

**Styles of moderation in online health and support communities:
an experimental comparison of their acceptance and effectiveness**

Abstract

Medical and social support communities depend very much on the active participation of their members. An active nurturing and moderation of online community activities is often necessary to overcome typical problems of community interaction, such as a lack of trust and active engagement. However, it is unclear what types of moderation and social control members do accept and which are effective. We study the acceptance and effectiveness of different moderation styles in two experimental scenario studies. Our results demonstrate that direct forms of control that provide members with incentives are not accepted and are regarded as ineffective, whereas more indirect forms that rely on relational interests and normative obligations are regarded to be more acceptable and effective. Furthermore, positive (rewarding) moderation styles are more effective than negative (punishing) styles. Members regard negative moderation styles as more effective for the avoidance of unacceptable (rule-breaking) behavior than for the stimulation of desirable (e.g., engaging) behavior. Acceptance and effectiveness of different moderation styles do not differ between active versus passive members.

Key words: online community; e-health; moderation; effects; acceptance; social control; relational signaling; social media.

This is a pre-print version as of 16-03-2014 which has been accepted for publication. For citation, only use the following version:

Matzat, U., & Rooks, G. (2014). Styles of moderation in online health and support groups: An experimental comparison of their acceptance and effectiveness. *Computers in Human Behavior* 36: 65-75. <http://dx.doi.org/10.1016/j.chb.2014.03.043>.

1. Introduction

Online communities for people with medical or psychological limitations are used by quite diverse audiences, such as people with diabetes, eating disorders, older adults who face difficulties in coping with their restricted mobility, and patients with serious diseases, such as cancer or HIV/AIDS (e.g., Blank & Blocknieks, 2007; King, 1994; Mo & Coulson, forthcoming; Weitzman, Cole, Kaci, & Mendl, 2011; Wright, 2000). Empirical studies indicate that members of online communities can profit substantially from participation in a community with respect to gaining useful information, receiving social support, and building up valuable relations with fellow-sufferers (Barak, Boniel-Nissim, & Suler, 2008; Coursaris & Liu, 2009; Eysenbach, Powell, Englesakis, Rizo, & Stern, 2004; Idriss, Kvedar, & Watson, 2009; Shim, Cappella, & Han, 2011). Online health and support communities (OHSCs) thrive on the contributions of their active members. However, OHSCs often face problems with their members' engagement. In many OHSCs only a small minority of members actively contributes (e.g., Lau & Kwok, 2011; Mo & Coulson, 2010; Preece, Nonnecke, & Andrews, 2004). Another problem is that in some communities, members behave in inappropriate ways (Coulson & Shaw, 2013). Although it is unclear whether passive members profit less from OHSCs than active posters (Mo & Coulson, 2010; van Uden-Kraan, Drossaert, Taal, Shaw, Seydel, & van de Laar, 2008), a sufficient level of members' active engagement in community discussions is regarded as a pre-condition for any benefits to emerge in online communities (e.g., Pfeil, Zaphiris, & Wilson, 2010; Matzat, 2010).

Recently, studies of different types of online communities have demonstrated that an adequate active moderation increases the engagement of members, and consequently also increases the beneficial outcomes for members in an online community (Chen, Xu, & Whinston, 2011; Gairin-Sallan, Rodriguez-Gomez, & Armengol-Asparo, 2010; Hsieh & Tsai, 2012; Wise, Hamman, & Thorson, 2006). Moderators in OHSCs themselves regard their moderation style as important for the regulation and stimulation of membership engagement (Coulson & Shaw, 2013). Although the literature on online community design and management offers many recommendations for moderators to increase members' engagement, until now it remains unclear what forms of moderation are useful for OHSCs to increase members' engagement. Some of the typical recommendations suggest the use of appeals to community norms, the provision of financial incentives, formal reputation systems, and informal provision of social approval (Kim, 2000; Figallo, 1998). An important limitation of this literature is that its

recommendations are best-practice examples, without a proper empirical and theoretical foundation. In contrast, the literature on consumer online communities provides evidence-based recommendations about the strengths and weaknesses of different forms of moderation and online community management (Garnefeld, Iseke, & Krebs, 2012; Yen, Hsu, & Huang, 2011). It is unclear whether the same moderation styles that work in the commercial sphere also work in OHSCs, or whether the “incentives offered should match the values of the group in question” (Hall & Graham, 2004: 1). Our study addresses this knowledge gap. We contribute to answering the question what forms of moderation members of OHSCs do accept (and which ones not), and which forms are more effective in facilitating desirable member behavior, such as helping new members or sharing ones’ knowledge. Accordingly, an important objective of our study is to create knowledge on useful styles of moderation in OHSCs. This increases our understanding of effects of social control in online communities and may help health professionals in their management of medical and social support communities on the Internet.

In the next section, we introduce the theoretical background of our study, and summarize the findings of earlier research. We distinguish moderation styles in OHSCs along two dimensions. The first dimension distinguishes between so-called direct and indirect social control. The second dimension distinguishes between positive, rewarding styles and negative, punishing styles. This then leads to four hypotheses about the acceptance and effectiveness of different moderation styles in OHSCs. Our research design consists of two experimental scenario studies among 99 randomly selected members of seven Yahoo! OHSCs. We first describe the procedure, the measurements, and the findings of the first experiment, followed by the procedure, measurements, and findings of the second experiment. We conclude with a general summary of the findings and discuss the implications of our study for the moderation of OHSCs and clarify directions for future research on online communities and social media.

2. Earlier research and theoretical background

2.1 Earlier Studies

Already since the 1990s people increasingly use the internet as a source for information and help around medical and psychological problems (Rainie & Fox, 2000). OHSCs are popular because of their convenience. They often include bulletin board systems, emailing lists, or

other social media offering information that is available 24 hours a day (ibid.). For users they often are an alternative for or supplement to social support that is offered in face-to-face interactions (Cummings, Sproull, & Kiesler, 2002; Preece & Maloney-Krichmar, 2005). OHSCs are a special type of online communities because they do not just offer informational benefits, such as consumer and knowledge sharing communities do (Hall & Graham, 2004; Jarvenpaa & Staples, 2000). An important additional benefit of OHSCs is that members meet similar people, and develop affective relationships (Barak, Boniel-Nissim, & Suler, 2008; Coursaris & Liu, 2009). Processes of self-disclosure, leading to emotional health benefits, are a special asset of useful OHSCs (Shim, Cappella, & Han, 2011). Some OHSCs can develop rather strong norms that guide the members' community behavior (Preece & Maloney-Krichmar, 2005).

A potential problem in OHSCs is that they thrive on the active contributions of their members. The literature discusses various factors that affect the members' tendency to participate actively during discussions in online communities. Personality factors play a role as well. For instance, members with a stronger pro-social value orientation are more likely to participate actively (Jadin, Gnambs, & Batinic, 2013). Social incentives, for instance status considerations, as well as material incentives stimulate members' discussion contributions (Hummel, Burgos, Tattersall, Brouns, Kurvers, & Koper, 2005; Matzat, 2009b). In addition, moderators' involvement in community activities may be an important determinant of the health benefits (Coulson & Shaw, 2013; Lorig, Laurent, Deyo, Marnell, Minor, & Ritter 2002). One of the crucial tasks of a moderator is the development, and, if needed, enforcement, of clear rules of members' engagement (Coulson & Shaw, 2013). Furthermore, according to the literature on online communities, moderators can stimulate discussions by fulfilling various functions. These functions include the prevention of extreme conflicts between members, ensuring that members' contributions stay on-topic, fostering trust between members, starting up new discussions when needed, and helping specific members. Intensity of moderation on all these dimensions can vary very much between communities (Preece, 2000). In some communities moderation activities can become very time-consuming (Berge & Collins, 1993; Coulson & Shaw, 2013).

The literature on the design and management of online communities offers many recommendations for effective moderation. Kim (2000), for instance, recommends

constructing a members' ranking based on the number of their postings within a specific time frame. This would provide an incentive for members to increase the number of postings so that they can achieve a higher position in the ranking. Another recommendation is to use community specific symbols and to appeal to community-specific norms. Such symbols and pleas to norms would motivate members to take into account the community rules (ibid.).

While the recommendations for effective moderation are interesting, there are two important limitations. First, the theoretical foundation of the recommendations is unclear. It is unknown why the recommendations work. The lack of a theoretical foundation also makes it hard to find out under what conditions, or for what types of communities, they do work and under what conditions they fail. Second, there is insufficient systematic empirical testing of the recommendations that goes beyond the best-practice examples. A philosophy of "anything goes" clearly does not work as the example of Suler (2000) demonstrates. He provides an interesting case of a large multimedia chat community moderator who temporarily banned a misbehaving member from the community. Later, the moderator was confronted with other outraged members who fiercely disagreed with this decision. In order to make sure that moderators avoid making wrong decisions that damage the community, it is important to step away from the best practice example. What is needed is a theoretical underpinning of the expected effects of specific moderation styles and systematic empirical tests and comparisons of the acceptance and effects of different moderation styles.

Systematic research on consumer and knowledge-sharing online communities indicates that the style of moderation can have desirable and undesirable effects. A number of studies demonstrate that material incentives can motivate members to share knowledge and become more active (Bartol & Srivastava, 2002; Henning-Thurau & Walsh, 2003; Hummel, Burgos, Tattersall, Brouns, Kurvers, & Koper, 2005). However, as Garnefeld, Iseke, and Krebs (2012) demonstrate, there may be detrimental effects of material incentives as well. They distinguished between a single material (monetary) incentive and a single normative plea to members' willingness to engage, while also examining their short-term and long-term effects. They found that a single monetary incentive in the short term increases members' willingness to contribute actively. The short-term effect of the single monetary incentive is stronger for passive than for already active members. In the long term, however, the single monetary incentive does not have any effect on passive members, but reduces active members'

willingness to contribute. Explicit single normative pleas, on the other hand, increased active and passive members' willingness to contribute in the short term (but not in the long term). They did not have any negative effects in the long term. Garnefeld, Iseke, and Krebs (2012) explain the negative long-term effect of monetary incentives on active members as a "crowding-out effect". Active members, when compared to passive members, have a different motivation to participate. They already have an implicit incentive that motivates them to contribute without any monetary incentive. The implicit incentive may consist of a mixture of intrinsic motivation, the hope to gain social approval, or feelings of obligation to adhere to social norms (ibid.). In the long term, however, these motivations will be reduced by the introduction of monetary rewards for behavior that originally was motivated by non-monetary rewards (Fehr & Falk, 2002; Frey & Jegen, 2001; Janssen & Mendys-Kamphorst, 2004). As a result, in the long term the willingness of active members to contribute is reduced. In a similar way, Garnefeld, Iseke, and Krebs (2012) explain why the short-term effect of monetary rewards is smaller for active members than for passive members. While the monetary reward has a short-term increasing effect for all members, it also reduces the implicit incentives of active members in the short run, making the overall effect smaller for active than for passive members.

The studies discussed above demonstrate that the effects of a moderation style depend on its context. It is therefore unclear whether material incentives and normative pleas will have the same effects in OHSCs as in consumer online communities. Some researchers warn that direct incentives may not work at all in (some) online communities (Forte & Bruckman, 2005; Preece & Maloney-Krichmar, 2005).

2.2 A relational signaling approach to moderation styles

In the following we utilize a relational signaling approach (Lindenberg, 1997) to develop a theoretical reasoning about effects of a number of specific styles of moderation in OHSCs that takes into account earlier findings, leading to four testable hypotheses. The earlier distinction between monetary incentives and normative pleas is a first useful step. However, there are more ways to moderate or stimulate members' behavior.

2.2.1 Direct versus indirect social control

According to the theory of relational signaling in online communities a distinction can be made between direct and indirect social control (Matzat, 2009). Direct control works through influencing the direct benefits linked to a member's behavior, e.g. to contribute/not to contribute or to respect/break community rules etc. Direct control is not limited to the utilization of monetary incentives, but includes social incentives as well. The construction and public announcement of a members' ranking system based on the number of postings or the public peer evaluation of the usefulness of other members' comments for the community are other examples of direct control. A community rule stating that rule-breaking members will be excluded from the community is a form of direct control as well.

A type of social control that works in indirect ways is "frame-stabilizing". A frame consists of norms or rules, e.g., 'community members should respect and support each other'. Frames provide criteria how to evaluate decision behavior, for instance whether to participate actively or how to behave in an OHSC. Frame-stabilizing influences behavior by drawing the member's attention to the common frame of the community. An example of frame-stabilization would be a moderator's normative plea that refers to common rules and goals, the use of rituals and symbols that stress the common identity and thereby enhance the cognitive salience of the community frame (Matzat, 2009). In contrast with direct control that works via changing the 'real' benefits, frame-stabilizing social control only affects the perceived benefits. For the member, it brings the common community frame more to the forefront of the member's attention and diminishes the subjective relevance of other particular, perhaps conflicting, interests. The member's conflicting individual goals are pushed to the cognitive background, thereby reducing their subjective value and diminishing the subjective costs of neglecting them. This should increase the member's willingness to behave in accordance with the community frame (Lindenberg, 1997; 1998).

A third type of social control, called indirect monitoring, provides members with the opportunity to signal exemplary compliance with norms of the community via their behavior. The members thereby gain the social approval of other community members (Lindenberg, 1997). An example of indirect monitoring is the behavior of the moderator of the famous online community "The Well" (Hafner, 1997). After a few members disturbed discussions and behaved in unacceptable ways, the moderator decided not to exclude or punish them directly. Rather, he publicly declared their behavior as unacceptable and invited other

members to show their disapproval in public, thereby punishing the deviating members indirectly. Members that followed this invitation gained the appreciation of other members.

Indirect monitoring works through so-called “relational signaling”. That is, members signal through their participation, or lack thereof, how they regard their relation to other members and to the community. In the example of “The Well”, participating in the public punishment of deviating members signals conformity to the rules and norms of the community.

Accordingly, indirect monitoring works through members’ relational signaling that indicates conformity to the norms, thereby indirectly also conformity to the common frame of the community. However, contrary to frame-stabilizing social control, it does not just change the perceived benefits, but provides opportunities to gain ‘real’ social approval (Matzat, 2009; Lindenberg, 1998). To sum up, community moderators can choose between direct social control and two types of indirect control, namely indirect monitoring and frame-stabilizing control.

2.2.2 Relational signals of the application of direct versus indirect control

The utilization of (direct or indirect) social control by a moderator provides information to the community members about the behavioral standards and norms that the moderator regards as important for the community. Stated differently, active moderation sends relational signals to the members (Matzat, 2009). The social control literature suggests that direct control strategies signal a lack of relational interests (Ellickson, 1991; Lindenberg, 1997; 1998).

Direct control may be accepted within a consumer online community with a limited amount of relational interests of its members, but it is less adequate in OHSCs that aim at building up supportive relations between members. That is, direct control will be tolerated less in an online community with a high degree of relational interests. The application of direct control signals that the moderator expects members not to have strong relational interests. However, in communities with a high degree of relational interests, a member would receive the signal that (s)he is in the ‘wrong’ group that does not fit with her or his interests. (S)he will leave, diminish his or her engagement, or may even protest. Direct control is more useful in communities with a lower the degree of relational interests (Matzat, 2009: 383).

Matzat (2009a) provides some evidence for the hypothesis that relational interests affect the acceptance of direct control. He examined the acceptance of direct and indirect social control

in two types of online communities, namely knowledge sharing communities of teachers and eBay as an example of a consumer community. He found that for problems of membership engagement in both types of communities indirect forms of social control were more accepted than direct forms of control. For problems of rule compliance there was no difference in the acceptance of indirect versus direct control. Furthermore, for the problem of membership engagement the acceptance of direct control was much lower in the teachers' community (with somewhat more relational interests) than among eBay members (who had less relational interests). This is in line with the argument that the level of relational interests affects the level of acceptance (and therefore also the effectiveness) of social control.

Several studies indicate that members of OHSCs often have strong relational interests (e.g., Preece & Maloney-Krichmar, 2005; Shim, Cappella, & Han, 2011; Winzelberg, 1997). The teachers' communities, discussed above, which had a moderate level of relational interests, tended to accept direct control less than indirect control for problems of membership engagement. Accordingly, we predict that direct forms of social control are less accepted and will be less effective than indirect control in OHSCs. We test these arguments by means of the following two hypotheses.

Hypothesis 1: In OHSCs, for problems of membership engagement, members accept indirect forms of social control more than direct forms of social control.

Hypothesis 2: In OHSCs, for problems of membership engagement, members regard indirect forms of social control as more effective than direct forms of social control.

2.2.3 Rewarding versus punishing styles of moderation

Another dimension of social control consists of its positive (rewarding) versus negative (punishing) character. Rewarding social control consists of the provision of benefits for desirable behavior, whereas punishing social control removes benefits for undesirable behavior. Examples are the public appreciation of members who are very engaged versus the public disapproval of members who showed a significant lack of engagement. Moderators of OHSCs can define and broadcast such (rewarding or punishing) rules in the community. If such rules are publicly announced in a community they may affect the members' behavior. According to the relational signaling approach, the threat of negative sanctions in trusting

relationships implies a negative signal that endangers the relationship (Etienne, 2012). Moreover, findings demonstrate that even if the provision of rewards and punishments is contingent on behavioral performance, punishments are regarded as being less fair than rewards (Tremblay, Vandenberghe, & Doucet, 2013). Accordingly, we expect that in OHSCs rules that announce negative sanctions will be disapproved more by members, making them less effective than rules that have a positive (rewarding) character. Hence, the following hypothesis.

Hypothesis 3: In OHSCs, members regard positive (rewarding) forms of social control as more effective than negative (punishing) forms of social control.

The question is whether punishing social control can be applied in OHSCs at all. Or stated differently, it is unclear under which conditions members regard negative control as more effective (if at all). In the literature it is argued that punishment could be an appropriate method of sanctioning under specific conditions, such as when a balance between the offender and the victim has been disturbed and has to be restored (Seifried, 2008). Furthermore, observers regard a punishment as more deserved if the performance of the offender is poorer (Niehoff, Paul, & Bunch, 1998). We assume that rule-breaking behavior within OHSCs is regarded as worse behavior that in the eyes of members deserves to be punished more than a lack of desirable behavior (e.g., lack of active engagement). In addition, we assume that in case of rule-breaking behavior it is more likely that members perceive a “victim” to be present than in case of a lack of desirable behavior (e.g., lack of engagement). We test this line of reasoning with the following hypothesis.

Hypothesis 4: Members regard negative (punishing) forms of social control as more effective for the avoidance of unacceptable (rule breaking) behavior than for the stimulation of desirable behavior (active engagement).

2.2.4 Differential effects

All four hypotheses make predictions about styles of moderation that are utilized consistently and in an enduring manner over a longer period. Accordingly, we do not examine whether there is a difference between short and long term effects of “one shot interventions” because these seem to be less promising for the moderation of OHSCs. Another question is whether

the effects of moderation may differ between active versus passive members, as Garnefeld, Iseke, and Krebs (2012) found. The authors found evidence for a “crowding-out effect” among active members only for monetary rewards, but not for the utilization of normative pleas. It is debatable whether such an effect can be found for direct (monetary or non-monetary) control in OHSCs. According to Hypothesis 1 direct control will be less accepted than indirect control. Furthermore, for problems of membership engagement, direct control tended not to be acceptable within knowledge sharing communities with a moderate level of relational interests (Matzat, 2009a). One may therefore speculate whether in OHSCs (with strong relational interests) direct control is unacceptable in general, among active and passive members. Should this be true then there would be no difference in the acceptance and effectiveness of direct control between active and passive members. In a similar vein, one may speculate whether there is a difference between active versus passive members in the effectiveness of rewarding or punishing social control. Accordingly, we formulate this issue as a research question.

Question: Is there a difference between active and passive members a) in the acceptance and effectiveness of direct versus indirect social control and b) in the effectiveness of rewarding versus punishing social control in OHSCs?

3. Research design

We conducted two online experiments that use hypothetical but realistic scenarios about moderators’ behavior in online health support communities (OHSCs). Scenario research may have a lower external validity than experiments that actually apply the styles of moderation in the field. However, scenario experiments have been used earlier to study systematically the effects of variations in moderation of online communities (e.g., Garnefeld, Iseke, & Krebs, 2012; Matzat, 2009a). A rather limited number of studies have examined the ecological validity of such experiments. The findings generally support the ecological validity, although hypothetical behavior does not always accurately predict actual behavior (Caro et al, 2012).

3.1 Sample

All data have been collected in English communicating Yahoo! online health support communities (Yahoo, 2013). The following three frequently occurring categories of Yahoo! OHSCs were chosen:

- Health & Wellness > Support > 'Addiction and Recovery'
- Health & Wellness > Support > 'Diseases and Conditions'
- Health & Wellness > Support > 'Care Giving'

In contrast to other studies, we do *not* use a self-selected sample of members of OHSCs. Within seven different OHSCs, with the moderator's consent, email invitations to 1050 randomly selected members were sent. Out of the 1050 email addresses 266 were no longer valid. 131 members participated (16.7%) of which 99 took part in both experiments. That is, thirty-two respondents dropped out of the survey before the experimental part. We compared the respondents who participated in the experiments with those who chose not to participate. We were not able to compare the drop-outs with the participants on demographic measures, since we did not obtain that information for those who dropped out earlier. There is no difference between those who participated in the experiments versus those who dropped out with respect to their length of community membership ($M_1=3.98$, $M_2=3.97$, $t=0.06$, $p>0.1$). However, it turns out that on average in the group of drop-outs there is a larger proportion of passive members who claim typically not to post at all. Sixty-nine percent of the drop outs did not post, while only 35% of the participants did not post (Pearson $\chi^2(1)=10.97$, $p<.001$).

The age of the people that did participate in the experiments was on average 44.7 years, ranging from 27 to 77. A majority of 76% of the participants were women. The participants lived in various countries, but a majority of the participants resided in the U.S. (52%). The average number of years of formal education, counted from the first year of primary school, was 16 (ranging from 10-21). Most participants were experienced internet users, 89% were longer than 5 years on the internet. Of the participants 56% typically posted at least one time per month, 15% of this group were active poster that posted more than 10 times a month. Within the last three months, participants visited on average 1-3 times per week their OHSC and spent in total between 16-60 minutes in the last four weeks on their OHSC. Our sample does not only include satisfied members. A majority of 62% of the participants were satisfied with their OHSC, 28% were indifferent with respect to their satisfaction with the community,

while 10% of the participants were unsatisfied with their community. For 39% of the participants the community was an important part of their life, 28% did not think it was important, while 33% were indifferent. Most of the participants became a member of the community to obtain information (90%), other major reasons to join the community were to receive social support (30%), and to reach out and get in contact with others in a similar situation (22%). The hope to find new friends motivated only 5% of the participants to become a member. At the same time, 72% agreed that to the statement that “in general, contributions in my online community are of a personal nature”.

Communities varied in the degree to which they were active. Although 56% of the members think that their community had many active members, there were others (25%) who claimed that their community had too few active members. Most communities were moderated by one or two moderators (57% of the members claimed so), who mostly were quite active, f.i. 65% claimed that moderators often reacted to questions.

The moderate response rate and the difference between the participants in the experiment versus those who dropped out suggest that the sample has a bias in favor of active participants. However, when compared to other research that uses a self-selected sample of respondents (e.g., Mo & Coulson, 2010) we see that we were more successful in reaching passive members and members who were unsatisfied. For instance, Mo & Coulson (2010) have 24.7% passive members and 2.7% of their respondents were dissatisfied with the community. While the random sampling approach may not have eliminated the bias in favor of more active and more satisfied members, it has reduced it somewhat and made sure that the sample of participants has sufficient heterogeneity for testing our hypotheses and answering our questions.

3.2 Measures

The participants filled in a number of questions about their demographic background and their membership in their OHSC. As we explain in more detail below, the first experiment examined the effectiveness and acceptance of different forms of direct and indirect social control that were aimed at stimulating some desirable community behavior. The second experiment examined the effectiveness of social control measures that were either rewarding members who showed desirable behavior or punishing members who showed undesirable or

non-acceptable behavior. In the experiments, participants were confronted with hypothetical, but realistic scenarios about the application of a specific form of social control in their own OHSC. After each scenario they were asked to fill in a number of items that indicated the effectiveness and acceptance of these styles of moderation according to their point of view (see below).

4. The experiments: Set-up and results

4.1. Experiment I: direct versus indirect control

4.1.1 Set-up of experiment I

The first experiment used a between subject design. It consisted of four hypothetical though realistic scenarios. Participants were randomly assigned to one of the four experimental scenarios. Between these scenarios the hypothesized form of social control that was applied in the members' OHSC was manipulated.

Each of the four scenarios presented a situation in which a specific style of moderation was proposed to deal with the problem of how to facilitate active participation of members in their own OHSC. Respondents were asked about the extent to which they thought they would accept the introduction of such a moderation style to facilitate contributions within their community. Secondly, respondents were asked about the extent to which they thought their contributive behavior would be affected due to the hypothesized social control. This resulted in the following four scenarios.

(Table 1 about here)

Because the experiment examined people's self-reported, expected change in contributive behavior and acceptance of social control, it was expected that participants might present themselves more favorably than they would behave in reality. Therefore the experiment controlled for social desirability in the members' answers by using the method of direct and indirect questioning (Jo et al., 2000). Direct questioning consists of directly asking the respondent how he or she would react to a situation as described in the scenario. This is the procedure that some earlier research used (e.g., Garnefeld, Iseke, & Krebs, 2012). In addition, indirect questioning asks how the respondent thinks typical others would react to the situation

(Jo et al, 2000). Table 2 presents the three direct and three indirect items that we used. All items used seven-point-Likert scales with the option “4” as the point of indifference on the dimensions of acceptance and effectiveness.

Jo et al. (2000) propose fitting a confirmatory factor model to these data. The proposed model treats the responses from both direct and indirect questioning as consisting of both method factors and a common factor measuring one underlying same construct. Unfortunately, in our sample this confirmatory factor analytic model did not converge to a solution. However, subsequent analyses revealed that the results are independent of whether the answers to direct or indirect questions are used. An exploratory factor analysis revealed one dominant factor (see Table 2 and 3 for the factor loadings). Furthermore, we do find that the answers to the indirect and direct questions correlate highly, indicating that they measure the same construct. The correlation between the direct acceptance and indirect acceptance (what others think) is high and highly significant ($r = .90, N=99, p<.001$), the correlation between direct effectiveness, and indirect effectiveness is somewhat lower, but still high ($r = .77; N = 99, p < .001$). Based on these results, we decided to use the both direct and indirect items to measure the theoretical constructs. Both scales are highly reliable: the Cronbach’s alpha of the acceptance scale is high ($\alpha = 0.95$), just as the Cronbach’s alpha of the effectiveness scale ($\alpha = 0.96$).

4.1.2 Results of experiment I

(Table 2 about here)

The means in Table 2 suggest that members accept indirect forms of social control more than direct forms of social control. The overall mean of acceptance is 3.88. The scores of indirect monitoring and frame stabilizing are well above this mean, and the scores of direct monetary, and direct non-monetary control well below. We used a one-way ANOVA to test whether the means (of the factor scores) differ significantly. Acceptance differs significantly across the social control forms, $F(3, 96) = 8.14, p < .001$. We contrasted the combined means of the two direct forms with the combined means of the two indirect forms of social control. This result is highly significant as well, $F(1, 96) = 23.67, p < .001$, and supports hypothesis 1.

By looking at the mean values of the raw scores in Table 2, we see that members tend to not accept both direct forms of social control whereas they tend to accept the two indirect forms of social control. The significant difference in the acceptance between direct and indirect control cannot be explained by a rejection of monetary incentives. The non-monetary direct form of social control tends to be accepted even less than the monetary direct control, demonstrating that the difference cannot be explained by a rejection of monetary incentives.

(Table 3 about here)

The means in Table 3 suggest that members regard indirect forms of social control as more effective than direct forms of social control. The overall mean of effectiveness is 3.11 which is below the point of indifference. The scores of indirect monitoring and frame stabilizing are well above this mean, and the scores of direct monetary, and direct non-monetary control well below. We used a one-way ANOVA to test whether the means of the factor scores differ significantly. Effectiveness differs significantly across all the social control forms, $F(3, 96) = 5.11, p = .003$. We contrasted the combined means of the two direct forms with the combined means of the two indirect forms of social control. This result is highly significant as well, $F(1, 96) = 14.62, p < .001$, and supports hypothesis 2.

By looking at the raw scores of Table 3, we see that the two direct forms of social control are regarded as not effective. While the two forms of indirect social control are regarded as significantly more effective, their effectiveness is nevertheless not regarded as very strong. The two mean values of effectiveness, 3.88 for indirect monitoring and 3.56 for frame stabilization, are near to the point of indifference indicating that members regard the two indirect forms of social control as neither very ineffective nor very effective. Stated differently, while members regard the indirect forms of control as more effective they do not regard any form of social control as very much effective.

(Figure 1 about here)

In Figure 1, for all forms of social control the mean raw scores indicating the degree to which they are regarded as effective and accepted by members are shown. A score of “4” would indicate the point of indifference on the dimension of acceptance and effectiveness. The

figure shows clearly that direct forms of social control are considered to be less effective, and are less accepted, than the indirect forms of social control. A MANOVA was used to simultaneously compare the means of the experimental groups for the acceptance and effectiveness of social control. The multivariate result was highly significant, $V= 0.24$, $F(6,92) = 4.29$, $p < .001$. We checked whether the covariates gender and age influenced this result, they did not, both were not significant. The combined differences in acceptance and effectiveness between direct monetary and non-monetary social control on the one hand, and indirect monitoring and frame-stabilization on the other hand, is significant, $V = 0.20$, $F(2,95) = 11.94$, $p < .001$, again providing support for the first two hypotheses. Furthermore, there is a strong correlation between the acceptance and effectiveness scores of social control ($r=0.76$, $N=99$, $p<.001$).

Additional to our hypotheses we also asked the following question: Is there a difference between active and passive members in the acceptance and effectiveness? We first compared the overall means of acceptance and effectiveness between passive and active members. It turns out that on average there is no statistical difference between passive members ($M_{\text{acceptance}} = 3.96$; $M_{\text{effectiveness}} = 3.10$), and active members ($M_{\text{acceptance}} = 3.83$; $M_{\text{effectiveness}} = 3.13$), $V = 0.00$, $F(6,91) = 2.0$, $p = 0.796$. We also tested whether passive and active members differed across the four types of social control. To do so we included an interaction term between experimental condition and activity level of members in the MANOVA. Again we found no statistical differences, $V = 0.02$, $F(6, 184) = 0.95$, $p = 0.948$. Hence, the answer to our research question is that according to our results there are no differences between active and passive members in the acceptance and effectiveness of direct and indirect social control in OHSCs.

4.2 Experiment II: rewarding versus punishing social control

4.2.1 Set-up of experiment II

The second experiment examined the effectiveness of styles of moderation that rest on positive versus negative (direct) social control. A mixed design is used. Respondents were randomly assigned to answer questions about one of four scenarios. As Table 4 shows, all four scenarios were about moderation styles that aimed at either stimulating desirable,

engaging behavior (contributing to others' information or support requests, helping new members, reminding other members to stay on-topic during discussions), or at avoiding unacceptable behavior (insulting other members).

(Table 4 about here)

The participants were randomly assigned to one of the four conditions that are presented in Table 4. A participant who was assigned to a certain condition was first asked to assess six different items that presented examples of positive (direct) social control. Then, the participant was asked to assess six similar forms of negative social control, as shown in Table 5. Thus, within each randomly allocated scenario, participants were exposed to examples of different forms of social control characterized by its rewarding versus punishing character of a sanction. As Table 5 shows, the types of sanctions described in the six items were material rewards/punishments, status rewards/punishments, social approval/disapproval in public by the administrator, social approval/disapproval in public by other members, private approval/disapproval by the administrator, and private approval/disapproval by other members. Members had to assess the effectiveness of the rewarding/punishing forms of control on a seven-point Likert scale where a score of "1" indicates "not at all" and "7" indicates "very much". Only direct questioning focusing on the effectiveness of social control measures was used in order to reduce the respondents' burden.

(Table 5 about here)

The six items of rewarding social control as well as the six items of punishing social control form two reliable scales ($\alpha=0.86$ for rewarding control, $\alpha=0.89$ for punishing control).

4.2.2. Results of experiment II

As can be seen in Table 5, on average positive social control is considered to be more effective than negative social control. On average, on a 7-point scale, positive social control is rated 3.46, while negative social control is rated 1.97. Regardless of the punishing versus rewarding character of social control, participants thought that measures based on

manipulation of incentives (bonus or status) are less effective than measures based on private communication, such as sending a private message, as Table 5 indicates.

In Figure 2 we present the mean raw scores indicating the effectiveness of rewarding versus punishing social control per problem type. There are no striking differences in the scores between the different types of problems. In all cases positive social control is thought to be more effective. Negative forms of social control are most effective for the avoidance of insulting behavior. Positive forms of social control are regarded as most helpful for stimulating helping behavior. In line with the earlier findings about the effectiveness of social control, all mean raw scores of effectiveness are below the scale midpoint of four. The mean values of the four punishing forms of control are clearly below the scale midpoint, indicating that members tend to regard all punishing forms as ineffective. The mean values of the four rewarding forms of control approach, but are somewhat below, the scale midpoint indicating that members tend to regard rewarding control as neither very ineffective, nor very effective.

(Figure 2 about here)

Hypothesis 3 states that in OHSCs, members regard positive (rewarding) forms of social control as more effective than negative (punishing) forms of social control. This hypothesis is supported by the results. The average score on positive social control was significantly higher ($M = 3.46$, $SD=0.15$) than the average negative social score ($M = 1.97$, $SD=0.13$). We used a paired t-test to compare the variables, since each participant was assigned to a condition that allowed judging both positive and negative social control, $t(98)=9.98$, $p<.001$.

Hypothesis 4 predicts that members regard negative (punishing) forms of social control as more effective for the avoidance of unacceptable (rule breaking) behavior than for the stimulation of desirable behavior (active engagement). As can be seen in Figure 2, if we compare the effectiveness of punishing measures for different problems, then punishing social control is regarded to be the most effective for the avoidance of insulting other members, $M=2.33$, the average of the three other conditions is lower, $M=1.84$. The difference is statistically significant, $t(97)=1.73$, $p=0.04$ (one-tailed test). Hence, hypothesis 4 receives support. Punishing control is regarded as more effective for the avoidance of undesirable behavior than for the stimulation of desirable behavior. Note that, while significantly higher,

the effectiveness of punishments in order to avoid insults still tends to be rather low, as the absolute number presented in Figure 2 suggests. The average effectiveness is clearly below the scale midpoint, indicating that members tend to regard the punishing measure even for avoiding insults as not effective.

Additional to our hypotheses we asked whether there is a difference between active and passive members in how effective they regard rewarding versus punishing social control to be. We first compared the overall means of effectiveness of positive and negative social control between passive and active members. It turns out that on average there is no statistical difference between passive members ($M_{\text{positive}}=3.51$; $M_{\text{negative}}=1.98$) and active members ($M_{\text{positive}}=3.39$; $M_{\text{negative}}=1.95$), $V=0.00$, $F(2,96)=0.07$, $p=0.934$. We also tested whether passive and active members differed across the four conditions (issues). To do so we included an interaction term between experimental condition and activity level of members in the MANOVA. Again we found no statistical differences, $V=0.12$, $F(14, 182)=0.81$, $p=0.656$, indicating that there are no differences in the perceptions of active versus passive members.

5. Summary and discussion

In this study we analyzed the acceptance and effectiveness of different styles of moderation in OHSCs. Earlier research indicates that the effectiveness of community moderation depends on a number of conditions. It is unclear whether practices that work in one type of community also work in OHSCs that are characterized by strong relational interests. We extend earlier distinctions of styles of moderation by distinguishing two dimensions: direct versus indirect control on the one hand, and rewarding versus punishing control on the other hand. In line with arguments of the theory of relational signaling (Matzat, 2009; Lindenberg, 1997), we predict that for problems of membership engagement, members of OHSCs regard indirect control as more acceptable and effective than direct control. Rewarding forms of control will be regarded as more effective than punishing control. In two experimental scenario studies, we find support for these hypotheses as well as for the hypothesis that punishing forms of control are regarded as more effective for the avoidance of unacceptable (here: insulting) behavior than for the stimulation of desirable (here: engaging) behavior. A closer look revealed that members tend to not accept direct forms of control whereas they tend to accept indirect forms of control. Furthermore, acceptance and effectiveness perceptions are strongly

correlated. With respect to rewarding versus punishing control members regard rewarding control as significantly more effective than punishing control. Although they regard punishing control as most effective for the avoidance of unacceptable behavior, they evaluate all forms of punishing forms of moderation as not effective. No differences between active versus passive members have been found on all these issues. This is in line with earlier research that only found some limited differences between active and passive members with respect to processes of members' empowerment (Mo & Coulson, 2010; van Uden-Kraan, Drossaert, Taal, Shaw, Seydel, & van de Laar, 2008).

This study has a number of limitations. First, while scenario research is a valid method, it would be useful to reproduce the findings with data about real behavior of community members. It may be hard to conduct completely randomized studies that examine the effects of different styles of moderation on members' behavior. Nevertheless there may be opportunities to compare, in a quasi-experimental setting, communities whose moderators behave in different ways. Insights of such studies, when combined with the insights of scenario studies, would increase the validity of the conclusions and reduce the limitation inherent in scenario research. Another limitation of our study is its limited response rate, suggesting that there is a bias in favor of active participants. Our study shares this limitation with other studies. It would be valuable to reach much higher response rates in future research, for instance by especially targeting passive or unsatisfied members. This would ensure that not a maybe biased perception of just a few users dominate our knowledge about the acceptance of styles of moderation. A third limitation of our study is related to the large proportion of female members in our sample. While this may reflect the membership composition in OHSCs it nevertheless made it impossible to test for gender differences in the acceptance and effectiveness of styles of moderation. The literature does not offer arguments leading to clear expectations about gender differences. Nevertheless, they may exist.

The findings have important implications for the moderation of OHSCs. Earlier studies indicated that OHSCs can have benefits (Coursaris & Liu, 2009; Idriss, Kvedar, & Watson, 2009). Our findings provide guidance on how to amplify them. They support the idea that the style of moderation should match with the values of the community in order to raise members' satisfaction (Hall & Graham, 2004). In the terminology of a relational signaling approach the style of moderation should match with the degree of relational interests.

Measures that are useful in one type of online community, such as in consumer communities, are not always useful and acceptable in another type of community, such as in OHSCs. In order to stimulate membership engagement in OHSCs, moderators can better choose styles of moderation that rely on indirect forms of social control than direct forms and they can better avoid using any punishing forms of control. They can appeal to community norms and rules which could be formulated in clear and salient ways. However, moderators do not have to restrict themselves to normative pleas in the hope of affecting the members' perceptions. Rather, they can rely on techniques of indirect monitoring that invite members to demonstrate their exemplary rule-complying behavior that contributes to the public good. These styles of moderation do not rely on "imagined", but real social benefits. At the same time, moderators may want to restrict themselves very much in discouraging members' behavior that is not in line with community norms in order not to utilize styles that do not fit with the members' expectations and values. Given that in OHSCs members appreciate making new contacts and getting social support, and thus have relational interests, indirect monitoring techniques promise to be effective styles of moderation.

The findings also have important implications for further research. Future research can study more carefully differences in the effects of indirect and frame-stabilizing styles of moderation in order to give more concrete recommendations for what style may be most adequate. The repertoire of forms of indirect monitoring could be extended and its effects could be analyzed in more detail. While this study mainly provides insights about the problem of membership engagement, future studies should include in much more detail other types of problems as well, such as rule-compliance and the development of trustful relations between members. What is needed most, is the deeper study of the underlying mechanisms that explain how different styles of moderation work. More insights are needed about perceptions of relational signals and fairness in various online communities and social media. For instance, it is unclear whether the insights can be extended to non-Western cultures and to what extent individual differences versus differences in the affordances of various social media play a role in the acceptance and effectiveness of different styles of moderation. Furthermore, in communities (with fewer relational interests) that accept direct and indirect forms of control the issue of "crowding-out effects" deserves to be studied in more detail. Such research could lead to a useful and very much needed theory about the design and governance of social media and online communities.

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Table 1. Social control conditions.

Condition	Scenario
	<p>Initial description of problem (identical in all four conditions):</p> <p>The community needs the members' contributions. It is crucial that members not only take information and support, but also share their knowledge and help others. What do you think of the following measure to facilitate contributions of members?</p>
Direct monetary	<p>To increase the number of postings every 3 months, every member's non-anonymous postings are counted. The 5 members with the highest number of postings receive a book or CD voucher as a reward. This rule will be announced to the community at the beginning of the 3 month period.</p>
Direct non-monetary	<p>To increase the number of postings every 3 months every member's non-anonymous postings are counted. Every member is ranked according to the number of posts. The higher the number of postings, the higher the position in the ranking. The ranking is made publicly within the community and brought to the attention of every community member.</p>
Indirect monitoring	<p>The community management provides an opportunity for experienced members to participate in a 'helpers' program'. Everyone who subscribes to this program commits himself/herself to offer members help and support by regularly looking for their questions and requests that he tries to answer or to forward to knowledgeable others. Additionally, the names of the participants will be announced on the web so that every member is able to contact them when he/she needs help or support.</p>
Frame-stabilization	<p>On the website of the community, the community manager makes clear that it is the common intention of the whole community to exchange knowledge and support each other. He emphasizes that the whole community profits from the members' contributions and that active members are of special value to all other members and the community. He draws attention to the opportunity to actively contribute to this goal by posting messages and helping other members. At appropriate times, this message is repeated in an email newsletter and on the web pages of the community if members' activities are decreasing.</p>

Table 2. Mean values of raw scores (M) and factor loadings (λ) of the (indirect and direct) acceptance items.

Item	Direct monetary		Direct non-monetary		Indirect monitoring		Frame-stabilization	
	M	λ	M	λ	M	λ	M	λ
Indirect items								
<i>What do you think, to what extent would a typical member of the online community:</i>								
regard such a rule as acceptable?	3.12	0.94	2.43	0.96	4.44	0.93	4.88	0.98
welcome such a rule?	2.92	0.90	2.30	0.88	4.37	0.92	4.75	0.96
be offended by such a rule? (reversed)	3.65	0.83	3.13	0.77	4.85	0.92	5.08	0.91
Direct items								
<i>What do you think, to what extent would you:</i>								
regard such a rule as acceptable?	2.96	0.94	2.39	0.96	4.48	0.95	4.79	0.95
welcome such a rule?	2.77	0.95	2.26	0.95	4.29	0.92	4.25	0.89
be offended by such a rule? (reversed)	4.08	0.71	3.83	0.75	5.11	0.85	5.38	0.42
Mean	3.25		2.72		4.59		4.85	

Table 3. Mean values of raw scores (M) and factor loadings (λ) of the (indirect and direct) effectiveness items.

	Direct monetary		Direct non-monetary		Indirect monitoring		Frame-stabilizing	
	M	F	M	F	M	F	M	F
Indirect items								
<i>What do you think, to what extent would a typical member of the online community:</i>								
be motivated by such an approach to contribute more to the community?	2.81	0.94	2.48	0.97	3.74	0.83	3.75	0.68
increasingly share his / her information?	2.81	0.92	2.52	0.99	3.96	0.90	3.88	0.77
feel more eager to satisfy others' help / information requests?	2.85	0.93	2.52	0.99	4.00	0.91	3.96	0.92
Direct items								
<i>What do you think, to what extent would you:</i>								
be motivated by such an approach to contribute more to the community?	2.19	0.90	2.34	0.99	3.85	0.88	3.25	0.91
increasingly share your information?	2.15	0.91	2.34	0.99	3.89	0.86	3.29	0.92
feel more eager to satisfy others' help / information requests?	2.35	0.84	2.30	0.98	3.81	0.87	3.25	0.86
Mean	2.53		2.42		3.88		3.56	

Table 4. Four problems and their scenarios.

Topic	Type	Introduction of scenario
Not insulting other members	Avoidance of undesirable behavior	Respecting other members by not insulting them is a valuable task for the community. Do you think that the following ways to treat members who performed this task would be stimulating for them?
Contributing to others' information or support requests	Stimulation of desirable behavior	Contributing to others' information or support requests is a valuable task for the community. Do you think that the following ways to treat members who performed this task would be stimulating for them?
Helping new members	Stimulation of desirable behavior	Helping new members is a valuable task for the community. Do you think that the following ways to treat members who performed this task would be stimulating for them?
Reminding members to stay on topic	Stimulation of desirable behavior	Reminding other members during discussions to stay on-topic is a valuable task for the community. Do you think that the following ways to treat members who performed this task would be stimulating for them?

Table 5. Mean scores of effectiveness of positive and negative social control

Positive social control	Mean	Negative social control	Mean
Increase a members' bonus points that can be exchanged against a reward.	2.15	Decrease a members' bonus points that can be exchanged against a reward	1.73
Enhance a members' community status (For example: newbie, experienced member, community guru).	2.87	Reduce a members' community status (For example: newbie, experienced member, community guru).	1.94
The community administrator appreciates a member in public.	3.28	The community administrator disapproves a member in public.	1.85
Other members appreciate a member in public.	3.99	Other members disapprove a member in public.	1.78
The community administrator sends a member a private message stressing the great job he did.	4.26	The community administrator sends a member a private message stressing he did not a good job.	2.41
Other members send a private message stressing that the member did a great job.	4.23	Other members send a private message stressing that the member did not a good job.	2.09
Mean	3.46		1.97

Figure 1. Acceptance and effectiveness of different forms of social control.

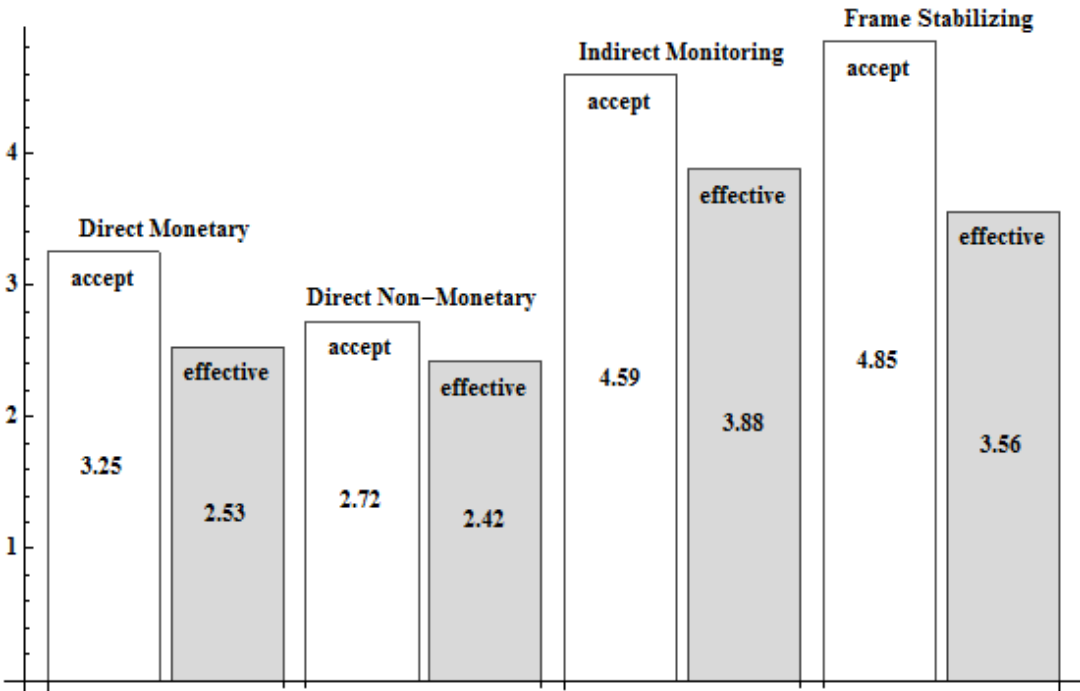


Figure 2. Effectiveness of positive and negative social control for four different issues.

