hat{y}_i = the model's prediction; N = number of cases.

Finally, the developed machine learning model is used to annotate the leader dataset after extracting respective features from profiles and tweets. This results in a large dataset of scored Twitter profiles on personality and narcissism traits.

4.3. Phase 2: building a leader database

For this study, we define organizational leaders as CEOs or C-level directors who hold strategic executive control. We were mostly interested in leaders who had been with the company for several years, if not from the very beginning. Hence, we categorized founders, or co-founders, as organizational leaders. The initial dataset of organizational employees and their company information was provided by Crunchbase (crunchbase.com). From this database, we extracted organizational

leaders' Twitter content and profiles along with their business and social media information. Next, we selected a subset of organizational leaders, using the definition above (i.e., CEOs and founders), for our final sample. This was done in a multi-stage process and based on several criteria.

To sample leaders, we defined a behavioral proxy to include leaders who are active on the Twitter platform and published tweets regularly, defined by the number of status updates (or tweets, not counting re-tweets) divided by the date of account creation. We selected leaders whose tweets were published between 1st January 2018 to 15th November 2019, to extract the personality traits of leaders who were recently active on Twitter. Based on this proxy, and contingent on our criteria of focusing on CEOs and founders, we sampled 2377 leaders (from as many companies) who also had a minimum of 100 followers and were on a minimum of 10 lists, to capture individuals who were highly active on the platform.

5. Results

Our dependent variable (DV) constitutes a count variable, namely total funds raised in '000 USD. Given previously identified biases regarding logarithmically transformed count variables (e.g., Powell & Seabury, 2018; Silva & Tenreiro, 2006), we considered two recommended types of regressions, namely Poisson and negative binomial regressions. Since our dependent variable ($M = 29,140.33$, $SD = 87,646.4$) is largely overdispersed ($t = -24.19$, $p < .000$), negative binomial regressions could provide a good model fit. We recognize that leaders who failed to raise any funds, or companies that did not provide information regarding funds raised, are not listed in our dataset. Hence, our DV did not include any zeros. Therefore, we specify our models to be zero-truncated regression models. We examined two goodness-of-fit measures for both regression types, including Akaike's information criterion (AIC) and Schwarz's Bayesian information criterion (BIC) (see Cameron & Trivedi, 2010 for more detail). The zero-truncated negative binomial regression provided the best model fit (AIC = 48,520.22, BIC = 48,618.37) and was selected for all presented analyses.

Results (Model 1, Table 2) showed that grandiose narcissism, comprised of admiration and rivalry as a combined trait, seems to be positively associated with the total funds raised. However, this association was only marginally significant ($b = 0.46$, $SE = 0.25$, $p = .068$), controlling for organization size, measured by the number of employees, leader gender, as well as the number of funding rounds.

Next, we examined whether there is a possible moderation of leader gender² on leader narcissism and total funds raised (in '000s USD). Including a possible moderation of leader gender (Model 2, Table 2), we found that the association between grandiose narcissism and total funds raised (in '000s USD) was not significant ($b = -0.70$, $SE = 0.57$, $p > .10$).

As discussed earlier, we also examined the inclusion of both leader grandiose narcissism dimensions (Model 1, Table 3), as well as a possible interaction between each narcissism dimension and leader gender (Model 2, Table 3). With regard to Model 1 (Table 3), admiration positively predicts total funds raised ($b = 1.18$, $SE = 0.25$, $p < .000$), while rivalry negatively predicted total funds raised ($b = -0.90$, $SE = 0.30$, $p = .003$). Hence, admiration seemed the driving factor of the positive relationship between grandiose narcissism and fundraising. In Model 2 (Table 3), we examined a possible moderation of gender for each narcissism dimension. We found that the relationships between leader gender and admiration ($b = -0.51$, $SE = 0.53$, $p > .10$) as well

² We also tested a potential moderating effect of gender on a balanced dataset, by comparing all female leaders in our dataset with a random equal sub-sample of male leaders ($n = 289$). These results did not change overall reported results (M2, Table 3).

Table 2

Zero-truncated negative binomial regressions - association between narcissism, gender and total raised funding (in '000s USD).

Total raised funding (in '000s USD)	Model 1	95% CI	Model 2	95% CI
Narcissism	0.46 [†] (1.82)	[-0.03, 0.96]	1.09 ^a (1.99)	[0.02, 2.16]
Gender	0.34 ^{***} (3.31)	[0.14, 0.55]	2.39 (1.43)	[-0.89, 5.67]
Gender X narcissism			-0.70 (-1.24)	[-1.82, 0.41]
Openness	-0.06 (-0.41)	[-0.33, 0.21]	-0.05 (-0.38)	[-0.32, 0.22]
Conscientiousness	-1.68 ^{***} (-3.81)	[-2.54, -0.81]	-1.67 ^{***} (-3.79)	[-2.53, -0.81]
Extraversion	-0.31 (-1.00)	[-0.91, 0.29]	-0.31 (-1.01)	[-0.92, 0.29]
Agreeableness	0.55 ^{**} (2.63)	[0.14, 0.95]	0.53 [*] (2.55)	[0.12, 0.94]
Neuroticism	3.51 ^{**} (2.61)	[0.87, 6.15]	3.56 ^{**} (2.64)	[0.92, 6.19]
No. of employees (1-10)	(base level)		(base level)	
No. of employees (11-50)	1.28 ^{***} (11.61)	[1.06, 1.50]	1.28 ^{***} (11.61)	[1.06, 1.50]
No. of employees (51-100)	2.15 ^{***} (19.25)	[1.93, 2.37]	2.15 ^{***} (19.27)	[1.93, 2.37]
No. of employees (101-200)	2.68 ^{***} (22.03)	[2.44, 2.91]	2.68 ^{***} (22.05)	[2.44, 2.92]
No. of employees (251-500)	3.03 ^{***} (19.80)	[2.72, 3.32]	3.03 ^{***} (19.83)	[2.73, 3.33]
No. of employees (501-1000)	3.71 ^{***} (10.01)	[2.98, 4.44]	3.71 ^{***} (10.01)	[2.99, 4.44]
No. of employees (1001-5000)	3.84 ^{***} (10.11)	[3.10, 4.59]	3.86 ^{***} (10.04)	[3.10, 4.61]
No. of employees (5001-10,000)	2.48 ^{***} (5.74)	[1.63, 3.32]	2.52 ^{***} (5.59)	[1.64, 3.41]
No. of employees (10000+)	4.32 ^{***} (5.35)	[2.74, 5.91]	4.35 ^{***} (5.36)	[2.76, 5.94]
No. of funding rounds	0.26 ^{***} (11.20)	[0.22, 0.31]	0.26 ^{***} (11.24)	[0.22, 0.31]
Constant	2,61 (0.54)	[-6.95, 12.17]	0.69 (0.14)	[-8.73, 10.12]
Wald χ^2	2185.20		2202.86	
Pseudo R ²	0.04 ^{***}		0.04 ^{***}	

Note: CI = Confidence Interval; variables have been rescaled to facilitate interpretation (narcissism, admiration, rivalry = 1-6; Big Five personality traits = 1-5); z-statistics in parentheses; $n = 2377$.

*** $p < .001$.

** $p < .01$.

* $p < .05$.

as between leader gender and rivalry ($b = -0.16$, $SE = 0.72$, $p > .10$) were not significant. Therefore, the moderating effect of leader gender was not supported.

6. Discussion

This study advances the literature on organizational leadership and personality by examining the relationship between specific facets of grandiose narcissism and corporate fundraising success. We found that grandiose narcissism is positively associated with corporate fundraising success. Specifically, the subdimension admiration was the driving factor in the positive association between grandiose narcissism and corporate fundraising.

Another key finding of the study is that rivalry negatively correlated with corporate fundraising effectiveness. This outcome is somewhat

Table 3
Zero-truncated negative binomial regressions – association between admiration, rivalry, gender and total raised funding (in '000s USD).

Total raised funding (in '000s USD)	Model 1	95% CI	Model 2	95% CI
Admiration	1.20*** (4.82)	[0.71, 1.69]	1.64*** (3.40)	[0.70, 2.60]
Rivalry	−0.90*** (−3.07)	[−1.47, −0.32]	−0.75 (−1.19)	[−1.99, 0.49]
Gender	0.35*** (3.38)	[0.15, 0.56]	2.36 (1.44)	[−0.86, 5.58]
Gender X admiration			−0.51 (−0.96)	[−1.54, 0.52]
Gender X rivalry			−0.16 (−0.22)	[−1.57, 1.25]
Openness	−0.10 (−0.71)	[−0.39, 1.81]	−0.10 (−0.70)	[−0.38, 0.18]
Conscientiousness	−2.00*** (−4.52)	[−2.87, −1.14]	−1.99*** (−4.49)	[−2.86, −1.12]
Extraversion	−0.64* (−2.15)	[−1.22, −0.06]	−0.64 (−2.15)	[1.22, −0.06]
Agreeableness	0.32 (1.58)	[−0.08, 0.73]	0.31 (1.51)	[−0.09, 0.72]
Neuroticism	3.33* (2.52)	[0.74, 5.92]	3.38* (2.55)	[0.78, 5.98]
No. of funding rounds	0.26*** (11.89)	[0.22, 0.31]	0.26*** (11.92)	[0.22, 0.30]
Constant	6.04 (1.26)	[−3.37, 15.44]	4.12 (0.87)	[−5.20, 13.45]
Wald χ^2	2266.86		2290.99	
Pseudo R ²	0.05***		0.05***	

Note: Model 1 and Model 2 include No. of employees as control variables (as shown in Table 2), complete table and findings may be obtained from authors; Gender (0 = female, 1 = male); CI = Confidence Interval; variables have been rescaled to facilitate interpretation (narcissism, admiration, rivalry = 1–6; Big Five personality traits = 1–5); z-statistics in parentheses, $n = 2377$.

*** $p < .001$.

** $p < .01$.

* $p < .05$.

intuitive. As noted previously, rivalry reflects aggression, hostility, and the derogatory treatment of others (Leckelt et al., 2018; Wetzel et al., 2016) and is negatively correlated with self-esteem, extraversion, and openness (Back et al., 2013); this pathway is triggered by narcissists' defensiveness and need for protection. Additionally, the findings related to the subdimensions of admiration and rivalry may help to explain the mixed results found between narcissism and fundraising success in prior studies (Anglin et al., 2018; Buttice & Rovelli, 2020). Future research may seek to examine whether rivalry lowers corporate fundraising effectiveness or whether ineffective corporate fundraising causes feelings of defensiveness and activates the rivalry pathway.

Although there was a main effect of leader gender on fundraising success, no significant moderating effect of leader gender was found. This may be related to the small sample of female leaders ($n_{\text{female}} = 290$). As there are far more male leaders who have secured funding in our data set, gender bias may still be present. It is also important to note that our dataset did not list leaders and firms, who failed to secure funding. Future research may be needed to more closely examine this potential moderation relationship, particularly accounting for unsuccessful funding rounds.

Our study may help overcome certain previously raised methodological concerns such as the use of an observational measure of

narcissism based on pronoun usage, which has been criticized by some scholars (Carey et al., 2015). The applied machine learning algorithm allows us to distinguish subdimensions of grandiose narcissism, namely admiration and rivalry, and to analyze a large sample of organizational leaders in an unobtrusive manner.

7. Conclusion

In sum, in this study we examined the relationship between grandiose narcissism, in particular its subdimensions admiration and rivalry, and corporate fundraising success, using a machine learning algorithm. Based on predicted personality scores, we find that admiration relates positively to and rivalry relates negatively to corporate fundraising success. A moderation effect of leader gender was not found.

CRedit authorship contribution statement

Dritjon Gruda:Conceptualization, Methodology, Formal analysis, Writing - review & editing.**Jim McCleskey:**Investigation, Writing - original draft, Writing - review & editing.**Dimitra Karanatsiou:**Data curation, Software, Formal analysis.**Athena Vakali:**Supervision, Resources.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2020.110317>.

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