Spread the Word: A Replication and Theoretical Extension of a Word-of-
Mouth model of consumer behavior with regard to the context of HIV
prevention campaigns

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Abstract

Background: Although new infection rates for HIV have decreased over the last few decades, the HIV
epidemic still has a high level of global relevance, especially among men who have sex with men
(MSM). At the same time, decreasing public health budgets force campaign managers to spend
money more efficiently, which is shown in advertising effectiveness studies. However, these studies
only control the direct advertising effects of campaigns and neglect the degree of social contagion
effects caused by word-of-mouth (WOM) actions within the campaigns target groups.

Objectives: The objective of this study is to examine how and why MSM communicate regarding HIV
prevention campaigns. The results have important implications for the way future campaigns are
designed and what they should focus on to foster positive WOM among campaign target groups.

Conceptual considerations: We apply a WOM model from consumer research in the context of HIV
prevention campaigns and extend the model for context-specific variables.

Data and Methods: Targeting a HIV prevention campaign run by the Swiss Federal Office of Public
Health in 2015, we conducted a survey among MSM to empirically test our conceptual
considerations. The data are analyzed using structural equation modeling (Smart PLS).

Results: The model that describes the social motives for engaging in WOM behavior in Alexandrov et
al. (2013) can be replicated and validated in the context of public health campaigns on HIV
prevention behavior among MSM. In particular, the perceived effectiveness of and stated adherence
to the recommendations of the campaign greatly encourages other-directed motives instead of self-
directed motives to engage in positive WOM for the campaign. This means that the motivation for
MSM to tell others about the campaign is driven by the desire to help others and share social
information and is only to a small extent due to the desire for social bonding.

Contribution to Public Management: Because non-communicable diseases are becoming more
prominent in public health promotion strategies, public budgets for HIV prevention are reduced. Our
study offers new insights about the relevance of WOM in the context of public health campaigns.
Based on the study findings, the efficiency and effectiveness of future campaigns can be increased in
view of positive WOM effects among target groups.
Introduction

In Switzerland, the prevalence and incident rates of the Human Immunodeficiency Virus (HIV) are decreasing (Bundesamt für Gesundheit, 2015), and this rate is similar to other developed countries. According to the current data, the number of new HIV infections in Switzerland in 2014 was 519. The total number of HIV-infected individuals totaled 34,465 in 2014. While the HIV rates are decreasing among the heterosexual population, the number of annual HIV infections of men who have sex with men (MSM) in Switzerland is stable and amounts to 250 per annum on average. Therefore, MSM are the main target group for HIV prevention campaigns from the Federal Office of Public Health (FOPH; BAG in German). The main challenge of campaigns that target very specific and small populations, such as MSM, is that media channels (billboards, radio and TV advertising) as communication channels are highly ineffective and are thus inefficient because the campaign mainly reaches people who are not part of the target group. As public health campaigns are financed by public budgets that are decreasing, the effectiveness and efficiency of public health campaigns must be proven to be financed. Therefore, public health campaigns, especially in the field of HIV prevention, need new approaches to surmount these shortcomings.

The research on public health campaigns for HIV prevention is multidisciplinary. According to Noar et al. (Noar, Palmgreen, Chabot, Dobransky, & Zimmerman, 2009), studies in health psychology, sociology and health economics address this issue. An increasing number of studies on HIV prevention also take into account findings from behavioral economics (Glanz & Bishop, 2010). The results of these studies suggest nudging strategies to foster preventive behavior among target groups with high infection risks, such as MSM. These studies focus on cognitive and affective motives for engaging in prevention behavior. While these studies concentrate on the understanding of the decision making process to encourage compliance, to the best of our knowledge, no study so far has examined the motives for engaging in word-of-mouth (WOM) distributions of messages from public health campaigns. This finding is surprising given that campaign effectiveness is highly dependent on the spread of specific information among the target group besides having a direct effect on individuals’ intentions to comply with the recommendations of the campaign.

An intensive line of marketing and consumer research already addresses the so-called social contagion effects while measuring campaign or advertising effectiveness (Iyengar, Van den Bulte, & Valente, 2011). The application of these findings on the effectiveness of public health campaigns can be identified as an important research gap that needs to be closed.

More precisely, researchers must find promising approaches for public health campaigns to foster motivation for engagement of WOM within the target groups. Motives for engaging in WOM can be self-related and other-related. Public health research has considered self-interest and altruistic motives in the context of individual prevention behavior, such as engaging in safer sex (e.g.,
Nimmons & Folkman, 1999), but this research has not included a study on drivers of WOM. In this context, Wolitski et al. (2006) highlight that future research has to explore in how far MSM believe that HIV prevention is a personal matter. Nimmons (1998) states that future studies should examine how an other-oriented versus self-directed perspective is related to safer sex behavior. Consequently, the present study focuses on self-directed and other-directed motives for spreading campaign information about HIV prevention behavior among MSM.

To analyze the underlying motives of WOM regarding messages of public health campaigns, a validated model of Alexandrov et al. (2013) from marketing research on the motives for engaging in WOM behavior is applied to the study context and is extended to the variables measuring the perceived effectiveness of the campaign among MSM and the level of individual adherence. The model of (Alexandrov et al., 2013) is applicable in the context of the spread of campaign information because they understand WOM as a social process within a community.

The paper focuses on three main research questions:

1. Can the WOM model of Alexandrov et al. (2013) from consumer research be applied in the context of a public health campaigns?
2. Are the motives for spreading WOM affected by the perceived effectiveness of the campaign?
3. Has the level of adherence to the campaign message an influence on engagement in WOM?

The findings from this study can help develop more effective public health campaigns that create social contagion effects among the target groups. The knowledge about the social motives that activate WOM allows for more specific campaign messages that directly address these social motives.

The paper is structured as follows. In the next section, we will describe the current state of research on the social interaction of MSM about public health campaigns in the context of HIV prevention behavior. Based on the baseline model of Alexandrov et al. (2013), we develop a conceptual model of the impact of campaign-related efficiency beliefs and self-/other-directed social motives for WOM intentions. The model is validated among a sample of Swiss MSM (N=93) who were asked about their motives and intentions to spread positive WOM about the message of an actual public health campaign from the Swiss Federal Office of Public Health. The campaign’s objective was to inform the public about the risk of primary infection with HIV. The concluding section includes a summary, a discussion of the study’s limitations, implications for decision makers and avenues for future research.
Current state of research on social interaction

Most research on HIV prevention campaigns focus on the impact of the campaign on the individuals’ behavior. As Convey et al. (2010) conclude, the outcome of HIV prevention analyses in previous research are mostly limited to adherence to campaigns messages, increases in motivation to practice protective behavior, and increases in self-efficacy at the individual and community level.

In addition to the effectiveness of health prevention campaigns in reaching their target individuals directly, the success of these campaigns strongly depend on social interactions within target populations. These interactions can spread the campaign message, thereby multiplying its effect. Studies show that so-called peer educators, defined as community members who promote health information among peers, increase the efficiency of health prevention campaigns by translating the offered information to other target group members (Convey et al., 2010; Kelly et al., 1991). In this context, altruism as a motivational driver for disseminating health information is of major importance. Different researchers have proven altruistic behavior in MSM including an inner belief that protecting others from HIV is a personal responsibility and a moral obligation. As Nimmons and Folkman (1999) conclude, altruistic behavior is linked to several underlying considerations. These considerations include “altruistic concern for sex partners, personal ethical/moral values, expressed desire for communal/collective survival, concerns about self-definitions, and elaborate concerns over the effects of potential HIV infection on family and friends” (Nimmons & Folkman, 1999, p. 313). Davis (2008) argues that gay men are aware of the implications of safer sex and risky behavior on their identities and sexual relations. He suggests that in the context of morality, the HIV prevention behavior of gay men is characterized by a mixture of self-care and moderate altruism in addition to the voluntary behavior of their sex partners. Nimmons (1998) summarizes the literature about altruism in HIV prevention. He emphasizes the limit of self-interest in men who have already been infected with HIV and mentions the importance of focusing on altruism and caretaking in HIV prevention programs. In a study including 637 HIV seropositive men, O’Dell at al. (2008) found a significant influence of altruism on a lower rate of serodiscordant unprotected anal intercourse (UAI), although this was not true under the circumstances of drug use and compulsive sexual behavior. They suggest that promoting altruistic behavior may offer many benefits for HIV prevention programs. O’Leary et al. (2013) examined the relationship between responsibility beliefs in HIV seropositive men and safer sex behavior. A total of 248 participants rated their personal responsibility beliefs towards sex partners whom they met in different ways. The findings suggest that the responsibility beliefs vary across different environments. The strongest responsibility beliefs occurred with partners who were met through friends and family, while anonymous partners met in public sex-driven environments evoked the weakest responsibility beliefs. These findings are supported by van Kesteren et al. (2005) and Wolitski et al. (2003), who conducted interviews with
HIV seropositive men. They showed that safer sex behavior was linked to feelings of personal responsibility, although contextual factors determined whether the sexual behavior was consistent with the individual norms.

These findings show the importance of altruism in HIV prevention. Most studies focus on subgroups of HIV seropositive men who have a high risk of transmitting HIV to sex partners. Because this target group does not have a personal interest in protecting themselves from an HIV infection, prevention efforts must especially focus on promoting altruistic behavior in this subgroup. However, there is no reason to believe that altruistic behavior does not exist in HIV seronegative men. Extending efforts to promote altruism in both HIV-positive and HIV-negative MSM may have a significant effect on the success of HIV prevention campaigns.

Altruistic behavior is believed to be reciprocal, thus offering a benefit for the giver and the recipient. On the one hand, researchers see the satisfaction of social needs as a main trigger for altruistic behavior in gay men (Nimmons, 1998). On the other hand, this behavior leads to emotional and psychological well-being for the altruistic individual in satisfying his individual needs (Convey et al., 2010). In comparison to individual needs, social needs have often been neglected in the early research on HIV prevention (Nimmons, 1998; Nimmons & Folkman, 1999). O’Dell et al. (2008) claim that a better understanding of the motivators leading to protective sexual behavior in HIV seropositive men is needed to address the prevention needs of the MSM population. In addition, a better understanding of altruistic behavior can be utilized to promote long-term HIV prevention as well as to disseminate health information by using peer educators in the target population (Convey et al., 2010).

Social interaction has been shown to play an important role in protective sexual behavior. Studies have shown that even communication about sex before engaging in sexual interaction has led to a higher probability of protective sexual behavior. In this case even the communication about the possibility of having safe sex will make protective behavior more likely by reminding the participants of the risk of an HIV infection (Gold & Skinner, 1992). As Molitor et al. (1999) summarize, the opposite case has also been shown in the research. While the lack of communication about sexual risk reduction has been linked to more UAI in young MSM, poorer communication skills about safer sex have been correlated with engagement in more UAI than in individuals with stronger communications skills concerning this subject.

Von Wangenheim and Bayón (2004) offer a conclusive framework of WOM with reference to theories on interpersonal and social influence. In this framework, the influence of a person is either informational or normative, while WOM can use both channels. Informational influence is exerted if the given information is perceived as true by the recipient. Normative influence is exerted when the
verbalized expectations aimed at the recipient are followed by compliance – for example, safer sex behavior. The degree of influence that WOM has on the recipient depends on how he perceives the sender of the information. Previous research shows two characteristics that are of vital importance: the perceived similarity between recipient and sender and the expertise of the sender as perceived by the recipient.

**Conceptual framework**

To investigate the relevance of WOM in the context of this study, the authors apply and extend the WOM model of Alexandrov et al. (2013) in the context of HIV prevention campaigns. To develop our model as shown in Figure 1, we used the original model as a theoretical framework. We reviewed the literature on social interaction, peer education and altruism in HIV prevention. On the basis of the empirical evidence on this topic, we defined the extensions of the original model to create a better fit for our research questions. Therefore, the model was extended to the perceived effectiveness of a public health campaign as well as the effect of the target groups’ adherence to its guidelines. In the following section, the original model is described in detail.

Alexandrov et al. (2013) examine social- and self-directed motives as drivers of WOM. The main proposition of the model is that the transmitter expects to gain social benefits from sharing his opinion about a brand. These gains are manifested in the form of expected satisfaction of self and social needs (Baumeister & Leary, 1995). The research model postulates that self needs (i.e., self-enhancement and self-affirmation) are the initial drivers of WOM. The desire for their satisfaction through WOM results in an intended social interaction, which in turn triggers social motives. These social motives include social needs (i.e., social comparison and social bonding) and social intentions (i.e., helping others and sharing social information). WOM is the outcome of the intention to engage in a social interaction, which is initiated by the intention to satisfy self-needs.

In the original model, a distinction between positive and negative WOM is made, which refers to previous work of Richins (1983). While positive WOM is motivated primarily by the need for self-enhancement, negative WOM is motivated by the need for self-affirmation. Regarding the social motives, the need for social comparison affects both valences of WOM, while the need for social bonding affects only positive WOM. The intention to help others and share social information affects only negative WOM. In the analysis of this study, only the influence on positive WOM is examined. This decision was made because the probability of engaging in negative WOM about the campaign (see campaign description below) was stated as being very low in our survey. In this context, the data were not sufficient for an analysis. Different results would be expected if the campaign addressed behavioral guidelines for safer sex for MSM. In this context, different attitudes toward engaging in
safer sex exist in the community. Therefore, there may be a significant proportion of MSM who intend to engage in negative WOM about such campaigns.

The considerations of Alexandrov et al. (2013) led to the following hypotheses:

H1: The needs for a) social comparison (H1a) and b) social bonding (H1b) positively affect WOM.
H2: The intention to a) share social information (H2a) and b) help others (H2b) positively affects WOM.
H3: The need for social comparison is positively affected by the need for self-enhancement.
H4: The need for social bonding is positively affected by the need for self-enhancement.
H5: The intention to share social information is positively affected by the need for self-affirmation.
H6: The intention to help others is positively affected by the need for self-affirmation.

As described earlier, the explanatory model has been extended by two additional variables, whereby adherence and the perceived effectiveness of the campaign are incorporated into the model. This expansion is based on the following considerations. First, it can be assumed in a health care context that there has to be a commitment with the message of public health campaigns to foster social intentions and social needs to engage in WOM. It is unlikely that affected people recommend healthy behavior without being compliant themselves. These considerations are reflected by the theory of planned behavior, which has already been applied to health promotion behavior (Ajzen, 1991; Fishbein, 2000). Based on this model, a motivation to comply and a strong commitment to the recommendations of the campaign is positively related to behavioral intentions, such as practicing WOM. Consequently, we conclude in the following hypothesis:

H7: The level of adherence positively affects social comparison, social bonding, the sharing of social information and helping others as motives for engagement in WOM.

The second additional variable refers to the perceived effectiveness of a public health campaign. Again, this variable can be derived from the theory of planned behavior (Ajzen, 1991; Fishbein, 2000). The theory highlights the importance of social norms for behavioral intentions, which means that the individual has to assume that a certain behavior will be accepted and practiced by people in the social environment before engaging in that behavior. When adapted to the context of HIV prevention campaigns, the individual has to assume that the recommendations of the campaign will have a high level of penetration within the community. If the effectiveness of a campaign is perceived by a target individual as low, i.e., if the individual does not expect the campaign to affect the target group, the motives for engaging in WOM will be lower. These considerations lead to the following hypothesis:
H8: The perceived effectiveness of an HIV prevention campaign positively affects social comparison, social bonding, the sharing of social information and helping others as motives for engaging in WOM.

**Baseline Model**

<table>
<thead>
<tr>
<th>Expected Satisfaction of Self-Needs</th>
<th>Expected Satisfaction of Social-Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Enhancement</td>
<td>Social Comparison</td>
</tr>
<tr>
<td>Self Affirmation</td>
<td>Social Bonding</td>
</tr>
</tbody>
</table>

H3/H4 (+)  
H5/H6 (+)  
H1a/H1b (+)  
WOM  

**Additional Variables**

<table>
<thead>
<tr>
<th>Adherence</th>
<th>Effectiveness</th>
</tr>
</thead>
</table>

H7 (+)  
H8 (+)  

**Social Intentions**

<table>
<thead>
<tr>
<th>Share Social Information</th>
<th>Help Others</th>
</tr>
</thead>
</table>

H2a/H2b (+)

*Figure 1: Conceptual framework of motives and variables affecting WOM.*

**Method**

**The campaign/strategy on HIV in Switzerland**

The LOVELIFE Campaign is an important element of the national Swiss HIV and STD prevention strategy, which is organized by the Swiss Federal Office of Public Health. The campaign works toward the goals of the national program on HIV and other STDs for 2011 to 2017 (Bundesamt für Gesundheit, 2010). The program identifies three goals that focus on HIV and STD prevention: first, to raise awareness of the risk of an HIV infection, especially in subgroups with high prevalence such as MSM; second, to give targeted information and guidance, focusing on different subgroups to support prevention behavior; finally, the provision of suitable counseling, testing and treatment when needed – for example, after exposure to HIV in a high-risk situation.

In the first few weeks after infection with HIV – known as the HIV primary infection – the risk of infecting others is much higher than in later periods due to the high viral load. This phase is often
accompanied by acute symptoms of illness as the virus spreads rapidly throughout the body. Immediate therapy can have a positive effect on the disease progression.

With the "Primary Infection 2015" campaign, the Swiss Federal Office of Public Health is drawing attention to the topic of HIV primary infection in which individuals who experience flu-like symptoms after unprotected sex are directed to talk to their doctor about whether an HIV test is appropriate; they are also directed to refrain from unprotected sex until the test result returns.

The campaigns objectives can therefore be summarized as follows: improved perception of risk and behavioral adaptation by taking appropriate protective measures. The campaign message was disseminated through various channels such as television, publicly displayed posters and various online actions. Advertisements were only used occasionally and were directed only at professionals. The campaign was carried out between October and November 2015.

**Sample description**

We conducted an online survey, and to disseminate information about the survey among the target group, we contacted different organizations focusing on MSM. We published an invitation to participate in the survey in the newsletter of the Swiss gay association (Pink Cross) twice, reaching 1500 subscribers. Additionally, we posted a notice on the Facebook sites of several gay and gay friendly organizations throughout German-speaking Switzerland. The survey was conducted about two weeks after the beginning of the campaign.

During the survey period, approximately 350 people began the survey; 180 people (51%) completed some of the survey, and 102 participants finished the survey completely (response rate: 28%). Incomplete surveys were excluded from the analysis. Nine surveys had to be excluded from the analysis due to the female gender and/or heterosexual orientation of the respondents, resulting in 93 surveys that were suitable for analysis.

Data for the year of birth, gender, sexual orientation and presence of HIV infection were collected. The average age of the participants was 36.43, and it ranged from 17 to 63 years old (SD = 12.055). 89 of the participants were male, and 2 identified as transgender (FtoM). 2 participants chose “other”. With regard to sexual orientation, 84 were homosexual, 6 were bisexual, 2 were unsure and 1 chose “other”. Of the participants, 4 had known HIV infections. Table 1 reports the characteristics of the analyzed sample.

<table>
<thead>
<tr>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Transgender (FtoM)</td>
<td>2</td>
</tr>
<tr>
<td>Transgender (MtoF)</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sexual orientation</th>
<th>Homosexual</th>
<th>84</th>
<th>90.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisexual</td>
<td>6</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>I don’t know</td>
<td>2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Known HIV infection</th>
<th>Yes</th>
<th>4</th>
<th>4.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>88</td>
<td>94.6</td>
<td></td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**Measures**

The survey included items based on the theoretical framework of Alexandrov et al. (2013), such as the expected satisfaction of self needs (self-enhancement and self-affirmation), social needs (social-comparison and social-bonding) and social intentions (sharing social information and help others).

WOM was measured by asking about the probability of communication about the campaign in a positive manner. The wording of the measures of Alexandrov et al. (2013) was adapted to the context of the above described HIV prevention campaign and was translated into German. To incorporate the variables of the extended model, the participants were also asked about the expected effectiveness of the campaign as well as their own adherence to the messages delivered.

The effectiveness was measured by asking the participants about the expected effect of the campaign on the health of MSM, their opinion as to whether the campaign was worth its cost of operation, and the expected effect of the campaign on the safer sex behavior of MSM. Adherence was measured by asking if the participants expect to keep the campaign message in mind and if they had the intention to follow the campaigns recommendations when necessary (Table 2). All items were measured on a 7-point Likert scale where 1 was the lowest (strongly disagree) and 7 was the highest (strongly agree). All scales were multi-item measures consisting of three items.

**Table 2: Scales for evaluating Perceived Effectiveness and Adherence on a 7-point Likert scale. 1=strongly disagree; 7=strongly agree.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Questionnaire Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adherence</td>
<td>1. I always adhere to the guidelines of the recommended behavior of the Primary</td>
</tr>
<tr>
<td></td>
<td>Prevention campaign.</td>
</tr>
<tr>
<td></td>
<td>2. I will keep the campaign information in mind.</td>
</tr>
<tr>
<td></td>
<td>3. I always follow the recommendations of the Primary Prevention campaign when I</td>
</tr>
<tr>
<td></td>
<td>suspect a primary infection occurrence.</td>
</tr>
</tbody>
</table>
Effectiveness

1. I think that the Primo Prevention campaign has a positive influence on the health of MSM in Switzerland.
2. In my opinion, the Primo Prevention campaign is not worth the money.
3. I think that the effect of the Primo Prevention campaign on the safer sex behavior of MSM can be regarded as minimal.

Results

To analyze the data, we used the SmartPLS 3.0 software, which is suitable for structural equation modelling (SEM) by using the partial least squares (PLS) approach. SEM is a general linear statistical modeling technique that is widely used in the behavioral sciences (Hox & Bechger, 2007).

SEM-based procedures have substantial advantages, such as offering principal components analyses, factor analyses, discriminant analyses, or multiple regressions given the greater flexibility of a researcher regarding the interplay between theory and data. SEM provides the flexibility to (a) model relationships between multiple predictor and criterion variables, (b) construct latent variables that cannot be directly measured or observed, (c) model measurement errors for manifest variables, and (d) test theoretical assumptions against empirical data (Chin, 1998).

PLS is a component-based SEM technique that is often considered a “soft modeling” approach to SEM compared to approaches such as the maximum-likelihood estimation (Falk & Miller, 1992). However, PLS is considered more appropriate for smaller datasets with nonparametric data (Falk & Miller, 1992; Reinartz, Haenlein, & Henseler, 2009).

The measurement model was evaluated in terms of reliability, discriminant validity and convergent validity of all the constructs. First, all factors used have an average variance extracted (AVE) greater than 0.5. Cronbach's alpha as a measure of the internal consistency is greater than 0.7 in all factors. The Fornell-Larcker criterion, as a measure of the discriminant validity, is met, following the requirements that all AVEs be higher than the squared correlations between the factors (Hulland, 1999). All item loadings were greater than 0.70 with a significant t-value (>1.96 when p<0.05), indicating the convergent validity of all constructs. Bootstrapping (N=1000) was applied to test for the significance of path coefficients.
Figure 2: Explanatory model visualizing the path relationships and variables affecting WOM; Note: *** = p < .01, ** = p < .05, * = p < .1, ns = not significant.

Figure 2 depicts the path coefficients for the proposed model as determined by non-parametric bootstrapping. The structural model presents information about the path significance of the hypothesized relationships using the path coefficients (β) and the coefficients of determination (R²) for each dependent variable in the model. The strength of the relationship is indicated by the β. Chin (1998) notes that the R² values of 0.67, 0.33, and 0.19 for the percentage of variance in a model are substantial, moderate and weak, respectively. The path significance levels (t-values) are estimated by the bootstrapping method. Table 3 presents the data βs, standard derivation (σ), t-statistics and p-values. The results obtained in this study indicate that the research model is structurally sound because it possesses adequate predictive performance.

Table 3: Overview of the path coefficients (β), standard-deviation, t-statistics and p-values of the explanatory model

<table>
<thead>
<tr>
<th>Path</th>
<th>Beta</th>
<th>Standard-deviation</th>
<th>T-Statistic</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Enhancement → Social Bonding</td>
<td>0.411</td>
<td>0.008</td>
<td>4.873</td>
<td>0.000</td>
</tr>
<tr>
<td>Self-Enhancement → Social Comparison</td>
<td>0.115</td>
<td>0.108</td>
<td>1.067</td>
<td>0.286</td>
</tr>
<tr>
<td>Self-Affirmation → Help Others</td>
<td>0.226</td>
<td>0.104</td>
<td>2.182</td>
<td>0.029</td>
</tr>
<tr>
<td>Self-Affirmation → Share Social Information</td>
<td>0.259</td>
<td>0.093</td>
<td>2.786</td>
<td>0.005</td>
</tr>
<tr>
<td>Effectiveness → Help Others</td>
<td>0.225</td>
<td>0.102</td>
<td>2.214</td>
<td>0.027</td>
</tr>
<tr>
<td>Effectiveness → Share Social Information</td>
<td>0.315</td>
<td>0.124</td>
<td>2.532</td>
<td>0.011</td>
</tr>
<tr>
<td>Effectiveness → Social Bonding</td>
<td>0.214</td>
<td>0.114</td>
<td>1.868</td>
<td>0.062</td>
</tr>
<tr>
<td>Effectiveness → Social Comparison</td>
<td>0.104</td>
<td>0.143</td>
<td>0.728</td>
<td>0.467</td>
</tr>
</tbody>
</table>
The results of the hypothesized relationships show that the baseline model of Alexandrov et al. (2013) can be validated in the study context, with exceptions of the effect of social comparison on WOM and self-enhancement on social comparison. Consequently, we can confirm hypotheses 1b, 2 and 4-6. Hypotheses 1a and 3 cannot be confirmed.

Regarding the activation of positive WOM, the following relationships can be described: the need for “social bonding” has a strong positive impact on the activation of positive WOM (0.214). “Gossip” is considered a powerful bonding mechanism that plays an important role in communities and networks (Granovetter, 1983). The need to share social information was also identified as having a significant impact on engagement in positive WOM (0.265). The data also showed that positive WOM is triggered by the need to help others (0.266). It can be concluded that social needs have a higher impact on the activation of positive WOM than self needs.

Additionally, there is a significant effect of the variable “adherence” to the guidelines of the campaign regarding the intention to “help others” (0.415). This means that individuals who identify with the campaign’s objectives and follow its guidelines want to help others to make the right decisions by sharing information and social norms. Further, “Adherence” showed a significant correlation to both social intentions in the explanatory model (share social information and help others). All together, these findings result in the confirmation of hypothesis 7.

Furthermore, we find a significant correlation between the perceived effectiveness of the campaign and the motives (intentions to share social information, help others and social bonding). Only the variable “social comparison” is not affected by the perceived effectiveness of the campaign. Overall, these findings support hypothesis 8.
Discussion

Summary

Because non-communicable diseases are gaining increased importance in public health promotion strategies, the public budgets for HIV prevention are reduced. Our study offers new insights about whether WOM has an important multiplier effect in the context of public health campaigns. Based on the study findings, the effectiveness of future campaigns can be increased considering the positive WOM effects on target groups.

The analysis of our research model examining the origin of WOM with regard to an HIV prevention campaign shows that WOM models from marketing research can be adapted to a public health context. The basic model of Alexandrov et al. (2013) can be replicated with data from our study and extended for relevant variables in the context of HIV prevention campaigns. Most of the correlations between self-motives, social motives and WOM were able to be verified. Regarding the additional variables, we find that strong adherence to campaign guidelines and a high level of perceived effectiveness for the health status of the community are important success factors of a campaign. In our analysis, these factors had a bigger impact on activating social intentions than social needs.

Furthermore, our results show that WOM about the campaign is mostly triggered by the intention to share social information and to help others. However, the need for social bonding was found to be a trigger for WOM as well, although to a lesser degree.

Limitations

Any interpretation of our study results must include the study’s limitations. First, although the use of SmartPLS has several advantages, a number of limitations in the use of PLS-SEM exist, particularly the lack of a global criterion to assess the overall model fit or the so-called PLS-SEM bias (Hair, Sarstedt, Ringle, & Mena, 2012). In particular, structural model estimates are typically underestimated; in contrast, the measurement model is overestimated. Second, in our empirical study, MSM only stated their intentions to engage in WOM. Although there is a strong causal relationship between intention and actual behavior (Fishbein & Ajzen, 1972), our study result may overestimate the level of WOM in the target groups. A social desirability bias may have been introduced in the survey responses of MSM.

Practical implications for public health campaigns

The Swiss Federal Office of Public Health’s work toward HIV prevention is characterized by shrinking budgets for campaigns and an undiminished high-risk situation of HIV infection among MSM. This environment requires innovative ideas for the design of future campaigns.
To increase the efficiency of the campaigns, a concentrated provision of information is recommended instead of a broad-based campaign. Information given to peer educators can then be disseminated throughout the MSM community using multiplier effects without requiring additional financial resources. The use of indirect channels of communication therefore offers significant potential for increasing the efficiency of health promotion campaigns.

In addition to the provision of information, future campaigns should promote the need for communication within the target community. Our research shows that the intention to share social information in particular can be a trigger for positive WOM. The need for communication can be generated using elements of gamification including the community or by stimulating the desire to talk about a specific subject. The use of humorous slogans, which can be observed in the evaluated primary infection campaign, is one way to facilitate communication that includes entertainment value for the interlocutors; therefore, these slogans point in the right direction.

**Implications for further research**

Our study suggests possibilities for further research. Concerning a broader evaluation of health promotion campaigns, an egocentric network analysis approach may be useful in offering important information about the interactions inside a target group. Findings about communication partners, locations, context and the valance of communication may offer valuable information for further considerations about the adjustment of campaigns.

In the following research, the measurement of multiplier effects should be an integral part of the evaluation of campaigns to offer an undistorted image of the effectiveness and efficiency of campaigns. The following success factors should be evaluated, as these are of great relevance to the correct analysis of the effectiveness and efficiency of campaigns:

1. The number of individuals reached in the target group, taking into account the estimated indirectly reached individuals using multiplier effects for an analysis of effectiveness.
2. Campaign cost per individual reached in the target group, taking into account the estimated indirectly reached individuals using multiplier effects for an analysis of efficiency.

This study did not evaluate the effect of self and social needs or the adherence and perceived effectiveness of the campaign on negative WOM because the probability of engaging in negative WOM was stated as being very low. This can be explained by the perception of the topic as very relevant or a social desirability bias in the collected data. Further information about the influence of these determinants on the probability of negative WOM may offer additional insights into the interaction mechanisms of health promotion campaigns. Other campaigns in which the target group has a more differentiated attitude towards the topic may be more suitable for this analysis.
References


