Encouraging Forum Participation in Online Courses with Collectivist, Individualist and Neutral Motivational Framings

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Online discussion forums have been shown to contribute to the trust and cohesion of groups, and their use has been associated with greater overall engagement in online courses. We devised two experimental interventions to encourage learners to participate in forums. A collectivist ("your participation benefits everyone"), individualist ("you benefit from participating"), or neutral ("there is a forum") framing was employed to tailor encouragements for forum participation. An email encouragement was sent out to all enrolled users at the start of the course (study 1: general encouragement), and later in the course, to just those who had not participated in the forum (study 2: targeted encouragement). Encouragements were ineffective in motivating learners to participate. The collectivist framing discouraged contributions relative to the other framings and no encouragement. This prompts the question: To what extent do online learners experience a sense of community in current implementations of online courses?

Introduction

Massive Open Online Courses (MOOCs) have swept through higher education like wildfire since Stanford University launched three open-access computer science courses to the world in Fall 2011. The predominant instructional model for MOOCs to date is one that emphasizes instructionist, individualized learning, structured around regularly released video lectures and individual assessments. However, as demonstrated by decades of research and theory in the learning sciences, learning with others is a central mechanism for supporting deeper learning (Brown & Cocking, 2000; Stahl et al., 2006; Vygotskiĭ, 1978). Social learning requires individuals to articulate and externalize their ideas, learn through teaching and engage in dialogue with others who may have different perspectives or greater expertise.

This begs the question of where social learning occurs in MOOCs. In most courses to date, the discussion forum provides the primary opportunity for learners to interact with one another. On discussion forums, learners can ask clarifying questions about course content and their expectations, seek and provide help on assessments, discuss ideas related to and beyond the course, or simply socialize with one another, which creates a sense of cohesion and trust among the group (Garrison, Anderson and Archer, 1999). While in some ways this may be idealized behavior, prior work has also found that participants in open online courses who engage more actively with videos and assessments are also more active on the course forum (Kizilcec, Piech, and Schneider, 2013). This may simply reflect a higher level of engagement with the course overall, but it is also plausible that the social and informational flows in

the community create a positive feedback loop that helps some learners stay engaged at a higher rate than they would otherwise. Taking this theoretical and empirical work together, it appears that forum participation is a valuable aspect of online learning, and one worth encouraging.

A traditional approach to encourage forum participation in online learning environments is to make learners' grades depend on their level of participation, thereby creating external reinforcement. Deci (1971) found that external reinforcements can increase or decrease intrinsic motivation, depending on the type of external reward. Engagement-, completion-, and performance-contingent rewards were found to significantly undermine intrinsic motivation (Deci, 1999). Hence, rewarding learners with a higher grade is expected to reduce their intrinsic motivation as a result of reevaluating forum participation from an intrinsically motivated activity to one that is motivated by the anticipation of a higher grade. Positive feedback, in contrast, was found to significantly strengthen intrinsic motivations and interest, as people do not tend to distinguish such rewards from the satisfaction they receive from performing the activity (Deci, 1999).

An alternative approach to encourage forum participation is to increase the salience of the activity in the learner's mind, which may be achieved by sending out reminders. Beyond increasing salience, such reminders could act as positive reinforcement for active participants and spark intrinsic motivations that lead non-participants to start participating while avoiding engagement-contingent rewards. The framing of these reminders is likely to moderate their effectiveness, as research on persuasion highlights the importance of designing persuasive messages such that they are relevant to the audience (Rothman and Salovey, 1997). For example, in another setting, Grant and Hofmann (2011) found a moderating effect of framing messages that encouraged hand hygiene among health care professionals who are stereotypically less concerned about their own health than that of their patients. As a result, messages that emphasized patients' safety were more effective than those that emphasized personal safety. Consequently, the design of encouragement messages should be informed by online learners' motivations for forum participation.

Motivations for participation are likely to vary across learners' own goals for the course, perceptions of the community and perceived benefits from participation in the forum. Some learners may be self-interested and motivated purely by what

they can gain by using the forum – for example, help on a particular homework question – whereas others may be more motivated by the opportunity to help other individuals or to support the community at large (Batson, Ahmad, and Tsang, 2002). To leverage this insight in the MOOC setting, we devised two experimental interventions that used self- and other-focused framings to characterize the merits of participation in the discussion forum. The encouragement was framed as individualist ("you benefit from participating"), collectivist ("your participation benefits everyone"), or neutral ("there is a forum"). Within each course, across the randomly assigned groups of learners, we compared two proximal measures of participation – whether learners participated in the forum at all and how actively they did so – and an overall outcome measure, their attrition in the course over time.

Background and Hypotheses

At the heart of most theories of human decision making in economics, sociology, psychology, and politics lies the assumption that the ultimate goal is self-benefit: in economics, for example, a rational actor is one that maximizes her own utility (Miller, 1999; Mansbridge, 1990). Another school of thought that spans across academic fields has suggested that while self-benefit is a strong motivation, it does not explain the human capacity to care for others and make sacrifices for family, friends, and sometimes complete strangers (see Batson, 1991, for a review). To successfully encourage forum participation, we need to form an understanding of what motivates people to engage in such participation.

A substantial amount of research investigated people's motivations for contributing to knowledge-sharing and knowledge-building online communities, such as Wikipedia or question-answering sites (e.g., Nov, 2007; Yang & Lai, 2010, Raban & Harper, 2008). Batson et al. (2002) present a conceptual framework that differentiates between four types of motivations for community involvement – egoism, altruism, collectivism, and principalism – by identifying each motive's ultimate goal. For egoism, the ultimate goal is to benefit yourself; for altruism, it is to benefit other people; for collectivism, it is to benefit a group of people; and for principalism, it is to uphold certain moral principles. This taxonomy of motives can be applied to the case of forum participation, such that a person may use the forum for their own benefit (egoistic or individualist), someone else's benefit (altruism), all course participants' benefit (collectivist), or to comply with course requirements or the

instructor's recommendation (principalism). Empirical evidence from online marketing research suggests that the framing of participation encouragements in terms of these different types of motivations can affect decisions to engage (White & Peloza, 2009).

In the present study, we focus on encouragements that employ either an individualist or collectivist motivation. To quantify the effect of the individualist or collectivist appeal in the encouragement relative to an appropriate counterfactual encouragement, we employ a neutral reminder encouragement to participate. Consequently, we formulate the following hypotheses:

H1: The encouragements with collectivist or individualist framings lead to increased forum participation compared to the neutral framing or in the absence of an encouragement.

In testing this hypothesis, we measure two aspects of forum participation: the proportion of learners in each experimental group who choose to participate and the average number of contributions (posts and comments) that those who participate author on the forum. Beyond forum participation, recent theoretical and empirical evidence suggests that increased participation on the forum is associated with greater group cohesion (Garrison et al., 1999) and greater overall engagement in open online courses (Kizilcec et al., 2013). Hence, we formulate the following hypothesis:

H2: The encouragements with collectivist or individualist framings reduce attrition compared to the neutral framing or in the absence of an encouragement.

Grant and Dutton (2012) found greater commitment to pro-social behaviors after individuals engaged in written reflections about giving benefits to others rather than receiving benefits from them. This could suggest that collectivist appeals to encourage forum participation would be more effective than individualist ones. In contrast, collectivist appeals were found to be less effective than individualist appeals when responses were private rather than public, because people could not be held accountable for not engaging in socially desirable actions (White et al., 2009). Given this conflicting evidence, we have no definite hypothesis about the relative effects of the types of appeals and therefore pose the following as a research question:

RQ1: Which motivational appeal is more effective at encouraging forum participation: a collectivist or an individualist one?

We conducted two experiments to test these hypotheses and this research question. In study 1, an email encouragement was sent out to all enrolled users at the start of the course (general encouragement). In study 2, a similar encouragement was sent out later in the course to a subset of learners who had not participated in the forums (targeted encouragement).

Study 1: General Encouragement

Methods

Participants

A subset of learners who enrolled in a MOOC on an undergraduate-level computer science topic offered by a major U.S. university participated in this study (N = 3,907). Learners who enrolled after the intervention took place or did not access the course page at all after the intervention were excluded. Consent for participation was granted by signing up for the course.

Materials

Each user received one of three possible emails at the beginning of the course: either a neutral 'reminder' email about the discussion forum; a collectivist encouragement to use the forum; or an individualist encouragement to use the forum. The lengths of the emails were very similar and each text began with "Hello [name of student]". Specifically, this is a representative extract from the neutral encouragement: "There are a number of lively posts on the discussion board." Similarly, from the collectivist encouragement, "We can all use the discussion board to collectively learn more in addition to video lectures and assignments in this course," and from the individualist encouragement, "You can use the discussion board to learn more in addition to video lectures and assignments in this course." Note that the non-neutral encouragements emphasize the goal of learning more yourself or together as a community.

Procedure

The encouragement emails were sent using the course platform's tool for sending mass emails and bucket testing, which randomly assigns enrolled users into the specified number of groups. Combining these two features, each user was assigned to one of three groups (neutral, collectivist, and individualist) and sent the appropriate email encouragement. The resulting groups comprised 1,316, 1,287, and 1,304 learners, respectively. The email was sent out at the beginning of the first week in the course. All forum contributions (posts and comments) used in the analysis were recorded automatically by the course platform.

Results

In total, there were 5,183 forum contributions from 182 (4.9%) of the study participants, i.e., the remaining 3,725 did not contribute.

A simple comparison of the proportion of contributing forum users between conditions one and ten weeks after the intervention yields no significant differences. As illustrated in Figure 1, the intervention had no significant effect on learners' decision to contribute on the forum, neither one week after the intervention, $X2(2) = 3.15$, $p = 0.21$, nor ten weeks later, $X2(2) = 2.04$, $p = 0.36$.

Beyond the question of whether a learner contributed or not, we compare how many contributions learners in the three conditions made on the forum. Figure 1 illustrates the average number of contributions with 95% confidence intervals that were computed by fitting a negative binomial model to account for over dispersion. One week after the intervention, learners in the group that received the individualist encouragement made significantly fewer contributions than those who received the neutral message, $z = 3.52$, $p = 0.0004$, and marginally fewer than those who received the collectivist message, $z = 1.77$, $p = 0.077$. Those who received the neutral message made 2.6 (1.7) times as many contributions in the first week than those who received the individualist (collectivist) message.

Ten weeks after the intervention, at the end of the course, we observe very similar patterns in the number of contributions from the experimental groups as we observed only a week after the intervention. While the number of contributions is not significantly different between the individualist and collectivist groups, $z = 1.42$, $p = 0.16$, it remains significantly lower than for the neutral group (relative to the individualist group, $z = 3.88$, $p = 0.0001$, and the collectivist group, $z = 2.34$, $p = 0.019$) by a factor of 2.3 and 1.6, respectively.

A longitudinal visualization of average cumulative forum contributions from learners in the three conditions suggests that the intervention permanently discouraged contributions from those who received the collectivist and, especially,
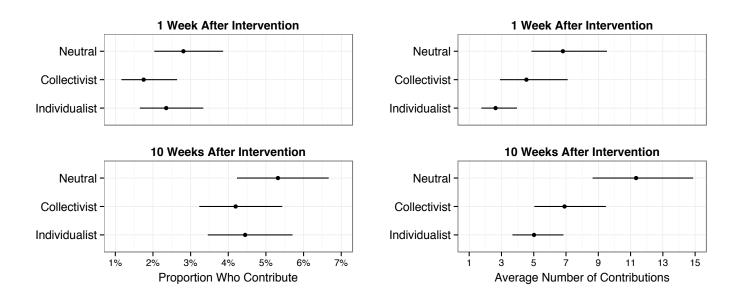

Figure 1. Proportion of contributing forum users in each condition (left) and their average number of contributions (right) one and ten weeks after the intervention with 95% confidence intervals.
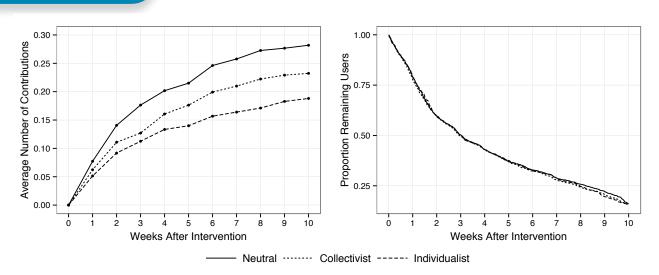
Figure 2. Average cumulative number of forum contributions (left) and Kaplan-Meier curves (right) by encouragement condition for the duration of the course following the intervention in the first week.

individualist message relative to the neutral group (Figure 2, left). Taking a step back from forum activity, we compare how the encouragements affected learner attrition. Figure 2 (right) shows Kaplan-Meier survival curves for each group, which indicate the proportion of learners remaining in the course after a certain time. There is clearly no evidence for differential attrition as a result of the intervention as the survival curves overlap.

Overall, there is no empirical support for hypotheses H1 and H2. Instead, the effect on forum participation measured by average contributions is found to be in the opposite direction than was hypothesized: the non-neutral framings discouraged participation rather than encouraging it. In answer to research question RQ1, we found no significant difference between the effect of the collectivist and individualist framings on forum participation.

Discussion

We found the framing of the general encouragement as neutral, collectivist, or individualist to not affect learners' decision to contribute on the forum. While we cannot infer the effectiveness of the encouraging email because learners' behavior in the absence of the encouragement is not observed, it still suggests that the framing manipulation alone is too weak to push learners over the participation threshold.

A large, significant effect of the framing manipulation was found in the number of contribution authored by those who decided to contribute on the forum. Surprisingly, the collectivist

message and to an even greater extent the individualist message effectively discouraged forum contributions compared to a neutral reminder. This result stands in conflict with studies (e.g., Grant et al., 2011, 2012) that report positive effects of framing calls to action (requests, offers, encouragements, etc.) to highlight the personal benefit of action (individualist) or the benefit to others (collectivist, or altruist).

We can offer a number of possible explanations for why we observe the effect reversed: First, if the non-neutral encouragements were perceived as too strong persuasion attempts due to message wording, then we would expect a negative response. For instance, Feiler et al. (2012) found that providing both collectivist and individualist motivations in an encouragement to generate less participation than just using one framing, because using both revealed the persuasion attempt.

Second, the apparent effectiveness of the neutral encouragement could be at least partly explained by an extrapolation effect: for example, in a marketing context, when a person is told about a product without an explicit value judgment, they might assume that the reason they are told is because the product is good. Similarly, online learners who are simply told about the forum and encouraged to participate might assume that it is beneficial.

Third, the non-neutral encouragements frame forum participation as supporting learning rather than as a primarily social activity, which affects learners' perception and ultimately their usage of the forum. A content analysis of posts and comments authored in each condition could provide insight into

whether learners' perception is reflected in their contributions but lies beyond the scope of this investigation.

Finally, most social psychology studies are conducted in highly controlled environments rather than in the field, where participants might feel less pressure to be obedient or to perform the more socially desirable action (Blass, 1991). Moreover, the motivational structures of participants in laboratory experiments are unlikely to match those of MOOC participants. These interpretations could potentially explain the effectiveness of the neutral encouragement but require further validation.

We found no differences in attrition between conditions, despite the significant differences in forum contributions. This might suggest that the direction of causality between forum activity and course persistence does not point from forum activity to persistence. Instead, this suggests that a third variable, such as motivation for enrollment or time constraints, influences both learners' forum activity and persistence in the course.

Study 2: Targeted Encouragement

Methods

Participants

A small subset of learners who enrolled in a MOOC on a topic in Sociology offered by a major U.S. university participated in this study (N = 7,522). Only those learners who had not contributed (posted or commented) on the forum three weeks into the course, and who had logged into the course page at least once after the encouragement intervention were considered. Consent for participation was granted by signing up for the course.

Materials

Each study participant received either no email at all (control) or one of three possible emails three weeks into the course: either a neutral 'reminder' email about the discussion forum, or a collectivist encouragement to use the forum, or an individualist encouragement to use the forum. The lengths of the emails were very similar and each text began with "Hello [name of student]". The email texts resembled those in Study 1, but were adjusted to fit the course topic and the instructor's writing style and tone in emails. Specifically, this is a representative extract from the

neutral encouragement: "The more people participate, the more posts there are on the discussion board." Similarly, from the collectivist encouragement, "The more people participate, the more we all learn together," and from the individualist encouragement, "The more people participate, the more they learn."

Procedure

Encouragement emails were sent using the same system as in Study 1. This resulted in four groups of the following sizes: control (n = 5,241), neutral (n = 782), collectivist (n = 799), and individualist (n = 757). The emails were sent out three weeks into the course and all forum contributions (posts and comments) used in the analysis were recorded automatically by the course platform.

Results

There were 830 forum contributions from 252 (3.4%) of the study participants, i.e., the remaining 7,327 did not contribute. In this section, we report results for the same measures as in Study 1, but for four instead of three comparison groups. The control group consisted of those learners who had made no forum contribution three weeks into the course and received no encouragement email. Figure 3 illustrates the proportion of users in each condition who authored a post or comment on the forum (left) and the average number of contributions made by contributing users from each group.

We observe no significant differences between groups in how many learners decided to contribute to the forum, neither one, $X2(3) = 0.56$, $p = 0.91$, nor eight weeks after the intervention, $X2(3) = 3.50$, $p = 0.32$. There were, however, significant differences in the number of contributions made by those who did contribute from each group. One week after the intervention, forum contributors who received the neutral message authored 1.7 times as many posts and comments as those who received no message at all, $z = 2.18$, $p = 0.03$. Although contributors who received non-neutral messages contributed at not significantly different rates than those who got no message (collectivist: $z = 1.13$, $p = 0.26$; individualist: $z = 0.73$, $p = 0.47$), they contributed significantly less than those who received the neutral message (collectivist: $z = 2.40$, $p = 0.017$; individualist: $z = 2.09$, $p = 0.036$). This activity pattern shifted eight weeks after the intervention when the course ended. The collectivist message appears to have significantly discouraged forum contributions relative to

the other conditions by a factor of 2.3 on average (control: z = 3.1, p = 0.002; neutral and individualist: z = 2.6, p = 0.010).

From a longitudinal perspective on the average cumulative number of contributions (Figure 2, left), the collectivist message appears to have permanently discouraged contributions, while the neutral message encouraged contributions relative to the control group. The individualist message had almost no impact on contribution rates relative to the control. Note that the neutral message induced steep growth in contributions early on but the trend flattened out after the third week, such that contribution rates were consistent with those in Figure 3

(bottom left) by week eight (except that a smaller denominator is used in Figure 3 by only considering contributing users).

In an analysis of attrition (Figure 2, right), the Kaplan-Meier survival curves for each group followed similar paths. However, attrition for those who received the neutral email appeared to be relatively higher (the dotted line is below the other lines). Using Cox regression with the control group as the baseline, we find this observation to be only approaching significance, z = 1.88, p = 0.061, with 9% higher attrition for those who received the neutral message.
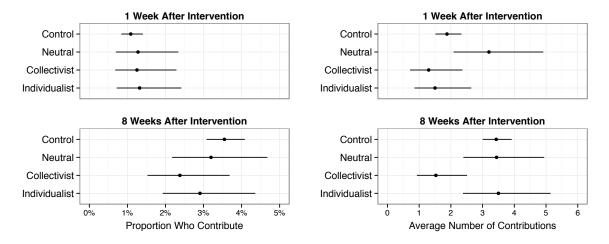

Figure 3. Proportion of contributing forum users in each condition (left) and their average number of contributions (right) one and eight weeks after the intervention with 95% confidence intervals.
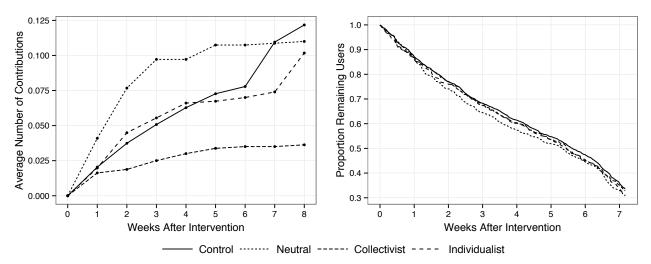

Figure 4. Average cumulative number of forum contributions (left) and Kaplan-Meier curves (right) by encouragement condition or control after the intervention in week three of the course.

Overall, there is again no empirical support for hypotheses H1. The effect of the encouragements is found to change with time: at first, we observe the same reversed effect where the non-neutral framings discourage participation measured by average contributions, but by the end of the course, forum participation is significantly lower for recipients of the collectivist encouragement compared to the other conditions, which also addresses RQ1. There is no empirical support for hypothesis H2, although attrition is marginally lower for recipients of the non-neutral encouragements compared to non-recipients.

Discussion

In the targeted intervention, we found the encouragement email to be ineffective at motivating learners to start contributing on the forum, independent of its framing. About the same proportion of learners decide to start contributing one week and eight weeks after receiving an encouragement or not. This is consistent with our finding for the general encouragement where the different framings did not show differential effect. It is surprising, however, that no significant difference could be detected between encouragement recipients and non-recipients. This might be in part due to the noisiness of the data as we could not observe who actually read the encouragement email.

In terms of the effect on the number of contributions, we found the collectivist message to discourage contributions while the neutral message temporarily boosts contributions relative to how non-recipients' forum behavior. Figure 4 (left) illustrates the progression over time to reveal these trends. By the end of the course, eight weeks after the intervention, average contribution numbers are significantly lower for recipients of the collectivist message relative to all other conditions. It is conceivable that the message with an appeal to collectivist motivations reminded learners of the fact that they are not attached to a community given that they had not contributed to the forum by the time of the intervention. As a result, these leaners are demotivated to contribute more actively compared to the other conditions in which no appeal to community is made. Moreover, the reasons put forward in the discussion of the first study's findings also apply in this context, except that the neutral encouragement does not turn out to be more effective in the long-run.

Finally, the survival analysis suggested that those who received the neutral reminder might be 9% more likely to disengage from the course, although this result only approached significance. If this finding holds up, however, it suggests that the neutral message could have led some learners to be less invested in the course, perhaps because the message was perceived as cold and less caring.

General Discussion

Our findings suggest that while different encouragement framings do not affect learners' decision to participate in the forum, they do affect the contribution rates of those who participate; in particular, in both interventions the collectivist messages discouraged contributions relative to other framings or no encouragement. One interpretation is that an appeal to collectivist motivations in an asynchronous online learning environment with mostly anonymous participant profiles induces resentment, as there is a limited sense of community in online courses, due to their general emphasis on individual achievement and limited duration. Further work is required to uncover what mechanisms might lead to these outcomes. Specifically, heterogeneous treatment effects could occur in an intervention that employs collectivist and individualist framings, such that cultural background and being part of a minority group are likely moderators of the treatment effect.

A limitation of our results is that they are based on two experiments run in two different courses. Extending this research to a wider number of courses would support more general claims about the effectiveness of encouraging messages and could uncover individual differences in course topics or how a virtual community is supported. Another limiting factor in these studies is the missing information on who actually received the encouragement by reading the email. Our experiments can therefore provide an estimate of the intent-to-treat effect, which is relevant for the policy decision of whether encouragement emails should be sent out, but not the effect of the treatment on the treated, where the treated are those who read the email. To this end, emails could be tracked with pingbacks on opening and a monitored link to the forum could be added as an immediate call to action, which would likely increase the overall strength of the intervention as well.

Other variables worth investigating in this context are the number of encouragements and message personalization with course-specific information. For instance, an encouragement with an individualist framing could be supplemented with an example of a forum thread that discusses a question the recipient struggled with in the homework. Moreover, learners could receive positive reinforcement after authoring their first contribution to encourage persistent participation. However, despite the good intentions behind these encouragements, we should be careful not to overload learners with communication to ensure that important reminders in the course receive an appropriate amount of attention.

Our findings highlight the limited, and potentially negative, effect of certain email encouragements and the importance of careful framing of communication with online learners. They also raise concerns around the establishment of a sense of community in online courses. Given our current results, we may recommend sending neutral reminders for participation and continuing to test the framing and dosage of non-neutral reminders.

Acknowledgements

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