

## MASTER

### Social control in online social support communities

an experimental approach to the effectiveness of two different dimensions of social control

Sneijers, D.P.H.

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# **Social control in online social support communities**

An experimental approach to the effectiveness  
of two different dimensions of social control.

Master's thesis  
D.P.H. Sneijers



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16 June 2008



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## Executive Summary

These days, people interact more and more interact on the internet. Many online 'places' in which people interact are online communities (OCs). OCs exist in many forms and one of them –which is the focus of this thesis- is the online health support community (OHSC).

Members of OHSCs exchange health information and provide support to each other. OHSCs can be a valuable source of health information and support that are easily accessible at relatively low costs. OHSCs can provide many benefits like information about diseases, support to cope with illnesses, a possibility to learn from others' experiences and an anonymous environment that allows sensitive topics to be discussed.

Nevertheless, interaction problems might exist that hamper the functioning of OHSCs and so the benefits they provide. Three problems that are frequently mentioned in the literature are problems of opportunity, trust and loyalty (Matzat, 2008b). Communities can apply social control to avoid these problems. Social control exists in many different forms and is a means that can stimulate behaviour of community members according to the norms of the OHSC.

Yet little is known about the impact of different forms of social control in various OCs (Matzat, 2008a). Therefore, inappropriate forms of social control might be applied, unintendedly resulting in negative effects like members that leave the community. The main research question of this thesis is:

*How do different forms of social control affect cooperative behaviour within online health support communities?*

This thesis adds knowledge about the impact of different forms of social control in OHSCs. OHSCs were chosen to test the hypotheses of this thesis because they provide many benefits that make them considerably helpful. Also, OHSCs are large in number and they are assumed to be relevant for this thesis because interaction problems are typically of major importance for these communities.

A theoretical framework is constructed using the 'theory of online relational signalling' (Matzat, 2008b) and knowledge about the effects of rewards and punishments in ordinary life. The theory of online relational signalling is quite new and not much evidence for its hypotheses is available yet. Matzat (2008a) examined the effects from the directness of social control within a transactional based community (eBay) and a teachers community. It is one of the few studies conducted that provided empirical evidence for the theory of online relational signalling. Therefore, this thesis is partly an extensive empirical validation of the theory of online relational signalling by conducting experimental research in another online setting, which is OHSCs.

This thesis adds new knowledge by examining whether the degree of positivity of social control affects cooperative behaviour in OHSCs. Nowadays, a lot is known about the effects of 'sanctions' and 'rewards' in ordinary life. This knowledge is used to examine the effects of sanctions and rewards in OHSCs using experimental research. Additionally, the combined effectiveness of both dimensions of social control –positivity and directness- is explored in this thesis.

The results show that social interaction with other members of the community is important to fulfil individual goals -such as obtaining information or getting support- for members of OHSCs. This suggests that the avoidance of interaction problems between members is of major importance for these communities.

Also, the results show that within the OHSCs examined, no problems of trust, opportunity and loyalty were apparent that hindered the cooperative potential of those communities for the moment. Nevertheless, the results of the experiments illustrate that it is essential to apply appropriate forms of social control if future problems occur or community administrators want to stimulate members to behave according to the common group goal.

The results of the experiments show that different forms of social control differently affect cooperative behaviour in OHSCs.

For social control characterized by different forms of directness, weak forms tend to be perceived as more effective and accepted by members in stimulating cooperative behaviour than strong forms. An example of a weak form of social control is:

- *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 contribute actively to this goal by posting messages and helping other members. This message is repeated in an email newsletter and on the web pages of the community if members' activities are decreasing.*

For social control characterized by different forms of positivity, positive forms tend to be perceived as more effective in stimulating cooperative behaviour than negative forms. An example of positive social control is:

- *The community management appreciates a members' dedication to the community through a post on the community's message board.*

Negative forms of social control tend to be perceived as most effective in avoiding unacceptable behaviour instead of stimulating desired behaviour. Yet community managers should be very reserved in applying negative forms of social control because they tend to be perceived less effective than positive forms. An example of negative social control is:

- *The community management decreases a member's bonus points that can be exchanged against a reward.*

This thesis additionally explored the combined effectiveness of social control characterized by different forms of directness and different forms of positivity. The results show that social control affects cooperative behaviour from more than one dimension. A major finding for the combined effectiveness of social control is that as social control becomes weaker, positive forms tend to be perceived considerably more effective than negative forms. Quite regularly, different dimensions of social control are applied simultaneously to stimulate one specific behavioural outcome of members. An example is that in many OCs people can judge the value of peoples' contributions in a positive or negative way in order to increase the quality of these contributions. The results of this study on the combined effectiveness of social control suggest that community managers should not apply them together because their effectiveness might be different.





## Preface

It is an honour to present my Master Thesis. It marks the end of my study, but simultaneously opens possibilities for a future career. I chose the subject for this thesis because of my personal interest in online interaction and for the reason that I wanted to develop my empirical research skills further. Because of this choice, realisation of my thesis took longer than expected. Nevertheless, hard working, much coffee and the help of several persons allows me to say that I have succeeded.

From this place, I want to thank some colleagues and friends for the support they offered me. My primary regards go to my supervisors at Eindhoven University of Technology. I want to thank Uwe Matzat for reviewing my thesis time after time, providing useful input, his prompt replies on my questions and letting me experience what empirical online research is all about. I want to thank Chris Snijders for reviewing my thesis and providing useful input.

Special gratitude goes to my girlfriend who was especially close on my side during the last couple of weeks. I want to thank her for her patience and support during stressful periods, for her critical comments on my report and for helping me out with the English language.

Last but not least, I want to thank my mother and stepfather for their infinite support and the opportunity to build my career.

A handwritten signature in black ink, appearing to read 'Dennis Sneijers', with a stylized flourish at the end.

Dennis Sneijers

16 June 2008



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*"One of the classic puzzles – perhaps the classic puzzle – of social theory is how society induces us to behave in ways that serve not our own interest, but the common interest of society" (Jencks, 1979, p. 63).*





# 1. Introduction

This chapter introduces the subject of this thesis, which is social control in online health support communities (OHSCs). First, the rationale for this thesis is explained in section 1.1. Section 1.2 presents the main research question. Next, the scope of this research is treated in section 1.3. Section 1.4 is about the scientific, social and technical relevance of this research. Finally, section 1.5 looks at the structure of this report.

## 1.1 Research rationale

Nowadays, more and more people get online. People buy and sell goods at digital marketplaces such as eBay<sup>1</sup> or keep in touch with their friends by social networking sites as Hyves<sup>2</sup>. Others exchange information on every imaginable subject by means of message boards like Yahoo! Groups<sup>3</sup>. Some of them even live in virtual worlds such as Second Life<sup>4</sup>.

Many of these places can be considered as online communities. An online community (OC) is *"a group of users of a website, who interact with each other through computer mediated communication tools of this site. Interaction is centered on at least one topic that reflects the common interest(s) of the site users"* (Matzat, 2004, p. 67).

OCs exist in many forms. One of them is the online social support community. An online social support community is an online community that has the provision of social support for its members as one of its central interests. OHSCs were chosen to test the hypotheses of this thesis because they provide many benefits that make them considerably helpful. Also, OHSCs are large in number and they are assumed to be relevant for this thesis because interaction problems are typically of major importance for these communities<sup>5</sup>.

Successful OCs expand the availability of public goods. These are goods *"that anyone might benefit from, regardless of whether they have helped contribute to their production"* (Kollock & Smith, 1996, p. 2).

This does not imply that OCs are only beneficial, let alone for everybody.

Public goods are indivisible or non-rival; that is, one person's consumption does not reduce the amount available to others. Additionally, they are non-excludable; that is, one can not or with difficulty exclude others from benefiting of it (Cornes & Sandler, 1996).

---

<sup>1</sup> <http://www.ebay.com/>

<sup>2</sup> <http://www.hyves.nl/>

<sup>3</sup> <http://groups.yahoo.com/>

<sup>4</sup> <http://www.secondlife.com/>

<sup>5</sup> This thesis focuses on OHSCs; nevertheless the concepts of OCs and OHSCs are interchangeably used because many theories apply to OCs in general.

## 1.Introduction

Although many people may be better off by the public goods OCs provide, communities do not automatically produce those goods (Kollock, 1999). Many problems may obstruct OC's public good creation. One such problem is that people may choose to only consume the benefits from an OC, without contributing themselves. This might be because contributing is costly (one has to invest at least some time and effort in contributing to the collective good), or because members think that others will contribute even if they do not.

Cooperative behaviour is considered to be of major importance for the success of OCs (Preece, 2000). In many OCs, social control is applied to stimulate cooperative behaviour. Social control is a mechanism that regulates and stimulates behaviour of OC members, leading to conformity and compliance with the common group goal of the community (Meier, 1982). Much social control is based on ICT tools like eBay's reputation system. Yet other forms are possible (Matzat, 2008a), for instance the fostering of community norms that disallow members to post off-topic.

Research found that social control affects cooperative behaviour in OCs. Yet much remained unknown about the impact of different forms of social control in various OCs. As a result, inappropriate forms of social control might be applied, unintendedly resulting in negative effects. Still, within many OCs social control is applied without knowing the effects for people's cooperative behaviour and so the community's public good creation (Matzat, 2008a).

The knowledge gap between the effects of application of different forms of social control in different communities, its common employment and the benefits of well functioning OCs for society are the rationale for this thesis.

## 1.2 Research question

The main research question of this thesis is:

*How do different forms of social control affect cooperative behaviour within online health support communities?*

Because the main question is rather broad, several subsidiary questions are used to answer it. The theory of online relational signalling (Matzat, 2008b) and knowledge about the effects of rewards and punishments in ordinary life (see for instance: Beck, 1978; Burnstein, 1982; Gibbs, 1982; Peype, 1981) are used to construct a theoretical framework to examine the effects of application of different forms of social control in OHSCs. The theory of online relational signalling assumes a certain degree of relational and material interests for community members. The question is which interest dominates the individual decision frame in contributing or not. This results in the following subsidiary question:

*Q1: What is the prevailing interest of members within OHSCs?*

Many OHSCs have existed for several years and therefore function properly to a certain extent. To determine whether they have reached their full cooperative potential, typical problems of interaction that might obstruct them are examined. This provides insight in the possibilities for application of social control in order to maximize OHSCs' public good creation. This results in the following subsidiary question:

*Q2: What problems of interaction do OHSCs experience that might hinder their full cooperative potential?*

Little research has been done about the effectiveness of different forms of social control in OCs (Matzat, 2008a). Therefore, this thesis examines two dimensions of social control. First we examine whether the degree of directness<sup>6</sup> in social control is likely to affect cooperative behaviour. Second we examine if the degree of positivity<sup>7</sup> in social control will affect cooperative behaviour. This results in the following subsidiary questions:

*Q3: How does the directness of social control affect the degree of cooperation in OHSCs?*

*Q4: How does the positivity of social control affect the degree of cooperation in OHSCs?*

---

<sup>6</sup> These are: Direct, Indirect monitoring and Frame-stabilizing forms of social control

<sup>7</sup> These are: Positive and negative forms of social control

### **1.3 Research scope**

Many theories have been developed that explain cooperative behaviour in OCs. Cooperative behaviour is a complex phenomenon that is affected by many factors (Tedjamulia, Dean, Olsen, & Albrecht, 2005). This thesis examines the effectiveness of different forms of social control from a sociological perspective and thus takes a group focus. It leaves out other factors that might affect cooperative behaviour in an OC such as the usability of the software. The results of this thesis are therefore limited to the effects of application of different forms of social control.

To get acquainted with social control in OHSCs, literature on social control and characteristics of OHSCs were studied. The theory of online relational signalling (Matzat, 2008b) was mainly used to construct a theoretical framework to examine the effects of application of different forms of social control in OCs. Because the theory of online relational signalling is quite new, this thesis is partly an empirical validation of this theory in another online setting. Therefore it does not examine the effects of different forms of social control using rival theories nor compares different theories. Because of this, conclusions drawn in this thesis are limited to this theoretical perspective.

The hypotheses were empirically tested in Yahoo! OHSCs by means of experimental research. Cooperative behaviour in these OHSCs concerns sharing knowledge and helping others by providing social support. The conclusions in this thesis are drawn based on empirical data. Therefore they are limited to the OHSCs that have been researched.

### **1.4 Research relevance**

This thesis' scientific relevance is threefold. Subsequently its scientific, social and technical relevance are discussed.

Previous research found that different forms of social control have different impacts in dissimilar social contexts. Matzat (2008a) examined the effects from the directness of social control within a transactional based community (eBay) and a teachers community and is one of the few studies conducted that provided empirical evidence for the theory of online relational signalling. Nevertheless, the theory of online relational signalling is quite new and not much evidence for its hypotheses is available yet (Matzat, 2008b, p. 25). Therefore, this thesis is partly an extensive empirical validation of the theory of online relational signalling by focusing at another online setting, which is OHSCs.

This thesis adds new knowledge by examining whether the degree of positivity of social control affects cooperative behaviour in OHSCs. Ross (1896) was one of the first who recognized positivity of social control as 'sanctions' and 'rewards'. Nowadays, a lot is known about the effects of sanctions and rewards in ordinary life (see for instance: Beck, 1978; Burnstein, 1982; Gibbs, 1982; Peype, 1981). This knowledge is used to examine the effects of sanctions and rewards in OHSCs. Additionally, this thesis will explore the combined effectiveness of both dimensions of social control, which are positivity and directness.

With regard to society, scientific insights provided by this thesis could foster online interaction. It aims to maximize benefits for society by examining the effects of application of social control on people's cooperative behaviour. Thereby it will enhance OCs' public good creation.

With regard to technology, scientific insights provided in this thesis could foster its promising development. It aims to increase the functioning of OHSCs by proposing design rules for the appropriate application of social control. Thereby it could steer the innovation path of this promising technology in the most desirable way.

The former areas are interrelated and reinforce each other. Society may benefit from well functioning OC technology which stimulates online cooperation. OC technology may flourish from scientific insights in online cooperation. The importance of an inter-disciplinary study is well illustrated by the following quotation:

*"...understanding the complexity of online communities requires study into both social and technical issues."*  
(Preece, 2000, p. XVI)

## **1.5 Report outline**

The next chapter presents existing literature on OCs and social control. The conceptual insights are used to construct a theoretical framework with several hypotheses in chapter 3. Then, in chapter 4, the methodology for testing the hypotheses is provided. It describes the experimental design, measurements, selection of the research population and response rate of this research. Several descriptive characteristics of our data and the research results are explained in chapter 5. Finally, chapter 6 contains the conclusion, limitations, recommendations for further research and some policy implications that propose design rules for appropriate application of social control.

## 2. Conceptual Background

This chapter discusses existing literature relevant for this thesis. Firstly, section 2.1 provides insight in the concept of online health support communities (OHSCs). Secondly, the functioning of two major types of social control is explained in section 2.2. Finally, section 2.3 will give a conclusion that summarizes the most important insights of this chapter.

### 2.1 Online health support communities

This section introduces the concept of OHSCs to obtain understanding of the surrounding factors of social control. Social control is a mechanism that regulates and stimulates behaviour of online community (OC) members and is elaborated in section 2.2.

This section starts with a definition of OHSCs. Then the main building blocks of OHSCs are explained, followed by some examples of software that facilitates interaction in online communities (OCs). After that, typical benefits of OHSCs are presented. Finally, several problems of interaction that occur regularly in OHSCs are looked at.

#### 2.1.1 Definition

Many different academic disciplines are engaged in research about OCs and have not agreed on a single definition (de Souza & Preece, 2004; Maloney-Krichmar & Preece, 2002; Matzat, 2004; Preece, 2000). It would make no sense to replicate all kinds of definitions. One could for instance consult Matzat (2004), who provides an overview of several definitions of OCs.

Matzat (2004) defines an online community as: *"a group of users of a website, who interact with each other through computer mediated communication tools of this site. Interaction is centered on at least one topic that reflects the common interest(s) of the site users"* (Matzat, 2004, p. 67).

This definition is useful in discerning real OCs from websites that are wrongly considered to be OCs. An example concerns Hyves<sup>8</sup>. Hyves has got many users who interact with each other through the site's computer mediated communication tools. Yet, communication within Hyves is not centered on a topic that reflects the common interest of the users of this site. Therefore, Hyves is not considered an OC by this definition.

---

<sup>8</sup> <http://www.hyves.nl/>

An online social support community is an OC that has the provision of social support among its members as one of the central interests. Social support is defined as *"the degree to which a person's basic social needs are gratified through interaction with others. Basic social needs include affection, esteem or approval, belonging, identity and security"* (Thoits, 1982, p. 147).

This study examines the effectiveness of different forms of social control in OHSCs. Therefore, definitions of OCs and social support are combined. This results in the following definition for an online health support community: *"a group of users of a website, who interact, exchange information and provide social support to each other through computer mediated communication tools, centered on health topics that reflect the common interests of the site users."*

### 2.1.2 Major building blocks

This section explains the concept of OHSCs by looking at the major elements of its definition. Social control affects each aspect differently. The following building blocks will be looked at (Preece, 2000):

- People;
- Policies;
- Purpose;
- Software.

#### *People*

People are the *raison d'être* for every OC. People within OCs can be categorized by a membership life cycle as illustrated in Figure 1 (Kim, 2000). This membership life cycle provides insight in the way members are involved in the OC over time.

Social control is applied in order to stimulate people to contribute to the existence of OCs. Because not all members are equally involved in the community, the effectiveness of social control could differ. Subsequently the typical membership roles that arise in OCs are elaborated.

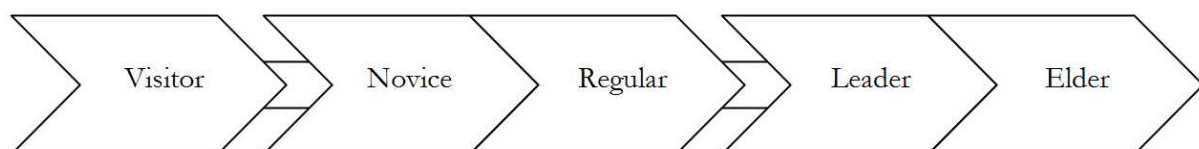


Figure 1: The membership life cycle (Kim, 2000)



## 2. Conceptual Background

People that arrive to a community and do not know where to go and whom to trust, are the visitors. Some will leave the community after a couple of visits, while others return more often. They become the community's new members, or so called novices. Novices are the eager ones; they want to make friends with members and participate in the community. The community instructs them about prevailing community customs and welcomes them. Some of these novices become regulars. They are the ones that stay in the community and so they are mainly affected by application of different forms of social control. If the regulars evolve into more official membership roles, they become leaders. Leaders help newcomers and run the community. Often they represent official roles such as moderators and administrators. Moderators guide and stimulate proper interaction; administrators design and support the community next to that. Moderators and administrators are the ones who have social control at their disposal in stimulating cooperative behaviour in the OC. These official roles require daily involvement. If leaders eventually lack the time or motivation to participate in a day-to-day leadership role, they become elders. At that time, they have become respected sources of cultural knowledge because they know the history and inner workings of a community (Kim, 2000).

### *Policies*

Communities develop certain policies to guide and structure people's interaction. Policies are clear guidelines that indicate the behaviour that is expected of members from an OC. Social control is used to stimulate members to behave according to the policies of a community. The major characteristics of policies are (Preece, 2000):

- Accepted behaviour;
- Repercussion in case of non-conformance behaviour;
- Requirements for joining a community;
- Style of communication.

Moderators use social control in order to stimulate members to follow the policies of an OC. Moderators are specific leader roles that govern communities. Preece (2000) provides an overview of the different tasks that moderators perform based on the research of Berge (1992), Collins & Berge (1997) and Salmon (2000). The main tasks of moderators are: facilitation (keep the group's discussion on-topic), being the expert by answering questions or directing people, editing texts, filtering messages and generating discussion (Preece, 2000).

An example of a policy from an OHSC is given in Text Box 1. This policy mainly describes the style of communication that is expected in the OC by five steps. The example is taken from a Dialyses support community. No source is mentioned because of privacy reasons.

**Text Box 1: Example of a community policy (Dialysis support community, 2007)**

STEP 1) SUBJECT Header - Describe the TOPIC.  
In a few words, describe the "topic/subject" of the post. Be brief. Do not remove the "Re:" word if it appears more than once in the reply header line. It is best to write the subject/topic *~AFTER~* completion of writing a post as your thoughts may have drifted from the earlier 'same' ideas and the reply may not represent the actual topic of your new response now.  
*~NO~* political or religious topics. Such talk may be important to YOU, yet "not in a forum for kidney disease talk." Such off-topic material is not to be discussed whether blatantly, outright, or subtly 'within a personal signature line.' Members must be responsible for self-moderating themselves. If such a member can't do it so other members may benefit, then management will intervene and be entrusted to enforce the rules by whatever means necessary. Members have been warned.

STEP 2) QUOTE Remind readers about what you are talking about by including a brief "quote" from the old message. Use a short quote (3 sentences or less) from the *~old~* message you are making a reply. The quote helps readers to clearly understand your comments. A quote is best placed at the *~TOP~* of a reply message, *~BEFORE~* writing your own ideas. Once you have selected the quote and placed it at the top/beginning of the reply message, delete all of the old post left-over now!

STEP 3) *~DO NOT~* send the entire email address or a message ID# when quoting an author. Refer to the author by their "name" whenever possible.  
For example:  
On Sept 19, 2006 at 23:42:01 hrs MST, "dalee" <xxx@xxx> wrote:"  
Instead, delete the full header and just write: dalee wrote:

STEP 4) NO SPAM! NO SPAM!! NO SPAM!!!  
Seriously, most users dislike bulk mail ads referred to as SPAM. This means, DO NOT provide a link to an off-location website or your own site, even though you may believe your site is awesome and everyone should go to it. Do not slip a link into your signature line as if "the moderator won't see it." Should you believe your link really deserves to be shared with this forum, send it to me for review and I will consider placing the URL within the LINKS section of this forum for members to review for themselves.

STEP 5) Personal Attitude, Behaviour and Netiquette.  
Yes, even mature adults, respectful and responsible in real-life daily living, may resort to very poor and negative behaviour, especially over the faceless internet where personal behaviour is almost impossible to manage, if not by the individual themselves. You are and will be held responsible for your own behaviour sent in an email message. This means NO ABUSE, be kind, respectful and responsible for your presentation of words. Obscene words, bully-type behaviours, condescending or demeaning language, etc., are NOT acceptable and membership may be revoked. This is your only warning.

*Purpose*

OCs are built around a common interest of its members. Social control is applied in order to stimulate members to contribute to the purpose of an OC. This purpose can cover almost every subject one could imagine. An example is a support community in which people exchange information about health topics.

A clear purpose succeeds in attracting members and makes them coming back. It also illustrates to newcomers what to expect and thereby largely prevent disinterested members from joining a community. This increases stability and decreases hostility within OCs (Kim, 2000).

## 2. Conceptual Background

Over time, a community's purpose should be adapted to members' evolving needs (Kim, 2000). Some OCs fulfil one need whereas others realize several needs. The fulfilment of several needs determines the multifunctionality of OCs. The extent to which an OC differs from its original function, concerns its plasticity (Matzat, 2008b).

The purpose of OHSCs is the provision of social support to its members and the exchange of health information. The extent to which members satisfy others' information request and provide social support determines the success of OHSCs. Application of appropriate social control could motivate members to behave cooperatively and contribute to the common group goal of the OHSC.

### *Software*

Software is the facilitator of interaction between people in an online environment. Many forms of social control are implemented in the software of OCs. Software allows people to communicate by offering functions like sending, composing, reading and searching for messages. It is an important determinant of appropriate interaction and communication within OCs since it is so highly involved. Therefore it is vital that software is well designed. Properly designed and easy to use software enables people to interact without frustration and improves both their productivity and creativity (Preece, 2000).

A major characteristic of OC software is its time frame in which users are able to communicate with each other. Software facilitates online communication synchronously or asynchronously. Synchronous software requires users to interact with each other in real time. This means users that want to interact have to be available at the same time. An example is chat rooms which will be explained hereafter. Asynchronous software allows users to communicate with each other without necessarily being available at the same time. The response might vary according to a couple of minutes until several months. For instance bulletin boards which are explained hereafter. Besides straightforward communication facilitation, software enables OCs to implement policy measures, express people's identity by for instance profiles and ensure that people's personal information is kept confidential and secure (Preece, 2000).

In practice, interaction within OCs is facilitated by many different kinds of software. Three examples of commonly used computer mediated communication tools of OHSCs are:

- *Bulletin boards* (BBS) are electronic message boards. A nowadays very popular and commonly found version of bulletin boards is the 'online forum'. The messages posted by its users are represented in chronological order displaying the last posted message first. If members reply to a message that already has been posted, their contribution appears beneath that one. Often these replies are preceded by the abbreviation 'Re:' which indicates a reply. In most message boards, users can only represent themselves by a username. Messages are archived so that anyone can consult them at anytime (Preece, 2000).
- *Email & list servers* are the most basic and widely used media for online communication (Preece, 2000). Nowadays, email communication is facilitated through a graphical user interface (GUI) by which users send messages to one or more recipients. This allows online communication among members selected by the message composer. List servers allow people to subscribe themselves in order to become part of a large email discussion often focussed around a specific topic of interest. When people have subscribed themselves to a list server, every message that is sent to the list server will be automatically forwarded them. This allows everybody to participate in this email based discussion after their registration has been accepted (Preece, 2000).
- *Chats* are text based real-time conversations and occur in so called 'chat rooms'. In chats, usually a large public accessible chat room is filled with any member that wants to join. In most chats, members can visually represent themselves (or 'someone', if they decide not to release their identity) through profiles. Because chatting occurs in real time, it is hard to apply social control (Preece, 2000).

### **2.1.3 Benefits**

This section elaborates on the benefits provided by OCs or so to speak, the reasons for people to become member. Social control is applied to increase the functioning of OCs and therefore the benefits these communities provide. First, major benefits of OCs in general will be provided. From this, the two most important benefits for OHSCs are discussed in detail.

Possible disadvantages that are quite likely for OCs and OHSCs will not be elaborated on because this would go beyond the scope of this research. This does not imply that OCs or OHSCs are only beneficial, let alone for everybody. Quite worrying is for example that one-third of all the Americans says they would turn to the internet instead of a medical professional next time they need health care information (Horrigan & Rainee, 2002). Among other things, the

question is whether the information for people's health issues is reliable and satisfactory. Even more frightening are the negative consequences that might result from not consulting a medical professional.

The far most important reason for people to join OCs and come back to them is the information exchange aspect. Information offered by OCs is unique and valuable because its content is member generated unlike most online information that is provided solely by the site owner (Ridings & Gefen, 2004).

The information offered by OCs is typically regarded as a public good. These are goods "*that anyone might benefit from, regardless of whether they have helped contribute to their production*" (Kollock & Smith, 1996, p. 2). Public goods are indivisible or non-rival and non-excludable. Non-rivalry or indivisibility means that an individual can consume the good and still leave the opportunity for others to consume the same good (Cornes & Sandler, 1996). Typical examples from everyday life include sunsets, weather-monitoring stations, crisis-warning monitors and unscrambled, free-available radio stations. With regard to the information exchange aspect of OCs, everyone can 'consume' (read) information and still leave a possibility for others to do the same. Non-excludability means that benefits from public goods are available to everyone once it is provided (Cornes & Sandler, 1996). Typical examples from everyday life in this case include firework and street lightning. With regard to the information exchange aspect of OCs typically everyone who wants to, can consume the information; others can not be withheld from it.

A second major reason for people to join OCs is to get social support (Ridings & Gefen, 2004). Social support was defined as "*the degree to which a person's basic social needs are gratified through interaction with others. Basic social needs include affection, esteem or approval, belonging, identity and security*" (Thoits, 1982, p. 147).

Finally, other reasons why people join OCs are friendship and recreation (Ridings & Gefen, 2004). OCs provide easy access to many people with similar interests. Therefore OCs offer possibilities for friendly relations. For others who are not particularly interested in starting new friendships, simply spending some time, chatting with others and browsing through an OC can be quite enjoyable. They join OCs for recreational purposes.

The benefits that OCs provide, are different for each community. The major benefits of OHSCs are information and social support. These are explained more detailed subsequently.

A major reason for people to go online is to find health related information. Nowadays, many OHSCs exist. For instance, Rice & Katz (2001) reported that Yahoo! linked to 19,000 sites for 2001. At the time of writing, Yahoo!<sup>9</sup> is linking to about 138,000 health groups. The Pew Internet & American Life Project study 'more online, doing more', reported that 60 million American adults went online to get health information in 2001 (Rainie & Packel, 2001). At that time, 55% of the adult population had an internet connection. Recently, the Pew Internet & American Life Project report 'Online Health Search 2006' found that 80% of the American internet users – which means 113 million people- go online to get health information (Fox, 2006). These figures show the enormous popularity of OHSCs. What makes them so popular for their members?

Maloney-Krichmar & Preece (2002; 2005) did a 2½ year study to understand in depth a OHSC named Bob's ACL WWWBoard. They used an ethnographic approach. Based on their empirical and literature study, information and social support benefits are elaborated.

#### *Information benefits of OHSCs*

People turn to OHSCs when they get little real world support (Cummings, Kiesler, & Sproull, 2002; Turner, Grube, & Meyers, 2001). They join them in order to find information and learn about their (possible) diseases (Rice & Katz, 2001). Additionally, they are able to check details about their diseases (Preece, 1998). In this way, people prepare themselves better for doctor visits (Maloney-Krichmar & Preece, 2002). OHSCs also allow people to find out what to expect at different stages of an illness or injury (Preece, 1998).

People perceive the twenty-four hours a day accessibility as a great advantage of OHSCs. (Fox & Rainie, 2000). They prefer OCs that use asynchronous software instead of synchronous based ones; so it can be used at any time. (Farnham, Cheng, Stone, Zaner-Godsey, & Hibbeim, 2002). OHSCs are especially valuable for people who are (geographically) isolated (Cummings et al., 2002). Additionally, people join OHSCs because they ensure people's anonymity (Walther & Boyd, 2002). Due to this anonymity, people are more comfortable in dealing with sensitive topics and expressing their feelings and emotions (Maloney-Krichmar & Preece, 2002).

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<sup>9</sup>[http://health.dir.groups.Yahoo!.com/dir/Health\\_\\_\\_Wellness/](http://health.dir.groups.Yahoo!.com/dir/Health___Wellness/), viewed 31/07/2007

### *Social support benefits of OHSCs*

Communication with other people who, for example, have the same disease is a very important benefit offered by these communities (Preece, 2000). On the other hand, many people also turn to them because they want to help others (Rice & Katz, 2001). Another share of members joins a OHSC to get social support so they are better able to cope with their illness. Types of social support that are commonly provided in OHSCs are: emotional support, affirmation, encouragement, understanding, empathy, information and esteem (Braithwaite, Waldron, & Finn, 1999; Brennan & Fink, 1997; Preece & Ghazati, 2001). Another important component that has been found to be exchanged among members of these communities is humor (Braithwaite et al., 1999). Preece (2000) argues that communities which show a degree of empathy, are generally focused on health or personal problems. Preece & Ghazati (2001) define empathy as *"the ability to identify with and understand another person's situation and feelings."* According to them, empathy is a key ingredient within health communities. Finn (1999) characterizes OHSCs as having the advantages of mutual aid groups whilst being easily accessible through computer technology.

Maloney-Krichmar & Preece (2005) found a high degree of tolerance for the OHSCs they studied. Flaming, which is a hostile intention characterized by words of profanity that harm another person (Alonzo & Aiken, 2004), did not exist. In addition, normative pressure and group cohesion were highly apparent within the community. The norms that had developed within the group became the community's model for interaction, which made externally driven governance obsolete. Group cohesion is apparent when members are attracted to the group because of its members, tasks or goals and ideals (Cartwright & Zander, 1968). Some studies confirmed the existence of interpersonal relationships among the members because of the activities and items they shared (Fussell & Setlock, 2003). Finally, empirical research found that OHSCs provide higher quality of life and lower use of healthcare services (Gustafson et al., 1994).

#### **2.1.4 Typical problems**

OCs are successful if they function as is expected by its members (Kim, 2000, p. 2). Yet many problems might occur that obstruct their cooperative potential. Social control could be a means to prevent these problems. Subsequently, four typical problems of interaction that occur in OCs are looked at (Matzat, 2008b; Matzat & De Vos, 2000).

To start with, the first category concern problems of opportunity. Problems of opportunity occur when a community member expects others to contribute to the common group goal. OCs face two typical problems of opportunity which are problems of free-riding and the volunteer's dilemma (Matzat, 2008b).

Free-riding considers the fact that members experience costs (in terms of time and effort) when contributing. Therefore, individuals are better off if they let other members bear the costs and gain the benefits anyway by taking public available information. If too many members prefer one's self-interest, the community's common goal will not be reached (Jones & Rafaeli, 2000; Kollock, 1999).

The volunteer's dilemma concerns the fact that it is sufficient for one member to satisfy other member's help request in OHSCs. If someone needs help, it requires only one volunteer to provide (informational) support. This individual raises the benefits for the group, because more knowledge will be publicly available (Murnighan, Kim, & Metzger, 1993). Yet, the individual himself incurs increased costs in terms of effort and time.

Problems of free-riding and the volunteer's dilemma result in members that only consume information without contributing anything to the community they belong to. People that have never contributed within the community are lurkers. Preece (2000, p. 87) defines a lurker as *"...someone who does not participate; he observes what is going on but remains silent."*

Researchers have found different levels of lurking within OCs. Rates vary between some communities having almost no lurkers, while others have 99% of its members lurking (Nonnecke, 2000; Nonnecke & Preece, 2000, 2001; Preece, Nonnecke, & Andrews, 2004). Lurking is often regarded as a negative phenomenon; yet the majority of lurkers is not a selfish-free rider (Preece et al., 2004). As in regular life, many people do not take initiative or behave in a pro-social way.

The second category of interaction problems are trust related. Ridings, Gefen & Arinze (2002, p. 275) define trust as *"an implicit set of beliefs that the other party will refrain from opportunistic behaviour and will not take advantage of the situation."* Many members within OHSCs fear situations of trust abuse. The problem of trust concerns the disclosure of sensitive information to others who might have unknown trustworthiness or indeterminable intentions that could lead to social and / or financial sanctions. Problems of trust arise because online environments provide relative anonymity and reduced social cues. Thereby people are not able to determine each other's trustworthiness (Matzat & De Vos, 2000).



## 2. Conceptual Background

Researchers stress that trust has to be regarded as a facilitator of online cooperative behaviour and collective action (Friedman, Kahn, & Howe, 2000; Schneiderman, 2000). Trust is considered as a subjective substitute to rules because in anonymous environments such as OCs, rules do not guarantee that others will behave as is expected. Trust allows people to rely on others behaving in a socially accepted way and therefore trust avoids undesirable and opportunistic behaviour (Ridings et al., 2002).

Most research about trust focuses on transactional based environments like eBay. Yet, some research examines the effects of trust for information exchange. For example, Ridings et al. (2002) found that trust is a significant predictor of people's willingness to exchange information. They concluded that individuals reveal more personal information and provide more replies as the level of trust within OCs increases. Without trust in OCs, people can not be expected to cooperate and behave socially acceptably.

The third category of problems is loyalty related. These problems have originated because there are so many OCs on the web that are often perceived as substitutes. Loyalty concerns that members' interests have to be in accordance with each other in order to attract and keep people to the community in a sustainable way (Matzat, 2008b). The connection people have with a community will be strengthened if members contribute interesting information. To keep members generating content, OCs should succeed in maintaining their members. Member's input and creativity is of major importance in stimulating loyalty and thereby prevent too much fluctuation within the OC (Kim, 2000).

The fourth category of problems arises in situations where individuals have conflicting interests and prefer different outcomes. These situations introduce problems of conflict because individuals can not find any agreement on their preference for different outcomes (Matzat & De Vos, 2000). Problems of conflict can be very diverse and a thorough discussion on them would go beyond the scope of this research. One example of problems of conflict is 'flaming'. Flaming is a hostile intention characterized by words of profanity that harm another person (Alonzo & Aiken, 2004).

## 2.2 Social control

Social control is a term widely used in sociology. Sociological literature uses the term in three contexts (Meier, 1982):

- As a description of a basic social process or condition;
- As a method by which to study a social order;
- As a mechanism to ensure compliance with the norms.

This thesis focuses upon social control as a mechanism to ensure compliance with the norms that exist within an OHSC. Therefore, social control is defined as *"a mechanism that regulates and stimulates behaviour of OC members, leading to conformity and compliance with the norms of the community"* (Meier, 1982). According to Homans (1961, quoted in Gibbs, 1982, p. 84) a norm is *"a statement made by a number of members of a group, not necessarily by all of them, that the members ought to behave in a certain way in certain circumstances."*

Much social control in OCs is based on ICT tools. They are directly visible when someone joins a community. An example concerns eBay's reputation system. Yet, social control does not necessarily have to be based on ICT tools (Matzat, 2008a). An example is the fostering of community norms that disallow members to post off-topic.

Social control in OCs exists in many different dimensions. This thesis focuses upon two of them. The first is characterized by the degree of directness through which it stimulates members and is proposed in the theory of online signalling (Matzat, 2008b). The second is characterized by the degree of positivity through which it stimulates members and mainly stems from personal observation and knowledge about the effects of sanctions and rewards in ordinary life.

More specifically, this thesis focuses upon the effects from application of social control in OHSCs characterized by the following dimensions through which they stimulate members:

- *Directness*: Direct, indirect monitoring and frame-stabilizing forms of social control (Matzat, 2008b).
- *Positivity*: Positive and Negative forms of social control.

Social control can comprehend characteristics from one or both dimensions. The functioning of the dimensions of social control is discussed separately. Firstly, the effects of social control characterized by different forms of directness will be discussed by using the theory of online relational signalling (Matzat, 2008b). Secondly, the effects of social control characterized by different forms of positivity through which it stimulates members will be discussed.

### 2.2.1 Social control characterized by its directness

The theory of online relational signalling (Matzat, 2004, 2008b) can be used to predict in specific online environments which form of social control is appropriate. The theory argues that members have both individual and common group interests that motivate them to contribute. In other words, one can state that an individual's motivation to contribute does not solely depend on his own, but also on other individuals within the group. This mutual dependency of an individual to reach his goals is called functional interdependency (Lindenberg, 1997).

Functional interdependency can result in situations with coordination difficulties or conflicting interests. Coordination difficulties arise when all members have the same goal and thereby sending too many messages at once or, on the other hand no messages at all. Conflicting interests arise when actors have different goals and as a result, gains for one actor results in losses for the other. Many problems of online interaction can be traced back to these two problematic situations (Matzat, 2008b).

The important assumption made in this theory, is that every individual sends signals about his personal decision frame to others by taking part (or not) in OCs. These are so called relational signals. Relational signals indicate how an individual regards the relationship between himself and another individual or the group as a whole (Matzat, 2008b). A decision frame is "*the decision maker's conception of acts, outcomes and contingencies associated with a particular choice*" (Tversky & Kahneman, 1981, p. 453).

A member decides whether to contribute or not based on an individual or common group goal that dominates his personal decision frame. Individual goals can be relational or material of nature. For relational goals social interaction is necessary whereas for material goals not (Matzat, 2008b). To avoid typical problems of interaction, Matzat (2004, p. 8) argues that "it would be useful that the common group goal is the frame that structures the decision situation of the member."

Examples of relational goals include individuals that make new contacts or maintain pleasant relationships online. An example of a material goal is an individual who is solely obtaining information from an OC (Matzat, 2008b). Finally, an example of a common group goal is the exchange of health information and the provision of social support in an OHSC.

Relational signals arise in three situations, which are bilateral communication, group communication and through actions performed by the administrators of an OC (Matzat, 2008b). Because this thesis focuses upon the effectiveness of social control in OHSCs, the relational signals that arise through administrative action are of particular interest. The relational signals of application of different forms of social control indicate what behavioural standards are expected from members within an OC (Matzat, 2008b).

Matzat (2004; 2008b) proposes a threefold classification of social control tools that group administrators have for stimulating people's contributive behaviour, namely: *frame-stabilizing tools*, *indirect monitoring tools* and *direct control tools*.

- Frame-stabilizing tools increase an individual's attention to the common group goal and thereby reduce the value of the member's individual goals. Frame-stabilizing tools enhance the salience of the common group goal, make groups easily identifiable and membership easily recognizable. These mainly affect an individual's cognition and perception. Frame-stabilizing tools are the weakest forms of social control in stimulating people's contributive behaviour. Examples include usage of symbols in the group or the development of group-specific rules (Matzat, 2008b).
- Indirect monitoring tools use already existing formal and / or informal rules that coordinate joint achievement of the common goal. Indirect monitoring tools restrict the fulfilment of the individual's short-term goal and increase people's attention to the common goal. Application of indirect monitoring tools sends relational signals which show the interest for conformity to the community rules and thereby indirectly to the group frame. Indirect monitoring tools give members incentives to signal their

compliance with the group frame to others and thereby avoid informal sanctions. Indirect monitoring tools are weak forms of social control in stimulating people's contributive behaviour. An example that Matzat puts forward concerns a community manager who sets up a public discussion about the group frame and rules of conduct at the time there were some difficulties concerning the behaviour of some members. With this, the community manager offered an opportunity for the community members to communicate their disapproval about the inappropriate behaviour. In this way they could contribute to the group frame without enforcement (Matzat, 2008b).

- Direct control tools influence the real direct benefits for a group member. Direct tools are strong forms of social control in stimulating member's cooperative behaviour. Examples include direct rewards for active participation like discount rates, credits for usage during online auctions and based reputation systems like eBay (Matzat, 2008b).

The theory of online relational signalling predicts that the effectiveness of these three control tools in stimulating individuals to contribute, will depend on the amount of relational interest that exists within an OC. Relational interest is determined by the interdependencies between individuals of the OC. Group administrators can influence the functional interdependencies in the long run by several social characteristics of the group. For the short-run, social control might be used to stimulate the functioning of OCs (Matzat, 2008b).

The effect from different social control tools is not the same for every OC. The more relational interest in a group, the less direct control tools will motivate people to contribute whereas indirect monitoring and frame-stabilizing tools will. On the other hand, the less relational interest within a group, the more will direct control tools motivate people to contribute whereas indirect monitoring and frame-stabilizing tools will not (Matzat, 2008b). By using the theory of relational signals, it is possible to predict which form of social control is appropriate in stimulating members of OC to contribute.

At the time of writing, the theory of online relational signalling is quite new and not much evidence for its hypotheses is available yet (Matzat, 2008b, p. 25). Recently, some empirical validation has been conducted. Matzat (2008a) examined the effects of social control in online auctions and knowledge sharing groups. Respectively an eBay community and a knowledge sharing group of teachers have been examined on acceptance and effectiveness of social control. Acceptance and effectiveness of social control were measured for rule compliance and stimulation of members' participation.

The study examined the existence of problems of trust in the communities. The study found that problems of trust were apparent in both communities; yet they were significantly more severe in the eBay community. The author gives two examples for problematic situations that demanded trust. For eBay, it is a situation in which money could be lost by buyers because sellers can send lower quality products than were promised or do not send any goods at all. For teachers, it is a situation in which teachers shared teaching material with other teachers and running the risk of not getting anything in return (Matzat, 2008a).

For the stimulation of members' participation, the study found that both groups less accepted strong forms of social control than weak forms as a remedy for problems of trust. Further, strong forms of social control were significantly less accepted within the teachers' knowledge sharing group. They were however more accepted for the problem of rule compliance than for the stimulation of members' participation.

The study revealed that relational interest was significantly lower among eBay members than for the members of the teacher community. Additionally it was found that weak forms of social control were regarded significantly less effective in the teachers' community than within eBay. This is against the predications that follow from the theory of online relational signalling; the theory of online relational signalling predicts that the less relationally interested a community is, the more effective weaker forms of social control will be. Therefore, weaker forms of social control should have been more effective in the teachers' community. According to the study, the unexpected outcome is the result of a difference in behaviour that needed to be stimulated between the communities.

Matzat's study is one of the few conducted in order to provide empirical evidence for the theory of online relational signalling. The study has been able to show that different forms of social control have different impacts in dissimilar social contexts. In other words, not every kind of social control is appropriate for every setting. The purpose of this thesis is to add empirical evidence to the theory of online relational signalling and knowledge about online interaction by examining the effectiveness of social control in another online social context that is assumed to be relationally interested, which are OHSCs.

### 2.2.2 Social control characterized by its positivity

This section focuses on the second dimension of social control, which is social control characterized by its positivity through which it stimulates members. This dimension of social control can stimulate members of OCs in a positive and negative way. Therefore, these are further referred to as *positive* and *negative social control*.

Positive and negative social control are used to stimulate people's behaviour in a desirable way commonly reflected by the policies of an OC. Positive and negative forms of social control motivate people to behave in accordance with the common group goal. They motivate members' behaviour by introducing rewards or punishments.

This thesis is interested in how positive and negative forms of social control affect cooperative behaviour in OHSCs. Positive and negative social control is applied in many different forms. The following examples illustrate a few of them:

- *Reputation, activity or contribution systems* that display a member's past behaviour and thereby introduce a kind of online status.
- *Save for discount* that is possible in communities initiated by for instance commercial firms that give active members a possibility to buy their products at a discounted price.
- The community management that publicly *emphasizes a member's outstanding behaviour* through posting a message on the home page of the community. Thereby they indirectly stress the community's group goal.
- Other community members that *send a member a private message* in which they tell when someone did a bad job for the common group goal by particular behaviour.

According to Talcott Parsons (1951, quoted in Gibbs, 1982, p. 83), social control tries to counteract deviant tendencies from a social system. A social system is the whole of interacting individuals who distinguish themselves as such by having developed unique norms and a unique structural order (Martin, 1974; Pollis & Pollis, 1970). Some examples are: a small group, a firm, an online community and a whole society.

Behaviour that complies with the social system (desired behaviour) may be encouraged by rewards. Behaviour deviant from the social system (unacceptable behaviour) might be avoided by punishments (Peyppe, 1981).

Moderators of OCs can introduce positive social control to reward desired behaviour. Rewards are used to reinforce behavioural outcomes that are desirable (Beck, 1978). The principle that application of rewards makes desirable behaviour more attractive has often been examined for regular life. This is illustrated by Beck (1978, p. 124): "empirically, there has been little dispute that reinforces can strengthen behaviour, in the sense that a behaviour is made more likely to occur in certain circumstances."

Desired behaviour for OHSCs is when members behave according to the common group goal by sharing their knowledge and providing social support. Application of positive social control might stimulate people to behave in conformance with the norms that exist within an OC.

On the contrary, moderators of OCs can use negative social control to punish unacceptable behaviour. Punishments are often used to inhibit an unwanted response from someone's behavioural repertoire (Burnstein, 1982; Walters & Grusec, 1977). According to Beck (1978), a punishment is "*an aversive stimulus or a stimulus which suppresses behaviour preceding it.*" The latter gives abhorrence of violations concrete expression and is commonly used to reinforce society's commitment to the norms as pointed out by Durkheim (1893, quoted in Storer, 1973, p. 240).

Unacceptable behaviour for OHSCs is for instance when members abuse people's trust or do not respect others by insulting them. Through application of negative social control, people might be stimulated to avoid unacceptable behaviour.



### 2.3 Conclusion

This chapter has shown that successful OHSCs provide many benefits for its members. Yet, several problems of interaction might obstruct OHSCs reaching their maximum public good provision. OHSCs' public good provision is mainly characterized by two advantages. These are the information exchange aspect and social support provision. Major problems that could affect OCs public good provision are problems of opportunity, loyalty and trust.

To prevent these problems, moderators and administrators of OHSCs can apply social control. These are mechanisms used to regulate and stimulate behaviour of OC members. Some are tools embedded in the OC's communication facilitating software while others are part of the OCs' norms.

Appropriate application of social control motivates members to behave according to the common group goal as is commonly reflected by the OC's purpose. However, members are not equally involved in an OC. Therefore, social control is expected to affect community members differently. The major challenge for the community is to keep novice members bonded to the group in order to prevent too much fluctuation in the amount of members of the OC. The major challenge of the OC for regular members rests in stimulating their cooperative behaviour by overcoming problems of opportunity and trust. This thesis focuses upon the stimulation of regular members' cooperative behaviour.

Moderators and administrators of OHSCs can apply many different forms of social control to stimulate cooperative behaviour or avoid unacceptable behaviour of regular members. The way in which they apply social control should be clearly communicated by means of the OC's policies. In this chapter, the theoretical mechanisms behind two dimensions of social control have been explained. These are social control characterized by its directness (direct, indirect monitoring and frame-stabilizing) and social control characterized by its positivity (positive and negative) by which it stimulates members. The theory of online relational signalling provided the conceptual background for what forms of social control (characterized by its directness) would be appropriate in stimulating members' cooperative behaviour under certain OC circumstances. The effectiveness of social control characterized by its positivity is determined in what way it rewards or punishes members. The next chapter uses these insights to construct a theoretical framework for examining effects of application of different forms of social control in OHSCs.

### 3. Theoretical Framework

The purpose of this chapter is to develop a framework to examine the effects of application of different forms of social control in online health support communities (OHSCs). First, section 3.1 provides the hypotheses about the prevailing interests of OHSC members as well as the major problems of interaction that exist within OHSCs. Section 3.2 presents hypotheses for the effectiveness of social control characterized by its directness as well as its positivity through which social control stimulates online community (OC) members. Finally, section 3.3 will give a conclusion that summarizes the major insights of this chapter.

#### 3.1 Interests and problems

In this section a hypothesis for the prevailing interest of members of OHSC is generated first. Then, a hypothesis is created about the major problems that might occur in OHSCs.

##### 3.1.1 Interests of members

The theory of online relational signalling is used to examine the effects of application of different forms of social control in OHSCs. The theory assumes the existence of a certain degree of relational and material interests for OC members. The question is which of the interests dominates the individual decision frame in contributing or not. This results in the first subsidiary question:

*Q1: What is the prevailing interest of members within OHSCs?*

OHSCs' major purpose concerns the exchange of health information and the provision of social support to its members. Within OHSCs, members offer each other emotional concern, esteem, affection, a sense of belonging, identity and security besides health information. An example is a member who suffers from a serious disease and joins an OHSC in order to find members who are all ears by showing emotional concern.

Many people become member of an OHSC in order to acquire information and to get social support (Cummings et al., 2002; Maloney-Krichmar & Preece, 2002; Preece, 1998; Rice & Katz, 2001). By joining these communities, people get access to many new contacts. People need to build and maintain pleasant relationships with these new contacts in order to learn from their knowledge and experiences about particular health issues and to get social support of them. Members of OHSC will only be eager to share their experiences when they consider the new

member trustworthy (Ridings et al., 2002). Because many discussions within OHSCs are concerned with sensitive topics due to their private nature (Maloney-Krichmar & Preece, 2002). Some people are member of an OHSC because they want to help others (Rice & Katz, 2001). For instance, they stay with the community to share their experiences about their disease recovery.

For relationally interested members, social interaction is important to fulfil individual goals (Matzat, 2008b). Relationally interested members are likely to take the common group goal into consideration when pursuing individual interests. The individual goals of members in OHSCs are expected largely to be conformance with the common group goal of the community; people need others to acquire particular health knowledge from their experiences or get social support. Therefore, for people who are member of OHSCs or want to join them, social interaction is expected to be important to realize their own goals. This results in the first hypothesis which predicts the following:

*H1: In OHSCs, members are relationally interested.*

#### **3.1.2 Interaction problems**

Many OHSCs have existed for several years and therefore function properly to a certain extent. To examine whether OHSCs have reached their full cooperative potential, typical problems of interaction that might obstruct them are examined. This provides insight in the possibilities for application of social control in order to maximize OHSCs' public good creation. Therefore, the second subsidiary question is:

*Q2: What problems of interaction do OHSCs experience that might hinder their full cooperative potential?*

Three problems of interaction that typically occur in OCs are evaluated if these might hinder OHSCs' cooperative potential. These are: problems of trust opportunity and loyalty.

To start with, problems of trust are likely to happen within OHSCs. As argued before, many discussions within OHSCs are concerned with sensitive topics (Maloney-Krichmar & Preece, 2002). They primarily involve sharing personal experiences and knowledge about particular health issues. Usually, these are not open to discussion in everyday life. Unintended disclosure of such sensitive information to others who have unknown trustworthiness or indeterminable intentions could lead to social and / or financial sanctions (Matzat & De Vos, 2000; Ridings et al., 2002).

Therefore, members might hesitate to share their personal experiences and knowledge because everyday situations might be negatively affected. Examples include refusal during a solicitation or social exclusion.

The sensitivity of information that is shared within OHSCs requires the community environment to foster trust. Paradoxically, within OHSC settings trust grows with more difficulty than in ordinary life. OHSCs lack several characteristics that facilitate trust in offline settings. These are social cues (posture signals and the notion of communicating with real persons) and accountability (Matzat & De Vos, 2000).

In sum, due to the sensitivity of information that is shared among members, problems of trust are likely to occur in OHSCs.

Secondly, problems of opportunity are assumed to be found in OHSCs because most communities are characterized by a large share of lurking members (Nonnecke, 2000; Nonnecke & Preece, 2000, 2001; Preece et al., 2004). Lurkers are community members that observe what is going on and do not contribute. As in ordinary life, most people do not take initiative or behave in a pro-active way (Preece et al., 2004). Lurkers post too little and hardly provide any social support to members that need it. Therefore it might occur that OHSCs have too little active members. Most likely only a small group of members is willing to contribute every now and then. Because most lurkers in OHSCs do not contribute or provide social support at all and only benefit from contributions made by a few active members, it is expected that OHSCs experience problems of opportunity, in specific problems of free-riding.

Thirdly, OHSCs probably experience problems of loyalty. These arise when visiting or novice members cannot be attracted to the OHSC in a sustainable way. Because the web is full of OHSCs (Rice & Katz, 2001), many may be perceived as substitutes. Therefore a considerable degree of problems of loyalty is expected.

To conclude, OHSCs experience typical problems of interaction because information shared within OHSCs is sensitive due to its private nature, OHSCs lack certain trust enhancing characteristics, many lurking members exist that only profit and do not feel eager to contribute and the web is full of OHSC that may be perceived as substitutes. Therefore the second hypothesis predicts the following:

*H2: OHSCs experience a considerable degree of problems of trust, opportunity and loyalty.*

## **3.2 Effectiveness of different dimensions of social control**

In this section, hypotheses for the effectiveness of social control characterized by its directness in stimulating cooperative behaviour in OHSC are generated first. Next, hypotheses will be provided about the effectiveness of social control characterized by its positivity through which it stimulates OHSC members.

### **3.2.1 Social control characterized by its directness**

Moderators of OHSCs can apply social control in stimulating cooperative behaviour of its community members. The right form of social control needs to be applied under the right circumstances to be effective. Application of social control is assumed to be appropriate if it is effective and accepted by members to stimulate cooperative behaviour.

Appropriate application of social control discourages the temptation to satisfy individual interest at the expenses of others. It fosters trust and thereby overcomes problems that might obstruct cooperative behaviour. This results in the third subsidiary question:

*Q3: How does the directness of social control affect the degree of cooperation in OHSCs?*

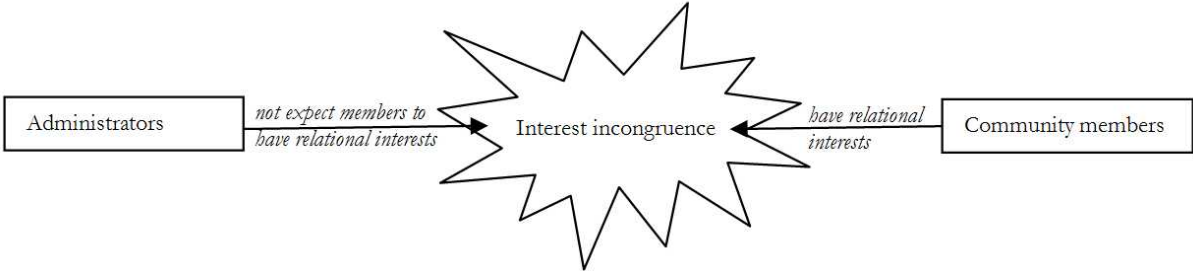
The theory of online signalling (Matzat, 2008b) is used to examine this question. In the next section the effectiveness of another dimension of social control is studied, which is social control characterized by its positivity through which it stimulates members. For now, the effects and acceptance by members of application of different forms of social control characterized by its directness are discussed.

Three different forms of social control characterized by its directness exist: direct, indirect monitoring and frame-stabilizing tools. To make a clear distinction, direct forms of social control will be referred to as 'strong' forms of social control whereas 'weak' forms of social control relate to both indirect monitoring and frame-stabilizing tools. Strong forms are looked at first, followed by weak forms of social control.

The starting point is that application of social control by administrators sends relational signals about the behavioural standards that are supposed of community members. By applying strong forms of social control, such as direct control tools, administrators give the signal that OHSC members are not expected to have strong relational interests.

Strong forms of social control can be applied by administrators when material interests are expected to dominate within the OC (Matzat, 2008b). An example of an OC in which material interests are emphasized is eBay. In this community, material interests are focused upon short-term maximization of individual profit while doing transactions with other eBay members. People usually do not have any intention to build long term relationships with others.

Members of OHSCs are expected to be relationally interested (see Hypothesis 1). When strong forms of social control are applied in OHSCs, a so called *situation of interest incongruence* occurs, see Figure 2. The relational interests that administrators not expect members to have, do not correspond with the relational interests members are assumed to have.



**Figure 2: Situation of interest incongruence**

The situation of interest incongruence is likely to affect the cooperative potential of OHSCs negatively in two ways. The first consequence that might occur from a situation of interest incongruence is that members of OHSC think they behave wrongly. Because administrators emphasize material interests, members might consider the fulfilment of material goals as the behavioural standards that are expected in the community and act as such. As a result, members' prevailing interest is supposed to change gradually over time. Ultimately, material interests will dominate members' decision frame in contributing or not.

When material interests dominate a members' decision frame, members will hardly take the OC's common group goal into consideration. Therefore, strong forms of social control are not expected to be the most effective form of social control to increase OHSCs' cooperative potential. Because relational signals that emphasize material interests initially do not coincide with members' assumed relational interests, strong forms of social control are not expected to be accepted by members either.

Members of OCs who have become materially interested will send corresponding relational signals to others by being active in their community. These are relational signals that occur in bilateral or group communication (Matzat, 2008b). The relational signals send by members and the relational signals from application of strong forms of social control by administrators, ultimately result in OHSC members for whom individual goals dominate the decision frame in contributing or not. Such members are not cooperative at all, but only take from the OC what has been or is being (if that is still the case) produced. At this point, the OHSC's public good provision concerning valuable, free information and social support will be down to zero.

The second consequence that might occur from a situation of interest incongruence is that OHSC members will be disappointed. They get disappointed due to the incongruity between the relational interests members are assumed to have (see Hypothesis 1) and the material interests that administrators emphasize. Members discover that the OHSC does not offer them what they wished to find. This leads to disappointed members that leave the OHSC to satisfy their needs elsewhere.

Once more, strong forms of social control appear not to be the most effective form of social control to increase the cooperative potential of OHSCs. Because members will be disappointed, strong forms of social control are not likely to be accepted by members either. As members simply leave and so do not send relational signals to others, the production of the OHSC's public good is not expected necessarily to drop down to zero.

When administrators apply weak forms of social control, such as indirect monitoring or frame-stabilizing control tools, administrators signal that OHSC members are expected to have relational interests. These relational signals do not emphasize short-term, individually oriented, material goals but the salience of the common group goal. Consequently, relational signals will be in congruence with members' assumed relational interests.

Weak forms of social control enhance members' attention to the common group goal (frame-stabilizing tools) or give members the opportunity to express their conformity with the community's rules (indirect monitoring) (Matzat, 2008b). As a result, members will consider the common group goal within the decision frame in contributing or not. Therefore weak forms of social control are supposed to be the most effective to increase OHSCs' cooperative potential. Additionally, because members will not be disappointed by relational signals that arise from application of weak forms of social control, these forms are likely to be accepted by members as well.

In sum, it has been argued that application of strong forms of social control in OHSCs leads to situations of interest incongruence. These situations occur because material interests that are emphasized by administrators do not correspond with the relational interests members really have. Because of that, members' interests will change or members could become disappointed and leave the community. Therefore strong forms of social control are not supposed to be effective nor accepted by members to stimulate OHSCs' cooperative potential.

On the contrary, when weak forms of social control are applied, members will take the common group goal in their decision frame in contributing or not. Therefore weak forms of social control, such as indirect monitoring and frame-stabilizing tools, are expected to be the most effective and accepted by members to stimulate OHSCs' cooperative potential. This results in the third hypothesis:

H3a: *In OHSCs, weak forms of social control are more effective than strong forms.*

H3b: *In OHSCs, weak forms of social control are more accepted by members than strong forms.*





In addition, this thesis will explore combined effects; how does social control, characterized by different forms of positivity and different forms of directness, affect cooperative behaviour within OHSCs?

Subsequently, the effectiveness of positive and negative forms of social control is looked at. These insights are combined with those from the theory of online relational signalling. This results in three hypotheses that predict the effectiveness of social control characterized by different forms of positivity for OHSCs.

In ordinary life sanctions are applied to avoid unacceptable behaviour. Negative forms of social control are commonly applied as punishments or sanctions (Beck, 1978; Peyppe, 1981). As in regular life, it is expected that negative social control is not perceived to be effective in stimulating desired behaviour in online environments while positive social control is. This results in hypothesis 4a that predicts the following:

*H4a: In OHSCs, positive forms of social control are more effective than negative forms in stimulating desired behaviour.*

From the preceding follows that negative forms of social control are likely to be perceived as most effective in avoiding behaviour of community members that is unacceptable. For instance, if a community member does not respect someone else through insulting him. This results in hypothesis 4b that predicts the following:

*H4b: In OHSCs, negative forms of social control are more effective in avoiding unacceptable behaviour than in stimulating desired behaviour.*

Finally, this thesis is interested in the combined effectiveness of both dimensions of social control that have been examined in this thesis. Therefore, the effectiveness of social control characterized by its positivity together with its directness is looked at hereafter.

Recall that because of the supposed relational interests for members of OHSCs (see Hypothesis 1), weak forms of social control were expected to be most effective in stimulating cooperative behaviour (see Hypothesis 3a). For social control characterized by its positivity, positive forms would be most effective in stimulating cooperative behaviour (see Hypothesis 4a).

From this follows that weak, positive forms of social control are presumably the most effective combination of social control (concerning the ones examined) in stimulating cooperative behaviour. After all, this combination of social control is in congruence with members' relational interests and its positivity stimulates desired behaviour through rewards.

Additionally, weak, positive forms of social control is likely to be the most effective combination of social control because it does not make use of too high incentives to motivate OHSC members. According to the 'crowding-out' effect, (too high) incentives eventually might reduce people's voluntary cooperation (Fehr & Gächter, 2001). This combination of social control uses weak forms that do not emphasize members' direct benefits. Therefore, this combined form of social control is not expected to be regarded as a material compensation for people's effort and nor loses its meaning of appreciation. This results in hypothesis 4c which predicts the following:

*H4c: In OHSCs, weak, positive forms of social control are perceived as the most effective combination of social control (concerning the ones examined) in stimulating desired behaviour.<sup>10</sup>*

### **3.3 Conclusion**

This chapter provided the theoretical framework for examining the effects of application of different dimensions of social control in OHSCs. If the assumptions appear to be correct after the testing of the hypotheses, new insights have been provided about the effectiveness of social control characterized by its directness in a previously unexamined online environment as OHSCs. Additionally, insights are provided in the effectiveness of another frequently applied dimension of social control characterized by its positivity. Finally new insights are provided by exploring the combined effectiveness of both dimensions of social control.

Because the theory of online relational signalling was mainly used to generate hypotheses, this chapter looked at the prevailing interest of OHSC members first and predicted that:

*H1: In OHSCs, members are relationally interested.*

Then, this chapter looked at whether typical problems of interaction would obstruct OHSCs' cooperative potential and predicted that:

*H2: OHSCs experience a considerable degree of problems of trust, opportunity and loyalty.*

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<sup>10</sup> It is recognized that H4c more or less follows from the preceding hypotheses. Yet, it is considered to be valuable as a concrete direction for the exploration of the combined effectiveness of different dimensions of social control.

The major part of this chapter was about the effects of application of different dimensions of social control. For different forms of social control characterized by their directness, it was predicted that:

H3a: *In OHSCs, weak forms of social control are more effective than strong forms.*

H3b: *In OHSCs, weak forms of social control are more accepted by members than strong forms.*

Additionally, for the effectiveness of different forms of social control characterized by their positivity it was predicted that:

H4a: *In OHSCs, positive forms of social control are more effective than negative forms in stimulating desired behaviour.*

H4b: *In OHSCs, negative forms of social control are more effective in avoiding unacceptable behaviour than in stimulating desired behaviour.*

Finally, both dimensions of social control were examined on their combined effectiveness. It was predicted that:

H4c: *In OHSCs, weak, positive forms of social control are perceived as the most effective combination of social control (concerning the ones examined) in stimulating desired behaviour.*

The next chapter presents the methodology that is used to test the hypotheses in chapter 5.

## 4. Methodology

This chapter provides the methodology used to test the hypotheses of this study. First, the research approach is discussed in section 4.1. Section 4.2 presents the selection criteria for the research population. Next, the way in which participants were invited is treated in section 4.3. Section 4.4 looks at the response rate of this research. The experimental design is explained in section 4.5, followed by section 4.6 that is about the validity of this research. The reliability of this study is described in section 4.7. Section 4.8 treats the ethical considerations. Then, section 4.9 provides the measurements of this research. Finally, section 4.10 is about the data preparation.

### 4.1 Research approach

The main focus of this study is experimental research. The hypotheses were tested using survey and experimental data. The survey data was used to test hypotheses 1 and 2, whereas experimental data was used to test hypotheses 3 and 4. All data have been collected in different English communicating, Yahoo! online health support communities (OHSCs). They were collected between November and December 2007 by means of an online questionnaire.

The online questionnaire included 36 questions divided along five parts. The first part of the survey was interested in participants' community usage, the second part in community characteristics, the third part in potential community problems, the fourth part in community management (and included both experiments) and the fifth part in personal characteristics. The online questionnaire is included in appendix A.

In total, 157 members participated in the questionnaire. Of them, 96 fully completed the survey's obligatory questions. On average, it took 25 minutes to complete the whole survey. The study's response rate for participants who have been randomly selected is 19.3% (n=150).

### 4.2 Selection of the research population

Yahoo! OHSCs<sup>11</sup> have been chosen as the research population for this study. These communities have no commercial interest, are easy to use, are commonly found online, can be setup and joined by anybody with internet access and cover a broad share of health problems.

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<sup>11</sup> The Yahoo! portal that links to about 40.000 (as of 30-08-2007) health support groups can be found at: [http://health.dir.groups.Yahoo.com/dir/Health\\_\\_\\_Wellness/Support](http://health.dir.groups.Yahoo.com/dir/Health___Wellness/Support)

Because Yahoo! OHSCs could be setup by literally anyone, a large share of these groups still exists without any activity at all. These so called 'dead-groups' were excluded from the research sample when they had 2 messages or less posted during July 2007 (which was the month prior to the participant selection). Additionally, some Yahoo! OHSCs covered such rare or sensitive topics that including these would have decreased the study's generalization or its response rate. Therefore the following three frequently occurring sorts of Yahoo! OHSCs were chosen:

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

Since this research is interested in the effectiveness of social control, Yahoo! OHSCs with less than 50 members were excluded. Here is assumed that these small groups would be so densely knit that they would not need any social control at all. After excluding the groups which did not have at least 50 members the research' accessible target population included 679 communities.

The sample size was determined on basis of previous comparable studies. The intention was to get cooperation of 30 online communities (OCs). This meant that the community manager allowed their members to be invited to participate in this study and would help approaching them. For every cooperating community 150 members were invited to participate. All in all, 679 communities were invited and 27 of them agreed to cooperate before the research had started.

### **4.3 Invitation of participants**

Three different methods were used to invite participants of the OCs. The first method included becoming member of the community and manually sending all randomly selected members a private message that included the invitation to participate. For the second method, 150 numbers were randomly selected from the total amount of members for a specific community. These numbers represented a particular selection of community members. The manager was asked to send the selected members the research invitation and some reminders if necessary. The third method invited participants by posting an invitation message on the community's message board. Members who were interested needed to register themselves to participate to the survey.

The first two methods were preferred because they preserved full randomness. The third method was used in case managers did not allow me to become member nor wanted to invite the members themselves. The invitations for the community manager and the members are included in appendices B and C.

#### 4.4 Response rate

157 participants out of 11 different online health support communities participated in the survey. Of them, 99 fully completed the questionnaire's obligatory questions. The study's response rate for the participants that have been randomly selected is 19.3% (n=150).

The subsequent table summarizes the randomly invited participants. It lists the method used to invite them, the amount of participants who were invited, the number of bounce invitations, the number of participants that participated and the response rate<sup>13</sup> for each community. In total, 7 members out of 4 communities have been excluded from the table because they were not randomly invited.

**Table 1: Response rate for randomly invited participants**

| OC <sup>12</sup> | Invitation method | Members invited | Invitations bounced | Members responded | Response rate <sup>13</sup> |
|------------------|-------------------|-----------------|---------------------|-------------------|-----------------------------|
| A                | Manager           | 150             | 46                  | 10                | 9.6%                        |
| B                | Became member     | 150             | 16                  | 35                | 26.1%                       |
| C                | Became member     | 150             | 18                  | 24                | 18.2%                       |
| D                | Became member     | 150             | 26                  | 18                | 14.5%                       |
| E                | Manager           | 150             | 83                  | 23                | 34.3%                       |
| F                | Became member     | 150             | 14                  | 33                | 24.3%                       |
| G                | Manager           | 150             | 63                  | 7                 | 8.0%                        |
| Total            |                   | 1050            | 266                 | 150               | -                           |
| Average          |                   | 150             | 38                  | 21.4              | 19.3%                       |

#### 4.5 Experimental design

In the online questionnaire, two experiments were included. The first experiment examined the effectiveness and acceptance of social control characterized by its directness through which it stimulates community behaviour. This experiment was used to test hypothesis 3. The second experiment examined the effects of social control characterized by its positivity through which it stimulates community behaviour. This experiment was used to test hypothesis 4.

In both experiments, participants were asked to assess several statements about the effect and acceptance of several forms of social control. Therefore effectiveness and acceptance represent participants' perceived effectiveness and acceptance. Subsequently, both experimental designs are discussed in detail.

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<sup>12</sup> Because of privacy reasons community names are represented by capital letters.

<sup>13</sup> The response rate is calculated on the basis of the subset of members who responded and the amount of invitations that 'bounced' (did not reach the intended recipient). Because not all invitations that bounced reached us with certainty or could be traced back to the right community, the figures listed should be considered as minimum response rates.

#### 4.5.1 Experiment one

The first experiment used a between subject design, scenario research and a model of direct and indirect questioning to control for social desirability bias (Jo et al., 1997). The experiment consisted of four hypothetical though realistic scenarios. Participants were randomly assigned to one of four experimental scenarios. Between these scenarios the hypothesized form of social control was manipulated. The following four forms of social control were used: direct monetary, direct non-monetary, indirect monitoring and frame-stabilizing social control.

Each scenario examined two things. Firstly, participants were asked about the extent to which they thought they would accept introduction of the hypothesized social control to facilitate contributions within their community. Secondly, participants were asked about the extent to which they thought their contributive behaviour would be affected due to the hypothesized social control. This resulted in the following four experimental scenarios:

- Direct monetary

*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.*

- Direct non-monetary

*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.*

- Indirect monitoring

*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.*

- Frame-stabilizing

*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.*



Because the experiment examined people's self-reported, expected change in contributive behaviour and acceptance of social control, it was expected that participants would present themselves more favourably than would be the case in reality. Therefore the experiment had to control for social desirability. The experiment controlled for social desirability by a method of direct and indirect questioning (Jo et al., 1997) as explained in Text Box 2.

**Text Box 2: Controlling for social desirability**

Nunally (1978) defines social desirability as respondents tendencies to present themselves in a favourable position with regard to social norms. It might arise when participants are directly asked for their responses about a sensitive construct. Social desirability manifests itself by compressing the range of responses around an end of a scale (e.g. "strongly agree"). Thereby it introduces a serious threat to the research' construct validity. To control for social desirability, indirect questioning is proposed (see i.e. Fisher, 1993). This way of questioning asks respondents how others would think about a typical sensitive construct. Yet, indirect questioning introduces problems for validity itself. Namely, do respondents' answers represent their true opinions and answers? (Jo, Nelson, & Kiecker, 1997) To control for both method variance and social desirability, Jo et al. (1997) propose to apply a model that incorporates both direct and indirect questioning. After data collection, a factor analysis should be used to generate a three-factor solution. One factor measures the sensitive construct. The two other factors should be excluded. These encompass the error-loadings for method variance and social desirability.

Participants were asked to assess 3 indirect and 3 direct items that measured one underlying construct for each dependent variable. Indirect items were measured by asking the participant how he thinks a typical member would accept (or be motivated to contribute by) the hypothesized form of social control. Direct items were measured by asking how the participant thinks he would accept (or be motivated to contribute by) the hypothesized form of social control. As a result, participants had to assess 6 items for acceptance of social control and respectively 6 for the effectiveness of social control as displayed Table 2

**Table 2: Items measured for each participant in experiment 1**

|          | Acceptance of social control  | Effectiveness of social control  |
|----------|---|--|
| Indirect | What do you think, to what extent would a <b>typical member</b> of the OC... <ul style="list-style-type: none"> <li>• regard such a rule as acceptable?</li> <li>• welcome such a rule?</li> <li>• be offended by such a rule?</li> </ul> | What do you think, to what extent would a <b>typical member</b> of your OC... <ul style="list-style-type: none"> <li>• contribute more?</li> <li>• increasingly share his/her information?</li> <li>• feel more eager to satisfy others' help / information requests?</li> </ul> |
| Direct   | What do you think, to what extent would <b>you</b> ... <ul style="list-style-type: none"> <li>• regard such a rule as acceptable?</li> <li>• welcome such a rule?</li> <li>• be offended by such a rule?</li> </ul>                       | What do you think, to what extent would <b>you</b> ... <ul style="list-style-type: none"> <li>• contribute more?</li> <li>• increasingly share your information?</li> <li>• feel more eager to satisfy others' help / information requests?</li> </ul>                           |

Afterwards a factor analysis was used to construct a scale that reduced social desirability bias for participant's acceptance and effectiveness of social control. These two scores constitute the dependent variables to test hypothesis 3.

#### 4.5.2 Experiment two

The second experiment used a mixed factorial design which tested for effects within and between subjects using a scenario approach. It examined the effectiveness of different forms of social control characterized by its positivity as well as its directness in stimulating different kinds of community behaviour.

The experiment consisted of four hypothetical though realistic scenarios. Participants were randomly assigned to one of four experimental scenarios. Between these scenarios the community behaviour was manipulated. The following four kinds of community behaviour were used: reminding other members to stay on-topic during discussions, helping new members, contributing to others' information or support requests and respecting other members by for instance not insulting them.

Within each scenario participants were exposed to different forms of social control characterized by its positivity as well as different forms of social control characterized by its directness. The different forms of social control characterized by its directness were: direct, indirect monitoring and frame-stabilizing social control. The different forms of social control characterized by its positivity were: positive and negative social control.

Each scenario examined the extent to which participants thought different forms of social control would be effective in stimulating members to behave as proposed by the scenario. Participants were asked to assess 6 different forms of social positive social control first. Then, they were asked to assess 6 similar forms of negative social control. Because of this, scenarios had to be formulated in two ways; one for stimulating desired behaviour, the other for avoiding unacceptable behaviour. This resulted in the following four scenarios:

- Respecting other members

Desired: *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?*

Unacceptable: *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, during a period of 6 months, never performed this task would be stimulating for them?*

- Contributing to others' information or support requests

Desired: *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?*

Unacceptable: *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, during a period of 6 months, never performed this task would be stimulating for them?*

- Helping new members

Desired: *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?*

Unacceptable: *Helping new members is a valuable task for the community. Do you think that the following ways to treat members who, during a period of 6 months, never performed this task would be stimulating for them?*

- Reminding members to stay on topic

Desired: *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?*

Unacceptable: *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, during a period of 6 months, never performed this task would be stimulating for them?*

The 6 positive forms of social control consisted of 2 direct, 2 indirect monitoring and 2 frame-stabilizing items. The same applies for the 6 negative forms of social control. This resulted in 12 different items measured for each participant as summarized by Table 3.

**Table 3: Items measured for each participant in experiment 2**

|                   | Positive   | Negative  |
|-------------------|--|---|
| Direct            | Increase a members' bonus points that can be exchanged against a reward.                       | Decrease a members' bonus points that can be exchanged against a reward                       |
|                   | Enhance a members' community status (For example: newbie, experienced member, community guru). | Reduce a members' community status (For example: newbie, experienced member, community guru). |
| Indirect          | The community administrator appreciates a member in public.                                    | The community administrator disapproves a member in public.                                   |
|                   | Other members appreciate a member in public.   | Other members disapprove a member in public.  |
| Frame-stabilizing | The community administrator sends a member a private message stressing the great job he did.   | The community administrator sends a member a private message stressing he did not a good job. |
|                   | Other members that send a member a private message stressing the great job he did.             | Other members that send a member a private message stressing he did not a good job.           |

To increase consistency and clarity, the 12 items were reduced to 6 by averaging the scores<sup>14</sup>. For instance, the average was taken of the items: 'Increase a members' bonus points that can be exchanged against a reward' and 'Enhance a members' community status (For example: newbie, experienced member, community guru)' in order to compute one score for direct, positive social control. In this way, six scores constitute the dependent variables to test hypothesis 4.

#### 4.6 Validity

Validity refers to the extent in which measurements measure what they are supposed to measure (Graziano & Raulin, 2004). This research' statistical, internal and external validity are subsequently discussed.

Statistical validity refers to the accuracy of the conclusions drawn on the basis of statistical tests (Graziano & Raulin, 2004). To achieve an acceptable degree of statistical validity, all statistical tests in this study use a two-sided p-value of .05 unless indicated differently. Internal validity refers to the extent in which the independent variable caused the observed changes in the dependent variable and not any extraneous one (Graziano & Raulin, 2004). Therefore the main experiment controlled for social desirability to avoid biased conclusions. The other control variables that have been measured are discussed in detail in section 4.9. External validity refers to the extent in which results can be generalized to other people, places or conditions. To infer results beyond the sample population that has been examined, one should randomly select participants (Graziano & Raulin, 2004). Because this study mainly concerned experimental research, participants were randomly assigned and the experiments were controlled for social desirability, it is reasonable to expect the observed effects to be caused due to experimental manipulation.

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<sup>14</sup> This was explicitly done during the analysis in order to ensure that the results on which the conclusions are based, would not be affected in any way.

## 4.7 Reliability

Reliability refers to measures that give consistent results when repeatedly performed (Graziano & Raulin, 2004). To enhance reliability, scales have been constructed by measuring several items. An exploratory factor analysis was used to assess that all items for one particular scale measured a similar construct. Afterwards a reliability analysis was carried out to verify how well the construct was measured. Section 4.9 discusses how particular scales were constructed and provides Cronbach's alpha which indicates their reliability.

## 4.8 Ethical considerations

Because people who were invited are member of health based OCs, there was a reasonable chance that some could have suffered from emotional or mental disorders. They could have difficulty in understanding the research invitation or questionnaire. Therefore, managers of the OHSCs were consulted to grant permission. All managers granted permission if no participant would be harmed nor asked more than necessary. Additionally, participants' privacy had to be respected at all cost.

## 4.9 Research measurements

Subsequently, the measurements that have been used in this research are discussed. All measurements have been given unique names that are used in italic throughout this thesis. Every measurement provides the questionnaire's corresponding question between brackets. The questionnaire is included in appendix A of this thesis.

The first part provides the general variables which are used to describe the research population. The second part discusses the control variables that have been measured. Part 3 and 4 present the dependent variables that have been used to test the hypotheses of this thesis; the third part is about the experimental variables, whereas the non-experimental variables are explained in the fourth part. Finally, an overview of the variables used to test the hypotheses of this research is given in the last part

### 4.9.1 General variables

*Membership\_reason (Q1)* measured participant's reason(s) to become member of their community. Participants could tick all reasons that were applicable. Additionally, they were offered the opportunity to fill in a reason which was not listed.

*Membership\_time (Q2)* measured how long participants have been member of their community. Participants could select one out of five choices from a drop-down box. The choices varied from 'less than one month' to '2 years or more'.

*Community\_visits (Q3)* measured how frequently participants visited their community during the last three months. Participants could select one choice out of six by means of a vertical radio button. The choices varied from 'never' to 'more than once a day'. This question was filtered out if participants were member for three months or less (measured by *Membership\_time*).

*Time\_spent (Q4)* measured the total amount of time spent by participants in their community during the last four weeks. Participants could select one choice out of eight by means of a vertical radio button. The choices varied from '0 minutes' to '4 hours or more'.

*Posts\_read (Q5)* measured the total number of posts read by participants each month. Participants could fill in the number of posts they read. Participants had to select 'I do not read any posts of my community' when they entered '0'.

*Questions\_asked (Q6)* measured the total number of questions posted by participants each month. Participants could fill in the number of questions they posted. Participants had to select 'I do not ask any questions to my community' when they entered '0'.

*Posts\_contributed (Q7)* measured the total number of posts participants contributed each month. Participants could fill in the number of posts they contributed. Participants had to select 'I do not contribute to my community' when they entered '0'.

*Community\_importance (Q8a)* measured participant's perceived importance of their community. It was measured using a 7-point scale varying from 'very unimportant' to 'very important'.

*Other\_community\_activity (Q8b)* measured in how many other communities participants are active except the for one for which they were examined. Participants could select one out of seven choices from a drop-down box. The choices varied from 'none' to 'more than 5'.

*Community\_benefits (Q10)* measured which benefit(s) participants currently get of their community. On a 7-point Likert scale ranging from 'fully disagree' to 'fully agree', every respondent had to assess eight benefits that typical OHSCs provide. These benefits were: information, new contacts, (social) support, a possibility to help others, insight in the subject, social recognition, friendship and recreation. Additionally, they could fill in a benefit which was not listed.

*Information\_value (Q18)* measured how useful participants perceived information shared in their community. Participants were asked to assess four items on a 6-point Likert scale ranging from 'fully disagree' to 'fully agree'. A factor analysis was used to construct one underlying scale that measured the information usefulness. Cronbach's alpha for the constructed scale was .850 after removal of item 4 that decreased the scale's reliability.

*Community\_norms (Q19)* measured the extent to which rules, habits and norms existed within the participant's community. Participants were asked to assess eight items on a 6-point Likert scale ranging from 'fully disagree' to 'fully agree' that measured the extent to which community norms

were apparent. This question was filtered out if participants were member for three months or less (measured by *Membership\_time*).

*Information\_sensitivity (Q20)* measured the extent to which participants perceived information shared within their community to be sensitive due to its private nature. Participants had to assess four items on a 7-point Likert scale ranging from 'fully disagree' to 'fully agree'. A factor analysis was used to construct one underlying scale that measured the extent to which information shared within the community is personal. Cronbach's alpha for the constructed scale was .935 and included all four items measured.

*Disclosure\_of\_identity (Q21a)* measured if a participant's nickname, used to participate within their community discloses their personal identity. By means of a vertical radio button, participants were asked to select 'yes' or 'no'. This question was not obligatory.

*Obligated\_identity\_disclosure (Q21b)* measured if participants were obliged to disclose their identity by the used nickname. By means of a vertical radio button, participants were asked to select 'yes' or 'no'. This question was not obligatory.

#### **4.9.2 Control variables**

*Years\_using\_internet (Q9)* measured for how long participants had been using the internet. Participants could select one out of seven choices from a drop-down box. The choices varied from 'less than 1 year' to 'more than 5 years'.

*Usability (Q11)* measured how easy participants perceived the usability of the software to participate within their community. On a 7-point Likert scale, participants had to assess their OC's usability ranging from 'very difficult' to 'very easy'. Additionally, they were offered the choice 'I only participate via email', for those who did not participate in the community using an internet browser.

*Internet\_literacy (Q27)* measured how experienced participants were with regard to certain internet related computer tasks. It was measured by extending the scale as proposed by Hargittai (2005). A factor analysis revealed two underlying constructs. Items 4, 5, 7, 8, 9 and 10 were used to construct a scale measuring basic competences. Items 2, 3, 6, 10, 11 and 14 were used to construct a second scale which measured advanced internet related competences. Cronbach's alpha for the constructed scale measuring basic competences was .886. Cronbach's alpha for the constructed scale measuring advanced competences was .866.

*Education (Q29)* measured participant's years of formal education measured since the first year of primary school. Participants could select one out of twenty-one choices from a drop-down box. The choices varied from '1' to '20 and more'. If participants had no formal education besides primary school, they could select 'none'.

*Age (Q30)* measured participant's age. Participants were asked to enter their year of birth. These have been converted to people's age in years.

*Social\_desirability (Q31)* measured people's tendency to give socially desirable answers. The scale was constructed using the shortened version of the BIDR 6 scale proposed in Paulhus (1991). Participants had to assess six statements on a 5-point Likert scale ranging from 'not at all' to 'very much'. For items 1, 3, 5 and 6, the number of times participants assessed 'very much' were counted. For items 2 and 4, the number of times participants assessed 'not at all' were counted.

*Trusting\_disposition (Q32)* measured to what extent participants were willing to place trust in others by nature as proposed by Jarvenpaa and Leidner (2000). Participants had to assess four statements on a 5-point Likert scale ranging from 'not at all' to 'very much'. A factor analysis was used to verify that all items measured the same underlying construct. Cronbach's alpha for the constructed scale was .750 after removal of item(s) 1 and 4.

*Gender (Q33)* measured participant's gender. Participants could either select 'male' or 'female'.

*Country (Q35)* measured participant's country of origin. Participants could select one out of 77 countries by means of a drop-down box. Additionally, they were offered the possibility to enter their country manually if it was not listed.

*Pro\_social (Q36)* measured the extent to which participants are pro-socially oriented. The score stems from a shortened version of the 'decomposed games method' as proposed in Snijders & Weesie (1999). They use Messick & McClintock (1968) to define social orientation which is the extent to which a person takes someone else's interest into consideration. Four options were presented that differed with regard to the amount of money the participant and another unknown person would be given. The scale has been constructed based on participants' ranking of the former options which measured people's social orientation.

#### **4.9.3 Dependent non-experimental variables**

*Relational\_interest (Q12)* measured how important participants regarded the relationship between themselves and other individuals or the group as a whole. On a 7-point Likert scale ranging from 'completely disagree' to 'completely agree', every respondent had to assess seven statements that needed social interaction for their fulfilment. These were for instance: making new contacts and disliking if one did not have anything usefully to contribute to the community. A factor analysis was used to verify that all items measured relational interest. This was the case and therefore an average score from the seven items has been calculated for each participant. Cronbach's alpha for the constructed scale was .897, no items were removed.

*Willingness\_to\_place\_trust (Q22)* measured the extent to which members were willing to place trust in typical situations that would demand it. Participants were asked if they would be willing to help



others with a serious problem. Helping others would indicate a similar problem for themselves. By means of a vertical radio button, participants had to choose one of the three options listed. The options varied in their degree of trust required to help others. Helping others non-anonymously required the most trust, helping others anonymously required some trust and not helping others does not require any trust.

*Community\_problems (Q23)* measured the problems as perceived by participants within their community. Participants had to assess eleven items which listed typical community problems on a 7-point Likert scale ranging from 'fully disagree' to 'fully agree'. This question was filtered out if participants were member for three months or less (measured by *Membership\_time*).

#### 4.9.4 Dependent experimental variables

Experiment one analyzed people's acceptance and perceived effectiveness of the introduction of different forms of social control using four scenarios.

The independent variable that was manipulated between these scenarios concerned the hypothesized form of social control. The following four forms of social control were used: direct monetary, direct non-monetary, indirect monitoring and frame-stabilizing social control. In the scenarios the following two dependent variables were measured:

*Acceptance\_exp1 (Q24)* measured participant's acceptance of the hypothesized form of social control by the experimental scenario. Participants had to assess six items on a 7-point Likert scale ranging from 'not at all' to 'very much'. To control for social desirability, a factor analysis was used to generate a three-factor solution (see: Text Box 2). 79.6% of the total variance was explained by the factor that measured *acceptance\_exp1*, the other two factors were excluded and explained 10.9% and respectively 5.2% of the total variance. The initial eigenvalue of the factor that measured *acceptance\_exp1* was 4.880. The initial eigenvalues of the two factors that were excluded, were .581 and .256.

*Effectiveness\_exp1 (Q24)* measured participant's self-reported expected change in the extent to which they would contribute when the form of social control as hypothesized by the experimental scenario would be introduced. Participants had to assess six items on a 7-point Likert scale ranging from 'not at all' to 'very much'. To control for social desirability, a factor analysis was used to generate a three-factor solution (see: Text Box 2). 84.4% of the total variance was explained by the factor that measured *effectiveness\_exp1* the others were excluded and explained 11.2% and respectively 2.0% of the total variance. The initial eigenvalue of the factor that measured *effectiveness\_exp1* was 4.775. The initial eigenvalues of the two factors that were excluded, were .653 and .312.

Experiment two examined the effectiveness of social control characterized by different forms of positivity and different forms directness in stimulating different kinds of community behaviour using four scenarios.

Independent variables were manipulated both between and within scenarios. Between these scenarios the typical community behaviour was manipulated. The following four kinds of community behaviour were used: reminding other members to stay on-topic during discussions, helping new members, contributing to others' information or support requests and respecting other members by not insulting them.

Within each scenario participants were exposed to social control characterized by different forms of positivity as well as different forms of directness. The different forms of social control characterized by its directness were: direct, indirect monitoring and frame-stabilizing social control. The different forms of social control characterized by its positivity were: positive and negative social control. Within the scenarios the following dependent variable was measured:

*Effectiveness\_exp2 (Q25)* measured participants' expectation about the extent to which others would be stimulated to perform specific desired community tasks when social control characterized by a certain form of directness and positivity would be introduced. Participants had to assess twelve items on a 7-point Likert scale ranging from 'not at all' to 'very much'.

#### 4.9.5 Variables used

The main variables used in the analysis to test the hypotheses of this study are summarized in Table 4.

**Table 4: Variables used to test the hypotheses**

| Variable                          | Measurement  | Survey question | Hypothesis |
|-----------------------------------|--|-----------------|------------|
| <i>Relational_interest</i>        | How important considered participants relationships between them and other individuals or the group as a whole.  | 12              | 1          |
| <i>Willingness_to_place_trust</i> | The extent to which members were willing to place trust in typical situations that would demand it.  | 22              | 2          |
| <i>Community_problems</i>         | Problems as perceived by participants within their community.  | 23              | 2          |
| <i>Acceptance_exp1</i>            | Acceptance of the hypothesized form of social control by the experimental scenario.  | 24              | 3          |
| <i>Effectiveness_exp1</i>         | Participant's self-reported expected change in the extent to which they would contribute when the hypothesized form of social control though the experimental scenario would be introduced.                                      | 24              | 3          |
| <i>Effectiveness_exp2</i>         | Participants' expectation about the extent to which others would be stimulated to perform specific desired community tasks when social control characterized by a certain form of directness and positivity would be introduced. | 25              | 4          |

### **4.10 Data preparation**

The data from the online questionnaire were imported in SPSS for statistical analysis. The dataset was checked for outliers and missing values. Additionally, scores from participants that completed the survey unreasonably quick were excluded. No cases were removed in advance. Scores that have been removed during the analysis are reported in the results section where applicable. This resulted in 157 valid cases used for the analysis.

## 5. Research Results

This chapter provides the results of the study and is divided in three sections. First, section 5.1 presents the descriptive statistics. The hypotheses of this study are tested in section 5.2. Finally, section 5.3 provides a conclusion that summarizes the major insights of this chapter.

### 5.1 Descriptive statistics

This section describes the population examined in this study. All in all, 157 participants out of 11 different online health support communities (OHSCs) responded to the questionnaire. Of them, 99 participants fully completed the questionnaire's obligatory questions. The study's response rate for participants that have been randomly selected, is 19.3%.

The section that follows discusses the population's demographical features, internet and community usage, membership motivation, problems within the community, value of the community, information exchanged and finally the relationships between members<sup>15</sup>.

#### 5.1.1 Demographics

Participants of all ages were included in the research sample. The average age of the research population was 44.7 (SD 10.79) after one significant outlier of 107 had been removed. The oldest participant was 77 and the youngest 27 years old.

The gender of participants was unequally distributed in the research sample. The sample was dominated by woman. From those who indicated their gender, respectively 75 were female and 24 male.

The research was held in English-speaking communities, which was visible by participants' countries of origin. From those who indicated their country of origin, 86.5% stem from native English-speaking countries. More specific: 52.5% came from the USA, 22.2% from the UK, 8.1% from Canada and 4.0% from Australia. In alphabetical order, the remaining participants (together 13.5%) came from Belgium, Finland, Hungary, India, Italy, Netherlands, New Zealand, Singapore, South Africa and South Korea.

Participants enjoyed quite some years of education. With regard to people's educational level, a negligibly small amount (2%) of participants indicated to have no formal education at all. Around 25% of the sample has had 10 - 14 years of education. 25% of the participants had 15 - 16 years of education. Around 28% had 17 - 19 years of education. Finally, 20% of the sample had 20 years or more of formal education.

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<sup>15</sup> The descriptive statistics that are discussed in this section have been chosen deliberately. The items were selected in order to make the research sample comparable to other populations and because they were assumed to be relevant for the subject of this thesis.

### **5.1.2 Internet and community usage**

Most participants had been using the internet for quite a long time. Of those who indicated it, 88.5% had been using internet for more than 5 years. 11.5% had been using the internet for 5 years or less.

Most participants had been a member of their community for some time. 23.7% indicated to be a member of their community for 3 - 12 months, 26% for 1 - 2 years and finally 34.4% had been a member of their community for more than 2 years. Only 9.2% of the participants indicated to be a member of their community for less than 3 months.

Most participants visited their community regularly. With regard to the frequency members visited their community during the last 3 months, 11.8% of the participants did not visit the community to which they were registered at all, 12.6% visited it once, 18.5% of the participants went to see it once every two weeks, 26.1% visited its community 1 - 3 times a week, 20.2% visited it 4 - 7 times a week and finally 10.9% visited its community more than once a day.

Most participants spent quite some time in their community. 13.7% of the participants indicated not to spend any time at all. 55.8% of the respondents spent 1 – 60 minutes, 21.4% spent 1 – 4 hours and at last, 9.2% of the respondents spent more than 4 hours during the last 4 weeks within their community.

Most participants did not contribute a lot to their community. With regard to community activity, 45% of the participants did not contribute to their community at all, 33.6% contributed 1 – 4 posts, 11.4% contributed 5 – 10 posts, 7.7% contributed 12 – 40 posts and finally 2.4% indicated to contribute 50 – 120 posts per month to their community.

Most participants read several posts in their community. 13.7% of the participants indicated not to read any post at all. This corresponds to the 13.7% of participants that did not spend any time in their community for the last 4 weeks. 10.7% of the participants read 1 – 4 posts, 22.1% reads 5– 10 posts, 29.8% read 12 – 40 posts, 14.5% reads 50 – 120 posts, 6.8% read 150 – 400 posts and 2.4% indicated to read 500 – 1000 posts each month.

Most participants hardly asked any question within their community. With regard to the frequency of questions asked per month, 55% of the participants did not ask any question at all, 35.9% asked 1 – 4 questions, 8.4% asked 5 – 10 questions and 0.8% indicated to ask 20 questions per month.

Most participants considered their community software easy to use. On a 7-point Likert scale, participants were asked to assess their OC's usability ranging from 'very difficult' to 'very easy'. On average, participants indicated that their community software is easy to use ( $\bar{X} = 6.0$ ,  $SD = 1.26$ ). Finally, almost 23% (22/110) of the participants participated in their community using email only.

### **5.1.3 Membership motivation**

Participants became member of their community mainly because of information and relational based reasons. People were asked to indicate the reason(s) why they became member of their community. The results revealed two major classes of reasons. The first encompasses information based reasons, the second relational based ones. The information based reasons were to find information ( $n = 117$ ) and because of people's interest in the subject ( $n = 52$ ). The relational based reasons were getting social support ( $n = 42$ ), finding new contacts ( $n = 23$ ) and helping others ( $n = 21$ ). Members hardly indicated other reasons.

Most participants were only member of the community for which they participated. People were asked in how many other communities they were active. Respectively, 37.5% of the participants was not active in other communities, 16.8% indicated to be active in 1 other community, 15.2% indicated to be active within 3 – 5 other communities and 13% was active in more than 5 communities besides the one for which they participated.

Participants get mainly informational and relational benefits from being member of an OC. On a 7-point Likert scale ranging from 'fully disagree' to 'fully agree', every respondent had to assess several benefits that OHSCs provide. Participants were not asked for possible disadvantages of OHSCs. The communities' main benefits were information ( $\bar{X} = 6.5$ ), insight in the subject ( $\bar{X} = 6.4$ ), an opportunity to help others ( $\bar{X} = 5.8$ ), new contacts ( $\bar{X} = 5.2$ ) and social support ( $\bar{X} = 5.2$ ). Communities did not provide benefits such as recreation ( $\bar{X} = 2.7$ ), social recognition ( $\bar{X} = 3.3$ ), friendship ( $\bar{X} = 3.6$ ) or other benefits ( $\bar{X} = 4$ ).

### **5.1.4 Problems in the community**

Discussions held and questions asked within the community were perceived as sensitive due to their private nature. On a 7-point Likert scale ranging from 'fully disagree' to 'fully agree', participants were asked to assess the extent to which they perceived information shared within their community sensitive due to its private nature. General contributions ( $\bar{X} = 5.3$ ) made and questions ( $\bar{X} = 5.2$ ) asked within the community were perceived as very sensitive. The same holds for people's own contributions ( $\bar{X} = 4.9$ ) and questions ( $\bar{X} = 4.9$ ).

About half of the participants' nicknames disclosed their identity (52.9%), whereas the others remained anonymous (47.1%). For almost every community (90.1%), the choice of people's nickname was a fully individual choice and not made obligatory by the management of the community.

Most participants claimed to be willing to help others. When participants were asked whether they would help others with a specific (personal) problem if that would indicate a similar problem for themselves, 75% was willing to help by posting a non-anonymous message. 21% was willing to help if the message could be posted anonymously. Finally, 4% was not willing to help regardless whether one's identity was being disclosed or not.

On average, participants did not perceive any community problems. They were asked to judge the extent to which they perceived several typical community problems on a 7-point Likert scale ranging from 'fully disagree' to 'fully agree'. The largest problems for the community were too few active members ( $\bar{X} = 3.1$ ), too few members ( $\bar{X} = 2.7$ ), members that wait until others satisfy help requests ( $\bar{X} = 2.6$ ) and members who post too little ( $\bar{X} = 2.4$ ).

Participants indicated that community rules did not really exist. However, group norms had developed within the communities over the years. Participants were asked to assess several items on a 6-point Likert scale ranging from 'fully disagree' to 'fully agree' that measured the extent to which community norms were apparent. On average, it was not tolerated to gossip about other members ( $\bar{X} = 1.4$ ). Further, members did not disapprove others who did not contribute when they were known for their competence ( $\bar{X} = 1.6$ ). Off topic discussions were not tolerated ( $\bar{X} = 2.4$ ). The rules and norms within groups were not strict ( $\bar{X} = 3.2$ ). Further, participants did not expect that members who are known for their competence contribute every now and then ( $\bar{X} = 3.8$ ). Within the community, members slightly encouraged each other to contribute ( $\bar{X} = 4.5$ ). Finally, members that contributed on a regular basis could develop a reputation because of that ( $\bar{X} = 4.7$ ).

### 5.1.5 Value of the community and information exchanged

Participants considered the information exchanged within the community to be valuable. The value of information was measured using a 7-point Likert scale ranging from 'fully disagree' to 'fully agree'. The information posted within the communities examined is related ( $\bar{X} = 5.4$ ) to the topic of discussion. The messages posted are on average fairly interesting ( $\bar{X} = 5$ ) and useful ( $\bar{X} = 4.7$ ) for the members. There seemed to be some commercial content in the messages posted on the communities, but the amount is negligibly small ( $\bar{X} = 1.7$ ).

Most participants considered their community important. On the question: 'How important is your OC to you?' 54.9% of the respondents indicated their community to be above average of importance. Of these 54.9%, 19.8% indicated their community to be very important. Respectively 17.6% of all the participants indicated that their community is of average importance and 27.5% indicated their community to be less than average important. Of the 27.5% that considered their community less than average important, 8.4% indicated their community to be very unimportant.

#### **5.1.6 Relationships between members**

On average, participants were slightly relationally interested. Using a 7-point Likert scale ranging from 'fully disagree' to 'fully agree', several items that determine people's relational interest were measured. Participants considered being considered trustworthy by others important ( $\bar{X} = 4.7$ ). Having something useful to contribute ( $\bar{X} = 4.2$ ), having good relationships ( $\bar{X} = 4.1$ ) and making new contacts ( $\bar{X} = 4.1$ ) were considered somewhat important. Participants rated members' sympathy slightly unimportant ( $\bar{X} = 3.8$ ). Members considered having attention of others ( $\bar{X} = 2.9$ ) and being popular ( $\bar{X} = 2.6$ ) quite unimportant.

Participants did not communicate much with other community members outside their OC. The interaction that took place outside the community was measured using a 7-point Likert scale ranging from 'fully disagree' to 'fully agree'. The participants who responded to the question neither agreed nor disagreed on the statement that members communicate with each other outside the community ( $\bar{X} = 4.2$ ). On average, participants slightly disagreed on the propositions stated that members would call each other ( $\bar{X} = 3.1$ ), undertake activities together ( $\bar{X} = 3.1$ ), communicate via instant messengers ( $\bar{X} = 3.2$ ) or meet each other during face-to-face meetings ( $\bar{X} = 3.3$ ).



## 5.2 Hypotheses testing

This section tests the hypotheses that have been generated before. In order to structure the discussion, it follows the division that was used in chapter 3. Therefore, in the first part hypotheses about members' interests and the problems of interaction that exist in the online health support communities (OHSCs) are tested. Finally and most important, hypotheses about the effects and acceptance of different forms of social control are tested in the second part.

### 5.2.1 Interests and problems

Subsequently several hypotheses are tested. The first part is about members' interest, whereas the second part is about typical interaction problems.

#### 5.2.1.1 Interests of OHSC members

The first hypothesis predicted relational interest for members within OHSCs. The hypothesis that will be tested is the following:

H1: *In OHSCs, members are relationally interested.*

*Relational\_interest* has been measured by seven items. These items used a 7-point Likert scale ranging from 'fully disagree' to 'fully agree'. A mean score for the relational interest of each participant was calculated from the seven items.

On average, participants appear to have slightly relational interests ( $\bar{X} = 3.75$ ,  $SD = 1.50$ ,  $SE = .14$ ,  $n = 110$ ). To test whether participants have a significant degree of relational interest, two one-sample t-tests are conducted. The first one uses a test value of '3' (= slightly disagree) to test whether there is any relational interest at all. The second one uses a test value of '4' (= neither disagree nor agree) to test whether there are strong relational interests for the people examined.

The first one-sample t-test reveals a significantly positive mean difference from the test value of '3'. This shows that participants are not relationally uninterested and some relational interest does exist. The results for this test are illustrated in Table 5.

**Table 5: One-sample t-test for relational interest (1)**

|                     | Test Value = 3 (testing for existence of any relational interest) |     |                 |                 |   |        |
|---------------------|---|-----|-----------------|-----------------|---|--------|
|                     | t   | df  | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference |        |
|                     |   |     |                 |                 | Lower                                     | Upper  |
| Relational interest | 5,260   | 109 | ,000            | ,74935          | ,4670                                     | 1,0317 |

The second one-sample t-test shows a negative mean difference from a test value of '4', however not significantly. This shows that participants do have some, but no high relational interests. The results for this test are illustrated in Table 6.

**Table 6: One-sample t-test for relational interest (2)**

|                     | Test Value = 4 (testing for high degree of relational interest) |     |                 |                 |   |       |
|---------------------|---|-----|-----------------|-----------------|---|-------|
|                     | t   | df  | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference |       |
|                     |   |     |                 |                 | Lower                                     | Upper |
| Relational interest | -1,760  | 109 | ,081            | -,25065         | -,5330                                    | ,0317 |

### *Conclusion*

The t-tests confirm some relational interests for members of OHSCs. It can be concluded that on average a slight degree of relational interests exists within the examined OHSCs. Because of the former findings, hypothesis 1 finds evidence.

#### *5.2.1.2 Problems within OHSCs*

The second hypothesis predicted several problems of interaction that would obstruct the cooperative potential of OHSCs. The second hypothesis that will be tested is the following:

*H2: OHSCs experience a considerable degree of problems of trust, opportunity and loyalty.*

Participants were asked to assess several typical community problems. They were measured by 7-point Likert scales ranging from 'fully disagree' to 'fully agree'. One-sample t-tests are conducted to test whether participants perceive them to be problematic or not. A test value of '3' (= slightly disagree) is used to test whether they are perceived as non-problematic. Subsequently, problems of trust, opportunity and loyalty will be looked at.

*Problems of trust*

Problems of trust were measured by the following three items: people's perception of problems of trust, people's willingness to place trust and problems of trust because of the sensitivity of information. Subsequently, it is tested whether they significantly cause problems of trust.

*Community\_problems* measured perceived problems of trust by the item: 'members don't trust each other'. On average, members do not perceive problems of trust within their OHSC ( $\bar{X} = 1.49$ ,  $SE = .088$ ,  $n=97$ ). A one-sample t-test shows that this mean is significantly lower than the test value of '3',  $t(96) = -17.08$ ,  $p = .000$ . This confirms the non-existence of perceived problems of trust. The results of this test are displayed in Table 7.

**Table 7: One-sample t-test for perceived problems of trust**

|                                | Test Value = 3 (slightly disagree) |    |                 |                 |   |         |
|--------------------------------|------------------------------------|----|-----------------|-----------------|---|---------|
|                                | t                                  | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference |         |
|                                |                                    |    |                 |                 | Lower                                     | Upper   |
| Members don't trust each other | -17,088                            | 96 | ,000            | -1,50515        | -1,6800                                   | -1,3303 |

*Willingness\_to\_place\_trust* measured the extent to which members are willing to place trust in a typical hypothesized situation that would demand it. Participants had to choose one of three choices which varied in their degree of trust required to help others. A Chi-square test is conducted to assess if the three options are equally preferred. The results of this test are displayed in Table 8 and Table 9.

**Table 8: Contingency table for willingness to place trust**

|                             | Observed N | Expected N | Residual |
|-----------------------------|------------|------------|----------|
| No, don't give an answer    | 4          | 35,0       | -31,0    |
| Yes, an anonymous answer    | 22         | 35,0       | -13,0    |
| Yes, a non-anonymous answer | 79         | 35,0       | 44,0     |
| Total                       | 105        |            |          |

**Table 9: Chi-square test for willingness to place trust**

|                   | Willingness to place trust |
|-------------------|----------------------------|
| Chi-Square        | 87,600                     |
| df                | 2                          |
| Asymp. Sig.       | ,000                       |
| Exact Sig.        | ,000                       |
| Point Probability | ,000                       |

The Chi-square test shows a significant outcome,  $\chi^2(2) = 87.6$ ,  $p = .000$ . This indicates that participants did not equally prefer the three choices that were presented. Participants had clear preference for the option in which they would non-anonymously help another person ( $n = 79$ ).

A binomial test is conducted to assess if a considerable share of the participants is willing to place trust. Therefore *Willingness\_to\_place\_trust* has to be dichotomised. Participants who indicated to be willing to help anonymously are considered not to be willing to place trust in situations when necessary. These participants are assigned to category '0' (see Table 10). Participants who indicated willing to help others non-anonymously are considered to be willing to place trust in situations when necessary. They are assigned to category '1' (see Table 10). Participants who indicated not willing to help others are excluded for the reason it is unclear why they do not want to help other members.

Problems concerning participants' willingness to place trust are expected if more than 28.5%<sup>16</sup> is not willing to place trust. An exact binomial test indicates that the amount of participants that is not willing to place trust was not significantly larger than the test proportion; 22 of 100 participants were not willing to place trust,  $p = .080$ . This confirms the non-existence of problems for participants' willingness to place trust. The results of this test are displayed in Table 10.

**Table 10: Binomial test for willingness to place trust**

|   | Category | N   | Observed Prop. | Test Prop. | Exact Sig. (1-tailed) |
|---|----------|-----|----------------|------------|-----------------------|
| Willingness_to_place_trust_dichotomised | Group 1  | 22  | ,217822        | ,285000    | ,080                  |
|   | Group 2  | 79  | ,782178        |            |                       |
|   | Total    | 101 | 1,000000       |            |                       |

*Community\_problems* measured problems of trust because of the sensitivity of information by the item: 'members are afraid that personal experiences and knowledge shared might be used in a way that negatively affects them'.

Previously, the descriptive statistics showed that members of OHSCs exchange sensitive information. Yet, participants perceive no problems of trust because of the sensitivity of information ( $\bar{X} = 1.57$ ,  $SE = 0.096$ ,  $n = 98$ ). A one-sample t-test showed that this mean is significantly lower than the test value of '3',  $t(97) = -14.85$ ,  $p = .000$ . This confirms the non-

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<sup>16</sup> This proportion has been chosen on basis of a 7 point Likert scale that is used in this thesis more often. A research population 'slightly agrees' with a certain proposition if the mean value of a Likert scale is 5/7 (or 71.4%). This means that on average, no more than 2/7 (or 28.5%) is allowed to disagree with a certain proposition.

existence of problems of trust due to the sensitivity of information. The results of this test are displayed in Table 11.

**Table 11: One-sample t-test for problems due to the sensitivity of information**

|  | Test Value = 3 (slightly disagree) |    |                 |                 |   |         |
|--|------------------------------------|----|-----------------|-----------------|---|---------|
|  | t                                  | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference |         |
|  |                                    |    |                 |                 | Lower                                     | Upper   |
| Afraid that experiences and knowledge shared might be wrongly used | -14,848                            | 97 | ,000            | -1,42857        | -1,6195                                   | -1,2376 |

In sum, problems of trust were assessed on the basis of people's perception of problems of trust, people's willingness to place trust and the sensitivity of information. None of these did cause any problem of trust. Therefore is concluded that problems of trust are non-existent within the OHSCs examined.

#### *Problems of opportunity*

Problems of opportunity were measured by problems of free-riding and the volunteer's dilemma. Subsequently, these are tested if they significantly caused problems of opportunity.

*Community problems* measured the existence of problems of free-riding by the items: 'members show too little support to other members within the online community', 'members post too little within the online community' and 'members hesitate to share their personal experiences and knowledge'.

Participants disagreed that members show too little social support ( $\bar{X} = 1.85$ ,  $SE = .12$ ,  $n = 98$ ). A one-sample t-test showed that this mean is significantly lower than the test value of '3',  $t(97) = -9.91$ ,  $p = .000$ . Further, participants disagreed that members of their community posted too little ( $\bar{X} = 2.44$ ,  $SE = .16$ ,  $n = 98$ ). A one-sample t-test showed that this mean is significantly lower than the test value of '3',  $t(98) = -3.378$ ,  $p = .001$ . Finally, participants disagreed that members of their OHSC hesitate to share personal knowledge and experiences with others ( $\bar{X} = 1.84$ ,  $SE = .13$ ,  $n = 99$ ). A one-sample t-test showed that this mean is significantly lower than the test value of '3',  $t(98) = -8.74$ ,  $p = .000$ . These findings confirm the non-existence of problems of free-riding. The test is displayed in Table 12.

**Table 12: One-sample t-test for problems of free-riding**

|   | Test Value = 3 (slightly disagree) |    |                 |                 |   |        |
|---|------------------------------------|----|-----------------|-----------------|---|--------|
|   | t                                  | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference |        |
|   |                                    |    |                 |                 | Lower                                     | Upper  |
| Show too little social support            | -9,910                             | 97 | ,000            | -1,15306        | -1,3840                                   | -,9221 |
| Post too little                           | -3,378                             | 98 | ,001            | -,55556         | -,8819                                    | -,2292 |
| Hesitate to share knowledge & experiences | -8,739                             | 98 | ,000            | -1,16162        | -1,4254                                   | -,8978 |

*Community\_problems* measured the existence of volunteer's dilemma related problems by the item: 'members wait until others satisfy members' help requests'. Participants disagreed that members wait until others satisfy help requests that occur within the OHSC ( $\bar{X} = 2.60$ ,  $SE = .18$ ,  $n=99$ ). A one-sample t-test showed that this mean is significantly lower than the test value of '3',  $t(97) = -2.16$ ,  $p=.033$ . This confirms the non-existence of volunteer's dilemma related problems. The test is displayed in Table 13.

**Table 13: One-sample t-test for volunteer's dilemma related problems**

|  | Test Value = 3 (slightly disagree) |    |                 |                 |   |        |
|--|------------------------------------|----|-----------------|-----------------|---|--------|
|  | t                                  | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference |        |
|  |                                    |    |                 |                 | Lower                                     | Upper  |
| Wait until others satisfy members' help requests | -2,164                             | 98 | ,033            | -,39394         | -,7553                                    | -,0326 |

Problems of opportunity were assessed on the basis of problems of free-riding and the volunteer's dilemma. None of these did significantly cause any problem of opportunity. Therefore can be concluded that problems of opportunity are non-existent within the OHSCs examined.

*Problems of loyalty*

*Community\_problems* measured people's perception of the variation in the amount of members for their community by the item: 'the amount of members varies too much'. On average, participants did not perceive any problems regarding too much variation in the amount of members within their OHSC ( $\bar{X} = 1.98$ ,  $SE = 0.12$ ,  $n=98$ ). A one-sample t-test showed that this mean is significantly lower than the test value of '3',  $t(97) = -2.16$ ,  $p=.033$ . This confirms the non-existence of problems of loyalty. The test is displayed in Table 14.

**Table 14: One-sample t-test for problems of loyalty**

|                                   | Test Value = 3 (slightly disagree) |    |                 |                 |   |        |
|-----------------------------------|------------------------------------|----|-----------------|-----------------|---|--------|
|                                   | t                                  | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference |        |
|                                   |                                    |    |                 |                 | Lower                                     | Upper  |
| Amount of members varies too much | -8,596                             | 97 | ,000            | -1,02041        | -1,2560                                   | -,7848 |

### *Conclusion*

The second hypothesis predicted that problems of trust, opportunity and loyalty would obstruct OHSCs reaching their full cooperative potential. Contrary to the expectations, participants perceived none of these to be problematic. Therefore, we find no support for the hypothesis that problems of trust, opportunity and loyalty exist within the OHSCs examined.

### **5.2.2 Effectiveness of different dimensions of social control**

Subsequently hypotheses are tested about the effectiveness of different dimensions of social control. The first part is about social control characterized by different forms of directness, whereas the second part is about different forms of positivity.

#### *5.2.2.1 Social control characterized by its directness*

The third hypothesis predicted that indirect monitoring forms of social control would be most effective and accepted by members to stimulate people's contributive behaviour within OHSCs. The hypotheses that will be tested are the following:

H3a: *In OHSCs, weak forms of social control are more effective than strong forms.*

H3b: *In OHSCs, weak forms of social control are more accepted by members than strong forms.*

A first experiment was conducted to test these hypotheses. The experiment tested the effects and acceptance of different forms of social control in stimulating people's contributive behaviour (see section 4.5.1 for full details about the first experimental design). From the data, scales for the effect as well as the acceptance of different forms of social control were constructed.

The scales were constructed by means of principal component analysis and oblique rotation in order to control for bias concerning social desirability (Jo et al., 1997). For each scale, a three-factor solution was calculated using SPSS based on 6 items that were measured in the experiment. The factor that measured the construct of interest is used further in the analysis. The other ones are excluded because they encompass error loadings due to social desirability and method variance.

Scales constructed by means of factor analysis have a mean of '0' and a variance of '1'. These scales have several limitations because they represent factor scores calculated by means of principal component analysis. First of all, they are not comparable with other factor scales. Secondly, factor scores do not represent participant's actual scores for a certain scale. Thirdly, principal component analysis assumes that the sample used considers the research population. Conclusions based on a scale calculated by means of principal component analysis are therefore restricted to the research sample (Field, 2005).

For this analysis, factor scores are used because they make it possible to reduce bias concerning social desirability which is likely to occur in the experiment. Thereby it is possible to examine the effects and acceptance of different forms of social control. The results are provided hereafter.

To start with, the effects of application of different forms of social control characterized by its directness in stimulating people's contributive behaviour in OHSCs are examined. The effects for each form of social control are examined separately. One-sample t-tests will use a test value of '0' to determine whether the effects significantly differ from the mean. After that, the effects of application of different forms of social control are compared.

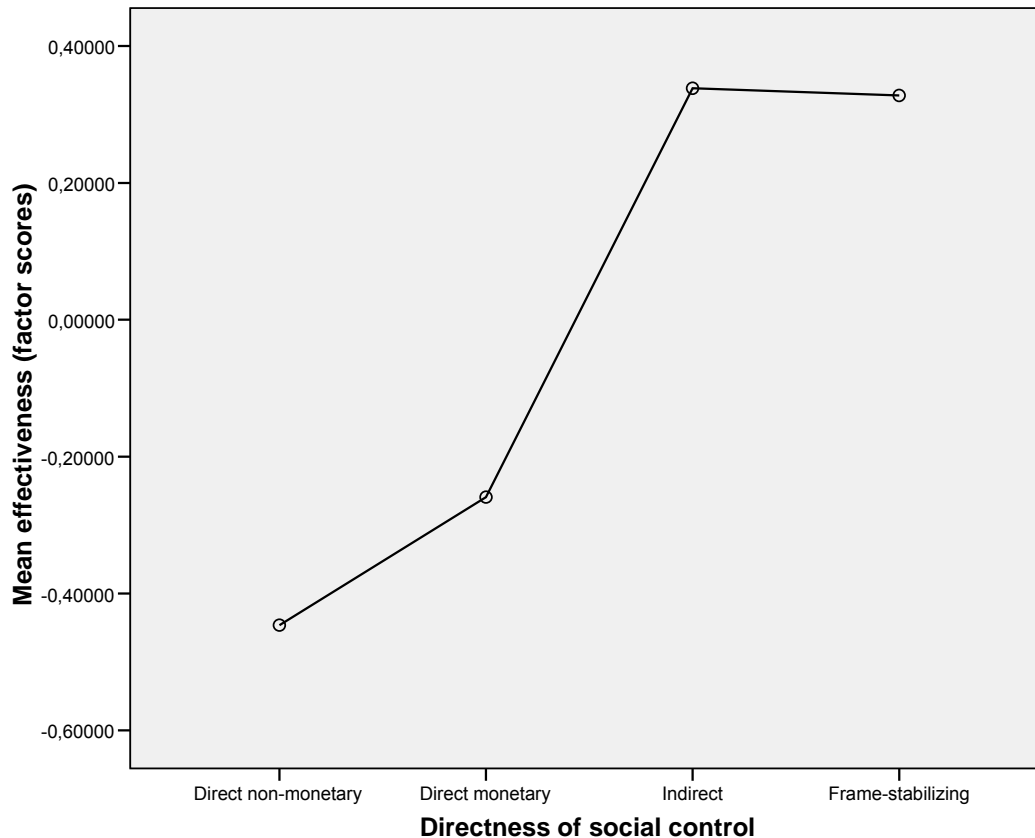
Application of direct monetary forms of social control in stimulating people's contributive behaviour ( $\bar{X} = -.26$ ,  $SE = .20$ ,  $n = 26$ ), shows a negative effect compared to the mean. This difference is not significant,  $t(25) = -1.275$ ,  $p = .107$  (one-tailed). Application of direct non-monetary forms of social control in stimulating people's contributive behaviour ( $\bar{X} = -.45$ ,  $SE = .24$ ,  $n = 23$ ) does also show a negative effect in comparison with the mean. This difference is however significant,  $t(22) = -1.881$ ,  $p = .037$  (one-tailed).

In contrast, application of indirect monitoring forms of social control in stimulating people's contributive behaviour ( $\bar{X} = .34$ ,  $SE = .17$ ,  $n = 27$ ) shows a positive effect in comparison with the mean. This difference is significant,  $t(26) = 1.993$ ,  $p = .029$  (one-tailed). Application of frame-stabilizing forms of social control in stimulating people's contributive behaviour ( $\bar{X} = .33$ ,  $SE = .14$ ,  $n = 24$ ) shows a positive effect compared to the mean. This difference is again significant,  $t(26) = 2.276$ ,  $p = .016$  (one-tailed).



An analysis of variance is conducted to compare the effects of application of different forms of social control. This analysis reveals a significant linear trend,  $F(3, 96) = 4.41, p = .006, r = .35$ . This implies that *as social control becomes weaker, it becomes more effective in stimulating contributive behaviour of members of OHSCs*<sup>17</sup>. This trend is illustrated in Figure 4.

Figure 4: The effectiveness of social control characterized by its directness



Direct monetary ( $\bar{X} = -.26, SE = .20, n = 26$ ) and direct non-monetary ( $\bar{X} = -.45, SE = .24, n = 23$ ) forms of social control do not significantly differently affect people's contributive behaviour,  $t(47) = -.602, p = .55$ . Therefore they are combined as 'strong' forms of social control.

Likewise, indirect monitoring ( $\bar{X} = .34, SE = .17, n = 27$ ) and frame-stabilizing ( $\bar{X} = .33, SE = .14, n = 24$ ) forms of social control do not significantly differently affect people's contributive behaviour either,  $t(49) = .047, p = .963$ . These are combined as 'weak' forms of social control.

Strong forms of social control (direct monetary and direct non-monetary,  $\bar{X} = -.35, SE = .15, n = 49$ ) are significantly less effective in stimulating people's contributive behaviour than weak forms

<sup>17</sup> The analysis of variance reveals a significant linear trend. Yet, indirect forms of social control are an exception to this trend as they are slightly more effective than frame-stabilizing forms. This is illustrated by the graph in Figure 4.

of social control (indirect monitoring and frame-stabilizing,  $\bar{X} = .33$   $SE = .11$ ,  $n = 51$ ),  $U = 746$ ,  $p = .000^{18}$ .

Strong forms of social control show a significantly negative effect in comparison with the mean,  $t(48) = -2.253$ ,  $p = .015$  (one-tailed). Weak forms of social control show a significantly positive effect compared to the mean,  $t(50) = 2.991$ ,  $p = .002$  (one-tailed).

In general, results for acceptance of application of different forms of social control characterized by its directness in stimulating people's contributive behaviour, are analogue to the results of the effects of application of different forms of social control.

First, people's acceptance of each form of social control is examined separately. One-sample t-tests will use a test value of '0' to assess whether people's acceptance significantly differs from the mean. After that, people's acceptance of different forms of social control is compared.

Application of direct monetary forms of social control in stimulating people's contributive behaviour ( $\bar{X} = -.33$ ,  $SE = .19$ ,  $n = 26$ ) is negatively accepted in comparison with the mean. This difference is significant,  $t(26) = -1.734$ ,  $p = .0475$  (one-tailed). Application of direct non-monetary forms of social control in stimulating people's contributive behaviour ( $\bar{X} = -.62$ ,  $SE = .19$ ,  $n = 23$ ) is also negatively accepted compared to the mean. This difference is again significant,  $t(22) = -3.248$ ,  $p = .002$  (one-tailed).

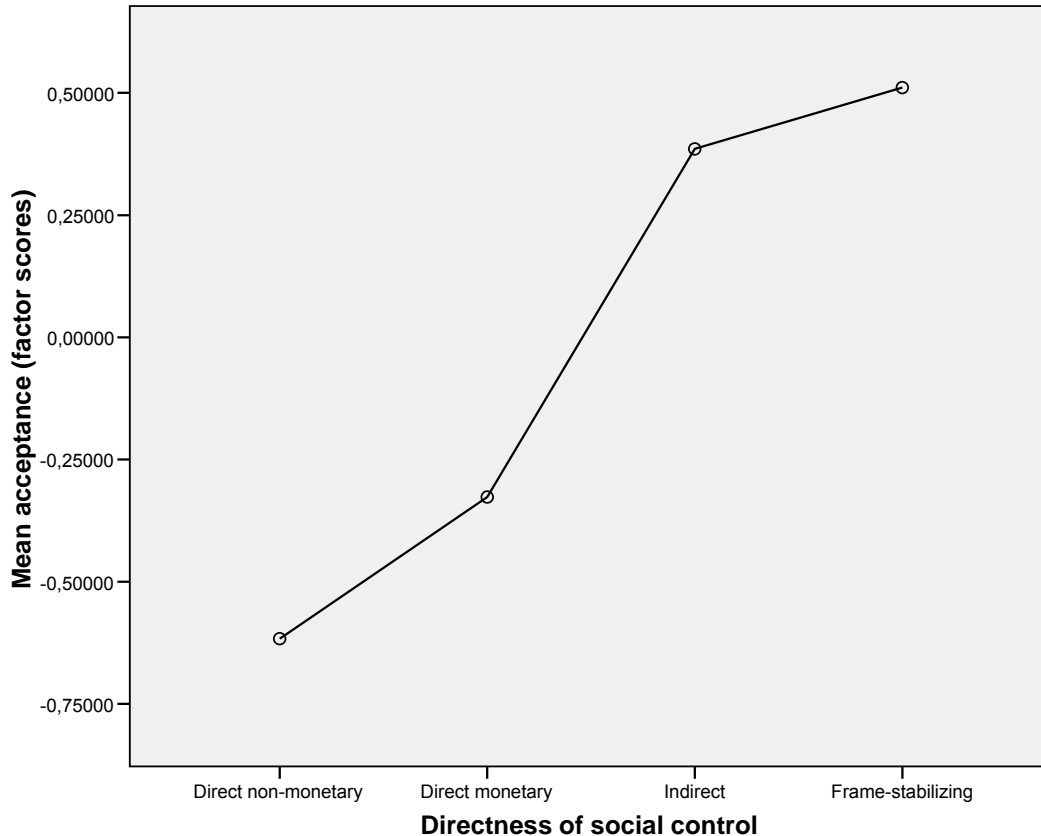
In contrast, application of indirect monitoring forms of social control in stimulating people's contributive behaviour ( $\bar{X} = .39$ ,  $SE = .17$ ,  $n = 27$ ) is positively accepted in comparison with the mean. This difference is significant,  $t(26) = 2.306$ ,  $p = .0145$  (one-tailed). Application of frame-stabilizing forms of social control in stimulating people's contributive behaviour ( $\bar{X} = .51$ ,  $SE = .17$ ,  $n = 24$ ) is also positively accepted compared to the mean. This difference is again significant,  $t(23) = 2.977$ ,  $p = .0035$  (one-tailed).

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<sup>18</sup> A Mann-Whitney U test was conducted because parametric assumptions of the independent t-test were violated.

An analysis of variance is conducted to compare people's acceptance of application of different forms of social control. This analysis reveals a significant linear trend,  $F(3, 96) = 9.03, p = .000, r = .47$ . This implies that *as social control becomes weaker, it is more accepted in stimulating contributive behaviour of members of OHSCs*. This trend is illustrated in Figure 5.

Figure 5: The acceptance of social control characterized by its directness



Direct monetary ( $\bar{X} = -.33, SE = .19, n = 26$ ) and direct non-monetary ( $\bar{X} = -.62, SE = .19, n = 23$ ) forms of social control are not significantly differently accepted,  $t(47) = -1.080, p = .286$ . Therefore they are combined as 'strong' forms of social control.

Likewise, indirect monitoring ( $\bar{X} = .39, SE = .17, n = 27$ ) and frame-stabilizing ( $\bar{X} = .51, SE = .17, n = 24$ ) forms of social control are not significantly differently accepted either,  $t(49) = -.522, p = .604$ . These are combined as 'weak' forms of social control.

Strong forms of social control (direct monetary and direct non-monetary,  $\bar{X} = -.46, SE = .13, n = 49$ ) are significantly less accepted by members to stimulate people's contributive behaviour than weak forms of social control (indirect monitoring and frame-stabilizing,  $\bar{X} = .44, SE = .12, n = 51$ ),  $t(98) = -5.070, p = .000$ .

Strong forms of social control are significantly negatively accepted in comparison with the mean,  $t(48) = -3.449$ ,  $p = .0005$  (one-tailed). Weak forms of social control are significantly positively accepted compared to the mean,  $t(50) = 3.737$ ,  $p = .000$  (one-tailed).

### *Conclusion*

Former findings confirm the predictions of the hypotheses. Different forms of social control are significantly differently effective and accepted by members. As social control becomes weaker, they are perceived as more effective in stimulating contributive behaviour of members of OHSCs. Additionally, members increasingly accept application of such forms of social control.

On the contrary, as social control becomes stronger, they are perceived as less effective in stimulating OHSC members' contributive behaviour. Additionally, members decreasingly accept application of such forms of social control. Because of the former findings, the hypotheses find evidence.

One interesting point is that the effectiveness and acceptance of indirect monitoring and frame-stabilizing forms of social control does not significantly differ for the OHSCs examined. The same applies for direct non-monetary and direct monetary forms of social control.

#### *5.2.2.2 Social control characterized by its positivity*

The fourth hypotheses predicted that positive forms of social control would be more effective than negative forms in stimulating people's cooperative behaviour within OHSCs. Additionally, negative forms of social control would be more effective in avoiding unacceptable behaviour than in stimulating desired behaviour. Finally, weak, positive forms of social control were expected to be the most effective combination (concerning the ones examined) in stimulating cooperate behaviour. The hypotheses that will be tested are the following:

H4a: *In OHSCs, positive forms of social control are more effective than negative forms in stimulating desired behaviour.*

H4b: *In OHSCs, negative forms of social control are more effective in avoiding unacceptable behaviour than in stimulating desired behaviour.*

H4c: *In OHSCs, weak, positive forms of social control are perceived as the most effective combination of social control (concerning the ones examined) in stimulating desired behaviour.*

A second experiment was conducted to test these hypotheses. The experiment included four hypothetical though realistic scenarios. It tested the effectiveness of different dimensions of social control characterized by its directness<sup>19</sup> and positivity<sup>20</sup> in stimulating different kinds of typical community behaviour<sup>21</sup>. The experimental design included between-group and within-group variables. Therefore, a two-way mixed analysis of variance is conducted (see section 4.5.2 for full details about the second experimental design).

Contrary to the first experiment, the second experiment did not control for bias concerning social desirability by means of factor scores. It was not viable for participants to assess all items in three-fold in order to construct factor scores. Therefore people's tendency to give socially desirable answers was measured by a scale of social desirability as proposed in Paulhus (1991). Data from those participants who scored more than '1' for *Social\_desirability* were excluded from subsequent analysis. This resulted in the exclusion of the data of 4 participants during the hypotheses testing hereafter<sup>22</sup>.

Hypothesis 4a predicted that positive forms of social control would be perceived more effective than negative forms of social control in stimulating desired behaviour. A two-way mixed analysis of variance revealed a significant main effect for social control characterized by its positivity,  $F(1, 91) = 95.781, p = .000$ . This indicates that positive and negative social control significantly differently affects desired behaviour.

A paired t-test is conducted to test whether positive social control is more or less effective than negative social control. This test shows that on average, positive forms of social control ( $\bar{X} = 3.51, SE = .15, n = 95$ ) are significantly more effective in stimulating cooperative behaviour than negative forms of social control ( $\bar{X} = 2.00, SE = .13, n = 95$ ),  $t(94) = 9.79, p = .000, r = .71$ . These effects are illustrated in Figure 6.

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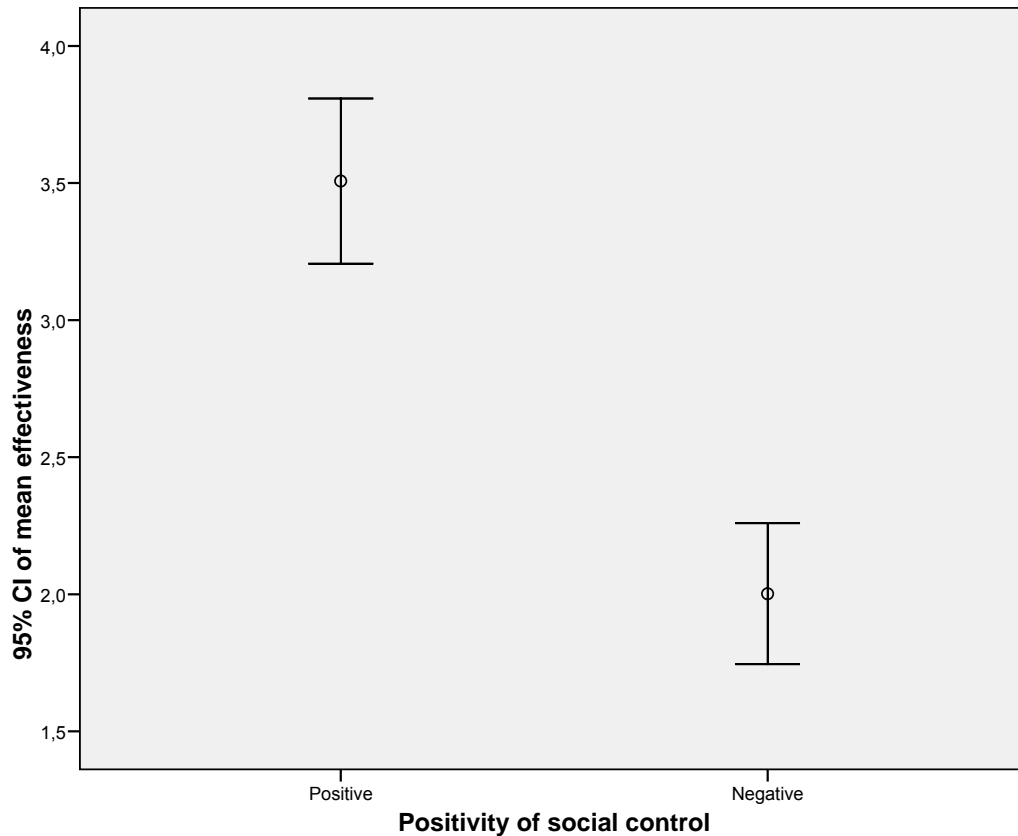
<sup>19</sup> Direct, indirect monitoring and frame-stabilizing

<sup>20</sup> Positive and negative

<sup>21</sup> Respecting others, contribute to info or support requests, helping new members and reminding others to stay on topic

<sup>22</sup> Excluding participants who scored '1' or more for *Social\_desirability* would result in too much data loss. Data from participants who scored more than '1' for *Social\_desirability* were excluded because they were supposed to give too socially desirable answers. The conclusions did not change due to the exclusion of the data.

Figure 6: The effectiveness of social control characterized by its positivity

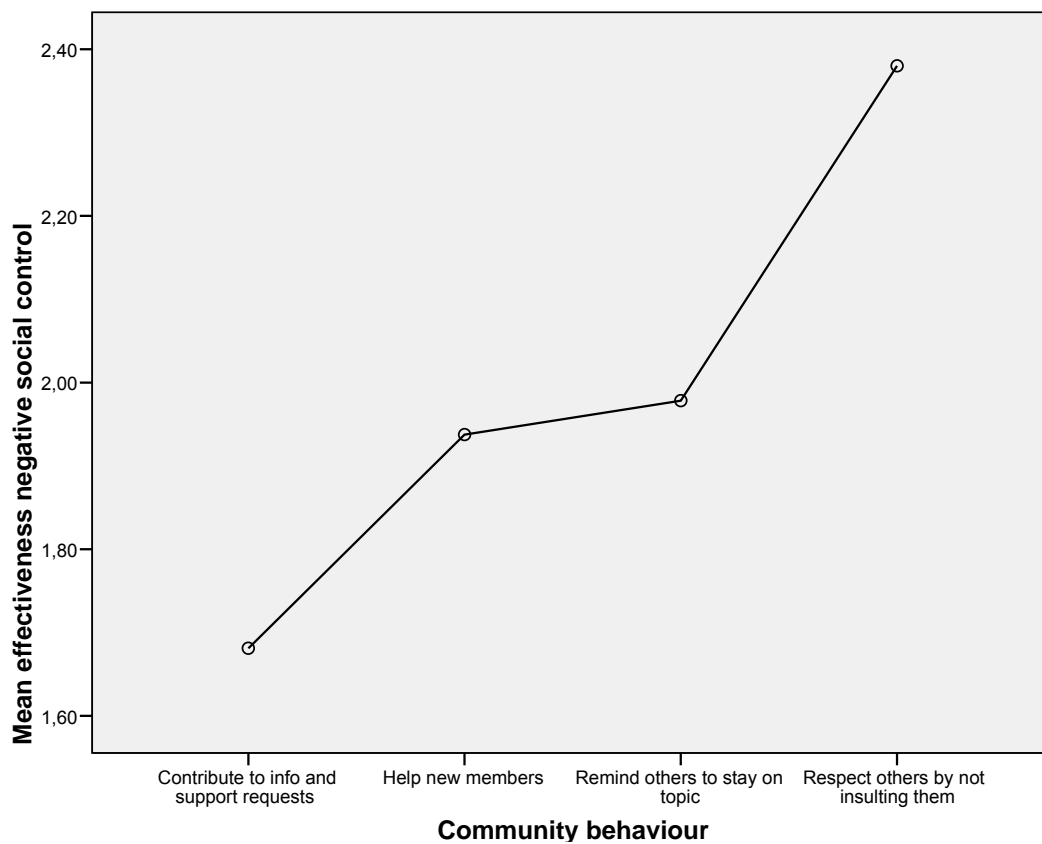


Hypothesis 4b predicted that negative social control is more effective in avoiding unacceptable behaviour than in stimulating desired behaviour. This is supported by the data. The results of the experiment show that negative social control is perceived as most effective in avoiding behaviour of members who do not respect others by insulting them ( $\bar{X} = 2.38$ ,  $SE = .26$ ,  $n = 25$ ).

Negative social control is perceived less effective in stimulating desired behaviour. It was perceived less effective in stimulating members: reminding others to stay on topic ( $\bar{X} = 1.98$ ,  $SE = .30$ ,  $n = 23$ ), helping new members ( $\bar{X} = 1.94$ ,  $SE = .24$ ,  $n = 24$ ) and contributing to others' information or support requests ( $\bar{X} = 1.68$ ,  $SE = .23$ ,  $n = 23$ ). An analysis of variance shows that the effectiveness of negative social control in stimulating three different kinds of desired behaviour, does not significantly differ,  $F(2, 67) = .384$ ,  $p = .683$ .

An independent t-test is used to assess whether the effectiveness of negative social control in avoiding unacceptable behaviour ( $\bar{X}=2.38$ ,  $SE = .26$ ,  $n = 25$ ) and in stimulating desired behaviour ( $\bar{X}=1.87$ ,  $SE = .15$ ,  $n = 70$ ) differs. The test reveals a significant difference,  $t(93) = 1.765$ ,  $p=.04$  (one-tailed). This confirms that negative social control is perceived as significantly more effective in avoiding unacceptable behaviour than in stimulating desired behaviour. The finding that negative social control is perceived as most effective in avoiding unacceptable behaviour is graphically displayed in Figure 7.

Figure 7: The effectiveness of negative social control for different community behaviour



Hypothesis 4c predicted that weak, positive forms of social control are perceived as the most effective combination (concerning the ones examined) in stimulating contributive behaviour within OHSCs. Previous findings of this study are used to test this hypothesis.

First of all, hypothesis 4a found evidence that positive social control is perceived as more effective in stimulating cooperative behaviour than negative social control.

Secondly, hypothesis 3a of the first experiment found that weak forms of social control are perceived as more effective in stimulating contributive behaviour than strong forms. This is also confirmed for the second experiment; a two-way mixed analysis of variance reveals a significant

main effect for the directness of social control,  $F(2, 182) = 43.417, p = .000$ . This indicates that direct, indirect monitoring and frame-stabilizing forms of social control significantly differently affect desired behaviour. Graphs of the combined effectiveness clearly confirm that weak, positive forms of social control are the most effective combination in stimulating cooperative behaviour, see Figure 8, Figure 9, Figure 10 and Figure 11.

Figure 8: Combined effectiveness of social control: reminding others to stay at topic

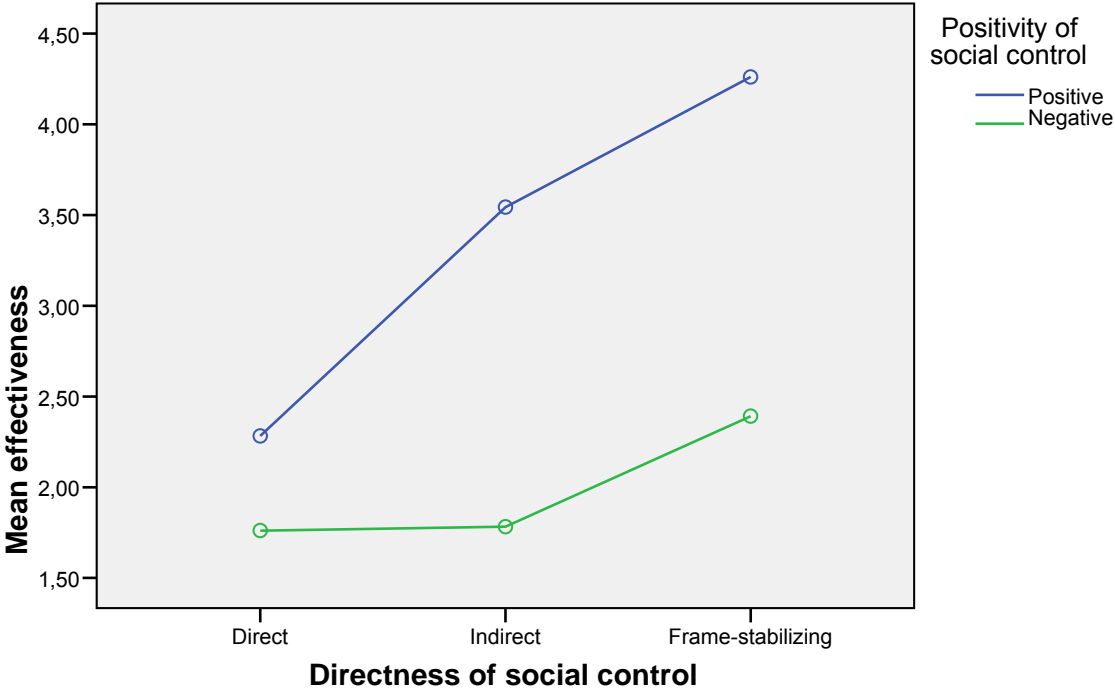


Figure 9: Combined effectiveness of social control: helping new members

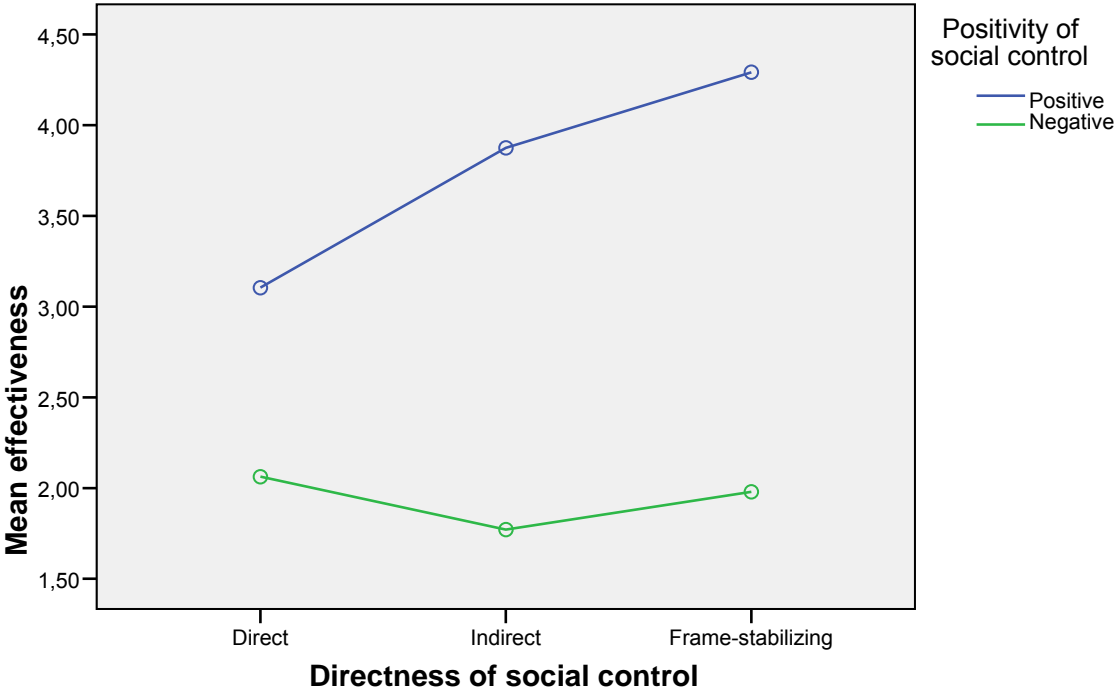




Figure 10: Combined effectiveness of social control: contributing to others' requests

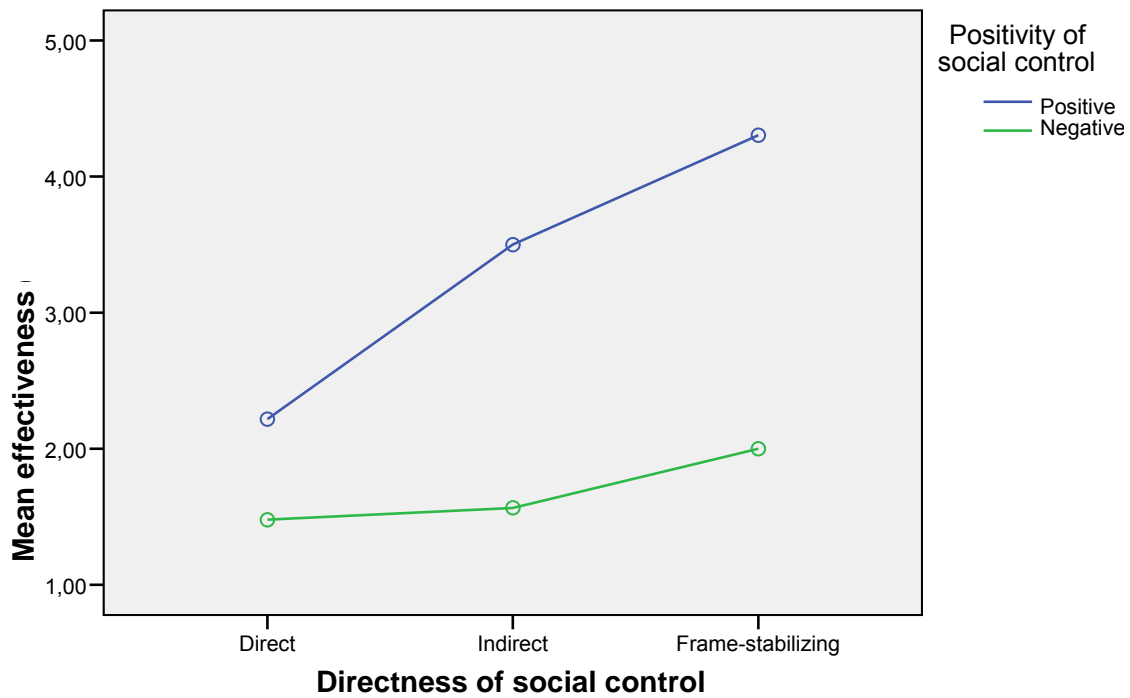
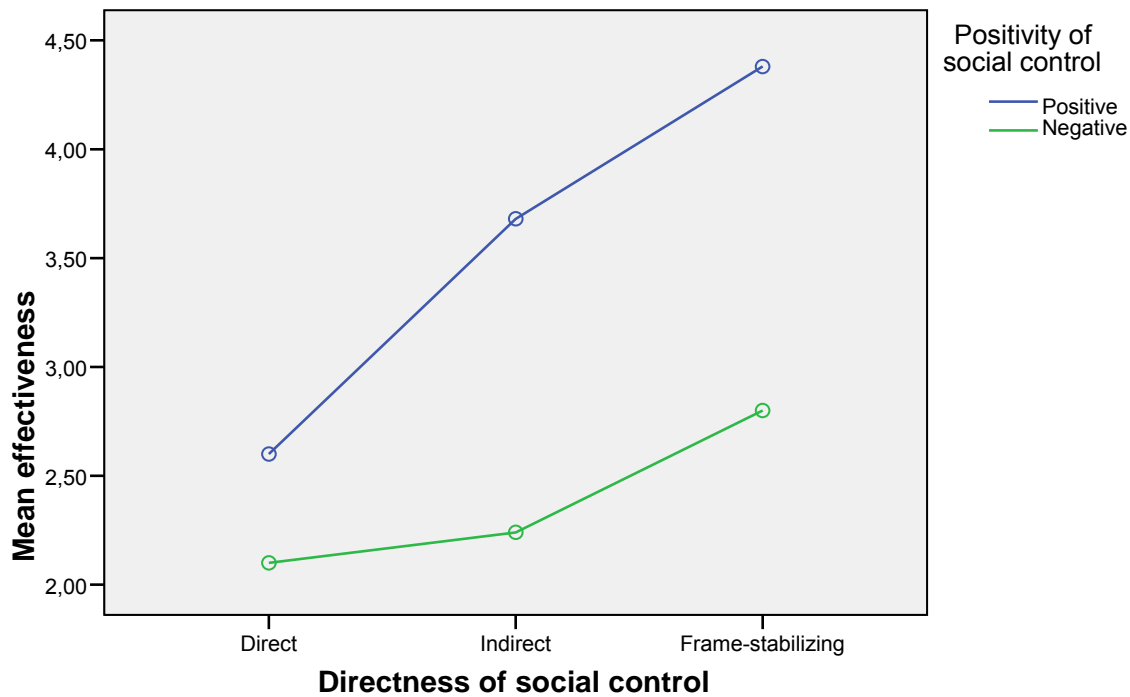


Figure 11: Combined effectiveness of social control: respecting others by not insulting them



The graphs in Figure 8, Figure 9, Figure 10 and Figure 11 seem to reveal something else that is worth mentioning. The graphs show non-parallel lines; this usually indicates a significant interaction effect<sup>23</sup> (Field, 2005).

<sup>23</sup> The interaction effect is not necessary to test hypothesis 4c.

The graphs show that for positive forms of social control, the effectiveness rapidly inclines as its combined form becomes weaker. The effectiveness of negative social control is more stable for different forms of directness (as is shown by a more horizontal line).

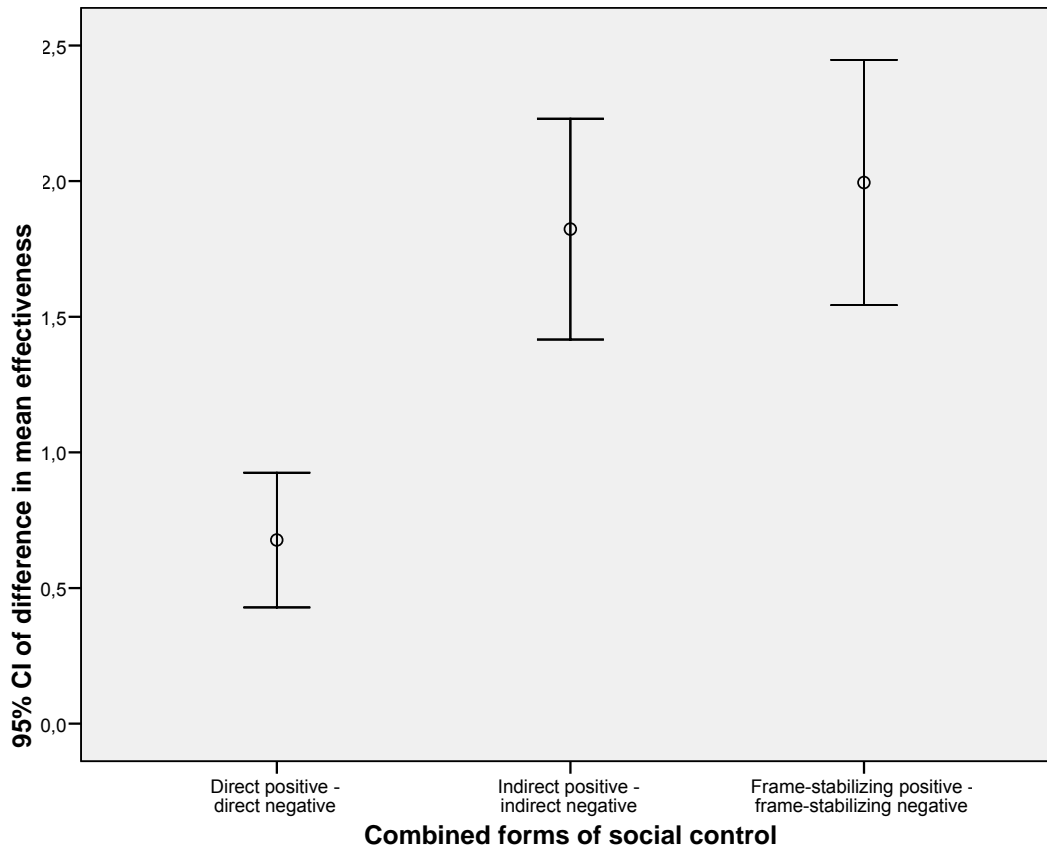
A two-way mixed analysis of variance is used to reveal any interaction effect between the directness and positivity of social control. The interaction effect is significant,  $F(1.911, 173.917) = 22.166, p = .000^{24}$ . The interaction effect tells that the directness of social control has little effect for negative forms of social control and that the effect of directness is prevalent mainly for positive social control.

Paired t-tests are conducted to test for significant differences in mean effectiveness of different combined forms of social control. The results of the test show that the mean effectiveness is significantly larger for frame-stabilizing positive and frame-stabilizing negative forms of social control ( $\bar{X} = 2.00, SE = .23, n = 99$ ) than for direct positive and direct negative forms of social control ( $\bar{X} = .68, SE = .13, n = 99$ ),  $t(98) = 6.271, p = .000, r = .54$ . Additionally, the mean effectiveness is significantly larger for indirect positive and indirect negative forms of social control ( $\bar{X} = 1.82, SE = .21, n = 99$ ) than for direct positive and direct negative forms of social control ( $\bar{X} = .68, SE = .13, n = 99$ ),  $t(98) = 6.508, p = .000, r = .55$ . The mean effectiveness is not significantly different for indirect positive and indirect negative forms of social control ( $\bar{X} = 1.82, SE = .21, n = 99$ ) and frame-stabilizing positive and frame-stabilizing negative forms of social control ( $\bar{X} = 2.00, SE = .23, n = 99$ ),  $t(98) = .761, p = .448$ . The differences in combined effectiveness are graphically illustrated in Figure 12.

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<sup>24</sup> The corrected Huynh-Feldt F statistic is reported because assumptions of sphericity were violated.

Figure 12: Difference in combined effectiveness of social control



*Conclusion*

The former findings confirm the predictions of the hypotheses. Positive social control is perceived to be significantly more effective in stimulating cooperative behaviour than negative social control. Negative social control is significantly more effective in avoiding unacceptable behaviour than in stimulating desired behaviour. Further, positive, weak forms of social control are perceived as the most effective combination (concerning the ones examined) in stimulating desired behaviour within OHSCs. Because of the former findings, the hypotheses find evidence. One interesting point is that earlier it was concluded that weaker forms of social control were significantly more effective than strong forms; however, an interaction effect demonstrated that this is especially true for positive forms of social control (negative forms appear to be more unaffected).

### 5.3 Conclusion

This section summarizes the main findings of the previous section. It recapitulates the hypotheses and concludes whether they are supported by the results or not. If not, some explanations are discussed.

*H1: In OHSCs, members are relationally interested.*

This hypothesis found evidence because a slight amount of relational interest existed for the members of the OHSCs that were studied. This means among other things, that social interaction is important to fulfil individual goals -such as obtaining information or getting support- for members of OHSCs.

*H2: OHSCs experience a considerable degree of problems of trust, opportunity and loyalty.*

No support was found for this hypothesis; problems of trust, opportunity and loyalty could not be confirmed for the OHSCs examined. An explanation for the non-existence of these problems in general, is that the research sample contained many active members. The results showed that for a typical month, 55% of the participants contributed at least 1 post to their community. It is therefore quite plausible that members, who are contributing anyhow, did not perceive problems at the first place. Subsequently, more specific explanations for the non-existence of each problem are given separately.

Problems of trust were mainly expected because unintended disclosure of information could have negative implications. The results did show that contributions made and questions asked within the community were perceived as very sensitive by participants. Yet, no problems of trust were perceived. Several explanations are possible. A first explanation is that participants were found very willing to place trust in others. Because of that, participants simply did not fear situations of unintended disclosure of the information they shared. Another explanation is that although many participants contributed, a reasonable share did not contribute much, which makes problems of trust less likely to occur. For a typical month, 45% of the participants indicated not to contribute at all; 33.6% of the participants only contributed 1 – 4 posts. This can explain why the majority of participants did not perceive problems of trust.

Problems of opportunity (in specific: problems of free-riding) were expected because a OHSC would have many lurking members. An explanation is that the share of lurkers was not sufficiently large to cause problems of opportunity. The results showed that for a typical month 45% of the participants did not contribute. Previous research found different levels of lurking;

some even up to 99% (Nonnecke, 2000; Nonnecke & Preece, 2000, 2001; Preece et al., 2004). Probably, 45% is not sufficiently large to cause problems of opportunity in OHSCs. Another explanation concerns the motivation of non-lurking members. Previous research found that a particular share of members just wants to help others (Rice & Katz, 2001). The results showed that participants perceived 'the opportunity to help others' as one of the major benefits of the OHSC they were member of. This might indicate that members were sufficiently motivated to help others although many lurkers were apparent in the OHSC.

Finally, problems of loyalty were expected because on the internet many OHSCs could exist that may be perceived as substitutes by participants. An explanation for these problems to be non-apparent is that no comparable OHSCs exist on the web (at least to participants' knowledge). The results showed that a large share (37.5%) of the participants was only active in the community for which they participated. This might indicate that participants preferred to stay within the community.

H3a: *In OHSCs, weak forms of social control are more effective than strong forms.*

H3b: *In OHSCs, weak forms of social control are more accepted by members than strong forms.*

These two hypotheses found evidence. The first experiment showed that as social control becomes weaker, the more it is perceived as effective and accepted by members to stimulate contributive behaviour in OHSCs. In contrast, when social control becomes stronger, is perceived as less effective and accepted by members to stimulate contributive behaviour in OHSCs. A t-test confirmed that weak forms of social control were significantly more effective and accepted by members to stimulate cooperative behaviour than strong forms.

Further exploration revealed that both the effectiveness and acceptance of indirect monitoring and frame-stabilizing forms of social control do not significantly differ. The same applies to direct non-monetary and direct monetary forms of social control. An explanation for this finding might be the perception of participants. Strong forms of social control, whether non-monetary or monetary based, are not accepted by members or perceived as effective anyway; it does not make a huge difference if strong forms of social control are monetary based or not. Presumably this also explains why the acceptance and effectiveness of weak forms of social control, respectively indirect monitoring and frame-stabilizing, did not significantly differ. Another explanation might be that the sample size is too small to determine a significant difference amongst these forms of social control.

H4a: *In OHSCs, positive forms of social control are more effective than negative forms in stimulating desired behaviour.*

H4b: *In OHSCs, negative forms of social control are more effective in avoiding unacceptable behaviour than in stimulating desired behaviour.*

H4c: *In OHSCs, weak, positive forms of social control are perceived as the most effective combination of social control (concerning the ones examined) in stimulating desired behaviour.*

These three hypotheses found evidence. The results of the second experiment confirmed that positive social control was perceived as significantly more effective in stimulating cooperative behaviour than negative social control. Additionally, negative social control was perceived as significantly more effective in avoiding unacceptable behaviour than in stimulating desired behaviour. Finally, positive, weak forms of social control were perceived as the most effective combination (concerning the ones examined) in stimulating desired behaviour within OHSCs.

Further exploration of the combined effectiveness of social control characterized by different forms of directness and different forms of positivity showed an interaction effect. This resulted in an additional finding. Namely, earlier was concluded that weak forms of social control were significantly more effective than strong forms; however, the interaction effect demonstrated that this was particularly true for positive forms of social control. An explanation for this finding is that participants perceived the effectiveness of strong forms of positive social control as being similar to the effectiveness of negative forms. In other words, the more positive social control is characterized by strong forms, the more they are perceived as similar to 'punishments' by members of OHSCs. This finding may have important implications for many OCs that try to motivate members by social control that uses positive and negative forms simultaneously.

First of all, OCs have to consider that the effectiveness of positive and negative social control differs. Secondly, OCs must take into account that the difference in effectiveness for positive and negative social control becomes even larger as its directness becomes weaker. This implies that positive and negative forms of social control can not be applied simultaneously in stimulating one specific behavioural outcome of members in OHSCs. For example, it has different effects when members' dedication within OHSCs is stimulated by sending them messages that stress when people did a good job for the common group goal (positive) and sending people messages that emphasize when someone did a bad job (negative) for the common group goal. For these members, a positive message will be stimulating whereas a comparable negative message might be perceived as a sort of punishment. Such punishments might ultimately negatively impact the functioning of the whole community. Further research is necessary to examine this finding in depth.

## 6. Conclusions & Recommendations

This chapter provides the main conclusions of this research. First, in section 6.1 the main research question of this thesis is answered. The limitations of this research are discussed in section 6.2. In section 6.3 suggestions for further research are given. Finally, policy implications are provided in section 6.4.

### 6.1 Conclusion

This thesis examined the effects of different forms of social control in online health support communities (OHSCs). To recapitulate, the main research question of this thesis is:

*How do different forms of social control affect cooperative behaviour within online health support communities?*

To answer this question, a framework was constructed by means of the theory of online relational signalling (Matzat, 2008b) and knowledge about the effects of rewards and punishments in ordinary life (see for instance: Beck, 1978; Burnstein, 1982; Gibbs, 1982; Peype, 1981). The prevailing interest of individuals and the possibilities for social control to maximize OHSCs' public good creation was examined by means of survey data initially.

- Firstly, it can be concluded that for the OHSCs examined, *members are relationally interested*. This means among other things, that social interaction is important to fulfil individual goals -such as obtaining information or getting support- for members of OHSCs.
- Secondly, it can be concluded that for the OHSCs examined, *no problems of trust, opportunity and loyalty are apparent* that hinder the cooperative potential of the community. This means that application of social control is not necessary to overcome problems that obstruct these communities' cooperative potential for the moment. Nevertheless, the results of the experiments show that it is essential to apply appropriate forms of social control if future problems occur or community administrators want to stimulate members to behave according to the common group goal.

Previously, Matzat (2008a) examined the effects from the directness in social control within a transactional based community (eBay) and a teachers' community. Matzat's study is one of the few conducted that provided empirical evidence for the theory of online relational signalling. The theory of online relational signalling is quite new and not much evidence for its hypotheses is available yet (Matzat, 2008b, p. 25). Therefore the effects of social control characterized by its

directness were studied by means of experimental research in another online setting – which is OHSCs – to provide extensive empirical support for the theory of online relational signalling.

- Thirdly, it is concluded that in OHSCs *different forms of social control have different effects for members' cooperative behaviour*. This means that this study (like Matzat, 2008a) found that social control can not be applied without taking its specific form into consideration.
- Fourthly, for social control characterized by different forms of directness is concluded that *weak forms of social control are perceived as significantly more effective and accepted by members than strong forms to stimulate cooperative behaviour*. The more social control becomes weaker, the more social control is perceived to be effective and accepted by members to stimulate cooperative behaviour within OHSCs.
- Fifthly, it is concluded that the *effectiveness and acceptance of indirect monitoring and frame-stabilizing forms of social control do not significantly differ* for the OHSCs examined. The same applies to *direct non-monetary and direct monetary* forms of social control.

This thesis adds new knowledge by examining whether the degree of positivity affected cooperative behaviour in OHSCs. The effects of sanctions and rewards were examined in OHSCs by means of experimental research.

Additionally, new insights have been provided by exploring the combined effectiveness of social control characterized by different forms of directness together with different forms of positivity.

- Sixthly, for social control characterized by different forms of positivity is concluded that *positive forms are perceived as significantly more effective than negative forms in stimulating behaviour of members of OHSCs*.
- Seventhly, the effectiveness of negative social control was examined for different kinds of behaviour. It is concluded that *negative forms of social control are perceived as significantly more effective in avoiding unacceptable behaviour than in stimulating desired behaviour* of members from OHSCs. Nevertheless, negative forms of social control are not perceived to be more effective than positive forms in avoiding unacceptable behaviour.
- Eighthly, it can be concluded that for the combined effectiveness of the two dimensions of social control examined, *weak, positive forms of social control are the most effective in stimulating cooperative behaviour* in OHSCs.



- Ninthly, for the combined effectiveness of social control characterized by different forms of directness together with different forms of positivity, an interaction effect is apparent. The interaction effect demonstrates that *positive forms of social control become significantly more effective as they become weaker* in OHSCs.

### 6.2 Limitations

This study has several limitations that should be taken into account when interpreting its results.

The first limitation is that the response rate is rather low (19.3%). The first reason for the low response rate might be that a certain amount of the invitations that were sent to people did not reach them. People have been sent two reminders. A lot of those probably ended up in their spam-box, simply slipped their mind in the middle of many other emails or did not reach people due to an old or invalid email address. Another reason for the low response rate may be that many people were still registered as a member, but have not been active within the OHSC for a long time. This resulted in many people who did not respond to the invitation. A final cause of the low response rate is that people were not eager to participate because they distrusted the study. A reaction often received was: "How do I know that I can trust you and that you are not related to any government or commercial firm?" To increase our reliability, we built a personal website, used email addresses from the University, were as clear as possible about our origin, offered many possibilities to contact us and answered with quick and personal replies.

The second limitation is that the sample contains a lot of active members and few lurkers. 55% of the participants indicated to contribute to the community. The share of lurking members is fairly low (45%) in the research sample compared to other studies (Nonnecke, 2000; Nonnecke & Preece, 2000, 2001; Preece et al., 2004). This means that the results might be biased towards active members and so over- or under represent reality.

The third limitation is that the experiments of this study measured perceived effectiveness. The effectiveness of different forms of social control was measured by asking participants about their expectations for several statements. The real effects of different forms of social control could not be measured. Therefore participants could misjudge the effectiveness of different forms of social control or participants could represent themselves more favourably than would be the case in reality. Because of the latter, the study controlled for bias concerning social desirability as much as possible.

The fourth limitation is that the study controlled for social desirability but has not been able to evaluate the precise effectiveness of this method. Several results were examined for their similarity before and after controlling for social desirability. Controlling for social desirability did not change the conclusions. Nevertheless, the extent to which the method was effective remains unknown and so how much bias concerning social desirability could still be apparent for the results of this study.

The fifth limitation is that the study included participants from 11 different Yahoo! OHSCs. This introduces limitations for the generalization of the results of this study.

### **6.3 Suggestions for further research**

This study adds knowledge about the effects of different forms of social control in OHSCs. Nevertheless, it also raises new questions that can be studied in further research. Some suggestions for further research are provided.

This study found that negative forms of social control are perceived as most effective by members to avoid unacceptable behaviour. Further research could examine if presence of negative forms of social control in OHSCs motivates members' desired behaviour.

This study concluded that different forms of social control differently motivate the behaviour of OHSCs members. As discussed in the previous section, the findings are based on people's perceptions. Further research is necessary to examine if these forms really motivate members to behave more cooperatively.

This study found that no problems for interaction exist in the OHSCs examined. Additionally it was found that members of such communities are relationally interested. Further research could examine whether the degree of relational interest is also a determinant of the (interaction) problems that might exist in an online community (OC).

Finally, this study revealed an interaction effect for the combined effectiveness of different dimensions of social control. The results show that social control affects cooperative behaviour from more than one dimension. Several different dimensions might have an impact on the effectiveness of social control. Therefore, further research is suggested to classify different dimensions of social control and examine their combined effectiveness.

## 6.4 Policy implications

OHSCs provide many benefits to its members. This study found that within OHSCs no typical problems of interaction were apparent that obstruct knowledge exchange and social support provision for the moment. Nevertheless, the results of the experiments show that it is essential to apply appropriate forms of social control if future problems occur or community administrators want to stimulate members to behave according to the common group goal. Subsequently some design rules for appropriate social control application are proposed.

Members of OHSCs are relationally interested. Moderators and administrators of such communities should therefore be very careful to avoid situations of interest incongruence and simultaneously create a community environment in which trust and cooperation is preserved and stimulated.

With regard to the *directness* of social control, this study found that weak forms of social control are the most appropriate in stimulating members. They are effective and accepted by members to stimulate their cooperative behaviour. The weaker social control, the more effective it is. Moderators and administrator might consider applying weak forms of social control in stimulating the functioning of their OC. Two examples of weak forms of social control that were mentioned in this thesis are:

- *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.*
- *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.*

With regard to the *positivity* of social control, this study found that positive forms of social control are the most appropriate in stimulating members. Two examples of positive social control that were used in this thesis are:

- *The community management appreciates a members' dedication to the community through a post on the community's message board.*
- *The community management increases the community status of members that support the common group goal by contributing regularly (for example: newbie, experienced, guru).*

Negative forms were perceived to be the most effective unacceptable behaviour. Nevertheless, community managers of OHSCs should be very reserved with the application of negative forms of social control because they tend not to be perceived as more effective than positive forms. An example of negative social control that was used in this thesis is:

- *The community management decreases a member's bonus points that can be exchanged against a reward.*

For the *combined effectiveness* of social control, positive, weak forms were perceived to be the most effective in stimulating members' behaviour. An example of a combined form of positive, weak social control is:

- *A community administrator that sends a private message that stresses the great job the member did.*

Commonly, positive and negative forms of social control are applied simultaneously in stimulating one specific behavioural outcome of members. An example is that in many OCs people can judge the value of peoples' contributions in a positive or negative way in order to increase the quality of these contributions. Because the effectiveness of positive and negative forms of social control differs significantly, community administrators are suggested not to apply them together. The former example of rating a contribution positively or negatively is characterized by a rather strong form of directness. Yet, when positive and negative social control is applied together, characterized by a fairly weak form of directness, their effectiveness differs even more. An example is a community administrator who stimulates members' dedication within OHSCs by sending messages that stress when they did a good job for the common group goal and sending people messages that emphasize when someone did a bad job for the common group goal.

Results from this study also have important implications for other OCs apart from Yahoo! OHSCs. In addition to some previous studies, the results of this study support the theory of online relational signalling as well. We suggest using major insights from the theory of online relational signalling for appropriate social control application in OCs in general. Kim (2000) argued that OCs should adapt to members' evolving needs over time. Therefore, we propose that moderators and administrators keep themselves informed about the extent to which relational interest exists for members of their OC. They can measure to what degree new members are relationally interested during the registration procedure. An example is asking a few questions that determine people's relational interest. For regular members, a private message can be sent requesting people to answer similar questions every now and then. In this way administrators and moderators keep themselves informed about the relational interests that exist. Thereby administrators are able to determine which form of social control is more appropriate to increase the functioning of the OC. This research showed that for relationally interested OCs, such as Yahoo! OHSCs, weak and / or positive forms of social control are the most effective and accepted in stimulating members' cooperative behaviour.

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## Appendix A: Online Questionnaire

### The acceptance and effect of social control within OHSCs

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## Welcome!



We highly appreciate your willingness to participate to our research about cooperation in online communities. With insights from this research, we aim to increase the functioning of online communities for all its users.

By 'your community' we mean the Yahoo! online forum by which you've been invited. This research takes only 15 minutes to complete, won't ask for personally related information, treat all results fully anonymous, and uses the results for scientific purposes only. When you personally want to receive the results of this research, you'll have an opportunity to indicate that at the end of this research.

Again, your cooperation is highly appreciated!

Thank you,

Dennis Sneijers

Eindhoven University of Technology - The Netherlands

Please, start by filling in your unique invitation ID given by the previously received e-mail:

(You can use 'copy / paste' to avoid typing errors)

PS: For more information visit [www.student.tue.nl/Q/d.p.h.sneijers](http://www.student.tue.nl/Q/d.p.h.sneijers)

## 1. Community usage

Within this part we would like to know something about the frequency and reason of your online community usage.

1. What has originally been the major reason to become member of your online community?

- Searching for information [1]
- Finding new contacts [2]
- Looking for (social) support [3]
- Desire to help others [4]
- Interest in subject [5]
- Social recognition [6]
- Friendship [7]
- Recreation [8]
- Other, namely: [9]

2. How long have you been a member of your online community?

- less than 1 month [1]
- 1 month or more, less than 3 months [2]
- 3 months or more, less than 12 months [3]
- 1 year or more, less than 2 years [4]
- 2 years or more [5]

3. On average, how many times did you visit your online community during the last 3 months?

With visiting we mean reading or posting messages to the online community.

- Never [1]
- One time [2]
- Once every 2 weeks [3]
- Between 1 and 3 times a week [4]
- Between 4 and 7 times a week [5]
- More than once a day [6]

4. How much time did you spend in total, on reading or posting on the online community during the last 4 weeks?

- 0 minutes [1]
- 1-5 minutes [2]
- 6-10 minutes [3]
- 11-15 minutes [4]
- 16 minutes- 60 minutes [5]
- More than 1 hour, less than 2 hours [6]
- More than 2 hours, less than 4 hours [7]
- 4 hours or more [8]

5. For a typical month, how many posts of your online community do you read?

Around {numerical input + button 'I do not read any posts of my community'} posts per month

6. For a typical month, how many questions do you ask to the online community?

Around {numerical input + button 'I do not ask any questions to my community'} posts per month.

7. For a typical month, how many posts do you contribute to your online community?

Around {numerical input + button 'I do not contribute to my community'} posts per month.

8a. How important is your online community to you?

{7-point radio buttons, very unimportant [1] <~> very important [7]}

8b. In how many other online communities do you regularly contribute or read messages besides this one?

- None [1]
- 1 [2]
- 2 [3]
- 3 [4]
- 4 [5]
- 5 [6]
- More than 5 [7]

9. For how many years have you been using the internet?

- Less than 1 year [1]
- 1 year [2]
- 2 years [3]
- 3 years [4]
- 4 years [5]
- 5 years [6]
- More than 5 years [7]

## 2. Your Community

Within this part we would like to know something about the issues that characterise your community.

10.To which extent do you disagree/agree on the following statements? {7-point radio buttons, fully disagree [1] <~> fully agree [7]}

My online community gives me...

- ...information
- ...new contacts
- ...(social) support
- ...a possibility to help others
- ...insight in the subject
- ...social recognition
- ...friendship
- ...recreation
- ...other, namely:

11.How easy is the online community (software) usable? {7-point radio buttons, very difficult [1] <~> very easy [7] + button 'I only participate via email'}

12. How important is it to use the community for the following purposes? {7-point radio buttons, fully disagree [1] <~> fully agree [7]}

- It is important to me to make new contacts with other members of my community.
- There is a group of members whose sympathy is important to me.
- For me it's important that other members of my community consider me trustworthy.
- I like having the attention of other members.
- I would dislike having nothing to contribute to my community.
- I like being popular in my community.
- For me it's important to have a good relationship with some members of my community

13.To which extent do you disagree/agree with the following statements? {7-point radio buttons, fully disagree [1] <~> fully agree [7]}

- I'm well known for my achievements in my community
- The other community members appreciate my contributions
- The activities within my online community are a challenge for me
- I'm having lots of fun within my online community
- I make new contacts within my online community
- I maintain good relations with members of my online community.

14. To what extent do the following statements describe your online online community?

{6-point radio buttons, fully disagree [1] <~> fully agree [6]}

My online community is...

- ...more a group of unconnected individuals than a community.
- ...a set of groups with their own interests and activities, but not much in common as a community.
- ...a set of groups with their own interests and activities, but also some common interests as a community.
- ... a moderately integrated community that shares some interests and some activities in common.
- ... a well-integrated community that shares many interests and activities in common.

15. What sort of interaction takes place between members of your community?

{7-point radio buttons, fully disagree [1] <~> fully agree [7] + button 'Don't know' }

In my online community there are members...

- ...who have regularly contact with each other outside the online community
- ...who meet each other regularly during face-to-face meetings
- ...who call each other regularly
- ...who regularly undertake activities together
- ...who communicate via instant messengers like i.e MSN or Skype

16a. In some communities there are experts who have much more knowledge about a subject than the average member. How many experts are there approximately in your online community?

- 0 [1]
- 1-5 [2]
- 6-10 [3]
- 11-20 [4]
- 21-30 [5]
- more than 30 [6]
- Don't know [7]

16b. How often do you notice that (one of the) expert(s)...

{7-point radio buttons, never [1] <~> very often [7]}

- ...responds to a question?
- ...asks a question?
- ...makes a statement? (neither questions nor answers)

17a. In some online communities there may be moderators who have special administration rights. How many moderators are there approximately in your online community?

- 0 [1]
- 1 [2]
- 2 [3]
- 3 [4]
- 4 [5]
- 5 [6]
- 6-10 [7]
- 11 or more [8]
- Don't know [9]

17b. How often do you notice that (one of) the moderator(s)...

{7-point radio buttons, never [1] <~> very often [7]}

- ...responds to a question?
- ... moves a message?
- ...deletes a message?

18. How useful are the posted messages and the information within your community for you? {6-point radio buttons, fully disagree [1] <~> fully agree [6]}

- I noticed many messages that are related to the topic of discussion.
- I noticed many messages on the message board that are interesting for me.
- I noticed many messages on the message board that are useful for me.
- I noticed many messages on the message board that contain commercial contents.

19. What do you think about the rules and habits in the online community? {6-point radio buttons, fully disagree [1] <~> fully agree [6]}

- It is tolerated that members gossip about other members on this online community.
- It is tolerated that members have off-topic discussions on this online community.
- The rules and norms on this online community are strict.
- In this online community members encourage each other to contribute to the online community.
- In this online community individual members can develop a reputation for their regular provision of useful contributions.
- In this online community, it is expected that individual members known for their competence contribute actively to the community every now and then.
- In this online community, it is expected that members known for their competence regularly devote their time to the community's development.
- In this online community, members known for their competence are disapproved if they do not contribute sufficiently.

### 3. Potential problems

Within this part, we would like to know more about possible problems that exist within your online community.

20. To which extent is information shared in your community of personal nature?

{7-point radio buttons, fully disagree [1] <~> fully agree [7]}

- My contributions within the online community are of personal nature.
- Contributions in general within my online community are of personal nature.
- My questions asked within the online community are of personal nature.
- Questions asked in general within my online community are of personal nature.

21a. Does your (nick)name or email-address used to place posts or ask questions within your community disclose your identity? {vertical radio-button}

- Yes, it reveals my identity [1]
- No, it doesn't disclose my identity [2]

21b. Has it been obligatory to reveal your identity in your name used to place posts and ask questions within your community?

- Yes, it is obligatory [1]
- No, I chose it myself [2]

22. Suppose someone in your online community asks a question that indicates that (s)he has some serious problems and you would be able to help this person. Would you respond to the question even if your answers would indicate that you had a similar problem? {vertical radio buttons}

- No, you don't give an answer by posting a message to the online community.
- Yes, you do give an answer by posting an **anonymous** message to the online community.
- Yes, you do give an answer by posting a **non-anonymous** message to the online community.

23. To which extent do you perceive the problems listed below in your community? {7-point radio buttons, fully disagree [1] <~> fully agree [7]}

- There are too few members within the online community
- There are too few active members within the online community.
- There are too many members within the online community.
- The amount of members varies too much.
- Members within the online community wait until others satisfy members' help requests.
- Members show too little social support to other members within the online community.
- Members post too little within the online community.
- There is an overdose of information within the online community



- Members don't trust each other.
- Members hesitate to share their personal experiences and knowledge.
- Members are afraid that personal experiences and knowledge shared might be used in a way that negatively affects them.

#### 4. Community management

Within this part, we would like something about the acceptance and effect of possible community management techniques.

24. The community needs the members' contributions. It is crucial that members not only take information and support, but also share their own knowledge and help others. What do you think of the following proposal to facilitate the contributions of members?

"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." {7-point radio buttons, not at all [1] <~> very much [7]}

a) What do you think, to what extent would a typical member of the online community...

- ...regard such a rule as acceptable?
- ...welcome such a rule?
- ...be offended by such a rule?

b) What do you think, to what extent would a typical member of your online community...

- ...be motivated by such an approach to contribute more to the community?
- ...increasingly share his / her information?
- ...feel more eager to satisfy others' help / information requests?

c) What do you think, to what extent would you...

- ...regard such a rule as acceptable?
- ...welcome such a rule?
- ...be offended by such a rule?

d) What do you think, to what extent would you...

- ...be motivated by such an approach to contribute more to the community?
- ...increasingly share your information?
- ...feel more eager to satisfy others' help / information requests?

24. The community needs the members' contributions. It is crucial that members not only take information and support, but also share their own knowledge and help others. What do you think of the following proposal to facilitate the contributions of members?

"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." {7-point radio buttons, totally not [1] <~> totally [7]}

a) What do you think, to what extent would a typical member of the online community...

- ...regard such a rule as acceptable?
- ...welcome such a rule?
- ...be offended by such a rule?

b) What do you think, to what extent would a typical member of your online community...

- ...be motivated by such an approach to contribute more to the community?
- ...increasingly share his / her information?
- ...feel more eager to satisfy others' help / information requests?

c) What do you think, to what extent would you...

- ...regard such a rule as acceptable?
- ...welcome such a rule?
- ...be offended by such a rule?

d) What do you think, to what extent would you...

- ...be motivated by such an approach to contribute more to the community?
- ...increasingly share your information?
- ...feel more eager to satisfy others' help / information requests?

24. The community needs the members' contributions. It is crucial that members not only take information and support, but also share their own knowledge and help others. What do you think of the following proposal to facilitate the contributions of members?

"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." {7-point radio buttons, totally not [1] <~> totally [7]}

a) What do you think, to what extent would a typical member of the online community...

- ...regard such a rule as acceptable?
- ...welcome such a rule?
- ...be offended by such a rule?

b) What do you think, to what extent would a typical member of your online community...

- ...be motivated by such an approach to contribute more to the community?
- ...increasingly share his / her information?
- ...feel more eager to satisfy others' help / information requests?

c) What do you think, to what extent would you...

- ...regard such a rule as acceptable?
- ...welcome such a rule?
- ...be offended by such a rule?

d) What do you think, to what extent would you...

- ...be motivated by such an approach to contribute more to the community?
- ...increasingly share your information?
- ...feel more eager to satisfy others' help / information requests?

24. The community needs the members' contributions. It is crucial that members not only take information and support, but also share their own knowledge and help others. What do you think of the following proposal to facilitate the contributions of members?

"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." {7-point radio buttons, totally not [1] <~> totally [7]}

a) What do you think, to what extent would a typical member of the online community...

- ...regard such a rule as acceptable?
- ...welcome such a rule?
- ...be offended by such a rule?

b) What do you think, to what extent would a typical member of your online community...

- ...be motivated by such an approach to contribute more to the community?
- ...increasingly share his / her information?
- ...feel more eager to satisfy others' help / information requests?

c) What do you think, to what extent would you...

- ...regard such a rule as acceptable?
- ...welcome such a rule?
- ...be offended by such a rule?

d) What do you think, to what extent would you...

- ...be motivated by such an approach to contribute more to the community?
- ...increasingly share your information?
- ...feel more eager to satisfy others' help / information requests?

25a) 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? {7-point radio buttons, not at all [1] <~> very much [7]}

- The community administrator provides the member with bonus points that ultimately can be exchanged against a reward, like for instance a CD or gift-voucher.
- The community administrator enhances the member's online community status, for instance: newbie, experienced member, super member, online community guru.
- The community administrator appreciates the member's exemplary behaviour in public.
- Other members show their appreciation by thanking the member in public.
- The community administrator sends the member a private message stressing that the member did a great job.
- Other members send a private message stressing that the member did a great job.

25b) 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 during a period of 6 months never performed this task would be stimulating for them? {7-point radio buttons, not at all [1] <~> very much [7]}

- The community administrator decreases the member's bonus points that ultimately can be exchanged against a reward, like for instance a CD or gift-voucher.
- The community administrator reduces the member's online community status, for instance: newbie, experienced member, super member, online community guru.
- The community administrator shows disapproval of the member's behaviour in a public posting.
- Other members show their disapproval by criticizing the member in public.
- The community administrator sends the member a private message stressing that the member did not a good job.
- Other members send a private message stressing that the member did not a good job.

25a) 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? {7-point radio buttons, not at all [1] <~> very much [7]}

- The community administrator provides the member with bonus points that ultimately can be exchanged against a reward, like for instance a CD or gift-voucher.
- The community administrator enhances the member's online community status, for instance: newbie, experienced member, super member, online community guru.
- The community administrator appreciates the member's exemplary behaviour in public.
- Other members show their appreciation by thanking the member in public.
- The community administrator sends the member a private message stressing that the member did a great job.
- Other members send a private message stressing that the member did a great job.

25b) Helping new members is a valuable task for the community. Do you think that the following ways to treat members who during a period of 6 months never performed this task would be stimulating for them?

{7-point radio buttons, not at all [1] <~> very much [7]}

- The community administrator decreases the member's bonus points that ultimately can be exchanged against a reward, like for instance a CD or gift-voucher.
- The community administrator reduces the member's online community status, for instance: newbie, experienced member, super member, online community guru.
- The community administrator shows disapproval of the member's behaviour in a public posting.
- Other members show their disapproval by criticizing the member in public.
- The community administrator sends the member a private message stressing that the member did not a good job.
- Other members send a private message stressing that the member did not a good job.

25a) 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? {7-point radio buttons, not at all [1] <~> very much [7]}

- The community administrator provides the member with bonus points that ultimately can be exchanged against a reward, like for instance a CD or gift-voucher.
- The community administrator enhances the member's online community status, for instance: newbie, experienced member, super member, online community guru.
- The community administrator appreciates the member's exemplary behaviour in public.
- Other members show their appreciation by thanking the member in public.
- The community administrator sends the member a private message stressing that the member did a great job.
- Other members send a private message stressing that the member did a great job.

25b) 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 during a period of 6 months never performed this task would be stimulating for them? {7-point radio buttons, not at all [1] <~> very much [7]}

- The community administrator decreases the member's bonus points that ultimately can be exchanged against a reward, like for instance a CD or gift-voucher.
- The community administrator reduces the member's online community status, for instance: newbie, experienced member, super member, online community guru.
- The community administrator shows disapproval of the member's behaviour in a public posting.
- Other members show their disapproval by criticizing the member in public.
- The community administrator sends the member a private message stressing that the member did not a good job.
- Other members send a private message stressing that the member did not a good job.

25a) 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? {7-point radio buttons, not at all [1] <~> very much [7]}

- The community administrator provides the member with bonus points that ultimately can be exchanged against a reward, like for instance a CD or gift-voucher.
- The community administrator enhances the member's online community status, for instance: newbie, experienced member, super member, online community guru.
- The community administrator appreciates the member's exemplary behaviour in public.
- Other members show their appreciation by thanking the member in public.
- The community administrator sends the member a private message stressing that the member did a great job.
- Other members send a private message stressing that the member did a great job.

25b) A reasonably share of online communities apply certain rewards to avert undesired member behaviour. To which extent do you agree that members who don't respect other members by for instance insulting them are stimulated by the following incentives? {7-point radio buttons, not at all [1] <~> very much [7]}

- The community administrator decreases the member's bonus points that ultimately can be exchanged against a reward, like for instance a CD or gift-voucher.
- The community administrator reduces the member's online community status, for instance: newbie, experienced member, super member, online community guru.
- The community administrator shows disapproval of the member's behaviour in a public posting.
- Other members show their disapproval by criticizing the member in public.
- The community administrator sends the member a private message stressing that the member did not a good job.
- Other members send a private message stressing that the member did not a good job.

## 5. Personal characteristics

Within this final part we would like to know a few, general things about yourself.

27. How familiar are you with the subsequent internet-related phenomena? {5-point radio buttons, never heard [1] <~> well known [5]}

- Downloads
- Advanced Search
- Preference Settings
- Newsgroups
- PDF documents
- Refresh / Reload
- MP3-files
- Spamfilters
- Calling via internet
- Uploading
- WebLogs/Blogs
- Voice over IP (VOIP)
- Virtual Private Networks
- Email lists
- Virtual domain
- MAC-address

28. To which extent do the statements about your community below apply to you?

{5-point radio buttons, totally not [1] <~> totally [5]}

- Taking part within my online community gives me satisfaction.
- I participate within my online community because of my curiosity.
- I'm highly interested in the online community discussions.
- My contributions are useful to the online community.
- The contributions that I make, are available to all other members.
- The community software doesn't hinder me when participating in discussions

29. How many years of formal education do you have? *Please start counting at the first year of primary school.*

{Drop-down box '1' <~> '20 and more' 'none'} years

30. What is your year of birth?

19 {numerical input, 2 digits}

31. To which extent do the statements about personal attitudes and characteristics below apply to you? {5-point radio buttons, not at all [1] <~> very much [5]}

- My first impression of other people is always right
- It would be very hard for me to change one of my bad habits.
- I always know why I like certain things.
- I sometimes lie when circumstances ask for it.]
- If people are having conversations about personal issues, I avoid listening to them.
- I don't chitchat about other people.



32. What's your opinion about other people in general?

{5-point radio buttons, not at all [1] <~> very much [5]}

- You can expect that most people do what they tell they'll do.
- Most people tell the truth when they describe their experiences and competences.
- Most people respond with an honest question to a personal question.
- If possible, you need to avoid cooperating with unfamiliar people.

33. What is your gender?

- Male [1]
- Female [2]

34. What is your country of origin?

|                               |                |                 |                       |
|-------------------------------|----------------|-----------------|-----------------------|
| Algeria[1]                    | Denmark[20]    | Malta[41]       | South Africa[62]      |
| Argentina[2]                  | Egypt[21]      | Mexico[42]      | South Korea[63]       |
| Armenia[3]                    | Estonia[22]    | Monaco[43]      | Spain[64]             |
| Aruba[4]                      | Finland[23]    | Montenegro[44]  | Sri Lanka[65]         |
| Australia[5]                  | France[24]     | Morocco[45]     | Suriname[66]          |
| Austria[6]                    | Germany[25]    | Nepal[46]       | Sweden[67]            |
| Bangladesh[7]                 | Greece[26]     | Netherlands[47] | Switzerland[68]       |
| Belgium[8]                    | Greenland[27]  | New Zealand[48] | Taiwan[69]            |
| Bolivia[9]                    | Hong Kong[28]  | North Korea[49] | Thailand[70]          |
| Bosnia and<br>Herzegovina[10] | Hungary[29]    | Norway[50]      | Tunisia[71]           |
| Brazil[11]                    | Iceland[30]    | Pakistan[51]    | Turkey[72]            |
| Bulgaria[12]                  | India[31]      | Paraguay[52]    | Ukraine[73]           |
| Canada[13]                    | Indonesia[32]  | Peru[53]        | United<br>Kingdom[74] |
| Chile[14]                     | Ireland[33]    | Poland[54]      | USA[75]               |
| China[15]                     | Israel[34]     | Portugal[55]    | Yugoslavia[76]        |
| Croatia[16]                   | Italy[35]      | Romania[56]     | Other [77]:           |
| Cuba[17]                      | Japan[36]      | Russia[57]      |                       |
| Cyprus[18]                    | Lithuania[37]  | Serbia[58]      |                       |
| Czech<br>Republic[19]         | Luxembourg[38] | Singapore[59]   |                       |
|                               | Macedonia[39]  | Slovakia[60]    |                       |
|                               | Malaysia[40]   | Slovenia[61]    |                       |

35a. Suppose you need urgent advice on a problem that is discussed in your community. You send a message asking for advice. A member recommends buying an electronic book for 30,- \$ that he claims would be very useful. You don't know the book nor the member, but you're in a bit of a hurry and cannot easily find other sources of information. The recommendation sounds plausible, but you don't know for sure.

Would you buy the book? {5 point radio definitely not [1] <~> definitely [5]}

35b. Suppose you need urgent advice on a problem that is discussed in your community. You send a message asking for advice. A member recommends buying an electronic book for 30,- \$ that he claims would be very useful. With the help of the information in the member's profile you discover that (s)he is a baker in your neighbourhood. You do not know the baker personally but you do your shopping at his/her bakery. You don't know the book, but you're in a bit of a hurry and cannot easily find other sources of information. The recommendation sounds plausible, but you don't know for sure.

Would you buy the book? {5 point radio definitely not [1] <~> definitely [5]}

35b. Suppose you need urgent advice on a problem that is discussed in your community. You send a message asking for advice. A member recommends buying an electronic book for 30,- \$ that he claims would be very useful. With the help of the information in the member's profile you discover that (s)he is a helpdesk employee of your online provider. You have never seen this person in a face to face meeting but every now and then you exchange emails with the employee about computer related topics. You don't know the book, but you're in a bit of a hurry and cannot easily find other sources of information. The recommendation sounds plausible, but you don't know for sure.

Would you buy the book? {5 point radio definitely not [1] <~> definitely [5]}

36. Suppose you and another (for you unknown) member who is taking part in this survey will be given money. Below, four examples are listed that distinguish between the amount of money you and the other member will be given. Please rank the four examples starting with the most preferable (1) ending with the least preferable (4)

|               | you get | the other gets | your preference |
|---------------|---------|----------------|-----------------|
| First option  | 110,-   | 38,-           | ___             |
| Second option | 98,-    | 88,-           | ___             |
| Third option  | 125,-   | 21,-           | ___             |
| Fourth option | 102,-   | 54,-           | ___             |

37. Finally, during the last 12 months did you make contact with members of your online community who have one of the following characteristics? With 'making contact' we mean that when you meet that person accidentally you know the (nick)name and you both could start a conversation with each other.

Did you make contact with a community member of whom you know that (s)he ...

{Radio buttons: 'Yes' [1], 'No' [2], 'Don't know' [3]}

- ...knows a lot about governmental regulations
- ...has knowledge about financial matters (taxes, insurances, subsidies etc.)
- ...can give advice concerning a conflict at work
- ...can help when moving house (packing, lifting)
- ...can do your shopping when you (and your household members) are ill
- ...can give medical advice when you are dissatisfied with your doctor
- ...can give advice concerning a conflict with family members
- ...can give a good reference when you are applying for a job
- ...can give legal advice concerning problems at work, with a landlord etc.
- ...would listen to you when you talk about personal problems

Here, you can leave comments which would help us to understand your community better if you'd like:

Would you like to receive a summary of the results?

Yes [1] No [2]

We would like to take this final opportunity to let you know that we highly appreciate your cooperation to our research. All results will be treated anonymously and for scientific purposes only. Please use the button below to send the survey. For the unthinkable case that something goes wrong, please contact me at [d.p.h.sneijers@student.tue.nl](mailto:d.p.h.sneijers@student.tue.nl).

Thank you!

Best regards,

Dennis Sneijers

## Appendix B: Community Member Invitation

Dear ~kname~,

I would like to invite you to participate in a research project of Eindhoven University of Technology about online communities. One aim is to improve their functioning for its users.

We approach you because you are a member of the ~kcommunity~ Yahoo! group. Independent of the intensity of your use of the community, your input is highly valuable. Your email address is used for this research project exclusively.

Filling in the questionnaire takes about 15 minutes. The questionnaire is easy to complete and your answers will be treated confidential. You can find the questionnaire at the following website:

<http://www.tue-tm.org/snej/index.htm>

Please use the following code to log in:

~kid~ (use 'copy / paste' to avoid errors)

For more information about the project, questions, or comments visit:

<http://www.student.tue.nl/q/d.p.h.sneijers>

Thank you very much for your cooperation and time!

Best Regards,

Dennis Sneijers

## Appendix C: Community Manager Invitation



Dear Sir / Madam,

With this email, I would kindly ask for your cooperation to our research aimed to improve the functioning of online communities. My name is Dennis Sneijers and I am doing my MasterThesis research at Eindhoven University of Technology in the Netherlands. In close cooperation with Dr. Uwe Matzat and Prof. Dr. Chris Snijders who are experts in the field of online communities, I'm doing research on community management techniques.

A reasonable share of online communities functions successfully while others don't. Prior research tried to improve the success of online communities by proposing community management techniques. Unfortunately, not every community is the same. In practice, this often leads to inappropriate functioning of communities because the applied management technique does not fit with the community. Therefore, the purpose of this study is to gain deeper insights about the appropriateness of community management techniques.

Should you agree to cooperate in this research project then we would provide you, among others, with insights on the following: the benefits that your community delivers, the reasons why people join and the appropriate application of management techniques within your community. Most of all, we will propose management techniques attuned to your community that aim to increase the overall functioning of all online communities.

It will be a short survey respecting both the community and participants' privacy. All results will be treated anonymously and are used for scientific purposes exclusively. If you already want to have a look into the questions, feel free to let us know and we'll gladly send them to you. If you have any questions or what so ever, you can personally reach me at my email-address stated below.

I am awaiting your reaction, thanks for your cooperation in advance!

Kind regards:

A handwritten signature in black ink, appearing to read 'Dennis Sneijers'.

Dennis Sneijers B.Eng  
Graduate Student Technology Policy  
Eindhoven University of Technology

A handwritten signature in black ink, appearing to read 'Uwe Matzat'.

Dr. Uwe Matzat  
Assistant Professor in Sociology  
Eindhoven University of Technology

A handwritten signature in black ink, appearing to read 'Chris Snijders'.

Prof. Dr. Chris Snijders  
Professor in Sociology  
Eindhoven University of Technology

PS: You can personally contact me at [D.P.H.Sneijers@student.tue.nl](mailto:D.P.H.Sneijers@student.tue.nl) or comments visit: <http://www.student.tue.nl/q/d.p.h.sneijers> if you have any questions!