



Using narratives as tools for channeling participation in online communities



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ABSTRACT

As online communities (OCs), each with unique characteristics and dynamics, proliferate on the Internet, the question of what makes some more successful than others, in terms of engagement and participation, certainly merits research attention. Scholars have argued that these communities use narratives to keep members engaged and to channel participation in their various activities, so this research aimed to evaluate if narratives play a significant role in this matter. Members of an OC were invited to participate in an online survey ($n = 2028$) and three hypotheses about sense of community, participation in culture formation and participation in community successes were tested. Results show that narratives play a significant role in participatory behavior. Specifically, it was found that narratives play two roles: first, as an amplifier of *membership* and *shared values* in the effects each of these have in participation; and second, as a mediator between both *needs fulfillment* and *influence and shared emotional connection*, and participation.

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1. Introduction

Online communities (OCs) have been emerging on the Internet for years now, and as ICTs evolve, they continue to become more sophisticated (Preece, Maloney-Krichmar, & Abras, 2003). Each new community is as unique as the next, so it is difficult to monitor the ways these communities are able to self-organize to achieve various types of accomplishments. Still, as the potentials of what OCs can achieve have become more evident, understanding their inner workings is essential. Faraj, Jarvenpaa, and Majchrzak (2011) argue that a fundamental aspect of OCs is their fluidity, which provides opportunities for the community to collaborate and to manage its resources. One way in which OCs respond to fluidity in a productive way is by identifying ways for channeling participation. This can be done by keeping community members informed about what is happening in the community using narratives (Faraj et al., 2011). The aim of this research is to explore whether or not narratives are effective tools to channel participation to answer the question: *To what*

extent does using narratives positively influence participation in online communities?

This report starts with a theoretical framework that introduces OCs, including Faraj et al.'s (2011) propositions about how fluid OCs channel participation with the use of narratives. To add on this idea, Bruner's (1991) approach to narratives and Schein's (2004) definition of culture are used to create a foundation for a proposed model that provides a theoretical basis for three hypotheses about the links between participating in the creation of a community culture through collective narrative accrual and participating in community successes (goals reached by the community after self-organizing through recognized ICT channels).

To test the proposed model, an online community that emerged from YouTube in 2007 was chosen for a case study. An online survey was used to measure community members' sense of community, their participation in narrative accrual, and their participation in culture formation. Data analysis reveals that narratives have a significant effect on the participatory behavior of OC members.

2. Theoretical framework

2.1. Online communities

In general terms, OCs are groups of people who interact in virtual environments with a purpose, following certain norms, and

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supported by technology (Preece et al., 2003). The term can be applied to different kinds of communities, which vary according to their type of activities, their online and offline presence, their purpose, size, duration of existence, stage in their life-cycle, governance structure, and the software environment that supports them (Preece et al., 2003; Yates, Wagner, & Majchrzak, 2009).

Faraj et al. (2011) define OCs as “open collectives of dispersed individuals with members who are not necessarily known or identifiable and who share common interests, [and] attend to both their individuals and their collective welfare” (p. 1224). These authors also emphasize that OCs are highly fluid, but they are also continuous, so they can change their “boundaries, norms, participants, artifacts, interactions, and foci” over time, but remain essentially the same (Faraj et al., 2011, p. 1226).

2.1.1. Components of online communities

According to Maloney-Krichmar and Preece (2002), there are four components that are needed for OCs to exist:

1. People, who interact socially while satisfying their own needs or performing special roles.
2. A shared purpose, which can be an interest, need, information exchange, or service.
3. Policies, which can take the form of tacit assumptions, rituals, protocols, rules, and laws, that guide people's interactions. (From a social science perspective, these can be interpreted as the community's culture, as defined in Section 2.5).
4. Computer systems, which support and mediate social interaction.

2.2. Channeling participation in online communities

Channeling participation is about “identifying ways to keep interested participants informed of the current state of the OC's collaborative efforts” (Faraj et al., 2011, p. 1232), with the goal of making it easier for them to take part and contribute. Narratives in this context are stories that explain how the OC has acted over time (Faraj et al., 2011). Different communities may exhibit different types of narratives, but their essential function is the same: they are helpful by “creating a context for disembodiment of ideas, providing a temporary convergence, and allowing passionate and time-constrained participants to direct their efforts” (Faraj et al., 2011, p. 1232).

Faraj et al. (2011) claim that narratives “represent a collective understanding of how individual behaviors interrelate over time” (p. 1232). This research explored how narratives influence participatory behavior in OCs. In order to do that, the following sections provide a theoretical background on how culture is created in communities, and how narratives play a role in creating culture.

2.3. Creating culture through narratives

Narratives are a version of reality that is easier to accept, and as such they serve as instruments for our minds to construct reality (Bruner, 1991). For Bruner (1991), narratives are defined as spoken or written accounts of connected events, and these accounts help people to make sense of their worlds. Taking Bruner's approach to narratives, as well as other authors', Brown (2006) also explored several narrative features to better understand how they serve to create culture and identity.

2.3.1. Key features of narratives

Brown (2006) argues that organizational actors use identity-relevant narratives “in their efforts to understand [...] the collective entities with which they identify” (p. 734). A first feature of narratives that allows individuals to better understand these collective

entities is “*narrative diachronicity*” (Bruner, 1991, p. 6), or *temporality* (Brown, 2006). These concepts refer to how individuals make sense of time by using narratives to create mental patterns of significant events (Brown, 2006). Narratives are also characterized by *particularities* – specific details that distinguish one narrative from another, even when they are part of a same genre. Genres represent different human plights, but they can also be “ways of telling that predispose us to use our minds and sensibilities in particular ways” (Bruner, 1991, p. 14). Either way, genres influence our modes of thought and interpretation. Another narrative feature that does this is that of *referentiality*, which is about how people use references from within one narrative and from its larger genre to make sense of it.

In addition to genres, Bruner (1991) talks about the notion of *hermeneutic composability*, which refers to how interpretation of narratives is also affected by contextual factors. Two important ones are: first, the issue of intention (for both storyteller and listener: why is the story told?); and second, the issue of background knowledge (again, for both storyteller and listener), and how each interprets the other's background knowledge. This leads to another feature of narratives: *context sensitivity and negotiability*. Since the understanding of narratives is very sensitive to context, narrative discourse in everyday life can be a viable instrument for cultural negotiation (Bruner, 1991).

Another key feature of narratives is *breach of canonicity* or of *normativeness*, which refers to how “to be worth telling, a tale must be about how an implicit canonical script has been breached, violated, or deviated from” (Bruner, 1991, p. 11). In short, not every sequence of events constitutes a narrative; there must always be an element that makes the story worth telling, and this element can be found in the story itself, as well as in the mode of telling it. This is related to the idea of an *intentional state entailment*, which explains that while protagonists in narratives start off in a specific setting with happenings that befall them, they are able in charge of what happens during their storyline.

The last feature of narrative is *narrative accrual*, which refers to the way in which narratives are made into a whole: “narratives do accrue, and, as anthropologists insist, the accruals eventually create something variously called a ‘culture’ or a ‘history’ or, more loosely, a ‘tradition’” (Bruner, 1991, p. 18). When a group, or in this case an OC, takes on the endeavor of identifying, sharing and collectively interpreting specific narratives, it is actively creating its own culture and providing itself with legitimacy and historical foundations. Moreover, in such endeavors, the process of joint narrative accrual, is one of the ways in which people work “mentally” together (Bruner, 1991). This means that narratives are effective not only in helping to create culture, but also in strengthening group cohesion, as narrative accrual is a collective, ongoing activity.

2.4. Culture in online communities

Schein (2004) proposed an understanding of organizational culture that can be applied to culture in OCs (Xiao, 2006). Organizational culture is relevant in this case because it deals with culture in a specific kind of heterogeneous group – a group that is not necessarily connected by nationality, geographic locations, or specific specialized activities. Certainly, the differences between a formal organization and an online community can be many, going from the existence (or lack thereof) of specific purposes and resources, to the communication channels used, to the different formal and informal social structures that occur within them. Still, establishing some parallels between them will help make the formation of culture easier to understand. For Schein (2004), culture can be defined as:

A pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems.

[(Schein, 2004, p. 17)]

Schein additionally claims that culture happens whenever a stable group of people shares a significant number of problem-solving experiences that eventually leads them to share a view about the world. Going back to Bruner's (1991) theory, culture is formed by the constant collective accrual of narratives that are relevant to a group of people. These narratives can be about anything, including specific problem-solving instances the group experienced together.

This context clarifies Faraj et al.'s (2011) suggestion about how narratives help channel participation, and serves as a foundation for a general proposition: Narratives help channel participation when community members use them as tools to build a community's culture through an on-going process of narrative sharing and accrual.

2.5. Sense of community

The final key concept to consider is that of *sense of community*, which refers to the phenomenon of collective experience: it is a feeling of belonging and mattering that community members share (Peterson, Speer, & McMillan, 2008). McMillan and Chavis George (1986) identified four elements for a sense of community:

1. Membership, which is a feeling of belonging and personal relatedness;
2. Influence, which is a sense of mattering and making a difference to the community and its members;
3. Integration and fulfillment of needs, which refers to the members' expectations of having their needs fulfilled by the communities' resources; and
4. A shared emotional connection, which is a commitment and belief that members have shared and will continue to share a history together.

3. Hypotheses and proposed model

If members with a high sense of community actively work together to create a community's culture through collective narrative accrual, they are directly influencing the group as a whole, while at the same time being influenced by the community's shared history. Additionally, as long as members identify with a shared history regardless of whether they participated in it since the beginning or not, members share an emotional connection (McMillan & Chavis George, 1986). Moreover, in cases in which community members strongly share common values, they are more likely to believe that joining the community will reinforce their values, while also satisfying their needs, priorities and goals (McMillan & Chavis George, 1986). As these shared values "provide the integrative force for cohesive communities" (McMillan & Chavis George, 1986, p. 8), they affect not only member participation, but also community cohesion. This framework is the basis for the following hypothesis:

Hypothesis 1. The higher the sense of community, the more likely members are to participate in culture formation through narrative accrual.

Members who participate in culture formation are more likely to be more invested in the community's endeavors, as their perceived sense of influence would be higher. As OCs are characterized by their fluidity, their goals are likely to change constantly over

time. At the same time, goals are likely to hold different levels of importance or significance. Regardless of this fluidity, an online community will characterize specific instances as "successes" when a goal is achieved thanks to the community members participating in specific ways through the recognized ICT channels. If what Faraj et al. (2011) propose about channeling participation through narratives is actually so, then narratives play a significant role in the ways in which OCs reach successes. These successes can serve as indicators to measure participation.

Hypothesis 2a. Members who participate in collective narrative accrual are likely to participate in community successes.

Moreover, if narratives do indeed channel participation, then it is possible that members who take part in the process of narrative accrual tend to be more active in community activities than those who do not. Therefore, the second hypothesis is divided in two parts to explore this possibility.

Hypothesis 2b. Members who participate in collective narrative accrual are more likely to participate in community successes than those who do not.

Finally, not all members can actively take part of the culture formation process through narrative accrual, but they can all share a sense of community regardless. As explained earlier, as long as members identify with an interpreted shared history, they share an emotional connection. Members who share a sense of community and do not participate in narrative accrual are still likely to participate in community successes.

Hypothesis 3. Members with a higher sense of community are more likely to participate in community successes.

Fig. 1 illustrates the proposition synthesized above, and places these hypotheses within it. The dependent variable will be labeled as *Participation*, though it refers to participation in specific community successes.

4. Method

To test this model, a case study was performed on the Nerdfighter community, an OC that originated on YouTube in 2007 and proliferated through various online platforms – mainly Twitter, Facebook, Tumblr, Reddit, and various forums over the years (Leyton Escobar, 2013; Leyton Escobar, Kommers, & Beldad, in press). This community is worth exploring because it has shown durability and growth over the past seven years, a strong sense of cohesion, a shared culture, and a great ability to become organized.

An online survey was distributed among Nerdfighters through three different online platforms. The survey form was divided in five parts that contained both open and closed-ended questions about: (1) general demographics; (2) awareness of the community and its culture; (3) identification and sense of community; (4) participation in culture formation; and (5) participation in community

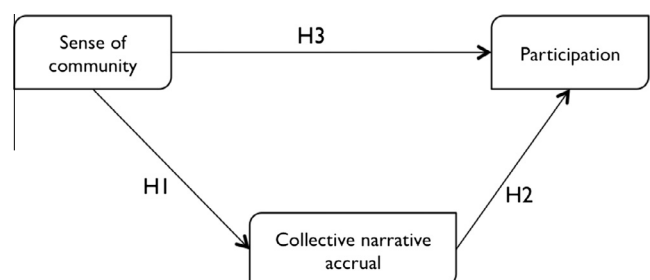


Fig. 1. Proposed model and hypotheses.

successes. The third part of the survey contained items of a scale developed specifically to measure sense of community according to McMillan and Chavis George's (1986) dimensions of needs fulfillment, membership, influence, and emotional connection (Peterson et al., 2008) adapted to suit to the study's context.

4.1. Participants

The survey was posted on four different platforms where Nerdfighters gather: two closed Facebook groups, an official subreddit on Reddit, and an official Tumblr account. The four platforms are run by volunteers who have decided to either gather with other Nerdfighter according to interest or location (in the case of the Facebook groups), or who want to have a central meeting point for Nerdfighters within larger sites (in the case of Reddit, or Tumblr). Each of these sites was chosen because they tend to have different audiences, so they would offer the chance to reach a broader scope of community members.

From a total of 2028 respondents, 78.5% of the participants were female, 19.8% male, and 1.7% reported other gender. The average age of the participants was 19.42 ($SD = 4.64$). In terms of education, the majority of participants reported being in or having finished either high school (42.5%) or university at an undergraduate level (34.9%). 6.3% reported being in middle school, 9.6% in graduate university level, and 6.8% reported other. People from over 60 different countries participated, 69.2%, were from the United States, followed by 9.3% from Canada, 4.1% from the United Kingdom (including all four UK countries) 3.3% from Australia, 1.6% from Brazil, and 1.1% from the Philippines. The rest of the countries accounted for smaller percentages.

4.1.1. Groups for comparison

In order to make comparisons among groups, participants were asked to report if they had participated in two community successes that were chosen because of their success and popularity, and because they had objective ways of measuring participation. The first activity was a public awareness campaign for several causes in which community members could participate by making videos for the campaign, donating money, or voting to choose the most successful sub-campaigns (this is the yearly *Project for Awesome* campaign; Leyton Escobar, 2013). The second activity is a funding group on Kiva.org in which members can participate by either lending money for microfunds in the developing world or by helping organize the group activities on the Kiva platform (Leyton Escobar, 2013). Participants who reported having partici-

pated in either one or both activities were then sorted as members who participate in community successes.

In total, 1073 participants responded to the questions about participation, out of which 61.4% reported having participated in either one or both of the activities, and 38.6% reported not having participated in either.

4.2. Principal component analysis

Principal component analysis was used to identify the major constructs measured by the survey. Sixteen items measuring the various constructs of the study were subjected to this analysis. The suitability of the data for factor analysis was assessed with an inspection of the correlation matrix, which revealed the presence of many coefficients of above .3. The Kaiser-Meyer-Olkin value was .692, exceeding the recommended value of .6, and the Bartlett's Test of Sphericity reached significance supporting the factorability of the correlation matrix (Pallant, 2011). Principal component analysis revealed five main components with eigenvalues exceeding 1, explaining 19.16%, 11.98%, 9.83%, 8.35%, and 7.02% of the variance respectively, which amounts to a total of 66.62% of the variance. Table 1 shows the Pattern Matrix of the components.

Parallel analysis was done by comparing the initial eigenvalues with corresponding random values generated by the Monte Carlo PCA program; only those with higher values were retained (Pallant, 2011). The resulting constructs are discussed in the following section.

4.2.1. Results of principal component analysis

This analysis resulted in five constructs that can be observed in Table 2. The items that clustered in each construct were subject to a reliability analysis, and each construct has high Cronbach's alpha values to indicate internal consistency.

Table 3 below presents the statistics for the resulting constructs. Additionally, all of the skewness values are negative, meaning that the distributions of the scores are clustered to the high end.

4.2.2. Final constructs

The resulting constructs from the factor analysis reveal five principal constructs, and not two, as it was originally expected. To test the relationship between these constructs, a correlation matrix is shown in Table 4 below.

Table 1
Pattern matrix.

	Component				
	1	2	3	4	5
<i>Pattern matrix</i>					
I am familiar with the Nerdfighter community	.588				
I consider myself a Nerdfighter	.573				
I consider myself a member of the Nerdfighter community	.681				
I can get what I need from the Nerdfighter community			-.841		
The Nerdfighter community helps me fulfill my needs			-.821		
I feel like a member of the Nerdfighter community	.651			-.302	
I belong in the Nerdfighter community	.641				
I have a say about what goes on in the Nerdfighter community					-.605
Members of the Nerdfighter community are good at influencing each other					-.634
I feel connected to the Nerdfighter community					-.647
I have a good bond with others in the Nerdfighter community					-.598
I share values with the Nerdfighter community				.712	
Members with whom I interact also share these values				.788	
I have shared these stories with someone else in the community		.342		.386	
My knowledge of these stories influenced my decision to join the Nerdfighter community		.855			
My knowledge of these stories influenced my decision to participate in activities		.855			

Table 2
Variables clustered in five main constructs.

Constructs	1. Membership	2. Needs fulfillment	3. Influence and Shared emotional connection	4. Shared values	5. Use of narratives
<i>Variables clustered in five constructs</i>					
Variables	<ul style="list-style-type: none"> • I am familiar with the Nerdfighter community • I consider myself a Nerdfighter • I consider myself a member of the Nerdfighter community • I feel like a member of the Nerdfighter community • I belong in the Nerdfighter community 	<ul style="list-style-type: none"> • I can get what I need from the Nerdfighter community • The Nerdfighter community helps me fulfill my needs 	<ul style="list-style-type: none"> • I have a say about what goes on in the Nerdfighter community • Members of the Nerdfighter community are good at influencing each other • I feel connected to the Nerdfighter community • I have a good bond with others in the Nerdfighter community 	<ul style="list-style-type: none"> • I share values with the Nerdfighter community • Members with whom I interact also share these values 	<ul style="list-style-type: none"> • My knowledge of these stories influenced my decision to join the Nerdfighter community • My knowledge of these stories influenced my decision to participate in activities
Cronbach's alpha	.854	.860	.795	.629	.765

Table 3
Descriptive statistics for the five main constructs.

Variables	N	Min	Max	Mean	Std. Dev.	Skewness	Std. Error
<i>Descriptive statistics for the five main constructs</i>							
1. Membership	1815	1.40	5.00	4.2581	.69383	-.972	.057
2. Needs Fulfillment	1637	1.00	5.00	3.8119	.87307	-.439	.060
3. Influence & Shared Emotional Connection	1638	1.00	5.00	3.6310	.81625	-.305	.060
4. Shared Values	1424	1.00	5.00	4.1053	.63106	-.935	.065
5. Use of narratives	994	1.00	5.00	3.3687	1.05947	-.362	.078

Table 4
Correlation matrix for all five constructs.

	1. Membership	2. Needs fulfillment	3. Influence and Shared emotional connection	4. Shared values	5. Use of narratives
<i>Correlation matrix</i>					
1. Membership	–	.635**	.708**	.377**	.387**
2. Needs fulfillment	.635**	–	.612**	.396**	.358**
3. Influence and emotional connection	.708**	.612**	–	.415**	.423**
4. Shared values	.377**	.396**	.415**	–	.271**
5. Use of narratives	.387**	.358**	.423**	.271**	–

** Correlation is significant at the 0.01 level (1-tailed).

The correlation matrix shows significant positive correlations among variables. Both *Influence and shared emotional connection* and *Needs fulfillment* share the highest coefficient with *Membership*. The lowest correlation coefficient is between *Shared values* and *Use of narratives*.

4.3. Results

4.3.1. Hypothesis 1

The first hypothesis is about the relationship between having a sense of community and participating in the creation of culture through a collective narrative accrual. In order to test this relationship, a standard multiple regression analysis was performed using the constructs *Membership*, *Needs fulfillment*, *Influence and Shared emotional connection* as independent variables (as each of these constructs is a dimension of a sense of community), and the construct *Use of narratives* as a dependent variable.

The total variance explained by the model, as a whole, was 20.8%, $F = 64.518$, $p < 0.000$. The coefficient standardized values, observed in Table 5, revealed that *Influence and Shared emotional*

connection was the variable that makes the strongest unique contribution to explaining the dependent variable when the variance explained by all other variables in the model is controlled for. Moreover, this table reveals that each of the other variables has a significance value smaller than 0.05, meaning that they all make a significant unique contribution to the prediction of the dependent variable (Pallant, 2011). The data support the hypothesis that a sense of community (which is made up by a sense membership, of shared values, of needs fulfillment, and of influence and shared emotional connection) has an effect on participation in narrative accrual. These results can be seen in Fig. 2.

4.3.2. Hypothesis 2a

Hypothesis 2 requires two different types of tests, as it establishes two types of relationships. First, it proposes a relationship between variables, and then, it proposes a difference between groups.

For the first part of this Hypothesis (2a), the focus is on the relationship between participating in narrative accrual and participating in community successes. The dependent construct is the

Table 5
Summary of Standard Multiple Regression Analysis for Variables Predicting Use of Narratives.

Variables	Unstandardized coefficients		Standardized coefficients β	t	Sig.	95.0% Confidence interval for B	
	B	Std. error				Lower bound	Upper bound
<i>Summary of standard multiple regression analysis for variables predicting use of narratives</i>							
(Constant)	.393	.233		1.690	.091	-.063	.850
Membership	.185	.066	.121	2.800	.005	.055	.314
Needs fulfillment	.120	.047	.099	2.546	.011	.028	.213
Influence and shared emotional connection	.313	.055	.241	5.636	.000	.204	.422
Shared values	.145	.053	.086	2.711	.007	.040	.250

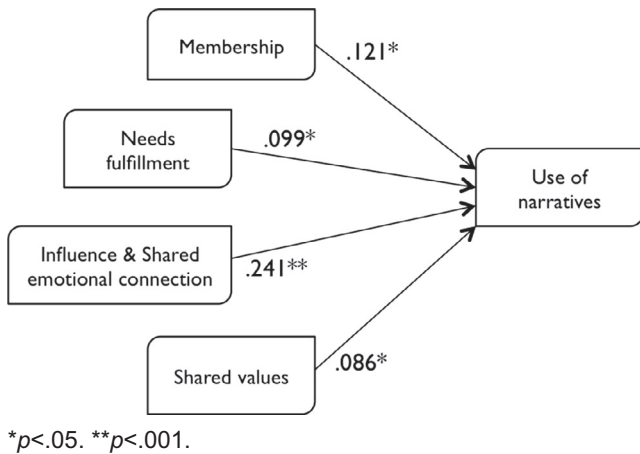


Fig. 2. Hypothesis 1 results.

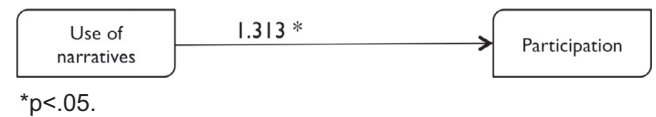


Fig. 3. Hypothesis 2 results.

categorical variable of participation. The independent variable is *Use of narratives*. Direct logistic regression was used to determine the impact of each variable on the likelihood that respondents would have participated in either of the community successes.

Logistic regression provided a model to predict the categorical outcomes of having participated or not. The model has one independent variable that was statistically significant, $\chi^2 = 18.502$, $p < 0.000$. The model as a whole explained between 1.9% (Cox and Snell R square) and 2.6% (Nagelkerke R squared) of the variance, and correctly classified 62.2% of all cases.

Table 6 shows that the variable *Use of narratives* contributes significantly to the model with $p < .000$. This variable has an odds ratio of 1.313, which means that people with a higher score on *Use of narratives* are 1.3 times more likely to have participated in either of the community successes. This analysis shows that the data provide enough evidence to support the first part of hypothesis 2. The link supported in this case can be seen in Fig. 3.

4.3.3. Hypothesis 2b

For Hypothesis 2b, the focus is on the comparison between the group that participated in culture formation through narrative accrual and the one that did not. To make this comparison, the participants were divided in groups according to whether or not they participated, and then an independent-sample t-test was performed to find if there was a difference in their levels of participa-

tion in culture. The means of the construct *Use of narratives* were compared between the groups. The results of the independent samples t-test can be seen in Table 7.

The test shows that there is a significant difference between members who reported participation ($M = 3.49$, $SD = 1.04$) and those who did not ($M = 3.19$, $SD = 1.06$); $t(951) = -4.338$, $p < .000$. These results suggest that members who participate in community successes have a higher score in *Use of narratives* than those who do not.

4.3.4. Hypothesis 3

The third hypothesis focuses on the relationship between a sense of community and participation in community successes. For this test, the independent variables are *Membership*, *Needs fulfillment*, *Influence and Shared emotional connection*, *Shared values*, and *Use of narratives*. Direct logistic regression was performed to determine the impact of each variable on the likelihood that respondents would have participated in either of the community successes.

Logistic regression provided a model to predict the categorical outcomes of having participated or not. The model was statistically significant, $\chi^2 = 53.381$, $p < 0.000$, and as a whole explained between 5.5% (Cox and Snell R square) and 7.5% (Nagelkerke R squared) of the variance, and correctly classified 67.1% of all cases.

Table 8 shows the variables that result from the model. The variables that significantly contributed to the model ($p < .05$) are *Membership* and *Shared values*. *Membership* has an odds ratio of 1.836, which means that people with a higher score on *Membership* are 1.8 times more likely to have participated in either of the community successes. The odds ratio for *Shared values* is 1.527.

Three variables (*Needs fulfillment*, *Influence and Shared emotional connection*, and *Use of narratives*) do not significantly contribute to the model. In the proposed model, a sense of community as a whole would directly influence participation; however, factor analysis (Section 4.2) showed that a sense of community is a variable best measured through separate constructs. The fact that only

Table 6
Summary of direct logistic regression analysis to predict participation.

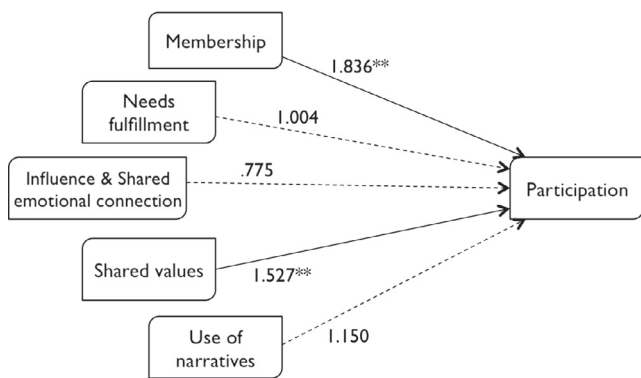
Variable	B	S.E.	Wald	df	Sig.	Odds ratio	95% C.I. for EXP(B)	
							Lower	Upper
<i>Summary of direct logistic regression analysis to predict participation</i>								
Use of narratives	.273	.064	18.164	1	.000	1.313	1.159	1.489
Constant	-.421	.222	3.588	1	.058	.656		

Table 7
Independent samples t-test for the Variable Use of Narratives.

t	df	Sig. (1-tailed)	Mean difference	Std. error difference	95% Confidence interval of the difference	
					Lower	Upper
<i>Independent samples t test for the variable use of narratives</i>						
-4.338	951	.000	-.30369	.07000	-.44107	-.16632

Table 8
Logistic regression predicting likelihood of participating according to participation in narrative accrual.

Variables	B	S.E.	Wald	df	Sig.	Odds ratio	95% C.I. for EXP(B)	
							Lower	Upper
<i>Summary of direct logistic regression analysis to predict participation</i>								
Membership	.608	.159	14.550	1	.000	1.836	1.344	2.509
Needs fulfillment	.004	.110	.001	1	.972	1.004	.810	1.245
Influence & shared emotional connection	-.255	.130	3.825	1	.050	.775	.600	1.001
Shared values	.423	.129	10.854	1	.001	1.527	1.187	1.964
Use of narratives	.140	.074	3.596	1	.058	1.150	.995	1.328
Constant	-3.417	.586	34.016	1	.000	.033		



* $p < .05$. ** $p < .001$. ----- Not significant.

Fig. 4. Hypothesis 3 results.

some of these (*Membership and Shared values*) have an effect on participation shows that Hypothesis 3, as it was originally stated, is only partly supported (see Fig. 4).

4.4. Conclusion: revised model

The items of the online survey were subjected to factor analysis, which revealed that a *Sense of community* was a variable best divided in separate constructs: *Membership, Needs fulfillment, Influence and Shared emotional connection, and Shared values*. It also revealed that only two items from the survey were significantly measuring participation in collective narrative accrual, both of

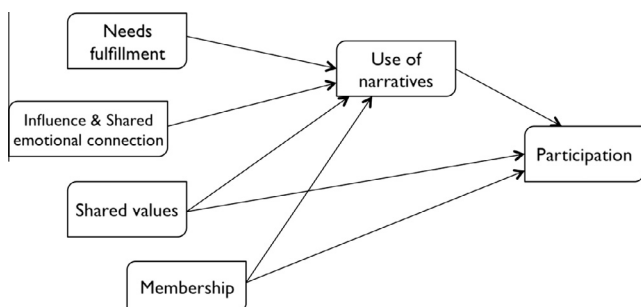


Fig. 5. Revised model.

which were indexed together as a *Use of narratives* variable. The dependent variable of *Participation* stayed the same.

The separate links found by the various tests were used to revise the proposed model and the result can be observed in Fig. 5. The original expectation was that *Participation* would be influenced by a *Sense of community*, and that the presence of *Participation in collective narrative accrual* would amplify this influence. The main notion of the proposed model is the same in the revised version, but the way in which narratives play a role as tools for channeling participation is placed more precisely with the dissected constructs. Consequently, we see that all dimensions of a sense of community according to McMillan and Chavis George (1986) influence the variable *Use of narratives*, but not all of them affect participation directly. The data shows that *Needs fulfillment* and *Influence and emotional connection* are not variables that influence participation directly in a significant way. However, these two variables do have a statistically significant effect in *Use of narratives*, which in turn has significant effect in participation. Therefore, it can be concluded that *Use of narratives* is only a determinant factor in the model when members have a higher perception of needs fulfillment, and of influence and emotional connection.

5. Discussion and implications

5.1. Major discussion points

The results of the statistical analysis revealed that the proposed model could not be supported by the data in the way in which it was formulated. Decomposing the variable sense of community of this sense actually play a role in the participatory behavior of OCs. While it was expected that all dimensions of a sense of community would influence participation directly, this was not the case. Only *Membership* and *Shared values* turned out to be constructs that significantly influence participation directly. *Needs fulfillment* and *Influence and Shared emotional connection* do not influence participation directly, but through the construct *Use of narratives*. Moreover, the results from the content analysis revealed that different dimensions of a sense of community are present in the participants reported motivations for participating in community successes.

The intent of this research was to find whether narratives positively influence participation in OCs. The revised model illustrates

the way in which the use of narratives plays a role in participation by doing two things; First, it amplifies the influence in participation that *Membership* and *Shared values* would have on their own. And second, it serves as a mediator for *Needs fulfillment* and *Influence and Shared emotional connection* to have a significant effect on participation. In other words, these last two variables would not have a significant effect on participation if the variable *Use of narratives* were not present. Therefore, it can be concluded that the use of narratives significantly influences participation in OCs.

In the specific case of the Nerdfighter community, narratives played a role in channeling participation when members reported having a higher score of *Needs fulfillment* and of *Influence and emotional connection*, even when they had already reported feelings of *Membership* and of *Shared values* (which directly increase participation on their own). Narratives seem to play a bigger role when members are more invested in the community and therefore develop higher scores in the aforementioned variables.

5.2. Implications

These findings reveal two main things that can be of use for scholars of OCs and for managers of OCs in both for-profit and non-profit realms. First of all, this research shows that narratives do accrue to form a culture in OCs, and that community members do take an active part in sharing and accruing narratives. Content analysis of the type of narratives community members reported sharing revealed both the type of narratives that are shared more often and the reasons for actively sharing them (Leyton Escobar, 2013; Leyton Escobar et al., in press).

Participants reported sharing narratives in order to make them clear for others, to involve others in the community, or to share wise/motivational content. They also reported sharing narratives because they felt they were personally important to them, and that they were worth sharing because they were about people making an impact in the world. The types of narratives participants reported sharing were about the community itself, about members of the community doing something significant, and about the community achieving goals together (Leyton Escobar, 2013; Leyton Escobar et al., in press).

This research shows narratives have a significant effect on participation in OCs, so considering the types of essential narratives explained here, as well as the reasons for sharing them, can be useful when trying to steer a process of culture formation in OCs. Significant features of narratives can serve as selection filters to pick which narratives are more influential in different communities. It should also be noted that spreading these types of narratives in OCs might be key not only for channeling participation, but also for creating more cohesive communities, and even for guiding behavioral change.

Another implication to consider is that these type of narratives, as instruments for cultural negotiation (Bruner, 1991), can also be useful to spread messages effectively in online platforms. Faraj et al. (2011) pointed out that narratives are helpful in “allowing passionate and time-constrained participants to direct their efforts” (p. 1232), meaning that narratives that are significant for a community can become good tools to spread messages. To do this, however, it is important to remember another important feature of narratives – hermeneutic composability (Section 2.4.1), which emphasizes the effect of the intention of the teller of a narrative, and of background knowledge of both the teller and listener, in how a story is to be interpreted. Since a prominent feature of the essential narratives found in this study is that they are genuine, narratives should not be made out and sent in a “calculated” manner.

5.3. Limitations

Something that was revealed in the content analysis was that participation in the chosen community successes were not the most highly ranked activity reported by participants. This may mean that the model could have been more significantly supported if a different activity would have been chosen. Still, choosing an activity that is not performed by everyone in the community served as an indicator for comparison between groups.

Another limitation of this case study is that results may not be entirely generalizable to other OCs. However, they do expose narratives as tools for channeling participation, and help understand how they can be used to boost participation in OCs in which members share a sense of community.

The last limitation of this research is the self-selection process of the participants. Although the online survey was posted in four different platforms to reach a broader scope of community members, it is likely that only those most invested in the community actually took the time to fill it out, which may have caused a bias in the results.

5.4. Future research

The findings of this study show that narratives are effective tools to create and develop culture, and to increase participation in OCs. Future research might focus on finding more evidence for the proposed model, as well as analyze how narratives play important roles in other aspects of OCs.

Additionally, narratives may serve as good heuristic tools to evaluate sociability in OCs. In a paper exploring the importance of both the sociability and usability evaluation of OCs, Preece, Abras, and Maloney-Krichmar (2004) explain that understanding how community members relate to each other is key to understand OCs. Since narratives were found to be common cultural artifacts that community members share with each other, their existence are an indicator of sociability in OCs. Moreover, analyzing the type of narratives a community exchanges and the reasons why they share them might be a useful way of understanding the particularities of each community.

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