Gender and Counterstereotypical Facial Expressions of Emotion in Crowdfunded Microlending

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Abstract

Crowdfunded microlending research implies that both communal and agentic characteristics are valued. These characteristics, however, are often viewed as being at odds with one another due to their association with gender stereotypes. Drawing upon expectancy violation theory and research on gender stereotypes, we theorize that gender-counterstereotypical facial expressions of emotion provide a means for entrepreneurs to project "missing" agentic or communal characteristics. Leveraging computer-aided facial expression analysis to analyze entrepreneur photographs from 43,210 microloan appeals, we show that women benefit from stereotypically masculine facial expressions of anger and disgust, whereas men benefit from stereotypically feminine facial expressions of sadness and happiness.

Keywords

facial expressions of emotion, gender, stereotypes, microlending, expectancy violation

Crowdfunded microlending allows prosocially motivated laypeople to create social impact by backing small, crowdfunded loans (Allison et al., 2015; Bruton et al., 2015). These loans are mostly made to entrepreneurs wishing to launch or grow a venture, allowing them to improve the quality of life for their families and communities (Anglin et al., 2020; Moss et al., 2018). A

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majority of microloans go to women (Figueroa-Armijos & Berns, 2021; Khavul et al., 2009), in part because their stereotypically communal characteristics are associated with greater motivation to use lent funds in ways that have a social impact. Communal characteristics are relationshiporiented and stereotypically feminine in nature, such as being caring, nurturing, or empathetic towards others (Eagly, 1987; Eagly & Johannesen-Schmidt, 2001; Smith et al., 2013). Reflecting this, women are more likely to spend the profits of their ventures on family or community members (Bruton et al., 2011). Lending further credence to the premise that microlenders value communal characteristics, research has found that displaying care for others, concerns about fairness, and concerns for the rights of others, increases loan contributions in crowdfunded microlending (Jancenelle et al., 2018).

Microlenders also value agentic characteristics. Agentic characteristics are action-oriented and stereotypically masculine in nature, such as being dominant, aggressive, or assertive (Eagly et al., 2000; Lee & Huang, 2018; Smith et al., 2013). Agentic characteristics are widely viewed as important for entrepreneurial success, contributing to the notion that entrepreneurship is an agentic, "masculine" endeavor (Balachandra et al., 2019). For example, successful entrepreneurs are generally perceived to be self-reliant, confident, aggressive, and risk-taking, with an ability to shape the world around them (Anglin, Wolfe, et al., 2018). In line with this, microlenders respond more favorably to entrepreneurs who present themselves as having the potential to shape their own future upon receiving financial support by displaying agentic characteristics (e.g., competitive aggressiveness and risk-taking; Moss et al., 2015).

Crowdfunded microlenders' valuation of both communal and agentic characteristics creates a gender-based tension for entrepreneurs seeking microloans. Gender is stereotypically associated with one set of these characteristics—communal characteristics for women and agentic characteristics for men (Eagly, 1987). But how can women seeking crowdfunded microloans appear agentic and how can men appear communal? Facial expressions of emotion may provide a solution, as they have been found to be differentially associated with men and women based on gender stereotypes (Birnbaum & Chemelski, 1984; Plant et al., 2000). Moreover, because microloan appeals are brief and the information available to microlenders is minimal, stereotypes corresponding with facial expressions are likely to be highly salient in crowdfunded microlending. To that end, we argue that both men and women benefit from projecting "missing" agentic or communal characteristics through facial expressions of emotion that run counter to stereotypes of their gender.

To probe this possibility, we study the intersection of expectancy violation theory (Jussim et al., 1987) and gender stereotypes (Eagly et al., 2000). Expectancy violation theory holds that counterstereotypical behavior encourages observers' favorable impressions of, and responses to, the violator when the behavior communicates characteristics which are valued in context (Jussim et al., 1987). Women are stereotypically perceived to embody communal characteristics but lack agentic characteristics (Eagly & Karau, 2002). As such, expectancy violation theory implies that expressing an agentic emotion (e.g., anger or disgust; Hareli et al., 2014; Ridgeway, 2006) in their microloan appeal would enable women to increase funding performance because doing so allows them to project valued agentic characteristics, in addition to the communal characteristics stereotypical of their gender. Likewise, we theorize that men benefit from expressing a communal emotion (e.g., happiness, sadness, fear, or surprise; Hess et al., 2004, 2005).

We make three distinct, yet connected, contributions. First, we contribute to research on gender in entrepreneurial fundraising. Studies showing that women entrepreneurs often face discrimination by resource providers are generally rooted in the premise that entrepreneurs should display stereotypically masculine, rather than feminine, characteristics (Abraham, 2020; Bird & Brush, 2002; De Bruin et al., 2007; Malmström et al., 2017). Reflecting this, recent work has demonstrated that feminine-stereotyped behaviors generally hinder funding pitch outcomes in traditional funding contexts, such as venture capital, for both men and women entrepreneurs. This has led to the view that when raising funds, "femininity leads to a disadvantage" (Balachandra et al., 2019, p. 130). Our results nuance this notion and provide evidence to demonstrate that feminine expressions can be helpful in funding contexts with prosocial aims, such as crowd-funded microlending.

Second, we contribute to the literature concerning entrepreneurial fundraising in hybrid contexts (e.g., Moss et al., 2018). Crowdfunded microlending is a hybrid organizational context (McMullen & Warnick, 2016) where lending decisions are based on both prosocial and economic/entrepreneurial expectations (Galak et al., 2011). Prior work has linked the display of communal characteristics in the written part of a microloan appeal to entrepreneurs' satisfaction of microlenders' prosocial expectations (e.g., Jancenelle et al., 2018) and linked the display of agentic characteristics to satisfaction of economic/entrepreneurial expectations (e.g., Moss et al., 2015). We connect these findings and extend prior work in two important ways. One, while prior work has examined how differences in campaign language can communicate agentic or communal characteristics, we introduce entrepreneurs' facial expressions of emotion as a mechanism to display characteristics that satisfy prosocial or economic expectations. Two, our work suggests that entrepreneurs' gender influences the characteristics needed to satisfy microlenders' expectations. Specifically, our work suggests that, to be viewed favorably by stakeholders in hybrid contexts, women should focus on satisfying economic expectations, whereas men should focus on satisfying prosocial expectations. This contribution is practically important for the organizations that help entrepreneurs obtain and crowdfund microloans; they should consider how facial expressions may be helping or harming fundraising. These influences are appreciable given that microlending accounts for millions in fundraising per week.

Finally, our study examines facial expressions of emotion as a way of communicating characteristics that are expected by fundraisers but are not implied by one's personage. Indeed, one's visage can project expected but "missing" characteristics. In the course of demonstrating this, we study emotional expressions that have been understudied in the emotions literature within entrepreneurship. Our work provides evidence that emotions that may be expressed less frequently by entrepreneurs, such as anger or fear, drive funding outcomes. We thereby embrace calls to avoid overlooking phenomena that occur less frequently, as they may drive important outcomes (Douglas et al., 2020; O'Boyle & Aguinis, 2012). Our work further suggests the importance of viewing entrepreneurs' emotional expressions through the lens of gender.

Theory and Hypotheses

Background on Crowdfunded Microlending

Crowdfunded microlending blends the concepts of microlending (i.e., providing small, unsecured loans to the poor; Bruton et al., 2011) and crowdfunding (i.e., use of an internet platform to support loans via a "crowd" of funders; Allison et al., 2017) to enable individual microlenders to fund small loans to impoverished individuals, most of whom are entrepreneurs (Allison et al., 2015). Three aspects of crowdfunded microlending—who microlenders are, how much they loan, and why they lend—define this funding mechanism relative to traditional, for-profit entrepreneurial funding. First, individual microlenders are not sophisticated resource providers. They are everyday people residing in developed economies who desire to make a difference by giving a hand up to the economically disadvantaged (Allison et al., 2013). Second, because total loan amounts and individual contributions provided by each individual microlender are small, crowdfunded microlending relies on brief microloan appeals to encourage lending, as opposed to the professionalized funding pitch and due diligence process found in traditional venture finance settings. Here, microlenders balance prosocial concerns of helping others with desire to support competent entrepreneurs (Allison et al., 2015; Anglin et al., 2020). Third, the fundamental mission of crowdfunded microlending is the facilitation of poverty alleviation by serving economically vulnerable populations, often with a particular emphasis on women (Ganle et al., 2015; Rahman, 2019). The data for our study are consistent with this emphasis on women, with approximately 81.5% of loans going to women, and women experiencing a 17 percentage-point greater probability of meeting their funding goal than men. Moreover, reflecting the prosocial nature of the context, crowdfunded microlenders receive no economic return. Instead, they only receive repayments of the amount they lent, without interest, when entrepreneurs make payments on their loan.¹

Gender Stereotypes and Expectancy Violation Theory

Gender stereotypes are common beliefs and expectations regarding the appropriate behaviors and characteristics displayed by those behaviors—of men and women (Eagly et al., 2000; Rosette & Tost, 2010). The characteristics stereotypically associated with women are communal, referring to those that are relationship-oriented in nature, such as being perceived as nurturing and exhibiting concern for others (Eagly & Johannesen-Schmidt, 2001; Smith et al., 2013). In contrast, the characteristics stereotypically associated with men are agentic, referring to those that are action-oriented in nature, such as being perceived as dominant, capable, or aggressive (e.g., Eagly, 1987; Lee & Huang, 2018).

Gender stereotypes play an important role in shaping the way we perceive and respond to others on the basis of their displayed characteristics (Hess et al., 2004, 2005). Indeed, gender stereotypes have consistently been found to be pervasive and automatically activated in social interaction (Banaji & Hardin, 1996). The influence of gender and associated stereotypes is particularly salient in low-information settings (Banaji & Hardin, 1996), such as crowdfunded microlending. Research on gender stereotypes has often focused on the unfavorable outcomes of expectancy violations, wherein violators are punished for displaying unexpected characteristics that are counter to stereotypes of their gender (e.g., Brescoll & Uhlmann, 2008; Eagly & Karau, 2002). For instance, upon receiving negative feedback in the workplace, men who express the counterstereotypical emotion of sadness are evaluated more harshly compared to women who express sadness (Motro & Ellis, 2017). However, negative outcomes are not universal: research on gender stereotypes has begun to acknowledge that displaying characteristics that are counter to stereotypes and to acknowledge that displaying characteristics that are counter to stereotypes has begun to acknowledge that displaying characteristics that are counter to stereotypes has begun to acknowledge that displaying characteristics that are counter to stereotypes and to acknowledge that displaying characteristics that are counter to stereotypes of one's gender can actually represent positive expectancy violations, leading to favorable outcomes.

Expectancy violation theory posits that the display of unexpected characteristics that run counter to gender stereotypes can lead observers to develop positive impressions of and responses to the violator in settings where those characteristics are desirable (Hmieleski & Sheppard, 2019; Jussim et al., 1987). In such instances, these unexpected characteristics are additive, complementing the characteristics one is already expected to possess due to stereotypes of their gender (Heilman & Chen, 2005; Hmieleski & Sheppard, 2019; Schaumberg & Flynn, 2017). For example, despite the stereotypically communal, feminine nature of altruistic behavior, men's altruistic behavior at work enhances supervisor evaluations of their performance (Heilman & Chen, 2005). Research has also found that women may benefit from displaying stereotypically masculine characteristics, such as self-reliance, increases female leaders' performance evaluations more than their male counterparts (Schaumberg & Flynn, 2017). This occurs because displaying valued agentic characteristics complements stereotypes of women's communality, whereas men are stereotypically assumed to already embody agentic characteristics (Schaumberg

& Flynn, 2017). Overall, expectancy violation theory explains that displaying valued, counterstereotypical characteristics can complement other valued characteristics that one is implicitly assumed to possess based on gender stereotypes (Heilman & Chen, 2005; Hmieleski & Sheppard, 2019; Schaumberg & Flynn, 2017).

Gender Stereotypes and Facial Expressions of Emotion

Evolutionary psychologists and sociologists have found that facial expression of emotions, as well as their recognition and interpretation by others, are generally consistent across different cultures (Ekman, 1999). Further, research on social interaction and impression formation has emphasized the salience of facial expressions of emotion in human communication, highlighting specific emotions – as well as the expression of those emotions – that are differentially associated with women and men (Birnbaum & Chemelski, 1984; Plant et al., 2000). Of the six basic emotions identified in facial expression research (Ekman, 1992; Ekman & Friesen, 2003), anger and disgust are agentic emotions, with their expression stereotypically associated with men (Hareli et al., 2014; Ridgeway, 2006). In contrast, happiness, fear, sadness, and surprise are communal emotions, whose expression is stereotypically associated with women (Hess et al., 2004, 2005).

Facial expressions of emotion may be particularly important in crowdfunded microlending given that microloan appeals on most crowdfunded microlending platforms include a prominent photograph of the entrepreneur. Such reasoning is consistent with work illustrating the significant power of emotional expressions to influence the entrepreneurial fundraising process and, like gender stereotypes, emotional expressions are particularly salient in low information settings, such as crowdfunding (e.g., Davis et al., 2017; Jiang et al., 2019; Scheaf et al., 2018; Warnick et al., 2021). As a result, facial expressions of emotion may provide a mechanism for entrepreneurs to display gender-counterstereotypical characteristics that microlenders value.

Facial Expression of Communal Emotions

Expressing communal emotions (e.g., happiness, fear, sadness, or surprise) encourages others' prosocial behavior, suggesting the importance of such emotions in prosocial contexts. This reasoning is consistent with past research in crowdfunded microlending linking expressions of communality to funding performance (e.g., Jancenelle et al., 2018). For instance, smiling-which is a marker of facially expressed happiness-is indicative of low power and social affiliation (LaFrance & Henley, 1994) and encourages others' support (Park et al., 2020). Expressions of happiness also convey communal characteristics, such as affability and the desire to affiliate (e.g., Diefendorff & Greguras, 2009). Communal characteristics are also conveyed by expressions of sadness (Hess et al., 2005), with research finding that such expressions increase perceptions of likability and warmth, while also promoting perceptions that the expresser is in need of help (Tiedens, 2001). Motro and Ellis (2017) illustrate that displaying sadness, the act of crying in this case, is viewed as a feminine behavior that is "fitting for individuals who are perceived to possess communal rather than agentic characteristics" (p. 228). Finally, fear and surprise are associated with uncertainty, loss of control, and often occur in response to potential threats (Gray, 1987; Lerner & Keltner, 2001), such as those faced by entrepreneurs seeking crowdfunded microloans. Reflecting this, facial expressions of fear or surprise convey a lack of dominance (Gray, 1990; Shen & Dillard, 2007).

Expectancy violation theory provides an explanation why facial expressions of communal emotions in microloan appeals may be especially beneficial for men. Communal characteristics are valued by microlenders but are counter to gender stereotypes of men. Displays of unexpected, yet valued characteristics have a disproportionately positive impact on observers (Hmieleski & Sheppard, 2019) because such characteristics are assimilated with or added to the valued characteristics that an expresser is already expected to possess as a function of their group membership (Jussim et al., 1987). When applied to crowdfunded microlending, this suggests that the unexpected, valued communal characteristics communicated by communal emotions are assimilated with the agentic characteristics that men are stereotypically assumed to possess. In this way, men who display communal emotions suggest they possess both communal and agentic characteristics, increasing the likelihood that they will be viewed positively by microlenders. In contrast, women entrepreneurs likely have little to gain from expressing communal emotions since they are already stereotypically assumed to possess communal characteristics. Here, facial expressions of communal emotions might reinforce stereotypes of women entrepreneur. As such, we expect that facial expression of a communal emotion increases the microlending performance of men more than women.

Hypothesis 1: Facial expression of a communal emotion increases crowdfunded microlending performance more for men entrepreneurs, as compared to women.

Facial Expression of Agentic Emotions

Within Ekman and Friesen (2003) six basic emotions of facial expression, agentic characteristics are displayed via expressions of anger (Durik et al., 2006; Keck, 2019; Ridgeway, 2006) and disgust (Hareli et al., 2014; Ridgeway, 2006). Agentic characteristics convey a dominant, selfassured, active, and independent tendency (Hess et al., 2005; Lee & Ellsworth, 2013). Reflecting this, expressions of disgust are associated with the rejection of outside forces and the willingness to stand one's ground (Newhagen, 1998; Plutchik, 1980). In turn, expressions of disgust encourage perceptions of the expresser's agentic characteristics, such as dominance and willingness to act (Lee & Ellsworth, 2013; Plutchik, 1980). Similarly, anger is linked to an increased sense of certainty (Lerner & Keltner, 2001), encouraging proactive behavior under conditions of risk or uncertainty, both of which are prevalent in entrepreneurship (Foo, 2011). Anger is typically felt and expressed when facing impediments in goal achievement-as is the case of entrepreneurs seeking financial capital through crowdfunded microloans-encouraging action to move beyond this impediment toward a desired condition or to rectify an injustice (Carver & Harmon-Jones, 2009; Harmon-Jones, 2003; Shaver et al., 1987). Emotion scholars have noted that facial expressions of anger may engender perceptions of the expresser's ambition (Van Kleef et al., 2010) as well as perceptions of other agentic characteristics, such as competence, toughness, and determination (Hareli & Hess, 2010; Harmon-Jones et al., 2011; Tiedens, 2001). The motivational, agentic characteristics that expressions of anger indicate may prove appealing to microlenders given their desire to provide financial capital to empower those in undesirable economic conditions to better themselves and their communities. Indeed, prior work has shown that expressions of agentic characteristics help fulfill microlenders' desire to support more "entrepreneurial" campaigns (e.g., Moss et al., 2015).

Expectancy violation theory provides an explanation for why facial expression of agentic emotions in microloan appeals may prove more beneficial for women than men. Because agentic characteristics are valued, yet counter to gender stereotypes about women, the display of such characteristics by women should have a disproportionately positive impact on microlenders (cf. Hmieleski & Sheppard, 2019). Given their valued, yet unexpected nature, the agentic characteristics communicated by agentic emotions should be assimilated with the communal characteristics that women are already assumed to possess via stereotypes of their gender. Thus, women

displaying agentic emotions may appear to possess both communal and agentic characteristics, increasing the likelihood that they would be viewed positively by microlenders. In turn, microlending performance should be improved. However, men seeking microloans likely benefit less from expressing agentic emotions, as gender stereotypes of men already imply that they possess agentic characteristics (Hess et al., 2005; Lee & Ellsworth, 2013). Rather, men's facial expression of agentic emotions likely reinforces gender stereotypes that they are agentic, while failing to display the communal characteristics that microlenders value. As such, we expect that facial expression of an agentic emotion in a microloan appeal photograph increases microlending performance more for women than men.

Hypothesis 2: Facial expression of an agentic emotion increases crowdfunded microlending performance more for women entrepreneurs, as compared to men.

Methods

Consistent with prior work, we drew our sample from Kiva, the world's largest crowdfunded microlending platform (Allison et al., 2015, 2020; Moss et al., 2015). The fundamental mission of Kiva, like many crowdfunded microlending platforms, is providing loans to poor individuals in an effort to promote entrepreneurship (e.g. Allison et al., 2013, 2015; Anglin et al., 2020; Bruton et al., 2015, Moss et al., 2015, 2018). Our target population was the most recent two quarters of loans as of the commencement of the study: July-December, 2018. This population numbered 116,652 and was selected to control for year effects, while also reflecting the current format of the Kiva platform. Earlier data are less comparable due to platform changes that increased the prominence and size of entrepreneur photographs, which could influence the salience of their facial expressions. Microloan appeals for personal use were excluded, as these may not reflect the entrepreneurial fundraising about which we theorize, leaving 105,489 loans. Group loans were also removed since they preclude controls for gender and the industry/sector of an entrepreneur's business, leaving 92,101 loans. Among this population, we retained all appeals with an identifiable face in the microloan appeal photograph, resulting in a sample of 43,210 entrepreneurs. We used facial expression analysis software to capture the facial expression of each of the six basic emotions (Ekman & Friesen, 2003), which we describe below. The software's ability to capture facial expression of emotions is a function of photograph quality (resolution), the size of the face in the photograph, the distance of the entrepreneur in the photograph, and any objects or poses that obscure the face.

Dependent Variable—Microlending Performance

Our dependent variable, microlending performance, captures decisions by microlenders to fund or not fund a loan. Consistent with prior work, we examined the likelihood of the microloan reaching its fundraising goal (e.g., Allison et al., 2013; Anglin et al., 2020). Considering whether the funding goal is met is the most commonly assessed dependent variable in microlending research (e.g., Anglin et al., 2018; Moss et al., 2015). This is important because the loans in our sample follow an "all-or-nothing" model: the goal must be met for any funds to be transferred. When this is the case, our *funded* variable is coded as "1" ("0" otherwise).



Figure 1. Facial action units.

Independent Variables—Facial Expressions of Emotion

To capture facial expressions of emotion—including each of the communal emotions (i.e., happiness, sadness, fear, and surprise) and each of the agentic emotions (i.e., anger and disgust)—we used computer-aided facial expression analysis (CAFEA). Facial expressions of emotion are a universal language across cultures (Ekman, 1992). The objective measurement of facial expressions of emotion was pioneered by Ekman and Friesen (1978) through their development of the facial action coding system (FACS). FACS describes facial movements through the use of 44 action units, defined as movement in one or more facial muscles. Discrete combinations of action units are indicative of expressions of corresponding discrete emotions. Figure 1 illustrates how action units combine as indicators of facial expressions.

Historically, facial expression analysis has relied upon trained experts to manually code facial action units on the basis of the FACS framework. In contrast with manual coding, computers do not tire, thus aiding reliable, consistent measurement (McKenny et al., 2018). While relatively new, CAFEA has advanced substantially in recent years (Loijens & Krips, 2018). A number of CAFEA algorithms exist, with recent studies using algorithms such as FaceReader (Jiang et al.,

2019) and Affectiva AFFDEX (Stroe et al., 2020). For the current study, we used the Emotient FACET algorithm (e.g., Warnick et al., 2021). The Emotient FACET architecture is texturebased, meaning that it does not explicitly look to facial-point-based action units. Instead, it employs a neural network to analyze patterns of wrinkles and crevices that are created by the different action units—an approach that is superior to facial-point-based architectures (iMotions, 2018). In consequence, Emotient FACET provides enhanced accuracy compared to human coders and other algorithms (Stockli et al., 2019).²

We analyzed each entrepreneur's photograph for facial expressions of emotion with the Emotient FACET algorithm of the iMotions (2018) biometric platform. The algorithm calculated an evidence score for each emotion via its neural network. Evidence scores represent the odds of an expression being present on a logarithmic (base 10) scale. For example, a score of 0 represents a 50–50 chance that a human coder would categorize an emotion as present based on an individual's facial expression. An evidence score of 1 indicates that an expression is 10 times more likely to be categorized by an expert human coder as the target emotion than not. In linear form, a value of 1 indicates 91% confidence that the emotion would be identified by a human.

To categorize facial expression of an emotion as present ("1" for present, "0" otherwise), we mirror accepted practice, using a minimum probability of 95% confidence that the emotion is present, which corresponds to an evidence score of 1.3 (probability = $1/(1 + 10^{-\text{evidence score}})$). We chose this cutoff point for two reasons. First, this score reflects the most conservative cut-off value in current research using CAFEA (e.g., Stroe et al., 2020) and provides a strong likelihood that the expression of emotion would be recognized by a microlender. Lowering this value would be akin to increasing measurement error as doing so would raise concerns regarding whether an emotion could be detected by a microlender. Second, this value also ensured that there was no overlap among emotions—no photograph included facial expression of more than one emotion. As such, our theoretical arguments concerning discrete emotions align well with our measures of discrete emotions. Table 1 presents exemplars of faces from our sample that were indicative of the six basic emotions, respectively.

Moderator and Control Variables

Gender was coded "1" for men and "0" for women, as provided by the Kiva platform. We also measured and modeled a set of controls to account for other influences on our dependent variable. Following extant research, we accounted for factors relating to the loan itself, including loan amount and loan term (e.g., Allison et al., 2015), and dummy variables to capture the repayment interval (i.e., *monthly; bullet—a*a lump sum at the end of the loan term; or *irregular*; Allison et al., 2013). All observations were from 2018, isolating year effects. We then controlled for aspects of the entrepreneur's photograph. Because the size of an expresser's face can cause differences in observer judgment of expressed emotions (Wang, 2018), we controlled for the natural log of the entrepreneurs' face width. Because eyewear can obscure facial features, we controlled for glasses, the presence of which is detected by FACET. We also controlled for facial position, including the yaw, pitch, and roll values of the entrepreneur's face. Given that the text of an appeal has been shown to influence funding (Anglin et al., 2020), we controlled for the natural log of text length (e.g., Allison et al., 2013) and words per sentence. To account for emotions within the text, we controlled for positive language and negative language using the positive and negative emotional tone variables generated by the LIWC software (e.g., Genevsky & Knutson, 2015). We also controlled for the social value orientation of each loan by using the social and environmental value dictionaries (Moss et al., 2018).



Table 1. Facial Expressions of Emotion From Entrepreneurs on Kiva.

Modeling Procedures

We used skewed logistic regression (scobit), an unconstrained version of logistic regression, ideal for when outcomes are concentrated at 0 or 1 (e.g., Yamakawa et al., 2013). Because Kiva loans are more likely to be funded than not on average, this technique allows correction for this skewed distribution. Tests of model fit comparisons between the logistic and scobit models showed that the scobit model is a more appropriate choice (e.g., natural log of alpha = 10.63; p < .001). Each model was estimated with robust standard errors.

Results

Table 2 presents descriptive statistics and correlations. Table 3 presents our hypothesis tests. Hypothesis 1 predicted that men entrepreneurs will benefit more from facial expression of communal emotions than women entrepreneurs. Here, we examined four basic emotions that are stereotypically communal: happiness, sadness, surprise, and fear. The happiness x gender term (odds = 1.136, b = .127, p = .003) and the sadness x gender term (odds = 2.051, b = .719, p = .719, p = .719, p = .719).032) each indicate a significant interaction, whereas the coefficient for the surprise x gender (odds = 1.002, *b* = .002, *p* = .998) and *fear x gender* (odds = 1.277, *b* = .245, *p* = .619) terms do not. Figures 2 and 3 plot the significant interactions. The marginal effects, holding all other variables constant at their mean, for men are 0.055 (p = .000) for happiness and 0.151 (p = .001) for sadness. The marginal effects for women are 0.010 (p = .001) for happiness and -0.019 (p = .522)for sadness. Taken together, the marginal effects results suggest that men increase their probability of success by approximately six percentage points when expressing happiness compared to not expressing happiness and by approximately fifteen percentage points when expressing sadness compared to not expressing sadness. Women increase the probability of success by approximately one percentage point when expressing happiness and show no significant change for expressions of sadness. In sum, Hypothesis 1 is supported for happiness and sadness, but is not supported for fear and surprise.

Hypothesis 2 predicted that women entrepreneurs benefit from facial expression of agentic emotions more than men entrepreneurs. Here, we examined the two basic emotions that are stereotypically agentic: anger and disgust. The *anger x gender* term (odds = .718, b = -0.331, p = .012) and the *disgust x gender* term (odds = .696, b = -0.362, p = .044) indicate significant interactions. Figures 4 and 5 plot these relationships. The marginal effects for men are -0.067 (p = .078) for anger and -0.080 (p = .170) for disgust. The marginal effects for women are 0.018 (p = .049) for anger and 0.019 (p = .039) for disgust. Taken together, the marginal effects results suggest that women increase their probability of success by approximately two percentage points when expressing anger or disgust compared to not expressing anger or disgust, respectively, while men experience no statistically significant changes for expressions of anger and disgust. In sum, Hypothesis 2 is supported.

Our results have additional takeaways. They suggest that women expressing anger have the highest overall success rate (approximately 96%), which equates to a 23 percentage-point difference between men and women expressing anger. Men expressing sadness have the overall largest gain in funding performance—15 percentage points. Women exhibit much higher success rates overall (92% for women compared to 75% for men), which is consistent with prior research (e.g., Bruton et al., 2011, 2015). In addition to our hypothesized interactions of emotions with gender, we found main effects of facial expression of happiness (odds = 1.092, b = .088, p = .000) and fear (odds = 1.573, b = .453, p = .029), suggesting both genders gain from expressing these emotions—although the marginal effects for happiness listed above suggest that the gain for men is approximately 6 times larger than the gain for women expressing happiness.

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- F	Funded		SD	-	2	e	4	5	6	7	8	6	0	=	12	13	4	5
2 E		0.885	0.319															
	End of month	0.05	0.221	0.047														
¥ ۳	Monthly	0.028	0.165	-0.022	-0.039													
4 1	rregular	0.921	0.270	-0.025	-0.793	-0.578												
5 L	-oan Amount	582.661	1004.496	-0.125	-0.025	0.086	-0.033											
6 R	Repayment term (In)	2.508	0.392	-0.248	0.032	0.154	-0.120	0.231										
5	Glasses	0.151	0.227	-0.041	0.043	0.008	-0.040	0.031	0.010									
8	⁻ ace Width (In)	4.744	0.720	-0.044	0.134	0.001	-0.110	0.028	0.101	0.060								
γ γ	Yaw	-0.257	8.468	-0.015	-0.006	0.006	0.001	-0.001	-0.004	-0.004	0.003							
10 P	Pitch	-0.237	5.403	-0.010	0:030	0.026	-0.040	0.015	0.057	-0.064	090.0	-0.106						
Щ В	Roll	-0.153	4.101	0.004	0.001	-0.004	0.001	0.002	0.004	0.006	-0.015	-0.364	0.027					
12 V	Word length (In)	4.614	0.458	0.006	0.177	-0.035	-0.123	0.057	0.081	0.046	0.211	-0.018	0.010	-0.004				
13 <	Word per sentence	22.520	11.800	0.014	0.057	-0.030	-0.028	0.008	-0.098	0.006	-0.026	0.009	-0.016	-0.005	0.048			
4 E	Environmental	0.002	0.006	0.061	0.255	0.005	-0.212	0.006	0.147	-0.003	-0.054	-0.009	-0.041	0.021	0.122	0.037		
I5 S	Social orientation	0.017	0.018	0.029	-0.034	0.019	0.017	-0.008	0.197	-0.043	0.010	-0.016	-0.004	0.010	0.171	-0.104	0.243	
I 6 P	^o ositive emotions	2.800	1.970	0.000	-0.049	-0.009	0.046	-0.015	0.045	-0.026	-0.029	-0.009	-0.041	0.012	0.200	-0.087	0.107	0.542
17	Negative emotions	0.300	0.720	0.043	0.067	-0.004	-0.052	0.009	0.117	-0.018	0.027	0.002	0.009	-0.008	0.019	0.006	0.175	0.277
8	Gender (I = man)	0.185	0.389	-0.205	0.288	0.059	-0.271	0.098	0.178	0.087	0.107	0.025	0.066	0.008	0.084	0.021	0.048	-0.05
19 A	Anger	0.015	0.123	-0.003	-0.003	0.002	0.001	-0.009	0.018	-0.006	-0.018	-0.019	0.035	0.014	0.007	-0.032	0.000	00.00
20 E	Disgust	0.012	0.110	0.007	-0.006	0.005	0.002	-0.008	-0.029	-0.002	-0.037	-0.001	-0.037	0.001	-0.023	-0.002	-0.002	-0.00
21 F	Happiness	0.242	0.428	0.022	0.035	-0.002	-0.027	0.057	-0.002	-0.023	0.017	0.014	0.021	-0.017	-0.010	0.053	-0.011	-0.03
22 S	Sadness	0.002	0.049	0.002	-0.007	0.006	0.002	-0.005	0.008	-0.002	0.000	0.002	-0.020	-0.005	-0.009	-0.006	0.003	0.002
23 F	⁻ ear	0.002	0.044	0.009	-0.006	0.005	0.001	0.004	0.011	0.021	-0.003	0.004	-0.010	0.005	0.00 I	-0.006	-0.005	-0.00
24 S	Surprise	0.001	0.025	-0.003	-0.00	0.002	0.000	-0.001	0.004	0.015	0.003	0.005	-0.003	-0.003	-0.002	0.008	0.003	0.00
	Variables			16		17		18		61		20		21		22		23
16	Positive emotions																	
17	Negative emotior	SL		0.006														
81	Gender		1	-0.059		0.042												
19	Anger			-0.004		0.004		0.024										

0 Disgust 0.008 -0.001 -0.011 -0.011 -0.011 -0.011 -0.011 -0.011 -0.011 -0.012 -0.062 -0.062 -0.062 -0.062 -0.028 -0.062 -0.028 -0.062 -0.028 -0.062 -0.028 -0.028 -0.028 -0.028 -0.028 -0.028 -0.028 -0.028 -0.028 -0.028 -0.028 -0.028 -0.028 -0.002 -0.002 -0.002 -0.002 -0.002 -0.002 -0.002 -0.002 -0.002 -0.002 -0.002 -0.001 -0.003										
21 Happiness -0.044 -0.011 -0.058 -0.062 -0.062 22 Sadness 0.000 0.002 0.001 -0.006 -0.028 -0.028 23 Fear -0.005 -0.006 -0.005 -0.005 -0.002 24 Survives -0.01 -0.03 -0.03 -0.01 -0.01	20 Disgus	st	0.008	-0.009	-0.011	-0.011				
22 Sadness 0.000 0.002 0.001 -0.006 -0.028 23 Fear -0.005 -0.002 -0.006 -0.005 -0.002 24 Survises -0.014 -0.01 -0.01 -0.01	21 Happir	iness	-0.044	-0.011	-0.058	-0.070	-0.062			
23 Fear -0.005 -0.006 -0.005 -0.006 -0.005 -0.023 -0.002 24 Summise -0.014 -0.001 -0.07 -0.003 -0.014 -0.001 -0.0	22 Sadne:	SS	0.000	0.002	0.00 I	-0.006	-0.006	-0.028		
24 Survives -0.004 0.001 -0.003 -0.003 -0.014 -0.001 -0.0	23 Fear		-0.005	-0.002	-0.006	-0.006	-0.005	-0.023	-0.002	
	24 Surpri:	ise	-0.004	0.001	-0.007	-0.003	-0.003	-0.014	-0.001	-0.001

Table 2. Continued

as follows: mean funded rate is 0.916 for women and 0.748 for men, mean happiness equals 0.254 for women and 0.190 for men; mean sadness equals 0.002 for women, mean anger equals 0.014 for women and 0.001 for men, mean disgust equals 0.013 for women and 0.0002 for men, mean anger equals 0.014 for women and 0.001 for men, mean anger equals 0.010 for men, mean anger equals 0.002 for men, mean anger equals 0.014

Table 3. The Influence of Gender	r and Emotion	on Microlending	g Performanc	e (Funding Su	ccess).				
		Controls			Main effects		Em	otions X Gend	er
Variables	Log odds	Odds ratio	p-value	Log odds	Odds ratio	p-value	Log Odds	Odds ratio	p-value
Loan controls									
Sector	Included	Included	Included	Included	Included	Included	Included	Included	Included
Monthly repayment	-0.077	0.926	.208	-0.067	0.935	.279	-0.061	0.941	.325
Irregular repayment	-0.286	0.751	000 [.]	-0.277	0.758	000	-0.276	0.759	000
Loan amount	0.000	000.1	000	0.000	000.1	000	0.000	000.1	000
Repayment term (In)	-1.055	0.348	000	-1.057	0.347	000	-1.060	0.346	000
Picture controls									
Glasses	-0.125	0.882	000	-0.122	0.885	000	-0.122	0.885	000
Face width (In)	-0.022	0.978	.030	-0.023	0.977	.024	-0.024	0.976	.021
Yaw	0.000	000 [.] I	.661	0.000	000.1	.590	0.000	000.1	.615
Pitch	0.002	1.002	.120	0.002	1.002	.156	0.002	1.002	.146
Roll	0.001	1.00.1	.490	0.001	1.00.1	.470	0.001	1.00.1	.457
Text controls									
Word length (ln)	0.055	1.057	100.	0.057	1.059	000	0.054	1.056	100.
Word per sentence	0.001	1.00.1	.154	0.001	1.00.1	.200	0.001	1.00.1	.185
Environmental orientation	14.871	1.160	000	15.024	1.162	000	15.260	1.165	000
Social orientation	2.165	I.022	000	2.205	1.022	000	2.227	1.023	000
Positive emotions	-0.027	0.973	000	-0.026	0.974	000	-0.026	0.974	000
Negative emotions	0.095	1.100	000	0.096	1.101	000 [.]	0.095	1.100	000
Gender (I = man)	-0.619	0.538	000	-0.611	0.543	000	-0.627	0.534	000
Emotions									
Anger				0.017	1.017	.769	0.133	I.I43	.074
Disgust				0.045	1.046	.486	0.128	1.137	.087
Happiness				0.088	1.092	000 [.]	0.065	1.067	100.
Sadness				0.009	1.009	.949	-0.106	0.899	.484
									(Continued)

		Controls			Main effects		Em	otions X Gende	er
Variables	Log odds	Odds ratio	p-value	Log odds	Odds ratio	p-value	Log Odds	Odds ratio	p-value
Fear				0.453	1.573	.029	0.418	1.519	.063
Surprise				-0.141	0.869	.580	-0.145	0.865	.588
Anger x Gender							-0.331	0.718	.012
Disgust x Gender							-0.362	0.696	.044
Happiness x Gender							0.127	1.136	.003
sadness x Gender							0.719	2.051	.032
Fear x Gender							0.245	1.277	619.
surprise x Gender							0.002	1.002	0.998
Constant	-6.524	0.000	0.000	-6.732	0.002	0.000	-7.249	0.001	0.000
-og pseudolikelihood	-123	56.800		-123	40.940		-123	28.380	
AIC	247	71.60		247	51.88		247	38.84	

Table 3. Continued

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Figure 2. Happiness x Gender.

Appendix A evaluates the robustness of our results in five alternative models. This appendix includes results for a time-to-fund model, a model that uses the percentage of loan amount raised as an alternative dependent variable, a standard logistic model, a complementary log-log model, and a linear probability model. Taken together, these models provide additional support for the results above.

Discussion

By leveraging expectancy violation theory and research on gender stereotypes, we provide evidence that entrepreneurs' gender-counterstereotypical facial expressions of emotion increase microlending performance. Specifically, our study illustrates that displays of happiness and sadness in an entrepreneur's microloan appeal photograph are particularly beneficial for men,



Figure 3. Sadness x Gender.



Figure 4. Anger x Gender.

whereas displays of anger and disgust are beneficial for women. In doing so, we make a number of contributions to theory and research.

First, in the literature on how gender shapes entrepreneurial fundraising, studies of traditional funding contexts, such as bank funding and venture capital have consistently shown that women entrepreneurs are disadvantaged (e.g., Abraham, 2020; De Bruin et al., 2007; Malmström et al., 2017). The key theoretical explanation for this advantage is that resource providers' bias leads to the expectation that entrepreneurs display stereotypically masculine, rather than feminine, characteristics. Reflecting this, recent work has demonstrated that stereotypically feminine behaviors generally hinder funding pitch outcomes in traditional funding contexts for both men and women entrepreneurs (Balachandra et al., 2019). Thus, it could appear that displaying feminine qualities is generally harmful for entrepreneurs when seeking financial capital. Our contribution is to identify a domain in which such behaviors can be beneficial. By showing that feminine-stereotyped behaviors are not universally disadvantageous, and in fact may actually prove



Figure 5. Disgust x Gender.

beneficial in funding contexts with prosocial aims, our study suggests that there are factors which influence whether gender-stereotyped behaviors help or harm. Our work cautions against applying knowledge regarding gender stereotypes generated from traditional funding contexts to prosocial fundraising contexts. Indeed, our work implies prosociality may serve as a key boundary condition among funding domains that serves to alter how gender stereotypes shape funding outcomes.

Second, we build knowledge concerning entrepreneurial fundraising within hybrid contexts (e.g., Anglin et al., 2020; Moss et al., 2018). Crowdfunded microlending is a hybrid organizational context (McMullen & Warnick, 2016) wherein microlenders make decisions on the basis of both prosocial and economic/entrepreneurial expectations (Galak et al., 2011). However, meeting stakeholders' dual prosocial and economic expectations is notably difficult in hybrid contexts (Battilana et al., 2012; Battilana & Lee, 2014; McMullen & Warnick, 2016). Recognizing this, scholars have found that funding performance is hindered for entrepreneurs who emphasize both an economic and social value orientation in their microloan appeals, rather than singular emphasis on one or the other (Moss et al., 2018). We show how communication of gender-counterstereotypical characteristics offers a resolution to this hybridity dilemma, allowing entrepreneurs to convey that they are simultaneously agentic (aligning with economic expectations) and communal (aligning with prosocial expectations). Our research suggests that meeting these dual expectations requires a different approach for women versus men: women benefit more from displaying agentic characteristics to complement stereotypes of their communality, whereas men benefit more from displaying communal characteristics to complement stereotypes that they are agentic. Moreover, prior work has linked the display of communal characteristics in the written portion of the loan to the ability to satisfy prosocial expectations (e.g., Jancenelle et al., 2018) and the display of agentic characteristics to the ability to satisfy economic/entrepreneurial expectations (e.g., Moss et al., 2015). We build on this to further demonstrate the influence of snap judgments based on the joint influence of gender and facial expression. These may be particularly salient given the prominence of microloan appeal photographs and the automatic inherences (e.g., stereotypes) drawn based on gender and expressions in person perception. Indeed, our work suggests that campaigns for women should focus on satisfying economic expectations and campaigns for men should focus on satisfying prosocial expectations.

Finally, a key implication of our theoretical contribution is that entrepreneurs can convey characteristics that are not implied by their gender via nonverbal communication. Specifically, we predict and find that facial expressions of an emotion stereotypically associated with communal or agentic characteristics serve as a display of the associated characteristic. To map emotions onto communal versus agentic characteristics, we examined the six basic emotions as categorized by emotions scholars, on the basis of their distinct experience and facial expression (cf. Ekman & Friesen, 2003). The set of basic emotions includes several emotional expressions that have been largely overlooked in prior entrepreneurship research, which primarily captures expressions of passion and positive affect (e.g., Jiang et al., 2019; Warnick et al., 2018). Our inclusion of these overlooked emotions enabled two contributions to the literature on entrepreneurs' emotions, including their expressions (Cardon et al., 2012). Namely, emotions such as anger and fear have remained largely unstudied, perhaps because it seems unlikely entrepreneurs would express them in a funding pitch. While expressions of anger and fear may be relatively uncommon in funding pitches, we find that such expressions not only occur in crowdfunded microlending but that they are important to funding outcomes. Our second contribution to research on entrepreneurs' emotional expressions is that we provide evidence that some emotional expressions may differentially benefit men and women entrepreneurs. This contribution suggests the potential to draw from related literatures on organizational behavior and leadership which have likewise found that the gender of the expresser influences observers' reactions to the expression (Heilman & Chen, 2005; Schaumberg & Flynn, 2017).

Our work also revealed a few findings that warrant additional discussion. First, while men benefitted from facial expression of the communal emotions of happiness and sadness, we were unable to draw such conclusions about surprise or fear. Instead, we found that fear, but not surprise, had a main effect on microlending performance, indicating that both men and women benefit from its expression. Crowdfunded microlenders thus appear to reward expression of fear by increasing their likelihood of funding regardless of the entrepreneur's gender but are not significantly influenced by expression of surprise by men or women. Expression of fear and surprise are similar in that both are communal and both convey uncertainty (Hess et al., 2004, 2005). They are distinct, however, in that surprise is a neutral emotion, whereas fear is negative, suggesting appraisal of a current or potential future threat (Gray, 1987; Lerner & Keltner, 2001). Consistent with this, fear has sometimes been discussed as "negative surprise" (Vrticka et al., 2014). In crowdfunded microlending, the negative uncertainty implied by expressions of fear may be viewed as appealing for both men and women, given that entrepreneurs within this context are fundraising to remedy their negative situation.

Our results also suggest that men benefit more than women from expressing gendercounterstereotypical emotions. We offer two potential explanations for this. One is that men's expressions may stand out more given norms that men are less emotionally expressive than women (Eagly, 1987). The second is that women perform substantially better than men in crowdfunded microlending, leaving less room for significant improvement in their funding prospects. For example, women have a 17 percentage-point greater probability of meeting funding goals compared to men when seeking a crowdfunded microloan. Thus, while women benefit from expressing emotions that run counter to gender stereotypes, the absolute size of this improvement is restricted in this context because they have less room to improve.

Limitations and Directions for Future Research

Our contributions must be considered in light of our study's limitations, which provide opportunities for future research. First, while our archival data allow our study of entrepreneurs' emotional expressions and microlending performance, it precludes a deeper dive into the details of funder decision-making processes (e.g., Harrison et al., 2015; Lucey & Dowling, 2005). For instance, we were unable to ascertain how characteristics of individual microlenders (e.g., age, gender, personality) might influence the decision-making process. However, prior research has shown that the interpretation of social roles, while consistent on a broad scale, can vary at the individual level (Eagly, 1987). Given this limitation, we urge future research to examine how microlenders might differ in their decision-making. For example, because younger individuals are more likely to disregard traditional gender roles (Porter et al., 2019), microlender age may be an important moderator to the gender-emotion relationships presented in our study. In a similar vein, microlenders' decision-making may differ from that of other types of resource providers, such as angel investors, venture capitalists, or crowdfunders.

A second limitation of our study is that we focus only on stereotypes activate by one's gender. However, it is important to recognize that stereotypes may also be activated by other personal characteristics, some of which may have important interaction effects. Indeed, research in areas such as intersectionality has highlighted the potential for stereotype activation via an array of personal characteristics beyond one's gender (e.g., Hancock, 2007; Shields, 2008). For instance, gender role expectations may encompass additional variation, depending on whether or not an entrepreneur is a person of color (e.g., Anglin et al., 2021). We urge future research to investigate what other entrepreneur characteristics might activate stereotypes that contribute to potential resource providers' perceptions of the entrepreneur and how such characteristics may intersect to shape funding outcomes. These could include factors known to directly influence crowdfunding, such as ethnicity (e.g., Younkin & Kuppuswamy, 2018), political expression (e.g., Allison et al., 2013), and third-party affiliations (e.g., Anglin et al., 2020), or those that remain uninvestigated, such as social status or marital status, among others. For example, research could examine the emotional expressions of entrepreneurs of color compared to those of white entrepreneurs.

Finally, our study's setting of crowdfunded microlending on Kiva limits facial expressions of emotion to a single photograph. As a result, entrepreneurs cannot express more than a single emotion. Inasmuch as our study represents a first step in building knowledge in this space, this limitation was valuable as a simplifying assumption. However, static emotional expression is at variance with other funding contexts that enable entrepreneurs to express a stream of emotions through a video recorded pitch or face-to-face communication. We encourage extension of our work into the implications of multiple, or co-occurring, emotional expressions. For example, facial expressions of surprise were relatively uncommon in the entrepreneurs' photographs. Examining the stream of emotions in a video pitch may help us better understand surprise and other emotional expressions. We call for such work as a next step toward understanding the complex and multifaceted nature of emotional expression.

Practical Implications and Conclusion

Taken together, our theory on and analysis of entrepreneurs' facially expressed emotions provide a clearer picture of how gender stereotypes impact the ability of entrepreneurs to raise funds. For practitioners, our study suggests that organizations making microloans to be posted on crowdfunded microlending platforms should be actively aware of the emotions expressed by entrepreneurs, including in the images used for their microloan appeals. Our study provides actionable guidance to these organizations, suggesting that emotional expression can be used as a strategic tactic. To that end, borrowers may benefit by displaying characteristics consistent with microlender expectations, including those that are positive violations of gender stereotypes.

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Notes

- 1. Payments include interest, which is assessed to cover the costs of the loan originator/servicer (Anglin et al., 2020); these assessments are not shared with the crowdfunded microlenders.
- A validation study comparing facial expression algorithms against the Warsaw Set of Emotional Facial Expression Pictures (WSEFEP) database and the Amsterdam Dynamic Facial Expression Set (ADFES) database. These databases contain validated pictures where trained subjects were photographed

displaying facial expressions of certain emotions. Emotient FACET was found to identify facial expressions of emotions from pictures in these datasets with 96% accuracy, which is superior compared to other popular algorithms such as FaceReader (88%) and Affdex (68%; Stockli et al., 2019). Additional validation studies have highlighted the ability of FACET to correctly classify emotions, illustrating strong agreement between FACET and human raters (e.g., Calvo et al., 2018; Krumhuber et al., 2020). FACET is also reliable across race and gender (iMotions A/S, 2018; Lucey et al., 2010). Accordingly, this approach allowed for valid and reliable measurement of facial expressions of happiness, sadness, fear, surprise, anger, and disgust.

Supplemental Material

Supplemental material for this article is available online.

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