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From Feelings to Funding: The Moderating Role of Category Membership in Crowdfunding Participation

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Abstract

This study investigates the impact of emotions conveyed in crowdfunding campaigns on the commitment of backers. Based on language expectancy theory and research on emotional psychology, we propose the effect of emotions depends on campaign category membership and varies between social and commercial crowdfunding campaigns. Empirical analyses of 12,862 Indiegogo campaigns using EmoRoBERTa, a pre-trained neural network algorithm specifically designed to identify emotions, reveal that gratitude and optimism have opposite effects on crowdfunding participation for social and commercial entrepreneurs. In particular, optimism is positively associated with backer participation in social and negatively in commercial campaigns. Counterintuitively, gratitude is positively associated with backer participation in commercial but negatively in social campaigns. Contrasting our analysis, we further examine the link between a factual, neutral tone and crowdfunding participation. Interestingly, a neutral tone has a positive relationship with crowdfunding participation in commercial campaigns. The association reverses for social campaigns.

Keywords: Emotions; crowdfunding; persuasion; language expectancy theory; neural network

Introduction

Crowdfunding has emerged as a crucial means of financing not only products and innovations but also projects and initiatives driven by social motives. There is a growing belief that traditional funding models do not always provide the best support for innovation and creativity and that crowdfunding can offer a more diverse and inclusive way to finance projects and ideas (Boudreau et al., 2021). By utilizing crowdfunding, entrepreneurs and organizations can bypass traditional funding sources like bank loans or venture capital and efficiently raise funds from a large number of potential supporters (Piening et al., 2021; Stanko & Henard, 2017). It is estimated that the amount of funds raised on crowdfunding websites reached $17.51 billion in 2021 and is anticipated to double by 2028. Despite the impressive progress and success of crowdfunding, a significant portion of projects still fail to meet their initial funding goals, with only about 50% achieving this target (SkyQuest Technology, 2022).

Crowdfunding campaigns leverage social media to reach a broad audience. Platforms like Kickstarter and Indiegogo facilitate the simple creation and promotion of such campaigns. On these platforms, entrepreneurs create project pitches using a combination of text and media tools to convince potential backers to support their campaigns (Josefy, Dean, Albert, & Fitza, 2017; Kaminski & Hopp, 2020). Consequently, the message conveyed is critical, and there is a growing body of research examining the content presented (e.g., project-related information, personal networks) and the way the message is delivered (e.g., narrative tone, visual cues) in crowdfunding campaigns (e.g., Allison et al., 2015; Patel et al., 2021; Scheaf et al., 2018). For instance, previous studies have identified factors such as an entrepreneur's linguistic style (Parhankangas & Renko, 2017), image-based rhetoric (Patel et al., 2021), and issue-relevant information (Allison et al., 2017) as drivers of crowdfunding success.

Yet, the current body of research on crowdfunding participation and success lacks an exploration of the role of distinct emotions. Notably absent is an understanding of whether and how certain emotions can enhance the appeal of a pledge to potential backers while considering the pervasive effects of context and community (Josefy et al., 2017). Prior studies have analyzed campaign message sentiments and appeal emphasis; however, the investigation has been limited to a surface level, lacking a comprehensive analysis of the emotional mechanisms at play (e.g., Courtney et al., 2017; Mendes-Da-Silva et al., 2022; Tafesse, 2021; Xiang et al., 2019). Thus, there remains a significant gap in our knowledge of the emotional underpinnings of crowdfunding success. We attempt to address these lacunae by explicating the role of emotions conveyed in the story text of crowdfunding campaigns for crowdfunding participation and explore how the effects vary for commercially oriented technological and innovation campaigns ("commercial") and social crowdfunding campaigns.

Based on the language expectancy theory (LET, Burgoon et al., 1975; Miller & Burgoon, 1979), we theorize that entrepreneurs should create a fit between emotional appeals and campaign goals regarding their target audience. In contrast to a more unitary view on the effects of emotions (e.g., Tafesse, 2021), we argue that the persuasiveness of the campaign content increases when the language conveys specific emotions tailored to backers' motivations towards social and commercial campaigns (Burgoon, 1993). Entrepreneurs' expression of optimism, gratitude, and neutrality in their crowdfunding campaigns will result in either positive or negative deviation from the target audience's language expectations (hereafter referred to as "expectations") contingent on the campaign category. This, in turn, has divergent effects on the success of social and commercial campaigns.

To test these assertions, we collect data on 17,696 commercial and social crowdfunding campaigns in the "Tech & Innovation" and "Community Projects" categories from Indiegogo - one of the world's most popular reward-based crowdfunding platforms. We draw on state-of-the-art natural language processing techniques and an artificial neural network to predict the emotions conveyed in the story text of crowdfunding campaigns. Our negative binomial regression results reveal that emotions have a highly context-dependent impact and do not exhibit a universal effect. Particularly, our findings indicate that optimism and gratitude have opposite effects for social and commercial campaigns. For commercial campaigns, optimism, which entails a certain degree of uncertainty, is negatively associated with backer commitment, whereas it fosters support for social campaigns. On the other hand, gratitude, which is a demonstration of prosocial behavior and instills trustworthiness, is positively related to support for commercial campaigns but negatively associated with support for social campaigns. Intriguingly, campaigns that adopt a neutral, matter-of-fact tone are positively linked with crowdfunding participation in commercial campaigns and negatively associated with participation in social campaigns.

Our work contributes to the information systems and crowdfunding literature in at least three important ways. First, we depart from the unitary view of previous studies on emotional signals and provide a more nuanced view (e.g., Ren et al., 2021; Zhou et al., 2018). By highlighting the effect of conveyed emotions contingent on the campaign category, we advance LET toward a less unimodal view of emotions. We extend Parankas and Renko (2017) and uncover a fit of conveyed emotions through campaign rhetoric and campaign category membership as crucial for the persuasiveness of campaigns and, ultimately, crowdfunding participation. Second, while more distinct emotions are a key driver in backers' behavior in crowdfunding, our findings show that neutral emotions reflecting a more matter-of-fact emotional state are positively associated with crowdfunding participation in commercial campaigns. In social campaigns, however, neutrality is associated with less backer participation. This finding contrasts with previous literature arguing that neutral emotions associated with detachment have little effect on the persuasiveness

of a campaign (e.g., Davis et al., 2017; Parhankangas & Renko, 2017). In our contingent perspective, we strengthen the alternative view, where neutral emotions may either positively or negatively violate the audience's expectations, thus, affecting the persuasiveness of the campaign. Third, we use a more refined approach to assessing linguistic styles and emotions that goes beyond current research, which primarily employs word-count-based approaches that ignore semantics and context (e.g., Parhankangas & Renko, 2017). By applying an advanced natural language processing model (i.e., EmoRoBERTa), we provide an in-depth analysis of campaign language's psychological and social meanings. In doing so, we provide an avenue through which scholars may obtain more nuanced measurements of crowdfunding campaign characteristics regarding emotions.

Theory and Hypotheses

Language Expectancies, Emotions, and Crowdfunding

Essential for a crowdfunding campaign's success is the ability to effectively persuade potential backers to contribute. Yet, entrepreneurship and information systems literature has only recently started to emphasize the importance of language in fundraising (e.g., Rhue & Clark, 2022). For instance, Anglin et al. (2018a) studied how effective storytelling in campaign texts affects crowdfunding and reveals specific elements that can yield superior funding performance (e.g., first versus third-person narrator). Drawing on the language expectancy theory (LET), we aim to extend the line of inquiry on crowdfunding communication. We theorize that conveyed emotions play a foundational role in effective written crowdfunding communication, profoundly influencing the message's persuasiveness and, as a result, potential backers' commitment.

According to the LET, the language we use in communication has connotations and associations that influence how we perceive and interpret information (Burgoon, 1995). People learn and develop expectations about appropriate communication styles in a particular context or situation based on the language behaviors they observe (Averbeck & Miller, 2014). These expectations are often shared by multiple individuals and become a norm within a particular social or cultural group (Burgoon & Miller, 1985). Research has shown that these expectations about language use can form categories that influence communication patterns (Burgoon et al., 2002). Violating an expectation, whether intentional or unintentional, profoundly affects the effectiveness of a message (Burgoon, 1995). Exceeding expectations (i.e., positive violation) can enhance credibility, positively change attitudes, and increase the persuasiveness of the message (Averbeck & Miller, 2014). Missing expectations (i.e., negative violation), on the other hand, can reduce the persuasiveness of the message and result in no attitude change or even a boomerang effect, in which the intended change and behavior occur in the opposite direction (Burgoon et al., 2002).

A speaker can use stylistic features to conform to or violate the audience's expectations for the message (Burgoon et al., 2002). This allows the speaker to strategically manipulate the audience's expectations and potentially influence their response to the message. Previous research has examined the effects of various stylistic features in a range of contexts, for instance, the relationship between persuasive language and the financial success of influencers (Lee & Theokary, 2021), expectancy violations in product reviews (Jensen et al., 2013) or the management of firm media coverage (Zavyalova et al., 2012). Recently, the LET has been leveraged in the entrepreneurial finance literature to link linguistic features and funding success. For instance, Parhankangas and Renko (2017) consider the effect of linguistic styles on potential backer commitment and find that social entrepreneurs can use them to increase the campaign's appeal. Similarly, research has investigated the effects of negativity (Uparna & Bingham, 2022), linguistic errors (Thewissen et al., 2022), and vague language (Costello & Lee, 2022) on campaign success.

These studies demonstrate a significant connection between the linguistic features used in crowdfunding campaigns and their audiences. By using language effectively, entrepreneurs can employ multi-layered linguistic features (e.g., intensity, phrasing) to reduce uncertainty about their projects and themselves, increasing their chances of success (Averbeck, 2010; Lounsbury & Glynn, 2001). However, potential backers remain significantly ill-informed about a project while having to choose from a vast pool of campaigns, competing for their limited attention (Jones et al., 2004). In contexts where ambiguity is high, linguistic content cues indicative of emotions (i.e., emotional cues) will become particularly salient for decision-making. (Kahneman & Frederick, 2004; Yin et al., 2014). Different emotional cues can have different impacts on audience perception and judgment (Nabi, 2003). The audience's response to these cues depends

on their characteristics and expectations shaped by social and normative influences (e.g., Parhankangas & Renko, 2017; Zhang & Chen, 2019).

Recent empirical studies have shown that crowdfunding campaigns directed at different types of entrepreneurship attract distinct audiences with shared interests (e.g., Bürger & Kleinert, 2021; Josefy et al., 2017). Considering the distinctive priority given to social versus economic value by social and commercial entrepreneurs (e.g., Calic & Mosakowski, 2016; Zahra et al., 2009), it is reasonable to anticipate that these two forms of entrepreneurship will appeal to distinct audiences with varying motivations. Social entrepreneurs are expected to attract social backers who value community-oriented products and collective identity more than financial returns (Bürger & Kleinert, 2021; Parhankangas & Renko, 2017). Rewards obtained from the investment process are primarily intrinsic, meaning they are psychological benefits rather than external or tangible gains (Allison et al., 2015). Conversely, commercial entrepreneurs will likely attract backers motivated by economic reasoning who seek innovative products with potential price discounts (i.e., extrinsic rewards) (Belleflamme et al., 2014).

Drawing on related studies (e.g., Anglin et al., 2018a; Davis et al., 2017), we examine the nuanced impact of positive emotional cues - specifically gratitude and optimism - that may be used to address the uncertainty between entrepreneurs' campaigns and backers. While these emotional cues are frequently displayed when seeking funding (e.g., Parhankangas & Ehrlich, 2014), both researchers and practitioners often overlook that these cues can both positively and negatively violate conversational norms (Jiang et al., 2023). Moreover, to contrast this emotions-as-information perspective, we further discuss campaigns that take a factual, unemotional tone.

Gratitude, Campaign Category Membership, and Crowdfunding Participation

Individuals are more likely to support others when requests for help are presented in an emotional manner that elicits positive emotions in the recipient (Dickert et al., 2011). While research has already shed light on some positive affect emotions (e.g., Davis et al., 2017), surprisingly, the "other-praising" category of emotions (Algoe & Haidt, 2009) received little attention. Emotions within this category focus on expressing appreciation for the positive qualities of others or external entities (Güsewell & Ruch, 2012). According to psychology research, particularly gratitude strengthens relationships and increases perceptions of an actor's understanding, validation, and caring (e.g., Algoe et al., 2016; Algoe & Zhaoyang, 2016). Therefore, we argue that conveying high levels of gratitude will be beneficial for both social and commercial campaigns by positively violating expectations. However, expressing gratitude is likely more important for social entrepreneurs, as relational resources are particularly important for social backers.

Building on LET, we propose two channels through which campaign category membership, signifying the entrepreneur's target audience, can strengthen the relationship between expressing gratitude and crowdfunding participation. First, the linguistic cues of expressing gratitude increase the socioemotional value for social backers, who are mainly driven by intrinsic motivation and strive to support others (Jiang et al., 2021). Thus, conveying gratitude provides direct feedback to the social and affective needs of backers and enhances intrinsic rewards, ultimately increasing participation in social campaigns (e.g., Jiang et al., 2021; Short et al., 2017). Second, by providing insight into the social and cultural norms of the campaign, expressing gratitude can increase its perceived tangibility and trustworthiness (e.g., Radoynovska & King, 2019; Robbins, 2016), which reduces backers' perceived uncertainty and risk (McKnight et al., 2002). This, in turn, will increase the likelihood of both social and commercial backers participating in a crowdfunding campaign (Liang et al., 2019). Taken together, we expect conveying high levels of gratitude to be beneficial for both social and commercial entrepreneurs through its effects on intrinsic rewards and building up trustworthiness. However, we expect that the effects of conveying high levels of gratitude will likely be more pronounced for social entrepreneurs as they stand to benefit from both proposed channels outlined above. Thus, we propose:

Hypothesis 1: Conveying gratitude is more important for the crowdfunding participation of social campaigns than commercial campaigns.

Optimism, Campaign Category Membership, and Crowdfunding Participation

According to psychology literature, optimism can either be situational (i.e., based on an evaluation of specific circumstances or factors) or dispositional, which is a more general long-term belief that good things

will happen in the future (Armor & Taylor, 1998). Despite the many desirable outcomes associated with optimism (i.e., increased motivation, Luthans & Youssef, 2007), research has brought forward conflicting evidence, with some studies reporting a positive relationship (e.g., Anglin et al., 2018a; Anglin & Pidduck, 2022); and others a negative relationship (e.g., Jancenelle et al., 2018; Sewaid et al., 2021) with crowdfunding success. Thus, taking a more context-dependent view, we hypothesize that the effect of conveying high levels of optimism is dependent on the campaign category membership (i.e., social, commercial), as each category entails specific audience motivations and corresponding expectations.

Drawing on the LET, we propose that campaign category membership leads to divergent effects of optimism on crowdfunding participation through two main channels. First, conveying high levels of optimism related to a social cause will positively violate social backers' expectations, enhancing intrinsic rewards (Allison et al., 2015). Promoting intrinsic rewards through conveying optimistic emotions will increase the persuasiveness of social campaigns. For instance, linguistic cues play a crucial role in social backers' assessment of the warm glow effect, and campaigns that convey high levels of optimism tend to downplay risks (Allison et al., 2013; Hmieleski & Baron, 2009). This, in turn, will lead to an exaggerated perception of intrinsic rewards. Moreover, social backers may perceive conveyed optimism as a cue to group identity, given that they tend to be optimistically biased (e.g., Munyoka & Maharaj, 2019). Therefore, conveying optimism may elicit social backers' support by fostering affective engagement (Allison et al., 2017).

In contrast, for commercial campaigns, conveying high levels of optimism will negatively violate commercial backers' expectations and decrease the persuasiveness of the campaign. Commercial backers are driven by economic evaluation and are more likely to view high levels of optimism as a signal of heightened uncertainty and risk (e.g., Belleflamme et al., 2014; Kim et al., 2022). Overly optimistic language in a campaign may be perceived as lacking the necessary level of caution or skepticism to evaluate the risks and challenges effectively. Additionally, such language may be viewed with suspicion by commercial backers, who are aware of the narrow success margin and high failure rates in crowdfunding campaigns (Mollick, 2014). Empirical evidence supports this contention, as commercial entrepreneurs who use overly positive language are less likely to attract funding (e.g., Parhankangas & Ehrlich, 2014). Thus, campaigns that promote themselves through overly optimistic language negatively violate commercial backers' expectations and will decrease the persuasiveness of the campaign. In particular, overly optimistic language may be viewed as lacking the necessary level of caution or skepticism needed to evaluate the risks and challenges of a crowdfunding campaign effectively. For instance, Parhankangas and Ehrlich (2014) show that commercial ventures are less likely to attract funding when using overly positive language to investors, as it can be perceived as overblown or dishonest. Moreover, high levels of optimism in a crowdfunding campaign may correspond to a lack of diverse information use (Wood et al., 2015), as excessive optimism is often readjusted based on new information (Hmieleski & Baron, 2009). In sum, we argue that campaign category membership moderates the relationship between optimism and crowdfunding participation, such that high levels of optimism are positively associated with social campaigns and negatively associated with commercial campaigns. We, therefore, hypothesize:

Hypothesis 2: Campaign category membership moderates the relationship between optimism and crowdfunding participation, such that the relationship is positive for social campaigns and negative for commercial campaigns.

Neutrality, Campaign Category Membership, and Crowdfunding Participation

Extant research advocates that entrepreneurs should strive to evoke strong emotions in potential backers to increase persuasiveness and the likelihood of funding success (e.g., Davis et al., 2017). However, recent empirical evidence (Kim et al., 2022) suggests that a more balanced tone may also be effective. Taking, both views into account, we propose a contingent approach to the use of neutral language, recognizing that the expectations of social and commercial backers may diverge. Thus, we hypothesize that the impact of conveying neutrality is dependent on the campaign category membership.

Following related research (e.g., Parhankangas & Renko, 2017; Rose et al., 2021), we propose that psychological distancing is the primary mechanism through which category membership leads to opposite effects of neutrality on crowdfunding participation. Psychological distancing refers to the mental process of creating a sense of distance or detachment between oneself and a situation, event, or topic (e.g., Trope et al., 2007). For social entrepreneurs who aim to attract social backers, using a neutral tone increases psychological distancing as it reduces the emotional connection with the campaign (Parhankangas & Renko,

2017). For instance, Seyranian and Bligh (2008) found that using vivid and less conceptual language evokes emotional reactions that support a leader's vision. Additionally, neutrality hinders the formation of a collective identity (Barberá-Tomás et al., 2019). We thus posit that social entrepreneurs who convey high levels of neutrality in their campaigns will negatively violate expectations and be less persuasive.

On the other hand, we posit that commercial entrepreneurs can leverage increased psychological distance stemming from neutral, matter-of-fact language, thereby positively violating expectations. The neutral tone can enhance the perception of objectivity and impartiality, thereby directing attention towards the benefits of the product (e.g., Rose et al., 2021; Toma & D'Angelo, 2015). Such a campaign is more likely to be supported by commercial backers who value reasoned and logical arguments over emotional appeals (e.g., Belleflamme et al., 2014; Forgas, 1998). This assertion aligns with prior studies indicating that people are more inclined to trust the information presented in a neutral, objective manner (e.g., Schlenker, 1980). Consequently, an unemotional campaign can enhance persuasiveness due to its perceived trustworthiness and credibility. Moreover, emotional appeals can be distracting and lead to a decrease in message comprehension (Slovic et al., 2007). When designing the campaign, entrepreneurs must choose between an informational or emotional appeal (Xiang et al., 2019). Therefore, presenting the campaign more objectively allows entrepreneurs to prioritize information over emotion. In sum, we propose that the influence of high levels of neutrality on crowdfunding participation will differ depending on campaign category membership. Specifically, building on psychological distancing effects', we contend that neutral language will be associated with lower backer participation levels for social campaigns but higher levels for commercial campaigns. Thus, we propose:

Hypothesis 3: Campaign category membership moderates the relationship between neutrality and crowdfunding participation, such that the relationship is negative for social campaigns and positive for commercial campaigns.

Methods

Data Collection and Sample Construction

We developed a unique dataset based on information from the crowdsourcing website Indiegogo to test our hypothesis. Indiegogo is a leading platform for rewards-based crowdfunding and a powerful instrument for both private and public fundraising (Bi et al., 2019; Indiegogo, 2023). In contrast to other crowdfunding platforms, Indiegogo offers a flexible funding model, which allows campaigners to retain all funds raised for their project, regardless of whether or not they reach their fundraising goal. This funding model mitigates the impact of survivorship bias in our sample as we include both successful and unsuccessful campaigns (Stanko & Henard, 2017).

We developed a web scraping algorithm and used the Indiegogo API to collect all projects posted on Indiegogo between 2015 and 2022. During these seven years, 17,696 projects were downloaded in December 2022. The data collected includes project title, tags, and category, funding goal and funds raised, launch and deadline date, country, and currency, as well as a short description and story text. To study how emotions trigger crowdfunding participation in social vs. commercial campaigns, we limit our dataset in the following ways. First, we focus on the two main categories, "Tech & Innovation" and "Community Projects", which align with our research objectives. These two categories include subcategories, such as "Phones & Accessories" and "Human Rights". Projects range, for instance, from gadget or software development to eco-friendly food packaging and water filtration systems for developing countries. Second, we follow related studies (e.g., Zhou et al., 2018) by including campaigns with more than ten words in their English story text and a monetary goal of at least $ 500. Third, to remove unserious campaigns, we exclude projects with unrealistic funding goals (> $1,000,000) that are not at least 1% funded (e.g., Mollick, 2014). Lastly, we remove closed campaigns where the story text has been altered accordingly. Our final sample consists of 12,862 observations after excluding incomplete data.

Measures and Statistical Model

Dependent Variable. We use c*rowdfunding participation* as our dependent variable. In line with prior research (e.g., Cecere et al., 2017; Mollick & Robb, 2016), we measure crowdfunding participation as the number of backers for the crowdsourcing project.

Explanatory Variables. To create our explanatory variables, we applied a pre-trained neural network algorithm from Huggingface. EmoRoBERTa is a variant of the RoBERTa language model that has been fine-tuned for tasks related to emotion recognition in text (Liu et al., 2019). RoBERTa (short for "Robustly Optimized BERT") is a variant of the BERT (Bidirectional Encoder Representations from Transformers) language model developed by Google. BERT is a bidirectional model, meaning it considers the context before and after a word in a sentence rather than just the context before the word, as in traditional language models. This allows BERT to better capture the meaning of words in the context of the entire sentence, leading to improved performance on tasks such as language understanding. EmoRoBERTa, fine-tuned on 58,000 Reddit comments for emotion recognition, achieves a Macro-average F1 score of 0.493 and a 0.18 standard deviation, significantly outperforming BERT's 0.46 score (Demszky et al., 2020; Kamath et al., 2022). This shows that the state-of-the-art model is especially adept at discerning and categorizing emotions in large textual datasets, a feature harnessed in diverse domains such as social media monitoring and customer experience management (Sykora et al., 2022). We apply the EmoRoBERTa algorithm to our scraped story text to extract the emotions. We focus on the most relevant emotion label the algorithm indicates and assign it to each project. To measure *gratitude*, we create a dummy variable, which takes the value of 1 if a project's emotion label is gratitude. To create our *optimism* measure, we create a dummy variable, which takes the value of 1 if a project's emotion label is optimism. Finally, we measure *neutrality* through a dummy variable, which takes the value of 1 if a project's emotion label is neutral.

Our main moderator is the indicator variable *social campaign*. Following Parhankangas and Renko (2017), we define the social campaign indicator variable as a binary code of 1 for campaigns in the "Community Projects" category of Indiegogo and 0 for campaigns in the "Tech & Innovation" category. We manually verified the face validity of these categories for our study.

Control Variables. We introduce different control variables to account for possible changes in the dependent variable. First, on the project level, we include the *funding goal* ($ amount), *project time* (days between the launch and the deadline date), and *text length* (the number of words in the project description) (Stanko & Henard, 2017). Moreover, we introduce a binary variable control for the use of *media* (i.e., images, gifs), as it also affects crowdfunding performance (Patel et al., 2021). Second, we control for campaign owner-related factors such as *crowdfunding experience* (the number of previous crowdfunding projects of the campaign owner), *sex* (a binary variable turning one if the campaign owner is a woman), and the level of *community involvement* (the number of contributions made by campaign owner to other projects), which may influence the potential backers' motivation and participation (e.g., Piening et al., 2021; Seigner et al., 2022). To account for different quality signals from campaign owner self-descriptions, we include campaign *owner description length,* operationalized by the total number of words (Piening et al., 2021). Third, following related studies (e.g., Parhankangas & Renko, 2017), we control for varying linguistic styles and content word categories typical for social and commercial campaigns using LIWC (Linguistic Inquiry and Word Count) software. LIWC operationalizes a range of psycholinguistic measures using predefined and validated word categories and calculating their occurrence relative to the total number of words in a given text. Thus, leveraging LIWC measures, we control for the use of *analytic language* (i.e., the use of analytic and formal words) (Boyd & Pennebaker, 2015), *tone* (i.e., the use of positive words), *collective language* (i.e., social references), *time orientation*, and interactive style (i.e., use of *questions* and *exclamations*) in the campaign story (e.g., Allison et al., 2013; Parhankangas & Renko, 2017). Moreover, we include the *deception cues* (Newman et al., 2003) to capture possible deception in the campaign owner description and the *tech orientation* as an important human capital indicator (Ahlers et al., 2015). Lastly, as our dataset spans several years, we include dummy variables for the *year* the campaign ends to control for unobservable time-varying effects (Wessel et al., 2017). We winsorize all continuous variables at the 2nd and 98th percentile to rule out the possibility of outliers distorting our analysis (Austin et al., 2006).

In analyzing our conceptual model with a dependent variable derived from count data, we considered both Poisson and negative binomial regression methods (Becker et al., 2019). The negative binomial model, which accounts for overdispersion often present in count data (Blevins et al., 2015), extends the Poisson model by adding parameters. To determine the appropriateness of the Poisson model, we conducted a goodness-of-fit (gof) test (Hausman et al., 1984). The results of the test indicated that the Poisson distribution was not suitable. Therefore, we opted for negative binomial regression. We used robust standard errors to control for minor violations of underlying assumptions (Cameron & Trivedi, 2009). Additionally, an analysis of variance inflation factors (VIF) revealed no issues with multicollinearity, with factors ranging from 1.01 to 2.23, well below critical thresholds for multicollinearity.

Results

Within our sample, 46.3% of campaigns are social. Commercial campaigns average 103.9 backers and $10,159 in funds, while social ones average 28.5 backers and $2,899. Text classification by campaign type shows that commercial campaigns exhibit a slight lead in neutrality (18.0% vs. 14.2%), while social campaigns show a marginally higher inclination toward gratitude (16.3% vs. 15.5%) and optimism (6.4% vs. 5.6%).

Table 1 presents the results from the negative binomial regression model predicting *crowdfunding participation*, including results on the moderating effect of *social campaigns*. The base model (Model 1) includes only control variables previously identified by prior studies. In accordance with the extant literature, several controls exhibit a significant positive effect (e.g., *crowdfunding experience*, *media*) and a significant negative effect (e.g., *sex*). In Model 2, we add our main independent variables. Our hypotheses are tested in Model 3, including first-order and interaction terms. Model 3 shows a positive and statistically significant direct effect of *gratitude* (β = 0.40; p = .001) and a negative and statistically significant interaction of *gratitude* and *social campaign* (β =-.52; p = .001). Panel A in Figure 1 presents the conditional predicted marginal effects of *gratitude* on *crowdfunding participation* for social and commercial campaigns. In sum, these findings only partially support Hypothesis 1, that being a *social campaign* moderates the relationship between *gratitude* and *crowdfunding participation* such that the relationship is more important for social than for commercial campaigns. Based on our findings, it appears that the relationship between *gratitude* and *crowdfunding participation* is positive for commercial campaigns, whereas, for social campaigns, the effect is reversed. Regarding *optimism*, Model 3 shows a negative and statistically significant direct effect (β = -.32; p = .002) and a positive and statistically significant interaction of *optimism* and *social campaign* (β = -.86; p = .008). Panel B in Figure 1 displays the predicted marginal effects of *optimism* on *crowdfunding participation* for social and commercial campaigns. Taken together, the results support Hypothesis 2, which posits that the relationship between *gratitude* and *crowdfunding participation* is moderated by social campaign category membership, such that the relationship changes from negative to positive. Finally, Model 3 of Table 2 reveals a positive and statistically significant direct effect of *neutrality* (β = .37; p = .025) and a negative and statistically significant interaction of *neutrality* and *social campaign* (β = -.53; p = .005). Panel C in Figure 1 illustrates the conditional predicted marginal effects of *neutrality* on *crowdfunding participation*, depending on the level of our social campaign indicator. These prior two results support Hypothesis 3, that being a *social campaign* moderates the relationship between *neutrality* and *crowdfunding participation* such that the relationship changes from positive to negative for social campaigns.

To supplement our analysis, we followed the recommendations of Gardner et al. (2017) and conducted separate regressions for social and commercial campaigns. The results are presented in Models 4 and 5 of Table 1, indicating that the negative binomial regression coefficients for gratitude, optimism, and neutrality are statistically significant in both the social and commercial campaign samples and, as before, have different directions.

The results are economically significant, with the predicted marginal effect sizes indicating a 47% decrease in crowdfunding participation when conveying gratitude in a social campaign relative to a commercial campaign. Conveying optimism increases social campaign participation by 61%, while neutrality decreases it by 46% compared to commercial campaigns (and vice versa).

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Funding goal	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00*** (0.00)
Project time	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.01*** (0.00)	0.01* (0.00)
Campaign story length	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)
Crowdfunding experience	0.17*** (0.04)	0.16*** (0.04)	0.16*** (0.04)	-0.06*** (0.01)	0.24*** (0.04)
Community involvement	0.04*** (0.02)	0.05*** (0.02)	0.05*** (0.02)	0.09*** (0.03)	0.03* (0.01)
Owner description length	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Analytic language	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00** (0.00)
Tone	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	-0.01 (0.02)	0.05** (0.02)
Collective language story	-0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.04*** (0.01)	-0.01 (0.01)
Time Orientation	0.06*** (0.02)	0.07*** (0.02)	0.07*** (0.02)	0.05*** (0.01)	0.06** (0.03)
Questions	0.57*** (0.21)	0.53*** (0.20)	0.53*** (0.20)	-0.04 (0.09)	0.81*** (0.25)
Exclamations	0.09* (0.05)	0.08* (0.05)	0.08* (0.04)	0.10*** (0.03)	0.05 (0.06)
Deception cues	0.00** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00 (0.00)
Technological orientation	0.04*** (0.01)	0.03** (0.01)	0.03** (0.01)	-0.01 (0.01)	0.04** (0.02)
Media	0.79*** (0.06)	0.73*** (0.05)	0.74*** (0.05)	0.44*** (0.05)	0.81*** (0.07)
Sex	-0.42*** (0.07)	-0.42*** (0.07)	-0.40*** (0.06)	-0.24*** (0.05)	-0.44*** (0.08)
Gratitude		0.17** (0.08)	0.40*** (0.13)	-0.14** (0.06)	0.40*** (0.11)
Optimism		0.19 (0.18)	-0.32*** (0.10)	0.36* (0.20)	-0.17* (0.10)
Neutrality		0.16 (0.11)	0.37** (0.16)	-0.16** (0.06)	0.25** (0.13)
Social		-0.31*** (0.05)	-0.20*** (0.07)		
Gratitude # Social			-0.52*** (0.15)		
Optimism # Social			0.86*** (0.32)		
Neutrality # Social			-0.53*** (0.17)		
Constant	1.24*** (0.26)	1.26*** (0.25)	1.22*** (0.23)	1.57*** (0.19)	0.98*** (0.31)
lnalpha	0.73*** (0.03)	0.72*** (0.03)	0.71*** (0.03)	0.66*** (0.03)	0.64*** (0.03)
Year Dummies	Yes	Yes	Yes	Yes	Yes
Observations	12862	12862	12862	5957	6905
Log pseudolikelihood	-56959.09	-56875.00	-56790.74	-24323.34	-31966.05
Wald chi2	1279.36	1429.49	1534.17	495.37	1446.63
Pseudo R^2	0.052	0.054	0.055	0.017	0.071

Note: Year dummies included but not reported. Standard errors (in parentheses) are White heteroskedasticity robust. Significance levels (two-tailed): * p< .1; ** p< .05; *** p< .01.

Table 1. Regression Results

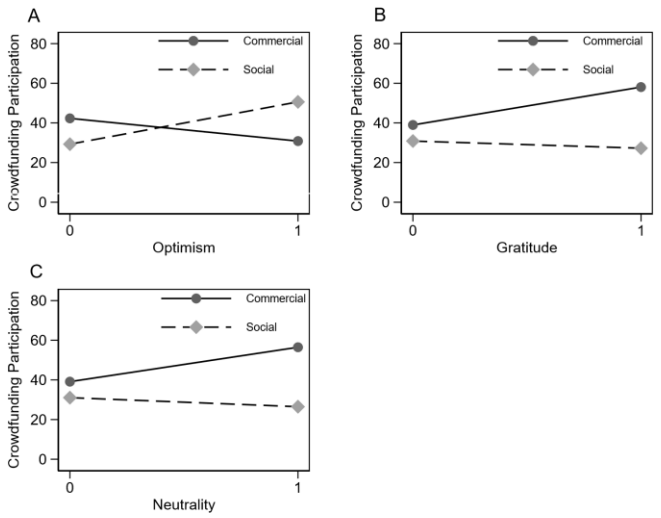

Figure 1. Interaction Effects

Robustness Checks

To ensure the robustness of our findings, we conducted several supplementary analyses. First, we validated our gratitude, optimism, and neutrality measures by comparing them to other, less sophisticated text-based proxies of emotions commonly used in management studies. Specifically, we compared our measures to Locklear et al. (2020) dictionary-based measure of gratitude, McKenny et al. (2013) dictionary-based measure of optimism, and Pennebaker et al. (2014) score of analytical thinking for neutrality. Our findings reveal a consistent positive relationship between our novel and refined approach and traditional dictionary-based measures. However, moderate correlations suggest that our approach may contain relevant information not captured by traditional measures. Second, we used Heckman's two-step procedure to address potential endogeneity concerns arising from sample selection (e.g., Certo et al., 2016; Heckman, 1979). Specifically, we collected all campaigns of Indiegogo's third main category, "Creative Works," to collect the entire population of Indiegogo campaigns between 2015 and 2022. Next, we specified a selection equation with a binary dependent variable, *Social_or_Commercial*, predicting the probability of a campaign being either a campaign of the category "Creative Works" or belonging to our sample of social and commercial campaigns (probit). We chose creativity-speak measured in the campaign owner's description as our exclusion restriction given that it is negatively related to the likelihood of campaigns being selected into the sample (β = -.011; p = .009) while not predictive of crowdfunding participation. We calculated the inverse Mills ratio (IMR) and included it in the second-stage negative binomial model to correct for selection bias. The results indicate that our analysis does not suffer from selection bias. Third, we tested the sensitivity of our results to potential omitted variable bias. Following recent studies (e.g., Quigley et al., 2020), we determined the impact threshold of confounding variables (ICTV) for all interaction effects between the conveyed emotions and campaign category membership (gratitude: 37.60%, optimism: 24.64%, neutrality:32.46%). The results suggest that our findings are unlikely to be driven by omitted variables. Fourth, to mitigate concerns of campaign misclassification, we reran the analysis, excluding "Tech & Innovation" projects with tags such as "social innovation" or "community," which may signal inherent social value. The results are fully robust. Fifth, we reran Model 3 using two alternative measures to quantify the success of the crowdsourcing projects: the amount of money raised and the percentage of the campaign funded (e.g., Jiang et al., 2021), both yielding robust results. Sixth, we checked for bias introduced by winsorization (e.g., Rose et al., 2021) and performed our analysis without and with winsorization at the 1st and 99th percentiles. The results remain robust. Seventh, we excluded the years 2020 and 2021 from our analysis to account for possible macroeconomic influences of the COVID-19 pandemic. Our findings remain completely reliable. Lastly, we included country dummies as additional controls to mitigate the potential effects of country-specific factors of crowdfunding participation (e.g., Allison et al., 2013). The results remain robust. Overall, these supplementary analyses increase our confidence in the robustness of our findings.

Discussion

Building on recent advances in crowdfunding and information systems literature, our study examines the role of conveyed emotions in predicting crowdfunding participation and the significance of campaign category membership (i.e., social or commercial). Building on language expectancy theory's notion of expectancy violations and insights from emotional psychology, we demonstrate that entrepreneurs can enhance campaign persuasiveness by conveying gratitude, optimism, and neutrality dependent on the campaign category membership, as emotions serve as cues for either the socioemotional value or the economic value of the campaign. Counterintuitively, our study's results show that social entrepreneurs who express high levels of gratitude are less successful in attracting commitment from social backers. This is surprising given that gratitude is typically regarded as a positive characteristic for entrepreneurs (e.g., Baron, 2008). We offer two potential explanations for this finding. First, conveying high levels of gratitude may shape whether the social entrepreneur is viewed as legitimately needy, as overdone gratitude may decrease the intrinsic rewards of social backers, leading to less participation. In support, Allison et al. (2017) show that blame rhetoric increases funding speed for social ventures while emphasizing accomplishments decreases it. Second, an excessive emphasis on gratitude towards past and future support may lead to diffusion of responsibility effects, decreasing contributions to already well-supported projects (e.g., Kuppuswamy & Bayus, 2017). Overall, our findings provide a nuanced view of the effects of emotional framing in crowdfunding campaigns and contrast previous research that has examined the impact of emotions in a more unitary manner (e.g., Ren et al., 2021; Tafesse, 2021; Xiang et al., 2019).

Theoretical Contribution

This study adds to the literature on entrepreneurship and information systems in several important ways. First, we contribute to extant research on the LET in an online context (e.g., Averbeck & Miller, 2014; Jensen et al., 2013; Parhankangas & Renko, 2017) by exploring language expectancies related to entrepreneurs' conveyed emotions, and how these expectancies, shaped by backer motivation, influence campaign persuasiveness. Specifically, we propose that positive emotions can both positively *and* negatively violate the expectations of social and commercial campaigns, resulting in divergent effects for social and commercial entrepreneurs. Additionally, we extend the growing literature on the role of communication in crowdfunding (e.g., Anglin et al., 2018b; Anglin et al., 2023; Patel et al., 2021). Our findings contribute to the ongoing debate on the relationship between optimism and crowdfunding success, where previous studies have produced mixed results (e.g., Anglin et al., 2018a; Jancenelle et al., 2018), with a focus on campaign content. In contrast, we have sought to explain the effects of emotions contingent on the campaign category membership. We reveal that the positive link between optimism and crowdfunding participation in social campaigns may be inverted in commercial campaigns. Furthermore, our results indicate that gratitude's effect on crowdfunding participation also depends on the campaign category membership. In line with previous research (e.g., Starr & MacMillan, 1990), we find a positive association between gratitude with crowdfunding participation for commercial campaigns. Interestingly, our results show a negative gratitude-crowdfunding relationship for social entrepreneurs, highlighting the importance of examining crucial contingencies and recognizing the disparities between social and commercial entrepreneurship (Austin et al., 2006).

Second, our study contributes to the literature on affective language and crowdfunding success by providing a nuanced perspective on conveying a more neutral, matter-of-fact tone in social and commercial campaigns. Specifically, we find neutrality has a positive effect on campaign participation for commercial entrepreneurs but a negative effect for social entrepreneurs. This finding contrasts with previous research assumptions on the unidirectional positive or negative effects of affective language on crowdfunding success (e.g., Davis et al., 2017; Kim et al., 2016; Zhou et al., 2018). Our study complements recent findings by Kim et al. (2022) on the positive effects of a balanced tone and extends work on the effects of psychologically distant language (Parhankangas & Renko, 2017). Our results also have implications for impression management in entrepreneurship (e.g., Parhankangas & Ehrlich, 2014) and suggest that a neutral narrative may effectively persuade potential commercial backers who base their decisions on economic reasoning (Belleflamme et al., 2014).

Third, our study takes a more sophisticated approach to analyzing linguistic styles and emotions in campaign content compared to previous research. Previous research, especially when drawing on the LET

in the crowdfunding context, has examined specific linguistic features or categories of words (e.g., Parhankangas & Renko, 2017; Thewissen et al., 2022). This study is one of the first to take a more holistic approach to language expectancy violations, examining the campaign communication as a whole rather than just individual words. It is worth noting that the use of advanced natural language processing models, like EmoRoBERTa, can provide a more accurate and nuanced analysis of language and emotions compared to simpler word-count-based methods. This is because these models can understand the context and semantics of the language used rather than just counting the occurrence of specific words. As such, our study's use of EmoRoBERTa allowed us to gain a more detailed and comprehensive understanding of the psychological and social meanings conveyed through campaign language. Gaining a more comprehensive understanding of these meanings is especially important in crowdfunding, where the language used in campaigns can significantly impact the decision-making processes of potential backers. By using more advanced methods to analyze language and emotions, researchers and practitioners can better understand these factors and how they influence campaign success.

Implications for Practice

Beyond theory, our findings also have important implications for practitioners. In contrast to everyday, spontaneous conversations, campaign pitches on crowdfunding platforms are carefully planned and revised. Based on our results, commercial campaigns benefit from conveying gratitude and neutrality, while too much optimism can be detrimental. In contrast, social campaigns thrive on conveying optimism but should avoid neutral or overly grateful language. Overall, entrepreneurs should be mindful of the language they use and the emotions they convey in their campaign content. It is worth noting that while adjusting the language and emotions in campaign content can be effective in influencing the decisions of potential backers, it is also important for entrepreneurs to be genuine and authentic in their communication. Using language and emotions in a manipulative or inauthentic way may ultimately harm the credibility and trustworthiness of the campaign. Therefore, entrepreneurs need to strike a balance and use language and emotions effectively and appropriately. However, some entrepreneurs may struggle to express emotions due to personal or dispositional factors. To address this challenge, entrepreneurs can consider enrolling in programs or participating in organizations focusing on developing emotional communication skills. By improving their ability to express emotions in their pitches, entrepreneurs may increase their chances of success in crowdfunding campaigns. Another practical tip for entrepreneurs is to consider the emotional needs and motivations of their target audience, as suggested by the campaign's category membership. Different audiences may have different emotional triggers and respond differently to different emotions. By carefully considering the emotions that are likely to resonate with their target audience, entrepreneurs can craft their campaign pitches in a way that is more likely to appeal to potential backers. It is also important for entrepreneurs to be aware of cultural differences and the potential impact that these may have on the emotions conveyed in their campaign pitches. Being mindful of these factors can help entrepreneurs effectively communicate emotions and increase the chances of their campaign's success.

Limitations and Future Research

Our study has some limitations that offer promising opportunities for future research. First, our data are from a single crowdfunding platform, and while many similarities and standards may ensure the broad applicability of our findings, platforms may vary in terms of their revenue model (e.g., fixed vs. flexible funding) and cost of usage (e.g., platform fees). Future studies should test our findings using data from different platforms. Second, while we rigorously confirmed the face validity of the platform's classification of campaigns as either social or commercial, the categorization could still be refined. Future studies could employ Machine-learning classifiers to enhance the categorization accuracy (e.g., Siering et al., 2016). Third, our study zeroes in on the predominant emotion conveyed in crowdfunding campaigns, a focus mirrored in our operationalization using binary indicators for each emotion. While this provides initial insights into the role of distinct emotional categories in persuading backers, it does not capture the interplay of multiple emotions that may be simultaneously elicited, as suggested by psychological literature (e.g., Larsen & McGraw, 2011). Future research could explore the nuanced effects of combined emotions on campaign persuasiveness (e.g., gratitude and entrepreneurial passion, Oo et al., 2019). Fourth, a significant challenge in crowdfunding research is the lack of data on backers (McKenny et al., 2017). While our results provide initial evidence that different conveyed emotions or unemotionality in campaigns tend to influence the decision-making process of potential backers, we cannot directly measure the impact using secondary

data. We encourage researchers to build upon our findings using experimental designs where decision-making processes can be directly measured (e.g., Davis et al., 2017) and individual factors can be examined in greater detail, for instance, with a subsequent survey for the backers to examine their support decision further. Lastly, although our approach using advanced natural language processing techniques and deep learning addresses many limitations of previous research relying on word counts to measure constructs (e.g., Anglin et al., 2018a; Parhankangas & Renko, 2017), it also introduces new limitations. For instance, deep learning models like EmoRoBERTa operate as a "black box," making it challenging to discern the specific linguistic features used to assign emotional scores (Chan et al., 2021). Furthermore, while our rigorous validation enhances the reliability of our findings, mindful consideration of the model's accuracy is advisable when drawing conclusions based solely on its classifications. However, as management scholars call for the increased use of advanced techniques (e.g., Harrison et al., 2022) to establish guidelines and increase generalizability, our approach can serve as a blueprint for similar research endeavors.

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