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Monic Sun
Stanford University

Xiaoquan Zhang
Hong Kong University of Science and Technology

Feng Zhu
University of Southern California

To Belong or to Be Different? Evidence from a Large-Scale Field Experiment in China

Monic Sun[1,2*], Xiaoquan (Michael) Zhang[3*], Feng Zhu[2*]

Abstract

We examined whether people conform to or diverge from the most popular choice among their friends by conducting a large-scale field experiment on a leading social-networking site in China. Our setting allowed us to minimize confounding effects such as pre-existing taste similarities between a subject and her friends, the need to create a social identity, and the possibility of learning by observing friends' choices. Surprisingly, we found that subjects were more likely to diverge from the popular choice among their friends as the popularity of that choice increased. The effect was more pronounced when they were reminded that their choices were visible to their friends. These results suggest that even members of a collectivist culture have a dominating need to be different.

[1]Graduate School of Business, Stanford University, 655 Knight Way, Stanford, CA 94305, USA. [2]Marshall School of Business, University of Southern California, 3660 Trousdale Parkway, Los Angeles, CA 90089, USA.
[3]Department of Information Systems, Business Statistics and Operations Management, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong.
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"All of us are stars and deserve the right to twinkle." — Marilyn Monroe

"Let a hundred flowers bloom." — Mao Tse Tung

1. Introduction

When a person is surrounded by her friends, and only her friends, does she conform to or diverge from the most popular choice among them? At the heart of this question is the trade-off between two fundamental human needs: the need to belong and the need to be different.

The need to conform and belong to a group is widespread among animals (Dindo et al 2009; Whiten et al 2005; Neda et al 2000). The need for uniqueness, on the other hand, is also documented for the human being (Snyder and Fromkin 1980; Imhoff and Erb 2009).

We investigate which of the two needs constitutes an innate human nature. In a field experiment with 16,298 subjects in China, we examined whether they conformed to or diverged from the most popular choices among their friends. The experiment allowed us to eliminate confounding effects such as pre-existing taste similarities between a subject and her friends, the need to signal one's group identity to the general public (Berger and Heath 2008), and the possibility of learning from friends' choices (Gilbert et al. 2009; Cai et al. 2009).

We found that, on average, a subject was more likely to diverge from the popular choice among her friends as the popularity of that choice increased. Divergence was even more pronounced when the subject was reminded that her choice was visible to her friends. Furthermore, female subjects and subjects born in more affluent regions had a stronger need to be different from their friends. Our results suggest that once we eliminate contextual influences, uniqueness seeking emerges as an innate human nature (Snyder and Fromkin 1980).

2. Prior Literature

Social psychologists have wrestled for many years with the notion of how people balance the need to be different and the need to conform (Hornsey and Jetten 2004). Many studies have shown that individuals are relatively malleable when it comes to fitting in and conforming to others' expectations. In his hierarchy of needs, Maslow (1968) placed the need to form loving social bonds immediately higher than the more primitive drives, such as satisfying hunger. Consistent with this theory, the forming of social bonds is generally characterized by positive emotions (Sternberg 1986; Fiske 2010; Leider et al. 2010). As a result, people succumb to group pressure, keep dissenting thoughts private for fear of social sanction (Deutsch and Gerard 1955), and may even take clearly wrong actions when such actions enable them to fit into the group (Asch 1952).

In western cultures, there is also a strong cultural norm to "be yourself." Consistent with the distinctiveness principle (e.g., Brewer 1991; Snyder and Fromkin 1980; Breakwell 1986), scholars have found that diverging from others is a meaningful way to establish one's individual identity (Vignoles et al. 2000) and that people are more motivated to diverge from others when such divergence is more visible (Codol 1981). There is, however, abundant evidence that the need to see oneself as unique is stronger in some cultures than in others. For example, individualism is presumed to be dominant in North America, Australia, and Western Europe (Gilbert et al 1998; Hofstede 1980; Triandis 1995), where the self is often prioritized above the group. While being a nonconformist and standing up against group pressure has a clearly positive valence in these individualistic societies, such behaviors might be seen as immature in collective cultures (Kitayama and Markus 1994; Kim and Markus 1999). Some theorists in fact doubt whether we can talk about distinctiveness as a fundamental need in more collectivist

cultures (Vignoles et al. 2000; Beloff and Coleman 1987), and cross-cultural studies often highlight that in collectivistic cultures, maintaining one's social relationships can become the highest priority (Vignoles et al. 2000; Sedikides et al. 2003).

3. Experimental Design

Evaluating the tradeoff between people's need to belong and their need to be different is challenging for several reasons. First, interpersonal relationships are hard to observe. When we observe them, it can be difficult to tell whether individuals' choices reflect pre-existing taste similarities or causal influences (Bapna and Umyarov 2011). Second, in many experiments, individuals are sharply aware that they are observed by either the experimenter or the general public. As a result, they may choose to conform because they want to avoid communicating undesirable social identities (Sedikides et al. 2003). Third, when there is uncertainty about a choice, observing others' choices can make an individual infer that she would also like that choice and thus motivate her to make the same choice (Banerjee 1992; Cai et al. 2009). As some or all these confounding factors coexist, prior findings on conformity often reflect a combination of situational and contextual influences, rather than outcomes of the subjects' innate preferences. We designed a controlled field experiment in the context of online social networks that minimized these confounding effects (Dodds et al. 2003; Levitt and List 2009).

The setting of our experiment was a leading social-networking website in China, Kaixin001.com (also known as the "Happy Net," referred to as Kaixin henceforth). As of February 2012, the site had 130 million registered users, roughly ten percent of the entire Chinese population.[2] The majority of users on Kaixin are registered with their real names and two users have to mutually agree to a friendship before they can access each other's information as friends.

[2] Reuters: "China's Kaixin001 posts 41% rise in 2011 sales," http://www.reuters.com/article/2012/02/13/kaixin-idUSL4E8DD13X20120213 (2012).

We conducted the experiment in January to March 2011 in two phases, for a total of three weeks, within a popular and free application on Kaixin, "Virtual Homes." After the first phase in January 2011, we checked the data to ensure all procedures in the experiment had been implemented correctly. We re-launched the experiment in March 2011 for a second phase. Subjects were not aware of the experiment when they visited the "Virtual Homes" application, and each subject could participate only once in our experiment. At the time of our experiment, according to Alexa.com, on an average visit, a Kaixin user accessed 49 pages and spent 33 minutes on the site, suggesting that users took their time to socialize with their friends on the site via the tools and games offered.

"Virtual Homes" is one of the 200+ applications on Kaixin. It is a non-competitive game for a Kaixin user to customize the looks of her virtual house. Users of "Virtual Homes" could own virtual houses, invite their friends to visit, and visit their friends' houses. In particular, they could paint the interior walls of their virtual houses with one of six colors: yellow, green, pink, blue, red, and gray. Users could experiment with different colors before confirming their selections. Figure 1 provides a screen shot of the image that appears when a user is painting her wall.

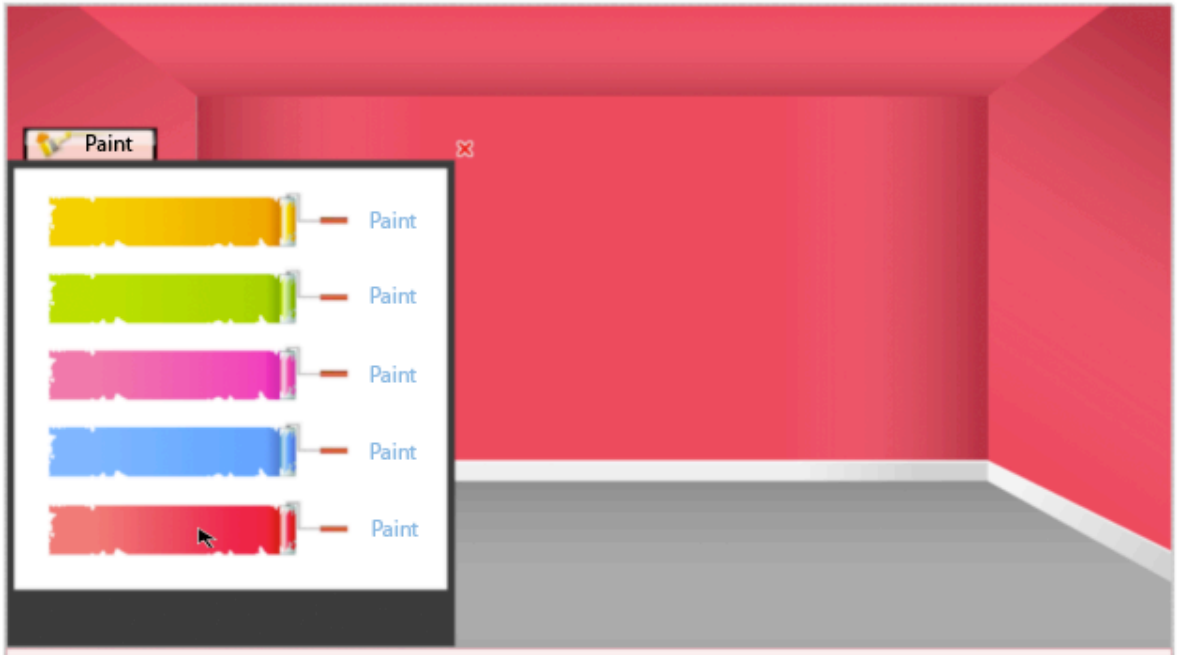

Figure 1: Screenshot of the "Virtual Homes" Application

We randomly picked users of this application as subjects and focused on their wall-color choices. On average, a subject had about 69 friends. When a subject picked a color and confirmed her choice by clicking on the "Save" button, the system would record her color choice, apply it to her virtual house, and display the confirmation message "Successfully Saved!" in a pop-up window.

We assigned each subject to one of three experimental conditions (A, B, or C) with equal probability. Under each condition, we displayed a randomly generated message in the pop-up window, along with the confirmation message. In condition A, our message informed the subject of the most popular color chosen by her friends and the adoption rate of that color. In condition B, we displayed the message under condition A together with the following sentence: "Don't forget to show your newly painted house to your friends." We refer to this sentence as the social message, as it reminded the subjects that their color choices would be visible to their friends. In

condition C, we informed the subject of the most popular color chosen by *all* users of "Virtual Homes" and the adoption rate of that color. See Figure 2 for an example of the messages. The message window was not triggered until a subject painted the walls and clicked the "Save" button. This figure shows a message window that a random subject in condition B could see (translated from Chinese into English). It displayed the most popular color among her friends, the associated adoption rate, and the social message.

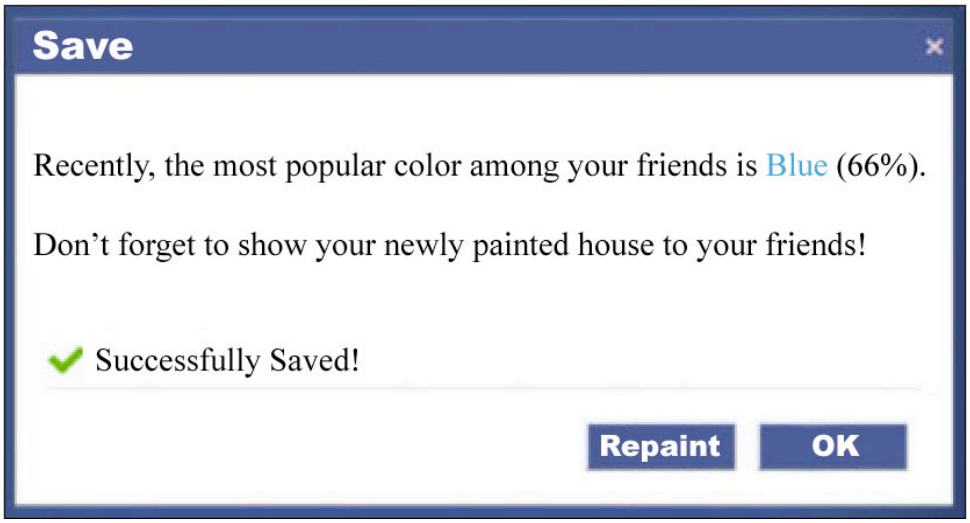

Figure 2: Screenshot of the Message Window for a Random Subject in condition B

We recorded the wall color when a subject first clicked the "Save" button as *CurrentColor*. The experimental message displayed in the message window gave information on either the most popular color among friends, *FriendColor,* or that among all users of this application, *GlobalColor*. We randomly picked a color from the five colors that were different from *CurrentColor* to generate either *FriendColor* or *GlobalColor*.

For all subjects, the pop-up window offered two buttons: *Repaint* and *OK*. If a subject decided to change the color, she could click on the "Repaint" button and pick a color again. Otherwise, she could click the "OK" button to close the message window. We recorded the final wall color that

the subject chose as *FinalColor*. The circles in Figure 3 illustrate the points in time at which we recorded the colors.

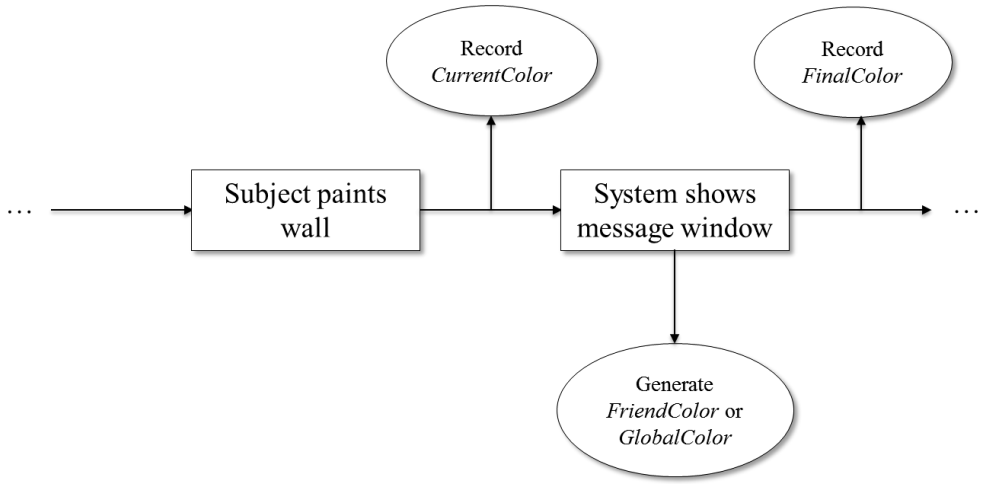

Figure 3: Timeline of Events and Color Records

The colors *FriendColor* and *GlobalColor* and their associated adoption rates in all conditions were generated randomly to minimize the influence of pre-existing similarities in friends' tastes. To ensure that the subjects perceived the most popular color to be the majority choice, we set the adoption rates to be greater than or equal to 50%. We took several measures to ensure that our messages could not be easily detected by the subjects as being randomly generated. First, we selected subjects with more than ten friends to avoid users who might remember all their friends' color choices and question the validity of our message. Second, as a subject could easily see the total number of her friends, we made sure that the adoption rates looked plausible. When generating the adoption rates, we used a subject's total number of friends, *n*, as the denominator and randomly picked an integer between $\lceil n/2 \rceil$ and *n* as the numerator. Finally, in all our messages, we used a vague word, "recently."

In total, we had 16,298 subjects in the final data set, with 5,440 in condition A, 5,423 in condition B, and 5,435 in condition C.

Figure 4 presents a flowchart of the experimental design.

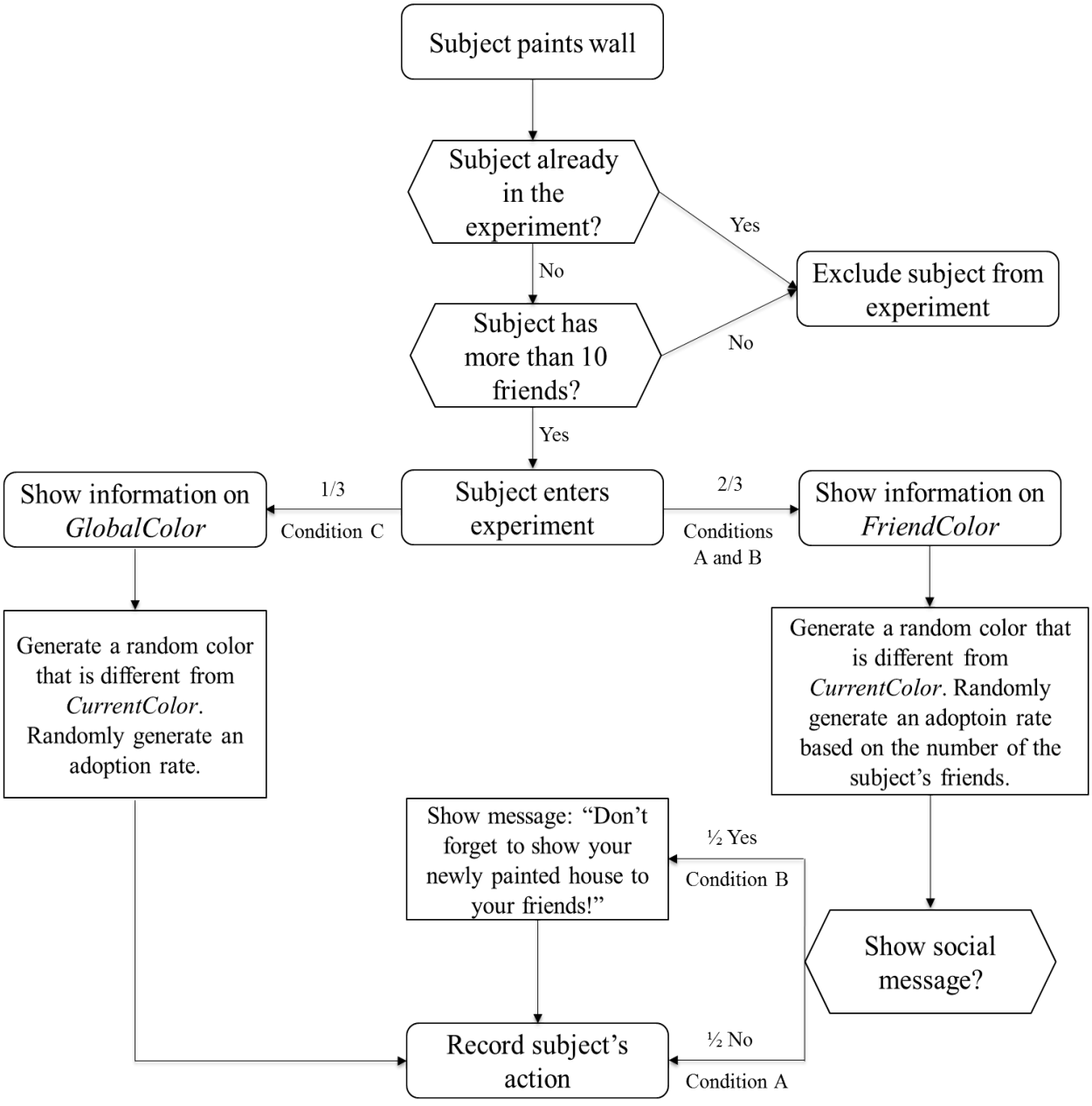

Figure 4: Design of the Experiment

Our experimental design has three distinctive features. First, by randomly generating the most popular colors, we eliminated the correlation between the subjects' color preferences and those of their friends. Second, a subject's choice of wall color was observed only by her friends and not by other users on the site. Therefore, our subjects did not have the usual pressure to signal group identities to the general public by conforming to their friends' choices. Third, learning was unlikely to drive subjects' behavior in our setting, as the six colors were standard and the subjects could experiment with each color before confirming their choices.

By displaying experimental messages to subjects, we could have introduced saliency and warning effects into our experiment. Subjects could be more likely to either switch to or avoid a color after seeing the color being mentioned in our message. Subjects could also interpret the messages as warnings and change their color choices to avoid seeing the messages again. To control for these effects, we focused our analysis on how the subjects' behavior varied with the adoption rates of the most popular color. As long as the saliency and warning effects remained unchanged as we varied the adoption rates, the trend in the subjects' behavior can be attributed to differences in the adoption rates.

4. Results

Summary Statistics

Table 1 presents summary statistics for all variables used in our regression analysis. The variable *Converge* is 1 if a subject decided to adopt the same color as the most popular color indicated in the experimental message. The adoption rate of the most popular color that we randomly generated, *% with Popular Color*, ranged from 0.5 to 1 with a mean of 0.73. The dummy variable *Friend Info* indicates whether we displayed information on the most popular color among the subject's friends, as opposed to that among all users of the application. Two thirds of

the subjects received information about their friends. The variable *Include Social Msg* indicates whether a social message was included, with a mean of 0.33 by design.

Table 1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Converge	16,298	0.04	0.20	0	1
% with Popular Color	16,298	0.73	0.16	0.5	1
Friend Info	16,298	0.67	0.47	0	1
Include Social Msg	16,298	0.33	0.47	0	1
Age	16,298	32.06	7.80	18	60
Female	16,298	0.69	0.46	0	1
Total Number of Friends	16,298	68.67	96.28	11	1,024
GDP Per Capita	14,257	42,246	15,132	7,074	71,808

The variables *Age* and *Female* record the age of each subject and whether the subject was female. Users were required to self-report this information when they registered on Kaixin. The average age of the subjects was about 32. Consistent with prior findings on social-network users,[3] females were more represented than males in this application, with the mean of *Female* being 0.69. We also collected information on the total number of friends each subject had upon entering our experiment (*Total Number of Friends*). There was substantial variation in the subjects' total number of friends, ranging from 11 to the maximum number allowed by the site, 1,024, with a mean of 68.67.

Finally, we collected information on subjects' hometowns. This information was self-reported and not mandatory. About 87.5% of all subjects reported this information in our dataset. For each hometown, we obtained data on its GDP per capita (*GDP Per Capita*) from the *2007 China Statistical Yearbook* published by the National Bureau of Statistics of China[4] as a measure of the

[3] See http://blog.nielsen.com/nielsenwire/social/, accessed in April 2012.
[4] The ranks of cities in China based on their GDP per capita remain mostly unchanged over time. As a robustness check, we used the ranks of the cities instead of their actual levels of GDP per capita and obtained similar results.

relative affluence level of the town. The mean GDP per capita was RMB 42,246 and it varied from RMB 7,074 to RMB 71,808.

Analysis

Figure 5 displays how the probability of *convergence*, defined as a subject's choosing the most popular color indicated in our message, varies with the adoption rate of that color. On average, the probability of convergence is low, ranging between 3% and 6%, indicating that the subjects were reluctant to expand efforts to make changes to their existing colors. The black curve demonstrates that, in condition A, an average subject's likelihood to converge to the most popular color among her friends decreased with the adoption rate of that color. The average probability of convergence dropped by 54.9% when the adoption rate increased from [50, 60) to [90, 100).

To rule out the possibility that the observed downward trend was a result of the variation in saliency or warning effects, we conducted the same trend analysis for condition C, as demonstrated by the red curve in Figure 5. The curve is mostly flat ($p = 0.240$), confirming our intuition that subjects did not care much about the adoption rate of the most popular choice among all the application users, as only their friends could see their houses. The contrast between the two curves hence provides evidence that the change in our subjects' behavior in condition A resulted from their thoughtful reactions to the choices of their friends.

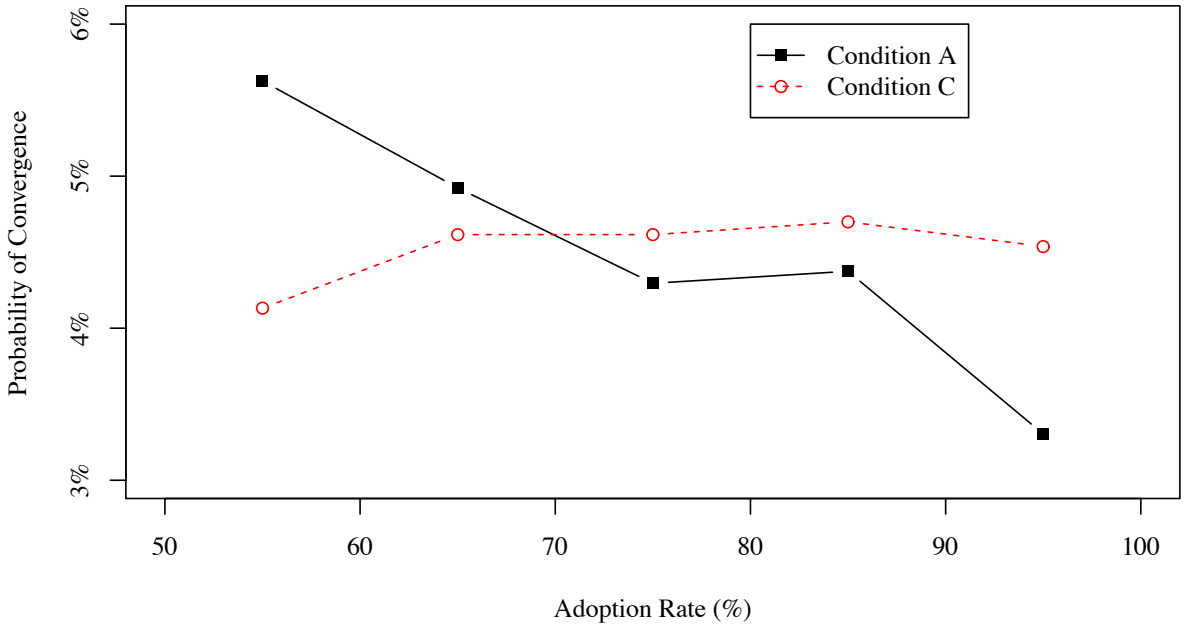

Figure 5: Probability of convergence as a function of the adoption rate of the most popular choice under conditions A (black curve) and C (red curve).

To gain a better understanding of how social pressure among friends may have influenced the subjects' behavior, we measured the impact of the social message on the subjects' color choices. In Figure 6, in addition to the curve for condition A (black), we plotted a curve for condition B (blue). The blue curve is below the black curve when the adoption rate is not extremely high (p = 0.043), suggesting that the subjects were less likely to choose the most popular color among their friends when reminded that their color choices were visible to their friends. The gap between the two curves becomes smaller as the adoption rate increases. A back-of-the-envelope calculation indicates that when the adoption rate exceeded 88%, the subjects were more likely to choose the popular color upon seeing the social message, succumbing to the intense social pressure to conform.

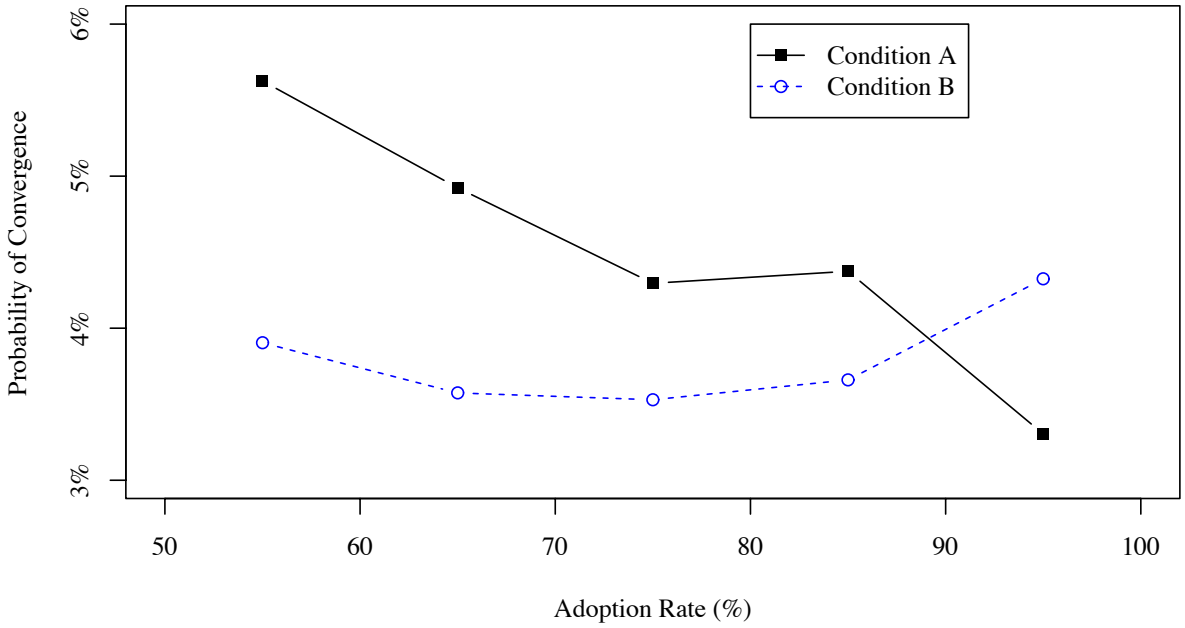

Figure 6: Probability of convergence as a function of the adoption rate of the most popular choice under conditions A (black curve) and B (blue curve).

Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Condition A	Condition C	Conditions A and C		Conditions A and B	
% with Popular Color	-0.047***	0.010	0.010	-0.021*	-0.047***	-0.048**
	[0.018]	[0.018]	[0.018]	[0.012]	[0.018]	[0.019]
% with Popular Color * Friend Info			-0.057**			
			[0.025]			
Friend Info			0.042**			
			[0.019]			
Include Social Msg				-0.008*	-0.046**	-0.047**
				[0.004]	[0.019]	[0.020]

% with Popular Color * Include Social Msg					0.052**	0.051**
					[0.025]	[0.026]
Age						-0.000
						[0.000]
Female						-0.008*
						[0.005]
Total Number of Friends						0.000
						[0.000]
Log(GDP Per Capita)						-0.011**
						[0.005]
Number of Subjects	5,440	5,435	10,875	10,863	10,863	9,455
R-Squared	0.001	0.000	0.001	0.001	0.001	0.002

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Table 2: Regression Results on the Probability to Converge

We report regression results in Table 2. The dependent variable was *Converge*. As we considered interaction variables in some of the specifications, for the ease of interpretation, we used linear probability models.[5] In Model (1), we restricted the analysis to subjects who received information on *FriendColor* without the social message (condition A). We found that a subject's probability of convergence to *FriendColor* decreased with the adoption rate of that color among her friends. In Model (2), we repeated the same analysis with subjects who received information on *GlobalColor* (condition C) and found that the adoption rate of that color among all users had no significant effect on the probability of convergence. In Model (3), we included all observations in conditions A and C. We added the dummy *Friend Info* to control for the differences in the average probabilities of convergence between these two conditions, and its

[5] In our analysis, 100% of the predicted probabilities of our estimates lay between zero and one. Therefore, the linear probability models with robustness standard errors yielded unbiased and consistent estimates (Angrist and Pischke 2009; Horrace and Oaxaca 2006). These results were robust when we used limited dependent variables models.

interaction with *% with Popular Color* to capture the difference in the slopes. We found a significant difference in the slopes, suggesting that our subjects were thoughtfully reacting to the adoption rates in our messages and cared more about the adoption rate of *FriendColor*.

In Models (4)-(6), we included subjects who received information on *FriendColor* (condition A), and those who received information on *FriendColor* along with the social messages (condition B). We included the dummy variable, *Include Social Msg*, in Model (4) to indicate whether the subject received the social message, and included its interaction with *% with Popular Color* in Model (5). The results suggested that when the adoption rate of *FriendColor* was below 88%, subjects were less likely to converge when the social message was displayed. When the adoption rate exceeded 88%, however, including social messages increased a subject's tendency to converge.

As the subjects' behavior could vary with their demographic characteristics (Fehr et al. 2008), we obtained data on each subject's gender, age and hometown, and tested how the propensity to converge varied with these variables. After controlling for demographics, we obtained similar results, in Model (6): Subjects were less likely to choose the most popular color among their friends as the adoption rate of that color increased, except when the social message was displayed and the adoption rate exceeded 92%. There was no significant difference between young and old users in their reactions to our messages. Meanwhile, females' probability to converge was lower than males' by 0.8 percentage points ($p = 0.066$), indicating that the female subjects had an even stronger need to be different. Finally, those born in more affluent cities, measured by GDP per capita, were less likely to converge ($p = 0.023$).

5. Conclusion

Our study demonstrates that people have an overruling desire to be different from their friends, which naturally emerges after we eliminate confounding factors such as taste similarities, identity signaling, and learning. They have strong incentives to avoid the most popular choice among their self-selected friends, and even more so reminded that their choices are visible to their friends. It is only in situations with extremely high adoption rates would the reminder motivate them to conform to their friends. Our findings suggest that even in a collectivist culture (Henrich et al 2010), the need to see oneself as being different from others is a fundamental human nature. These findings are consistent with recent observations of a growing cultural shift toward prioritizing the individual in an increasingly connected world (Baumeister 1991; Spears et al. 1997).

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