

Smiles, Babies, and Status Symbols: The Persuasive Effects of Image Choices in Small-Entrepreneur Crowdfunding Requests

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This article examines the persuasive effects of images in the context of online peer-to-peer microfinance. The theoretical framework—based in self-presentation and impression management—relates micro-entrepreneurs' loan-request image choices to lending decisions and lenders' perceptions of the borrower's trustworthiness and need. We explore effects of three specific visuals: (1) genuine enjoyment (Duchenne) smiles; (2) material status symbols; and (3) babies, children, and husbands. Using loan-request image data from 323 women micro-entrepreneurs on the Kiva.org website, results suggest smiling behavior is not associated with funding speed. However, loan-request images that include a baby are associated with significantly quicker funding, and those that include a man or an indication of relative material well-being are associated with delays in the average funding speed.

Keywords: crowdfunding, computer-mediated communication, Duchenne smile, impression management, microfinance, new media, nonprofit organizations, peer-to-peer lending, prosocial behavior, self-presentation, social lending, visual communication

Images have long been considered influential in persuasion (Birdsell & Groarke, 1996). This appears especially true in online and computer-mediated communication contexts, where asynchronous formation of initial impressions—at a distance and without salient nonverbal cues—generates substantial opportunities for selective self-presentation (Walther, 1996) and impression management (Goffman, 1959). Although researchers have extensively explored both the motivations and uses of self-presentation in online images (Ellison, Heino, & Gibbs, 2006; Rosenberg & Egbert, 2011; Rui & Stefanone, 2013), they have discovered less about the outcomes of image-based online impression management. Moreover, theories that explain *how* viewers are influenced by strategic self-presentation decisions are underdeveloped.

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The current study addresses these gaps while investigating visual self-presentation decisions in a new context: prosocial behavior. Specifically, this study examines whether various visual self-presentation choices influence lending decisions on the prosocial lending website Kiva.org. We hypothesize about the mediating processes that occur between the self-presentation decision and persuasive outcomes. In particular, we develop a theoretical framework that relates the choices made in micro-entrepreneurs' loan-request images to lenders' perceptions of the borrower's trustworthiness and need, which we posit in turn influence lending decisions. We formulate specific hypotheses regarding the effects on lenders of three sets of visual content choices that reflect possible selective self-presentation and impression management strategies: (1) facial expression, specifically smiling behavior; (2) image companions; and (3) material status symbols. We test these hypotheses using data from 323 loan requests submitted by women micro-entrepreneurs on the Kiva.org website.

The next section summarizes the peer-to-peer microfinance phenomenon. Propositions and hypotheses covering the persuasive effects of images follow. A fourth section reviews study methods and analysis procedures. Finally, results and conclusions are presented.

Peer-to-Peer Microfinance, Prosocial Behavior, and Persuasion

Sparked by the success of the Grameen Bank in 1970s Bangladesh (Hossain, 1988), the microfinance movement seeks to improve the fortunes of poor (especially women) entrepreneurs through small, low-interest, no-collateral loans (Braun & Woller, 2004), bypassing traditional commercial lenders. Its rise has spawned newer, Web-based microfinance institutions, such as Kiva and Wokai, which use advanced information and communication technologies to *crowd-source* (Howe, 2006; Saxton, Oh, & Kishore, 2013; Saxton & Wang, 2014) the lending and funding processes to geographically dispersed, prosocially oriented people around the globe. Although the social impact of such websites is uncertain and at times criticized for its perhaps problematic and indiscriminate regional impact (Burtch, Ghose, & Wattal, 2014), the popular press has referred to them as possibly the most significant new tool in the fight against poverty (Coleman, 2006).

These Web-based microfinance sites share much in common with *peer-to-peer* (P2P) *lending* websites (e.g., Prosper, Zopa, LendingClub). The key distinction between microfinance and for-profit P2P lending is that the latter involves a for-profit and generally unmediated transaction between peers, while microfinance transactions are mediated by local field partners and, most importantly, the financial transactions are not for profit. In the Web-based microfinance model, individuals lend money at zero interest and individually assume the risk of not being repaid. Web-based microfinance is thus a form of prosocial behavior (Dovidio, Piliavin, Schroeder, & Penner, 2006).

The growth of microfinance has not come without controversy and must be seen within the context of broader trends. First, the growth of microfinance has been linked with a subtle international shift away from support of charitable giving—what may be deemed a poverty-based or donor-supplied approach—toward small-user or developmental lending and financial systems designed to emphasize institutional self-sufficiency (Robinson, 2001). Similarly, over the last two decades, scholars have noticed a deliberate discarding of negative “victim” imagery in international nongovernmental organizations'

appeals—at least in non-Western media—in favor of positive, empowering imagery (Dogra, 2007; Vestergaard, 2013); this shift from “suffering others” to self-presentation has accelerated with the rise of new media.

The most popular Web-based microfinance organization and the specific context for the present study is Kiva. The Kiva website is designed to connect borrowers, generally in the developing world, with lenders, generally in the developed world. All borrowers are vetted by local field partner organizations, which assist the borrower in making a request for the Kiva website. Unlike other P2P lending sites, there is no artificial time limit on the length of the funding appeal, so practically all loan requests are eventually funded. Lenders browse through available requests (4,482 requests were available on January 16, 2014) and choose to whom they would like to lend. Loans can be from \$25 up to the full loan amount (generally under \$1,500). When the entrepreneur repays the loan, the lender receives the original amount with no interest.

Figure 1 shows a representative loan-request page. Each such page contains basic information on the entrepreneur and her request, including the length of the repayment term, the dollar amount requested, the entrepreneur’s name and location, background information on the local Kiva field partner brokering the request, the industry of the business (e.g., clothing, agriculture), an entrepreneur photo, and a written description of her investment idea.

Hoa Le [redacted]
 Ho Chi Minh City, Viet Nam Agriculture | Cattle Recommend

A loan of \$750 helps Hoa Le Thi [redacted] to purchase high quality food for cattle.

96% raised, \$25 to go

Select amount to lend
 \$25

Repayment Term: 12 months (more info)
 Repayment Schedule: Monthly
 Pre-Disbursed: Jun 28, 2011
 Listed: Jul 20, 2011
 Currency Exchange Loss: Possible
 Default Protection: Not Covered

Your funds will be used to backfill this loan. Repayments will go to you.

Hoa is a 37-year-old married woman with two children. She lives with her family in Ho Chi Minh City.

Hoa and her husband have been raising cows for meat and milk for six years. In order to raise larger cows and produce larger quantities of higher quality meat, Hoa would like to receive a loan to purchase high quality food for her cattle. She hopes that this will enable her to significantly increase the profit margin of her animal-rearing business. Hoa hopes that in the future she can save more money to improve her family's living conditions and reinvest in her business.

ABOUT THE FIELD PARTNER

CEP
 Capital Aid Fund for Employment of the Poor (CEP) administers this loan.

Figure 1. Sample funding request on Kiva.

On these pages, the borrowers attempt to persuade a person whom they have not met to make a peer-to-peer loan. The two key pieces of information that might persuade lenders are the written description and the photo. We focus on the content of the images. As shown in Figure 1, the photographs tend to portray the borrower in surroundings suggestive of the area of investment need, such as home, farm, or small-business setting. The poses typically include action and static shots and exhibit various facial expressions. Our study concentrates on the persuasive quality of these images.

Online Images, Impression Management, and Prosocial Lending Decisions

A growing body of research has explored the motivations and uses of online images in such diverse contexts as presidential campaigns, online dating, and social networking sites (e.g., Ellison et al., 2006; Rosenberg & Egbert, 2011; Rui & Stefanone, 2013; Verser & Wicks, 2006). With important exceptions (e.g., Duarte, Siegel, & Young, 2012; Walther, Slovacek, & Tidwell, 2001), researchers have focused less on the effects of these images. This is particularly important given the powerful role images play in the online environment, along with the fact that the online context is rife with opportunities for impression management (Goffman, 1959) and selective self-presentation (Ellison et al., 2006; Walther, 1996).

In earlier research, images in charitable appeals were evaluated for valence (Dogra, 2007; Dyck & Coldevin, 1992). More recently, the images offered in nonprofit fundraising requests have been subject to intense scrutiny and criticism for their potential to re-create racial and economic stereotypes of passive, victimized, needy, infantilized recipients being saved by heroic Western nations (Black, 2013; Dogra, 2007; Renteln, 2015; Vestergaard, 2013; von Engelhardt & Jansz, 2015). Most recently, however, researchers have begun calling for a more extensive examination of such images for their impact on lending results, including the effects of such factors as marital status and the number of children in the household (Mittelman & Rojas-Méndez, 2013).

There is effectively a gap in our understanding of the effects of online images in the literature. Notably, the highly influential hyperpersonal model (Walther, 1996) explores in which situations online images will help create affinity, when image effects may be enhanced, and the impact of chronemics, text, and language choices on affinity, but the model leaves unexplored which specific images will help engender affinity. At the same time, theories that explain *how* viewers are influenced by such strategic self-presentation decisions are underdeveloped (Small & Verrochi, 2009).

To articulate more fully which online images lead to persuasion, the present study examines which types of image content choices have an effect on lenders and develops hypotheses that elucidate the underlying processes. It does so, moreover, in a context—prosocial lending—that has received limited scholarly attention (Burtch et al., 2014; Galak, Small, & Stephen, 2011; Hsieh & Huang, 2011).

In the following sections, we outline hypotheses about the effects of three elements in women micro-entrepreneurs' loan-request images: (1) the type of smile, (2) the types of individuals included, and (3) the inclusion of items that indicate relative material well-being. We expect that images that vary along

these three dimensions will influence lenders' perceptions of the trustworthiness and need of the borrower and, in the process, influence the likelihood of an individual lending money to a given borrower. In the aggregate, we predict that borrowers with more persuasive images will receive funding more quickly.

Duchenne Smiles and Perceptions of Borrower Trustworthiness

Derived from impression management, our hypotheses postulate which selective self-presentation choices impact prosocial behavior. Our first hypothesis focuses on the potential for image choices to influence trust, the object of much recent empirical communication research (Altschuller & Benbunan-Fich, 2010; Ratan, Chung, Shen, Williams, & Poole, 2010; Wu, Hu, & Wu, 2010). In the for-profit peer-to-peer lending context, trust has been shown to spur lending decisions (Duarte et al., 2012; Larrimore, Jiang, Larrimore, Markowitz, & Gorski, 2011; Ravina, 2012). This relationship is similarly posited to hold in the prosocial lending arena. Our first hypothesis extends this line of research, centering on the heightened perception of borrower trustworthiness potentially produced by so-called genuine enjoyment smiles of borrowers.

The science of facial expressions can be traced to Guillaume-Benjamin Duchenne (1862/1990) and Charles Darwin (1872/1998). Beginning in the 1970s, psychologists built on these early works and began to code facial expressions as discrete muscle movements (e.g., Ekman & Friesen, 1978). Notably, the Duchenne smile has been specifically identified as a distinct set of muscle movements that uniquely signify happiness (Ekman, Davidson, & Friesen, 1990). The theoretical model created by Ekman and Friesen (1974) predicts that exhibiting Duchenne happiness smiles will lead to positive perceptions of the smiler's personal qualities, including trustworthiness. Experimental research has supported this prediction (Frank, Ekman, & Friesen, 1993; Harker & Keltner, 2001). More recently, an empirical study of the P2P lending site Prosper.com found that smiling behavior had a positive association with first impressions of a borrower's creditworthiness and trustworthiness (Ravina, 2012).

In related visual communication research on charity funding, Dyck and Coldevin (1992) found that positive images, rather than negative ones, enhanced funding results. Smiling expressions were an essential component of their positive image stimuli. By extension, we expect smiles in general, and particularly Duchenne happiness smiles, to correlate positively with funding success. Conversely, recent research has postulated a connection between smiling images and viewer experience of emotional contagion (Small & Verrochi, 2009). Specifically, viewers who were shown a sad face of a child were more likely to donate than were viewers who saw either a smiling face or a neutral one.

Overall, this review of the literature indicates that Duchenne smiles should be positively related to perceptions of trust. Taking the arena of prosocial giving as a proxy for a trust-building scenario, this study examines whether behavior indicating a higher level of trust occurs in situations where images of Duchenne smiling are present. Given that essentially all Kiva requests are eventually funded, it seems reasonable to use time to funding as a quantitative proxy for trust. Higher levels of trust should lead to a faster time to funding. Our first hypothesis is thus the following:

H1: Genuine enjoyment smiles are negatively related to the length of time it takes women micro-entrepreneurs to be fully funded.

Images and Perceptions of Borrower Need

Management scholars have long held that trust is the key determinant of for-profit lending (Duarte et al., 2012; Pöttsch and Böhme, 2010). This is not the case in the nonprofit and prosocial arenas, which emphasize the role of need (Bekkers & Wiepking, 2011). The remaining two hypotheses thus concentrate on explaining persuasion success as a direct function of lenders' perception of the borrower's need. It is expected that trust alone is not enough to determine lending behavior in a prosocial giving situation. People are motivated to give to those less fortunate when the recipients appear to be in greater need (e.g., Bekkers & Wiepking, 2011; Levitt & Kornhaber, 1977) rather than because they trust the person to repay the loan.

Theoretical support for the hypothesis that need mediates prosocial lending decisions may be found in the model of altruism proposed by Batson (1991). According to Dovidio et al. (2006), Batson's model predicts that empathic concern aroused by seeing another's need results in a motive to reduce the distress of the other and, in turn, to reduce one's negative emotion. This is congruent with Lowenstein and Small (2007), whose proposed model predicts that sympathy can lead either to deliberation about reducing another's distress or to aid.

Building on these ideas, we propose that certain visual stimuli lower lenders' perceptions of a borrower's need for funding, and the presence of other stimuli increases such perceptions of need. The former, in reducing the perception of need, are likely related to decreased willingness to lend money; the latter, in increasing perceptions of borrower need, should have the opposite effect. Our remaining two sets of hypotheses present these ideas by positing specific effects that material items and different types of family members have on lender perceptions of borrower need.

Babies, Children, and Husbands

Recently, researchers have called for an examination of images that imply marital status and the number of children in the household (Mittelman & Rojas-Méndez, 2013). Experimental research also suggests that who is shown in pictures with requesters has an effect on the contributions such requesters receive (Kogut & Ritov, 2005). Such requester and companion images may thus help explain funding success. Along these lines, our second set of hypotheses relates to *whom*, if anyone, is included in the images along with or instead of the woman requesting money. In particular, we propose that the inclusion of babies, children, and husbands can have unique effects on lenders' perceptions of women borrowers' level of need.

As noted earlier, in line with the traditional woman orientation of the microfinance movement, we concentrate on women entrepreneurs in this study. Though all borrower requests in our analyses are submitted by individual women entrepreneurs, in only 73% of cases does the loan-request photo show the woman borrower alone. In the remaining cases, either a different individual (typically the husband) than

the requester is shown, or additional people (babies, children, husbands) are included in the request photo.

The inclusion of babies in one's photo could be considered, in Goering, Connor, Nagelhout, and Steinberg's (2009) framework, a type of affective appeal, in which the borrower is attempting, perhaps subconsciously, to appeal to the lenders' sympathy through an "identifiable victim" effect (Lowenstein & Small, 2007). This concern is ostensibly for the survival needs of the young, and it may be transferable to the young of others in the shared population that—if we apply a 21st-century twist to Darwin's (1872/1998) evolutionary biology perspective—is constituted by the online community of borrowers and lenders. In our framework, then, we can think of babies as a *need-augmenting* factor, in the sense of increasing the borrower's perceived level of need. Toddlers and older, preadolescent dependent children (roughly ages 1 to 11) may also serve to augment need, although to a lesser extent.

In contrast, including a husband or man in the loan-request image suggests an additional helping hand in the household. Scholars have argued that collectives, such as Kiva, can be seen as feminine-gendered as they set aside traditionally masculine characteristics of rugged individualism and independence in favor of community and interrelatedness (Harter, 2004). The notions of masculine independence and individualism may thus result in borrowers being perceived as less needy due to the presence of a male partner. In line with both arguments, we propose that, all other things being equal, the inclusion of a man or husband in a photo communicates less need; it is a need-diminishing factor that is posited to decrease donors' willingness to lend money and hence increase the length of time it takes to get funded. In line with the above logic, we posit the following three hypotheses:

H2a: Inclusion of a baby in the loan-request photo is negatively associated with the length of time it takes women entrepreneurs to get fully funded.

H2b: Inclusion of a preadolescent child (age 1 to 11) in the loan-request photo is negatively associated with the length of time it takes women entrepreneurs to get fully funded, though to a lesser degree than babies.

H2c: Inclusion of a man or husband in the loan-request photo is positively associated with the length of time it takes women entrepreneurs to get fully funded.

Wealth Indicators and Perceptions of Need

Another factor posited to influence perceptions of borrower need is the relative degree of wealth indicated in the loan-request images. Exhibiting possession of modern technology—such as cars, trucks, motorcycles, refrigerators, and televisions—should negatively influence lenders by reducing their perceptions of the borrower's apparent need. In the microfinance context, the great majority of borrowers likely have few or none of these items. As a result, in making the choice between two borrowers, the potential lender will, all other things being equal, choose the candidate with no such obvious indications of material well-being. "If the borrower can afford a motorcycle or a TV," the lender might be thinking, "why

do they need \$25 from me?" Our third hypothesis taps this need-diminishing quality of indications of relative material wealth.

H3: Inclusion of material wealth indications in the loan-request photo is positively associated with the length of time it takes women entrepreneurs to get fully funded.

Method

Sample of Kiva Micro-Entrepreneurs

We chose a sample that helps control for the potentially confounding effects of gender and region. First, the analysis was restricted to a single geographic region. Studying borrowers from one geographic region helps control for the effects of cultural, ethnic, and racial characteristics on lender behavior. Since Kiva facilitates lender-borrower relationships internationally, the potential exists for cultural, ethnic, or racial characteristics to determine both visual message behaviors and lender behavior. To control for this, subjects were randomly chosen from within one geographic region: Asia.

Second, we restricted the sample to women. Historically, the microlending movement (Hossain, 1988) has focused on boosting the fortunes of women micro-entrepreneurs in the developing world. Given this fact and the accompanying small number of Asian men borrowers on the Kiva site during the study period, we decided to control for gender by restricting the study to only women borrowers.

The sample also benefits from a nonsampled census of images on a single date. Kiva's open application programming interface (API) and the relatively small number of borrowers allowed for a nonsampled investigation of the entire target population of Asian women entrepreneurs available on a single day, and following that population's progress until all had received full funding. The final sample thus comprises all 323 funding requests by individual women entrepreneurs from Asia with active requests on the Kiva website on December 6, 2009. Six countries were represented in these requests: Azerbaijan ($n = 6$), Cambodia ($n = 171$), Mongolia ($n = 15$), Philippines ($n = 119$), Samoa ($n = 3$), and Tajikistan ($n = 9$).

Data Collection and Measurement

We used the Kiva API to download the available loan request information on each entrepreneur (for detailed information on the API, see <http://build.kiva.org/api>). Initially, all 444 funding requests on Kiva.org on December 6, 2009, from Asian women entrepreneurs were downloaded. The 110 group loans were omitted, leaving 334 individual requests. After deleting 11 duplicate requests from the database, the final sample was 323 individual requests. Screenshots were taken of all 323 requests so that we could analyze the image associated with each request.

Dependent Variable: Time to Funding

In Kiva's social lending environment, the virtual community of lenders eventually funds practically all entrepreneurs (on average, there are 19 lenders per borrower request). The most appropriate measure of the impact of the content of funding request images is therefore the amount of time it takes for each entrepreneur to be fully funded. The logic is that the persuasiveness of a visual message influences the likelihood of a person's choice to lend money; in the aggregate, borrowers with more persuasive images will attract funding from more lenders, and thus reach full funding more quickly. In short, the more persuasive the request, the more quickly the community will fund it. The dependent variable, *time to funding*, measures the time in hours until an entrepreneur's loan request is fully funded.

Independent Variables: Smile Codings

Using the Facial Action Coding System model developed by Ekman and Friesen (1978), we analyzed each borrower's photo for the presence and type of smile. The system describes smiles in terms of the specific muscle groups engaged in each expression. Specifically, the Duchenne smile is identified by engagement of two muscles: the contraction of the orbicularis oculi (muscle surrounding the eyes, causing crow's-feet), referred to as Facial Action Unit 6; and the raising of the zygomatic major (muscle pulling up the lip corners), referred to as Facial Action Unit 12 (Ekman, Davidson, & Friesen, 1990).

Two coders trained in the Facial Action Coding System independently examined all 323 borrower photos collected from the Kiva website. Coders looked for evidence of Duchenne smiles, which use Facial Action Units 6 and 12; non-Duchenne (nonenjoyment) smiles, which use only Facial Action Unit 12; and nonsmiles, which engage neither Facial Action Unit. Intercoder agreement on this smile classification was 87.8% (Cohen's $\kappa = 0.81$), indicating a solid level of intercoder reliability. For all coded variables, after the intercoder tests, instances of initial disagreement between the two coders were discussed and jointly recoded until 100% agreement was reached. From these data, a single binary (0,1) variable was created, with those who exhibited a genuine happiness smile being assigned a code of 1 on *Duchenne smile* and 0 otherwise.

Independent Variables: People Included in the Image

Our second set of hypotheses (2a, 2b, 2c) relates to the types of individuals included in the loan-request images. Although all 323 borrower requests are from individual women entrepreneurs, borrowers often include different or additional people in their request photo. We thus coded a series of eight mutually exclusive binary variables, with each of the 323 borrowers being assigned a value of 1 on one of the following eight variables and a value of 0 on the remainder, according to who was present in the photo: *woman alone*, *man alone*, *man with baby/children*, *male-female couple*, *miscellaneous group photo*, *woman with baby* (age 1 or younger), *woman with children* (older than age 1), and *male-female couple with baby/children*. Two coders separately coded each of the 323 images. Intercoder agreement on the eight binary variables was above 98% in all cases, and Cohen's κ scores ranged from 0.93 to 1.0 for each variable, indicating a high level of intercoder reliability.

Independent Variables: Indications of Relative Material Well-Being

Our third and final hypothesis relates to the presence of items in the photo that indicate relative material well-being. Evidence from Cambodia, where roughly half of the borrowers in our analysis originate, indicates several household items that could differentiate wealthier from less wealthy borrowers. In 2008, 58% of Cambodian households had a television, 44% had a motorcycle or motorized bike, 41% had a radio, 5% had a car, 4% had a computer, and 22% had electricity (National Institute of Statistics, 2011). In Cambodia, then, households with any of these items are more likely to be in the wealthiest half of society. Informed by this evidence, our inductive analysis of Kiva photos suggested four items indicative of relative wealth: a television, a refrigerator, an electronic stereo or computer equipment, and a motorized vehicle (car, truck, motorcycle, tractor). If one of these items was included in a borrower's photo in the household setting, she received a score of 1 on the *wealth indicators* variable; if none of the items were present in the photo, she received a score of 0 for this variable. Coding of all 323 observations was done independently by the two authors, with 98.5% intercoder agreement and a Cohen's κ score of 0.93.

Control Variables

We also include two control variables that have been found to be significant across multiple studies in previous microfinance and peer-to-peer lending research (Burtch et al., 2014; Galak et al., 2011; Hsieh & Huang, 2011; Larrimore et al., 2011). The first, *loan amount* (the amount in dollars of the request) is included given its strong relationship with funding in studies by Hsieh and Huang (2011), Galak et al. (2011), Larrimore et al. (2011), and Ravina (2012). Second, given arguments by Hsieh and Huang (2011) and Ravina (2012) that age influences P2P lending decisions in visual contexts, we also include a control variable for the *age* of the entrepreneur. We additionally include a quadratic term (age^2), given the likelihood that there is not a linear relationship between age and time to funding.

Analysis Plan

The core of the analysis is a series of four multivariate regressions designed to test each of the three sets of hypotheses independently as well as in a combined test. Given the ratio-level nature of the dependent variable, *time to funding*, the appropriate regression technique is ordinary least squares. Each ordinary least squares regression is estimated using robust, or Huber-White, standard errors, to correct for any potential effects of heteroskedasticity (Wooldridge, 2002). Given that borrowers within countries are likely affected by similar, unobserved structural, social, and economic factors, we employ robust standard errors clustered on the country. This estimation technique is typically used in research in economics, political science, and related fields to correct for instances in which observations are spread unequally across organizational groups (e.g., countries) and where error variation is likely related within groups (Chaplin, 2003; Wooldridge, 2002). In effect, by clustering on the country, we are able to control for the potential nonindependence of observations within countries. Although this estimation technique can make it more difficult to obtain statistically significant coefficients, we feel it is an essential correction to establish confidence in the validity of our results.

Results

Descriptive Statistics

Before describing the results from the multivariate analyses, we summarize the descriptive statistics contained in Table 1 and provide a zero-order correlation matrix in Table 2. As shown in Table 1, the *age* of the average borrower in the data set was 42 years old ($SD = 10.4$). Requested *loan amounts* ranged from \$125 to \$2,850, with a mean of \$688 and standard deviation of \$442. The mean *time to funding* was 359.5 hours (14.98 days), with a range from 1.7 hours to 706.8 hours and a standard deviation of 179.46 hours.

Table 1. Summary Statistics, All Model Variables.

Variable	Number of observations	<i>M</i>	<i>SD</i>	Min.	Max.
Time to funding (hours)	323	359.47	179.46	1.71	706.82
Loan amount (\$)	323	687.69	442.25	125	2,850
Age (years)	262	42.41	10.41	21	69
Nonsmile	168	0.47	0.50	0	1
Nonenjoyment smile	168	0.39	0.49	0	1
Duchenne smile	168	0.07	0.34	0	1
Woman alone	323	0.73	0.44	0	1
Man alone	323	0.05	0.21	0	1
Man with baby/children	323	0.01	0.06	0	1
Male-female couple	323	0.16	0.37	0	1
Miscellaneous group photo	323	0.02	0.15	0	1
Woman with baby	323	0.01	0.06	0	1
Woman with children	323	0.01	0.11	0	1
Male-female couple with baby/children	323	0.02	0.15	0	1
Wealth indicators	323	0.14	0.35	0	1

For the binary (0,1) smile variable, 7% of borrowers were coded as having a *Duchenne smile*. For the eight mutually exclusive binary variables measuring the individuals included in the loan-request images, 73% of images showed a *woman alone*, 4.5% a *man alone*, 1% a *man with baby or children*, 16% a *male-female couple*, 2% a *miscellaneous group photo*, 1% a *woman with baby*, 1% a *woman with children*, and 2% a *male-female couple with baby or children*. Last, 14% of borrower images showed an indication of material well-being, as indicated by a value of 1 on the binary variable *wealth indicators*.

Smiling Behavior

Hypothesis 1 predicted a negative association between genuine enjoyment smiles and the length of time to receive full funding. The test of this hypothesis is reported in the first model (Model 1) presented in Table 3. This model shows the results of an ordinary least squares regression that includes

the independent variable *Duchenne smile* along with *loan amount*, *age*, and *age*² as control variables. Contrary to expectations, the smile variable did not obtain significance. Controlling for the size of the loan and the age of the entrepreneur, *Duchenne smile* does not have a significant relationship with time to funding. Hypothesis 1 is not supported by these findings. Likewise, our findings offer no support for the emotional contagion model of Small and Verrochi (2009).

Table 2. Zero-Order Correlation Matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Time to funding	1												
Duchenne smile	0.02	1											
Woman alone	-0.17**	0.03	1										
Man alone	0.20**	-0.03	-0.36**	1									
Man with baby/children	0.07	0.00	-0.09	-0.01	1								
Male-female couple	0.11	0.00	-0.72**	-0.10	-0.02	1							
Misc. group photo	0.00	-0.03	-0.25**	-0.03	-0.01	-0.07	1						
Woman w/ baby	-0.07	0.00	-0.09	-0.01	0.00	-0.02	-0.01	1					
Woman w/ children	-0.04	0.00	-0.18**	-0.03	-0.01	-0.05	-0.02	-0.01	1				
Male-female couple w/ baby/children	0.01	-0.03	-0.25**	-0.03	-0.01	-0.07	-0.02	-0.01	-0.02	1			
Wealth indicators	0.03	0.01	-0.05	0.04	0.14*	-0.03	0.12*	-0.02	0.03	0.00	1		
Loan amount	0.41**	-0.09	0.05	0.06	0.04	-0.09	0.05	-0.05	-0.04	-0.01	-0.02	1	
Age	-0.06	-0.04	0.13*	-0.08	-0.08	-0.06	-0.01	-0.01	-0.05	-0.02	-0.06	-0.06	1

* $p < 0.05$. ** $p < 0.01$.

Presence of Others in Loan-Request Images

Model 2 in Table 3 presents our test of hypotheses 2a, 2b, and 2c. Along with the *loan amount*, *age*, and *age*² control variables, this regression includes as independent variables seven of the eight mutually exclusive binary variables that indicate who is included in the loan-request image. The omitted variable in the regression is *woman alone*. An image of only a woman thus serves as the base, or comparison category, against which the remaining binary variables in the regression can be compared.

The results indicate that five of the seven mutually exclusive binary (0,1) variables are significant: *man alone*, *man with baby/children*, *male-female couple*, *male-female couple with baby/children*, and *woman with baby*. Specifically, the positive coefficients on the first four variables

indicate that the presence of a man in the photo is associated with a significantly longer time to funding than the case of a photo showing a woman alone. By contrast, the negative coefficient on *woman with baby* indicates that, compared to the case of a woman alone, the presence of a baby is associated with significantly less time to receive full funding of the loan request. Finally, the insignificant coefficients on *miscellaneous group photo* and *woman with children* indicate that there is no significant difference from *woman alone* in terms of the effects on time to funding. In short, controlling for the size of the loan request and the age of the entrepreneur, the presence of a man appears to significantly slow the funding process, and the presence of a baby significantly speeds the process. Hypotheses 2a and 2c thus receive empirical support, but hypothesis 2b does not.

Presence of Material Items in Loan-Request Images

Model 3 in Table 3 presents our test of hypothesis 3. The positive coefficient on the variable *wealth indicators* indicates that, controlling for the size of the loan request and the entrepreneur's age, the inclusion of an item in the photo suggesting relative material well-being is associated with a significant increase in the amount of time it takes for an entrepreneur's funding request to be filled. This result supports hypothesis 3.

Combined Test of Hypotheses

To test the robustness of the above results, Model 4 combines the smile, people, and wealth item tests from Models 1, 2, and 3. Model 4 thus represents a combined test of the hypotheses. The combined test shows similar results to those seen in Models 1, 2, and 3: There are no differences in sign or significance for any of the model variables. Hypotheses 1 and 2b continue to be unsupported, while hypotheses 2a, 2c, and 3 continue to receive support. As a robustness check on these results, we also ran the models using a Cox proportional hazards model, a technique often used in survival analysis or tests involving a temporal dependent variable. The results continue to support hypotheses 2a, 2c, and 3 but not hypothesis 1 nor hypothesis 2b. We also ran a version of the model including country dummy variables, with Azerbaijan serving as the omitted (baseline) category; here we found significantly longer baseline time-to-funding values for Cambodia, Mongolia, Philippines, Tajikistan, and Samoa compared to Azerbaijan, but the slope coefficients for all model variables was the same in terms of sign and significance as in previous models.

Expected Effects

To illustrate the practical impact of our findings, Table 4 presents the expected effects (also known as counterfactuals) of the significant independent variables from Table 3 on time to funding. Based on postestimation calculations using the combined regression (Model 4) in Table 3, the table presents the expected time to funding in days for various configurations of people and wealth items in borrowers' photos, holding the other continuous regression variables (*loan amount*, *age*, and *age*²) constant at their mean values. The data shown in Table 4 reveal three discoveries. First, funding is always quicker when a wealth item is absent from the borrower's photo. Second, the inclusion of a baby in the photo is in every

case associated with a quicker time to funding. And third, the inclusion of a man in the photo is always associated with a longer time for loan requests to be filled.

Table 3. Ordinary Least Squares Regressions, Effects of Smiles, People, and Wealth Indicators on Time to Funding.

	Model 1 (Smiles)	Model 2 (People)	Model 3 (Wealth)	Model 4 (Combined)
<i>Type of smile</i>	-8.84			5.57
Duchenne smile	(26.37)			(42.62)
<i>Types of people</i>				
Man alone		165.64*** (18.29)		164.17*** (21.01)
Man with baby/children		187.41*** (24.29)		155.88*** (23.53)
Male-female couple		44.49** (11.84)		41.39** (13.87)
Miscellaneous group photo		-41.30 (36.13)		-55.47 (32.04)
Woman with baby		-153.09*** (14.10)		-147.31*** (10.05)
Woman with children		-18.90 (53.86)		-21.97 (42.11)
Male-female couple with baby/children		54.87* (23.16)		60.43* (26.52)
<i>Status items</i>				
Wealth indicators			41.93** (15.91)	38.38** (13.36)
<i>Control variables</i>				
Loan amount	0.18** (0.06)	0.17** (0.05)	0.19** (0.06)	0.18** (0.05)
Age	12.31* (5.21)	15.87* (7.56)	13.30* (6.58)	16.85* (8.26)
Age ²	-0.15* (0.06)	-0.19* (0.09)	-0.16* (0.08)	-0.20* (0.10)
Constant	-8.04 (123.33)	-97.33 (162.79)	-39.31 (139.36)	-125.78 (180.09)
<i>N</i>	261	261	261	261

Adjusted R^2	0.18	0.21	0.18	0.21
F	10,444.10***	11.60***	16.36***	10.58***

Note. Table shows ordinary least squares regression coefficients, with robust standard errors clustered on country in parentheses. The omitted category in Models 2 and 4 is *woman alone*. Because the age variable was available for only 261 of the 323 entrepreneurs, the number of observations for all regressions reported in the Table is 261.

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Table 4. Expected Time to Funding in Days for Various Loan-Request Images.

Without wealth indicator		With wealth indicator	
Photo shows . . .	Time to funding (days)	Photo shows . . .	Time to funding (days)
Woman with baby	7.8	Woman with baby	9.4
Woman alone	13.9	Woman alone	15.5
Male-female couple	15.6	Male-female couple	17.2
Man with baby/children	20.4	Man with baby/children	22.0
Man alone	20.8	Man alone	22.4

Recall that our sample is limited to individual women entrepreneurs. The data shown in Table 4 thus indicate that expected times to funding are considerably higher for women borrowers who include men in their photos, and considerably lower for those who include babies. Take as a baseline the case of a photo showing a woman alone with no wealth indicators. *Ceteris paribus*, if that woman brings a baby into the picture, she can expect, on average, a 44% decrease in the expected time to funding (7.8 days instead of 13.9 days). Similarly, if that same woman appears in the photo with a television, refrigerator, electronics, or motorized vehicle, she can, on average, expect it will take her 12% longer to be funded (15.5 days instead of 13.9). And if that woman brings a man into the photo, she can expect the funding process to slow by 23.7% overall (17.2 instead of 13.9 days). In short, including a baby helps, and a man or an indication of material well-being hinders, the speed at which women entrepreneurs are funded.

Discussion and Conclusion

We have extended the literature of online self-presentation in impression management with a focused investigation of the effects of image decisions in the prosocial lending context. We find insufficient evidence to support the notion that a genuine enjoyment smile has a relationship with the speed with which one is funded. Although earlier studies have found increased trust to be associated with Duchenne smile images, we find no statistically significant relationship between Duchenne smiles and trust or faster action. Our findings on smiles are thus more in line with a recent study that found no difference in readers' willingness to apply for credit cards as a function of Duchenne smiles in advertisements (Carciooppo & Frank, 2008); our results neither support nor negate their findings, because we found no evidence that any increase in trust that might obtain from genuine enjoyment smiles in loan-request images is associated with increased prosocial behavior.

In contrast, perceptions of the borrower's need, as indicated by the types of companions and material items included in the loan-request images, do have a significant association with funding speed. In any event, because perceptions of trustworthiness and need are not measured directly in our study, future research, likely experimental, should construct direct measures of trust and need and test whether they do in fact serve as mediating factors in the relationship between imagery and prosocial behavior.

Our findings both support the combined predictions of models of need, sympathy, and trust and also clarify what factors determine whether need or trust motivates lending. In elaborating the processes underlying how babies, husbands, and prosperity symbols affect prosocial lending, our study thus expands the scope of models such as that of Pötzsch and Böhme (2010) in computer science, Dovidio et al. (2006) in prosocial activity, Lowenstein and Small (2007) in psychology, and Duchenne smile research (Ekman et al., 1990; Harker & Keltner, 2001). It would be consistent with these theories to expect that the underlying nature of the venture as for-profit versus not-for-profit will determine whether need or trust is more instrumental in funding success. And indeed, that is what our results indicate. In this prosocial realm, the trust indicator of the Duchenne smile showed no significant impact, but the need indicator of babies (as evolutionary cues evoking sympathy and need to protect the young) does show enhanced funding success. Husbands and men, consistent with these expectations, evoke less need—and likely less sympathy—and result in less funding success. Given the recent findings of cultural researchers that cognitive processing mediates the impact of image valence (Small & Verrochi, 2009), it might be instructive for future researchers to explore more fully whether controlling for the cognitive complexity of message processing helps explain our lack of findings on the Duchenne smile.

The issue of need could also be more fully explored in future research. If perceived need (as interpreted from visual cues) is a prime factor in prosocial lending, then it would seem reasonable to also assume that people with high happiness ratings would be perceived as having lower need and those with distressed facial expressions as having higher need.

More generally, our findings suggest several selective self-presentation decisions that have an effect on prosocial lending, and thus extend work on the effects of impression management and selective self-presentation in images. Consequently, the present study makes two contributions to the literature on hyperpersonal communication (e.g., Walther, 1996). It first supports the postulate that overcompensation occurs in some online image interpretation, as lenders appear to attribute to some groups a need for extra

care and respond accordingly. This is supported by our findings that need-indicating images are particularly impactful in the prosocial lending environment. Second, this study goes a step beyond the hyperpersonal focus on situations to explore the specific types of images that aid or hamper impressions.

This study also answers recent calls from communication researchers for engagement between theory and practice (Barge & Shockley-Zalabak, 2008) and improvement in message effectiveness in the prosocial domain (Das, Kerkhof, & Kuiper, 2008). It extends the field of empirical persuasion research by including the online world as a potential realm where visual content makes a difference. It also offers a reasonable explanation for the unexpected finding that a genuine enjoyment smile may not necessarily create more trust—or lead to the intended persuasive outcome. In effect, although smiling seems to be entrenched in our culture as part of sales and promotional efforts, and the folklore of sales and attraction postulates smiling as a desirable element in face-to-face communication, scientific research does not unilaterally support these ideas. Early results indicated that Duchenne smiling in still photos correlated positively with perceptions of trustworthiness and with relationship longevity, but our study finds that these results may have limited applicability in spurring consumer and donor action. It seems that need may be a factor that interweaves with trust and may take precedence over it in certain contexts.

Limitations of this study include its specific focus on only a few aspects of prosocial lending, on one geographic area, and on one sex. Moreover, while we limit our analysis to Asia to control for region, the six countries examined are culturally, linguistically, and geographically quite diverse, raising questions about the strength of this control. Given that we did find some significant differences in baseline funding speed according to country, along with recent findings of the importance of cultural and geographic differences in the prosocial lending decision (Burtch et al., 2014), this is a factor worth investigating further. We have also had to be cautious in interpreting the results pertaining to several categories with a small number of observations (e.g., woman with baby). In short, our findings would benefit from studies that use a larger sample size and explicitly control for such factors as culture, language, geography, and relationship to funder countries. Also valuable would be an in-depth qualitative analysis of Kiva and other P2P lending platforms. Such an approach would shed light on the nonsignificant Duchenne variable and lend itself to rich insights into what motivates lender behavior in the P2P lending environment.

Notwithstanding these limitations, we have undertaken an in-depth analysis of a microcosm within a larger phenomenon, adding richness to the literature on hyperpersonal communication by exploring how certain image choices used in information and communication technologies affect computer-mediated communication persuasion. Moreover, although this study does not explore all variables examined in previous studies on images and computer-mediated communication persuasion, it does introduce new ones in the little-explored context of prosocial lending. Future research might usefully explore the effects of potential cultural bias in the behavior of lenders in developed countries, given the apparent unwillingness of such lenders to lend to women presented as part of a couple or visually proxied by a man. Last, though it was beyond the scope of the study to directly measure need and trust, such analysis is recommended for future study.

At the broadest level, we have found that prosocial actors are affected by *particular* visual stimuli. The study thus carries implications for websites attempting to connect diverse sets of peers, as on

Match.com and MatchingDonors.com, as well as in a broad array of online commercial, political, and social endeavors. If we are correct in assuming that different content has a different effect on perceptions of trust and need, then those making any prosocial appeal will have to take pains to ensure that the visual content conforms to the textual message and that both convey the intended emotional and rational appeal. Images may indeed be worth a thousand words, but practitioners need to take care to ensure the multiple messages conveyed in any given image do not work at cross-purposes to one another.

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