Brother, Can You Spare a Pizza? Engagement after requests for tangible assistance

Emergent Research Forum Papers

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Abstract

Given the rise in the sharing economy, the effect of tangible assistance on community participation is a relevant topic. Using the social media site Reddit.com's sub forum Random Acts of Pizza, we investigate the effect of the receipt of altruism in the form of tangible goods rather than information or intangible assistance. We find evidence that the receipt of tangible assistance increases the normative adherence of users, the amount of participation, and the breadth of participation across the wider site.

Introduction

Forums for social interaction inevitably generate pleas for assistance from the less fortunate to the comparatively well-off. The internet is no exception to this. While the internet is well-suited to the offering of assistance in the form of instructions, information goods or other intangible forms of assistance, the nature of the internet is such that the ability of people to offer tangible help to people who are in need is limited. With the advent of social media, avenues are slowly opening up for one distant party to offer tangible help to others in limited ways.

One prominent example of this is GoFundMe, which is a crowdsourcing website for raising funds for a project, medical bill, or similar. An improvised solution is the Reddit forum /r/RandomActsOfPizza (RAOP) which leverages the extant structure that Reddit provides to offer a venue that connects people requesting a pizza with people who are willing to donate a pizza.

With the increase in altruistic activity afforded by crowd funding and other collaborative Web technologies, determining how the reception of tangible assistance will affect a user's bond to a community is an important unanswered question.

Our goal in this study is to determine whether the fulfillment of a request for altruism is effective in increasing the quantity and quality of participation in an online community.

Literature Review

Previous work on online altruism has primarily been focused on information goods of one type or another. Helping others is defined as a prosocial act that is intended to benefit the helped party rather than the helping party (Subramani and Peddibhotla 2004). This definition certainly captures the dissemination of information and other intangible goods, but clearly also incorporates tangible help given to strangers over the internet.

Communication in an online context is moderated by a number of factors. Chief among them is the perceived proximity of an agent to the group (O'Leary et al. 2014) – a sense of relational closeness in an affective sense, rather than physical location in the context of work teams. The identity of a person as a member of a team or a community will determine the level of perceived proximity.

Other previous work has focused on the determinants of the helping behavior rather than the effect that the behavior had on the party being helped. Subramani & Peddibhotla (2004) focus on the determinants of two particular forms of online help: information exchange and knowledge creation. Other work has found that people will offer advice to weak ties or strangers within an organization when there is a regard for the organization as a whole (Constant et al. 1996).

Each of the above studies focused exclusively on the transmission of help in the form of information. Information is easily replicable, and while it does require effort on the part of the transmitter, it does not lead to a zero-sum transfer from one party to the next. Furthermore, we know from previous studies on the unauthorized copying of information goods that people consider physical goods differently than they do digital goods (Danaher et al. 2010), of which information goods are a subset. As such, there is a gap in the extant literature as to the positioning of altruism with respect to requests for physical objects and the effects that this has on community.

Study Context and Data

Reddit is a popular website that consistently ranks in the top fifty worldwide ("reddit.com Site Overview" n.d.), and is a loose collection of independently moderated communities (denoted with the prefix "/r/", such as "/r/science") set within a larger structure. This structure unifies a number of aspects of the user experience such as maintaining a persistent identity across sub-forums and keeping track of "karma" points that are accrued over the course of normal use of the site.

Reddit offers a number of benefits for social science research. First, there is an open API from which activity can be freely downloaded and analyzed. Furthermore, the aforementioned karma system acts both as a crowdsourced indicator of quality to the users, but also acts as an indicator of adherence to normative behavior within the context of the sub-forum. Users can cast one vote on each piece of content posted to the site in the form of links, top posts, and comments. An up vote indicates that the post meets the normative expectations of the sub-forum while a down vote does not.

Each piece of content is individually scored based on the total number of up votes given minus the total number of down votes given to that piece of content. Consequently, scores that are strongly negative demonstrate that the number of down votes is larger than the number of up votes. Each piece of content starts with one up vote (from the author him or herself). These scores are aggregated on the user's profile page which gives an indication at a glance as to the behavior of an individual user ("redditor") generally.

The structure of Reddit forums are also sufficiently flexible as to allow for a number of different uses. Beyond the standard web forum use of discussion and sharing of content, there are forums that are dedicated to the trading of virtual goods (/r/SteamGameSwap), the sale of physical goods (/r/mtgtrades), and the altruistic donation of virtual goods of value (/r/freestuff). One forum that has received some attention, however, is /r/RandomActsOfPizza.

Previous researchers have scraped requests from /r/RandomActsOfPizza for a text mining study of features that increase the likelihood of fulfillment of the request (Althoff et al. 2011), which included the name of the redditor, the time of the request, the text of the request, the number of up votes and down votes received over the redditor's history, and whether that request was fulfilled (with the name of the giver, if known, though this was sparse), as well as other features of the request and the redditor. For our purposes, the important features were the time of the request, the person requesting, and whether the request was fulfilled.

These data were augmented by pulling every comment available in the sixty days before and after the request was made from a publicly available database available on Google's BigQuery. Each comment made by the redditor includes the score of the individual comment, the text of the comment (which for the purposes of analysis were aggregated down to word count), the time, and the forum in which the comment was made. These data were aggregated across users to facilitate the analysis of data.

Three metrics were used to measure engagement. First was score of each comment. This is an indicator of the redditor's adherence to the norms of the community in which they are operating. These norms vary across sub-forums significantly: in some cases, disagreement with a consensus may be frowned upon, and in others, lively debate may be encouraged. While there is a site wide "reddiquite" that is aspired toward, since each community is independently moderated, scores are highly dependent on the community in which the comment is posted. While this may cause some variance, this is still an important indicator of the normative adherence of the user. While the norms may vary, the participation in a community implies an acceptance of the norms as a condition of participation. We expect that users who receive pizza for their request will be more likely to adhere to the norms of the communities on Reddit.

H1: Users who are the beneficiaries of altruism will have higher scores than users who are not the beneficiaries of altruism.

The second metric used was number of posts. This is a proxy for the amount of effort exerted in the participation. (##) We expect that people who are more invested in a community will similarly create more posts. We expect that users who have been the beneficiaries of altruism will experience a greater sense of perceived proximity (O'Leary et al. 2014) as compared to users who did not benefit from altruism.

H2a: Users who are the beneficiaries of altruism will post more frequently than users who are not the beneficiaries of altruism.

Finally, we expect that the breadth of engagement will be increased with attachment to the community. This condition would hold if the redditor feels his or her attachment to be to the larger community (Reddit, in this case) rather than the sub-community that was more directly responsible for the altruism. This is analogous to a person feeling gratitude toward a particular sect or denomination of a religion (e.g. Catholicism) when they were helped by an individual parishioner or priest. Since this is observational data, we cannot directly measure the level of attachment to the site or individual forums but rather we can observe the number of forums that the redditor involved in his or her activities.

H3: Users who are the beneficiaries of altruism will increase their breadth of participation to a greater extent than users who are not the beneficiaries of altruism.

Records Used

3,619 users who had requested a pizza had their comment histories scraped from the reddit.com API for a period of sixty days before and after the request for pizza was made. Of these, 1,044 were successful in their request for a pizza and 2,575 were not. The original data set included 5,728 pizza requests; users who had deleted their accounts or were otherwise not searchable were dropped from our data set. Compared to the original data set's success rate of 24.6%, 28.8% of requesters in the current data set were successful. We believe this to be within reasonable bounds. Due to the anonymous nature of Reddit users, demographic data were not available. Previous research indicates that the user base of Reddit has more men and white people than the general public, and the nature of the sample dictates that the users have some access to a computer and Internet connection.

602,152 comments were collected across the 3,619 users. Mean score for comments was 4.66 with a standard deviation of 32.81. To reduce the effect of outlier comments with very high scores having significant effect on users' average counts, comments with scores above 202 (six standard deviations above the mean) were removed. This accounted for 1358 comments, or 0.2% of the total data set.

The time stamp of comments was normalized against the time of the request, in UNIX epoch time. The request was made at time 0; comments made before the request were negative and comments made after the request were positive.

Results

Data were analyzed in R (R Core Team 2014) using t-tests to determine the equality of two samples. Results are as follows (*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.001$):

	Mean of Altruism Recipients	Mean of Altruism Non-Recipients	P-Value (two-sided)
Score	3.49	3.35	0.2650
Count	88.40	80.71	0.2730
Breadth of Participation	12.78	12.20	0.2316

Table 1: Before Request

Users who were recipients of altruism had higher levels of participation on Reddit before their request, though not significantly so. This is consistent with Althoff et al. (2011), which found that Karma (on a decile

basis) was a significant factor in the success of the request. However, in each case a two-sided t-test returns an insignificant value.

	Mean of Altruism Recipients	Mean of Altruism Non-Recipients	P-Value (one-sided, altruism > non)
Score (H1)	3.45	3.21	0.0344**
Count (H2)	88.36	77.97	0.0529*
Breadth of Participation (H3)	13.48	12.64	0.0411**

Table 2: After Request

After the request, users who received a pizza posted more normatively conforming posts, posted more frequently and with a wider breadth than users who had not received a pizza.

Robustness Checks: Within Subject

	Mean of Differences (post - pre)	P-Value (matched two-sided t-test)
Score	0.04	0.7431
Count	-0.05	0.9894
Breadth of Participation	0.71	0.003**

Table 3: Recipients within-subject

Non-Recipients	Mean of Differences (post - pre)	P-Value (matched two-sided t-test)
Score	-0.14	0.1672
Count	-2.74	0.2252
Breadth of Participation	0.43	0.0048**

Table 4: Non-recipients within-subject

As suggested in the results between the two groups, users who did not receive a response to their request for altruism did in fact increase their scores significantly on a matched basis.

Discussion

As noted above, there are significant differences between the two groups after the request for pizza was made. First, there is a significant difference in scores between the groups based on the fulfillment of their request after the request is made while there is no significant difference before the request. This suggests that the fulfillment or non-fulfillment of the request will have an effect on the user's adherence to group norms. Notably, within the users, there are no significant differences. As such, H1 is confirmed.

The number of posts and breadth of participation were both significantly greater for those who received pizza than for those who did not, which confirms H2 and H3. Given that both of these metrics are indicative of participation in a community, it is clear that the receipt of tangible assistance upon request will induce those whose request is fulfilled to participate more in the community as a whole.

The increase in breadth of participation is an important one as it suggests that the receipt of tangible assistance upon request on one sub-forum within Reddit will lead to a wider breadth of participation across the site. While all groups increased their breadth of participation, the recipient group did so at a significantly greater rate than the non-recipient group.

Future Directions

Given the data set and the information available, future research on this topic can incorporate propensity score matching techniques which would enable a quasi-experimental setup and control for unobserved variables that this study did not account for.

Finally, the use of a randomized field experiment would be the ideal setup to test these hypotheses wherein people are randomly gifted with tangible goods. These methods have been used in previous IS research (see for example Bapna & Umyarov, 2015) where intangible goods of value were gifted randomly to users of an online service. Unfortunately, such a context would be difficult to come across.

Limitations

This study was limited by the nature of the sample, which as previously mentioned is over-representative of white and male users compared to the general population. We do not have reason to believe that the use of a more inclusive sample would yield significantly different results, but it is important to acknowledge the limits of the sample.

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