

# Socialization Tactics in Wikipedia and Their Effects

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## ABSTRACT

Socialization of newcomers is critical both for conventional groups. It helps groups perform effectively and the newcomers develop commitment. However, little empirical research has investigated the impact of specific socialization tactics on newcomers' commitment to online groups. We examined WikiProjects, subgroups in Wikipedia organized around working on common topics or tasks. In study 1, we identified the seven socialization tactics used most frequently: invitations to join, welcome messages, requests to work on project-related tasks, offers of assistance, positive feedback on a new member's work, constructive criticism, and personal-related comments. In study 2, we examined their impact on newcomers' commitment to the project. Whereas most newcomers contributed fewer edits over time, the declines were slowed or reversed for those socialized with welcome messages, assistance, and constructive criticism. In contrast, invitations led to steeper declines in edits. These results suggest that different socialization tactics play different roles in socializing new members in online groups compared to offline ones.

## Author Keywords

Socialization, Wikipedia, WikiProject

## ACM Classification Keywords

H.5.3 [Information Interfaces]: Group and Organization Interfaces – Collaborative computing, Computer-supported cooperative work, Web-based interaction

## General Terms

Design, Theory

## INTRODUCTION

One of the challenges of organizational management is helping new group members adjust to their environment. This adjustment process has been referred to as socialization, or the process of learning the behaviors and attitudes essential to playing a role in an organization [20]. Extensive research on organizational socialization highlights its importance to the overall functioning of groups and the satisfaction of individuals within them: Recent meta-analyses

of studies about newcomers indicates that organizational characteristics and newcomer characteristics present during the role transition from prospective member to new member significantly influence long-term outcomes for groups and their members (e.g., performance, job satisfaction, commitment, individual intentions to remain in the group, and member turnover) [4, 23]. It is important to note, however, that much of the research on socialization in conventional organizations is based on self-report data culled from surveys using a common questionnaire [12].

Socializing newcomers is critical for online groups as well. Some online groups set goals, coordinate the work needed to be done, and reward members just as off-line groups do. However, online group members often work in different locations, are anonymous, and are not bound to the group through an employment contract. Thus, the basis of many online groups is the relationships between individuals and groups that develop and are maintained through social interactions [14]. As a result, it is easier for members to leave online groups than off-line ones [14]. For this reason, socialization is at least as important online as offline.

However, there has been little empirical research on how socialization is accomplished in online groups and its effectiveness. Even though online groups are similar to offline ones on many dimensions, one cannot automatically generalize the findings from offline groups to online groups. Thus, empirical studies examining the impact of socialization tactics used by online groups are necessary. The research reported here attempts to fill this gap.

The remainder of this paper is organized as follows: The next sections review prior research on socialization in both conventional (offline) organizations and online groups. The subsequent sections report two studies conducted in Wikipedia, one examining the socialization tactics used and the second their effectiveness. The final two sections discuss our results and suggest future research directions.

## SOCIALIZATION IN CONVENTIONAL ORGANIZATIONS

Providing newcomers with explicit knowledge about job tasks and work roles contributes to successful newcomer adaptation. Ostroff and Kozlowski [22] suggest that receiving information about an organization from supervisors and co-workers increases self-reported newcomer job satisfaction and commitment and reduces their intent to leave. Moreover, newcomers who have to obtain information about their groups on their own report higher levels of stress. In addition,

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Chao et al. [6] indicate that newcomers who possess greater knowledge about aspects of their organization, such as internal group politics, the meaning of group-centric jargon, and group goals and values, are more satisfied and involved with their work than are those who possess less knowledge.

Van Maanen and Schein's [24] typology of socialization tactics has been very influential in shaping how researchers think about the techniques organizations use to socialize newcomers and how those techniques affect newcomer adjustment. Van Maanen and Schein [24] delineate six dimensions of tactics used by organizations to structure the socialization experiences of newcomers: formal vs. informal (i.e., whether newcomers have formal training to do their jobs or learn informally through trial and error), collective vs. individual (i.e., whether newcomers receive training and other socialization experiences as a part of a group of other newcomers or individually), sequential vs. random (i.e., whether the organization puts newcomers through a coherent sequence of training and job experiences that build on each other or provides a haphazard set of training experiences), fixed vs. variable (i.e., whether a newcomer is provided with a clear timetable for training experiences or job transitions or has little idea about when these will occur), serial vs. disjunctive (i.e., whether newcomers are provided with experienced mentors who help them learn their jobs or not), and investiture vs. divestiture (i.e., whether the organization acknowledges and builds upon the newcomers' existing skills and abilities or demands that they change).

Building on this work, Jones [12] hypothesized that Van Maanen and Schein's [24] collective, formal, sequential, fixed, serial, and investiture tactics form a desirable structure that he termed "institutionalized socialization". In his view, institutionalized socialization tactics help organizations reduce newcomers' anxiety and uncertainty, which have been theorized to be major obstacles for newcomers entering an organization [15, 24]. Additionally, institutionalized tactics help newcomers adjust to their roles within the organization and are positively related to job satisfaction. Jones contrasts institutionalized socialization to individualized socialization (individual, informal, random, variable, disjunctive, divestiture), which he argues leads to an innovative role orientation in which newcomers believe that adaptation to the organization requires organizational changes as well as personal change. Later research has supported Jones's hypothesis that institutionalized socialization leads to positive outcomes for both individuals and organizations. Recent meta-analyses show that newcomers who experience more institutionalized socialization practices have more certainty about their roles, feel more accepted by the organization, are more satisfied with their jobs, express greater organizational commitment, are less likely to leave the organization, and perform their work better [4, 23]. However, Jones's hypothesis that individualized socialization leads to an innovative role orientation has received much less support.

Additional work suggests that other socialization experiences beyond Jones's [12] institutionalized socialization tactics may influence the newcomer socialization process. Organizations that are better at recruiting potential newcomers, for example, tend to encounter fewer problems during socialization. Organizations that fully investigate potential members, whether via informal or formal discussions with them, observation of their participation in group activities, or by recruiting among the acquaintances of current group members, are more likely to retain newcomers who have the skills necessary to fulfill their future roles and who are likely to be willing to adjust to group norms [18, 21].

Online groups can provide newcomers with a variety of socialization experiences. Some communities, like the football-manager game [hattrick.org](http://hattrick.org), use highly institutionalized techniques. They socialize newcomers in cohorts, provide experienced mentors in online forums where experienced players answer newcomers' questions, provide clear sequences of roles within the game, and provide incentives for new players to gain formal training through what is called "Hattrack University." Others communities, like the online encyclopedia Wikipedia, use more individualized techniques to socialize newcomers. Wikipedia allows new editors to make changes to articles with no training at all, even though it has voluminous policies that prescribe how one should behave as an editor and has institutions like welcoming committees that have the potential to provide newcomers with structured guidance. We expect that different socialization tactics will influence new members' commitment to online groups. More specifically, as in conventional offline organizations, institutional socialization tactics are likely to have more positive effects on newcomers' commitment to groups than individualized ones in online environments.

#### **Limitations of the Organization Socialization Literature**

Despite the presence of an extensive social science literature examining factors that contribute to the successful socialization of newcomers, important limitations exist. Across the literature, organizational socialization tactics are typically measured via the use of Jones's self-report questionnaire [12]. This is an understandable limitation: The methodological difficulties involved in collecting and evaluating behavioral data from naturally occurring groups in the field are profound and are challenging even in the laboratory. Regardless, researchers do not yet have a good sense of how groups actually execute many of the tactics described above. However, the relatively recent emergence of the Internet, with its large number and variety of online groups (e.g., discussion forums, gaming guilds, support communities) now provides researchers with an accessible archive of text-based, conversational data which can be used to empirically test some of the above ideas about socialization behaviors in groups.

#### **ONLINE GROUPS AND SOCIALIZATION**

The Internet provides individuals with easy access to others who may be similar to them in interests, values, and goals,

and allows them opportunities to form groups based on those similarities. These online groups share many characteristics of traditional, offline groups: online groups develop and maintain group norms (e.g., written rules of conduct for posting on an email list), they establish social hierarchies (e.g., the assignment of special icons or titles to more senior members), group members elect and follow leaders (e.g., message board moderators), and they often work to attain collective goals (e.g., “questing” in World of Warcraft).

However, there are important differences between online and offline groups, which suggest that one cannot apply theories from conventional organizations without validating them in the new setting. Many online group members are anonymous and work in different locations. Their relationship to the group is voluntary, rather than based on an employment contract. Members’ connections with the group and one another are mainly based on social interactions in the online environment. Because of these differences, commitment to online groups is often lower than to offline groups. It is easy for members to leave online groups [14]. For example, 68% of newcomers to Usenet groups never post anything after their first post [3], and a quarter of the members of guilds in the massive multiplayer game World of Warcraft leave their guilds every month even though they are still playing the game [8]. Inequities in contribution are extreme, with a small fraction of members doing the vast majority of contribution. In Wikipedia, for example, more than 90% of all edits are made by the top 10% of editors. Given these high turnover rates and lack of contribution by most group members, research on the tactics that lead to successful relationships between online groups and their members will have important theoretical and practical implications.

Some research has investigated how newcomers to online groups change throughout the socialization process. In one example, Ahuja and Galvin [1] examined the impact of member tenure on individual communication patterns within an e-mail-based network. A content analysis of e-mail communication indicated that newcomers primarily seek information, while established group members primarily provide it. Bryant et al. [5] conducted telephone interviews with committed Wikipedia editors about their experiences, finding that as the editors moved from peripheral to full participation, their goals, tools, and perceptions of the community changed (e.g., newcomers did not perceive a sense of community within Wikipedia, but experienced users did). Ducheneaut [7], using ethnographic analysis, found that well-adjusted newcomers engage in identity construction over time and forge alliances with other group members.

However, as is the case with research on socialization to traditional groups, the current literature on socialization in online groups is limited by the absence of long-term behavioral data. Many studies use retrospective, self-report data to test hypotheses, while others use short periods of observation. Moreover, no study has investigated the types of tactics online groups use to socialize their new members or the impact of those tactics on members’ commitment.

Both of these limitations imply that empirical studies examining the impact of socialization tactics used by online groups on members’ commitment would be useful. Our research questions are: 1) what kinds of socialization tactics are used in online communities? and 2) what kinds of socialization tactics enhance newcomers’ commitment to these communities? To answer these questions, we chose WikiProjects as our research site.

### **Wikipedia and WikiProjects**

Wikipedia is a large, task-focused community whose goal is to produce a free online encyclopedia. Wikipedia is a highly popular website, with over eight million registered editors as of October, 2008, and over two million content pages. The broader Wikipedia community houses smaller topic-centric project subgroups known as WikiProjects. WikiProjects are collections of editors interested in improving the coverage and quality of articles in a particular domain. For example, members in the Oregon WikiProject create, assess, and improve pages related to the history, geography, culture, and other attributes of the US State of Oregon.

Each WikiProject has a dedicated page which exists in a namespace separate from regular article content. Editors can join a project simply by adding their name to the member list on this page, though some projects move members who have not been active to an inactive list. WikiProjects also provide mechanisms for members to self-identify and to acknowledge each other. Members can place project banners on their user pages, identifying their online personas with the project. Identification with the project seems to influence their behavior. After editors join a WikiProject, they direct more of their work to articles within the project’s scope [13].

WikiProjects are particularly interesting to group researchers because they incorporate many characteristics of traditional work groups even though they are online. For instance, WikiProject members set goals, develop task criteria, maintain diverse collaborative processes, keep track of work that needs to be done, discuss issues of interest using a forum, develop project-specific norms, and reward each other for good performance. In addition, like a “real-world” work group, the success of a WikiProject depends on the editors’ ability to function as a cohesive group working toward a common goal.

In summary, WikiProjects have many characteristics in common with other online (and offline) work groups. In addition, because the Wikipedia’s entire edit history is available to anyone who cares to see it, WikiProjects provide a lens through which to examine the socialization processes executed by WikiProject members. We conducted two studies in WikiProjects to answer our research questions about the types of socialization practices used online and their effects.

### **STUDY 1**

The goal of this study was to identify the socialization tactics used in WikiProjects.

### Data collection

We randomly selected 12 WikiProjects from the 50 projects focusing on US states. Because all of the state projects have similar content (e.g., cities, government, geography, history, culture), restricting the sample to US states helps to control many variables associated with topics.

We originally looked for evidence of the institutional tactics described in the prior literature, but most were absent in Wikipedia projects. For example, none of the projects socialized newcomers in a group, isolated newcomers from other members of the project during a training period, had a defined curriculum to help newcomers learn how to operate in the project, assigned a formal mentor to newcomers, provided a graded set of assignments that built upon each other or delineated a clear path through which newcomers could gain more responsibilities in the project. Instead, socialization occurred primarily through the interpersonal exchanges existing project members had with the newcomers on project and user talk pages.

In order to welcome and socialize new members, experienced members usually begin by recognizing the addition of a new member's username to the member list on the project's main page and then communicating with him or her. This socialization occurs on project talk pages, members' personal user talk pages, and project related article talk pages. In general, on project talk pages, users discuss how to develop criteria and maintain the diverse collaborative processes of the project. Each user has a personal page and a related talk page, which could be used to discuss various subjects ranging from personal issues to article conflicts. Article talk pages are used to discuss and build consensus on changes to the article page. In this research, we restricted our focus to project talk pages and user talk pages, because socialization of WikiProject members mainly occurs on these two kinds of pages. Many anonymous users, who have neither specific user names nor user pages, and many editors who are not members of projects post frequently on the article talk pages, and so these pages are not used for socialization. Article talk pages are commonly used to discuss article content itself rather than to socialize editors.

We identified all new members of each project from the beginning of the project to September, 2007. After identifying the date they joined the project, we visited project talk pages and each member's user talk page. We collected all communication a new member received from already existing project members during the month before joining and the month after joining. Some users were blocked by Wikipedia because of their vandalistic edits, and their user talk pages were removed. We excluded those users. The sample consists of 301 newcomers and 422 messages they received from existing project members.

### Analysis

In this study we used grounded theory methods to examine the socialization tactics used by WikiProjects [10]. We examined each response that newcomers received in the two months surrounding their joining the project. Each response

could include multiple socialization tactics. We continued analyzing the project data until we reached the point of data saturation, which occurred when the researchers no longer identified additional types of socialization tactics [10]. After examining messages in three projects, seven distinct categories emerged. Two independent coders coded the 422 messages received by newcomers into the seven categories using a standardized codebook. Each message could be associated with multiple coding categories. We coded each distinct socialization tactic received by each newcomer, resulting in total 838 socialization tactics used by twelve WikiProjects. The overall inter-rater reliability was high ( $r = 0.97$ ), and the lowest reliability for any category was 0.86.

### Results

Coding of the interactions between existing members and newcomers indicated that WikiProjects used the following seven socialization tactics: invitations to join the project, welcome messages, requests to work on a particular task, offers of assistance, positive feedback on work, constructive criticism of work, and personal comments. The first three tactics (invitations, welcome messages, and task requests) had both standardized and personalized variants. Standardized responses were formal and used templates to insure that all newcomers received the same communication, while personalized variants were informal and had content tailored to particular newcomers [12]. The remaining tactics had only personalized forms. We describe these socialization tactics in more detail below.

*Invitations* are an early socialization tactic used during the investigation phase of group socialization, when groups attempt to recruit appropriate people and individuals assess groups [16]. Invitations to join a project group were often sent to editors when an old-timer saw them editing project-related article pages before they had formally joined the project. Invitations were also sent to editors who just became a registered user in Wikipedia, or who had worked on similar projects. We found two types of invitations: standardized ones, in which old-timers pasted an invitation template on editors' personal pages, (Figure 1-1), and personalized ones (Figure 1-2), in which old-timers added a personal message to the standard invitation.

*Welcome* messages were sent to newcomers by old-timers shortly after the newcomer had registered to be a member of the WikiProject. The messages signaled that the group was interested in him or her and wanted to develop a positive relationship.

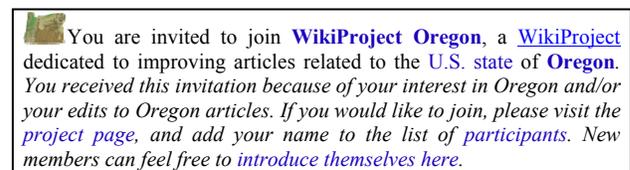


Figure 1-1. Example of standardized invitation message

Welcome to Wikipedia fellow Oregonian. I see you have been doing some work in history, especially Oregon history. With that in mind I invite you to join [WikiProject Oregon's group on history](#), or if writing about people is your thing then [the group on people](#)! No pressure, just a friendly invite. Plus you could sign up for [WikiProject Oregon](#) if you wanted.

Figure 1-2. Example of personalized invitation message

As with invitations, welcome messages came in two variants: standardized ones, in which old-timers pasted a project-specific welcoming template on newcomers' personal pages (Figure 2-1), and personalized ones (Figure 2-2), in which the old-timer added a personal message to the standard welcome.

 Welcome to [WikiProject Oregon](#)! If you'd like, you can add the WP Oregon userbox to your user page using this code: `{{User|WikiProject Oregon}}`. Check out the ongoing and archived discussions at [WT:ORE](#) and be sure to add the page to your [Watchlist](#). If you are new to Wikipedia, it's a good idea to browse through [the core principles of Wikipedia](#) as well. The project home page at [WP:ORE](#) has many useful links to get you started. The [recent changes](#) and [recent discussions](#) links will display recent edits on articles within the project's scope. Welcome!

Figure 2-1. Example of standardized welcome message

Welcome to [WikiProject Alabama](#)! I saw your name posted on the members list and wanted to welcome you. I'm from the other end of the state, Daphne, near Mobile. I was raised near Tuscaloosa and yes, I am a 'Bama fan. Seems like you Auburn guys have got us beat around here. Anyway we are glad to have you. If I can help at all let me know or any of the other folks around the project. There's a lot of work to be done! Welcome!

Figure 2-2. Example of personalized welcome messages

*Task requests* were sent to newcomers when the group asked the newcomers (and potentially existing members) to do a certain job. These too came in standardized and personalized variants. Standardized task requests often occurred in the form of a formal newsletter asking all project members to do a job or class of work (Figure 3-1). Personalized task requests were personal messages sent from an old-timer to a newcomer to do a specific task (Figure 3-2).

Geetings, [WPOR](#) member, we are starting a weekly collaboration project where we will announce two articles that are currently stubs that we hope to work together to improve. No pressure to help, but if you would like to, just stop by one of the articles and see if you can find information to expand the article with, copy edit what is there, help with formatting, or add some images. This weeks articles are: [Alis volat proprils](#) and [Fusitriton orgonensis](#).

Figure 3-1. Example of standardized task request

Hey, one of these days d you think you could take some pictures at Mission Mill? I'd like to spruce up the article but it really needs some photos. Thanks!

Figure 3-2. Example of personalized task request

WikiProjects also provided *assistance* to newcomers, as shown in Figure 5. Old-timers either responded to newcomers' requests for assistance or proactively offered assistance to newcomers even if they did not ask for help.

Some of the tasks you're doing, like adding the `{Defaultsort}` template, can be done using [Wikipedia:AutoWikiBrowser](#). It makes these tedious and repetitive edits much easier, and will check for typos and general formatting errors as well. You may want to apply for the software; I think it'll speed up your efforts. Let us know if we can help with anything.

Figure 4. Example of providing assistance

Old-timers often gave *positive feedback on* a newcomers' work. Existing project members either praised new members' edits on project-related pages or gave them an award as shown in Figure 5.



#### The Exceptional Newcomer Award

For doing more in the subject area of Oregon in one month than I have managed to accomplish in six, including writing several long-needed articles and whipping up a bunch of handy infoboxes.

Figure 5. Example of positive feedback

*Constructive criticism* was sent to newcomers when they did something wrong. It helped newcomers learn how to edit project-related articles correctly and how to discuss in a proper manner, both in Wikipedia and the WikiProject they joined. For example, in Figure 6, an existing project member asked a newcomer not to violate group norms.

I have seen you adding the links to UofO's special collections, and it looks like good portion of your material for articles come from that source. Just be careful about [copyright infringement](#) and [Plagiarism](#), as I am sure you don't want your articles to be deleted for either reason. I find it best to re-order information and integrate multiple sources, change phrases etc. to avoid making it look like anything I add is a copyright violation, and then I always [reference](#) the item to avoid plagiarism.

Figure 6. Example of constructive criticism

*Personal comments* were communications about the sender's interests or off-topic content which was not related to WikiProject tasks.

I was there from 1995-1999 (was it that long ago?). As an Econ major, I didn't take many Anthropology or Art classes... although Ann Nicgorski was my World Views professors. : ) I loved my experience at Willamette. I joined [WP:WPOR](#), so maybe I'll see you around in some articles.

Figure 7. Example of personal comments

In summary, we identified seven socialization tactics in Study 1. They are not entirely new tactics, and conventional offline organizations use at least some of them. For example, many organizations provide positive feedback to new members to encourage them to work harder. However, we did not find a similar set of tactics in prior analyses of socialization in either offline or online groups. This may be due to unique features of the Wiki projects we investigated or because most prior analyses used Van Maanen and Schein's [24] typology of socialization tactics as measured by Jones's survey instrument [12], rather than inductively determining the tactics used in particular settings.

Table 1 provides descriptive information about the data. Median of all variables was zero. Of the seven socialization

tactics, newcomers received a task request most frequently and an invitation least frequently.

	Mean	S.D.	Min	Max
Number of responses	1.402	2.877	0	22
Invitations	0.14	0.357	0	2
Welcome messages	0.236	0.561	0	3
Task request	0.877	2.355	0	22
Assistance	0.412	1.063	0	7
Positive feedback	0.512	1.363	0	10
Constructive criticism	0.369	1.052	0	9
Personal comments	0.186	0.615	0	5

**Table 1. Frequency of communication and socialization tactics per newcomer**

As noted above, organizational socialization research classifies socialization tactics into two categories: institutionalized and individualized socialization tactics. However, most classic institutionalized tactics were absent in Wikipedia projects, and standardization was the only component of classic institutionalized socialization used with much frequency. Among the seven tactics that we found, three tactics (invitations, welcoming messages, and task requests) had both standardized and personalized variants. The remaining tactics (providing assistance positive feedback, constructive criticism, and personal comments) were used only in a personal manner. We found that personalized socialization tactics were used more often than standardized ones in WikiProjects. Of the 838 socialization identified in the communications, 88% were personalized whereas only 12% were standardized.

## STUDY 2

In study 2, we investigated the impact of the seven socialization tactics on newcomer's commitment to the project. First, we examined the impact of number of messages newcomers received, regardless of their content. Second, we classified socialization tactics into standardized and personalized ones and examined their differential impact on newcomers' subsequent contribution. Lastly, we investigated the impact of each socialization tactic on newcomers' subsequent contribution.

### Data

To measure newcomers' commitment to the project, we collected data reflecting newcomer's contributions. Wikipedia provides a data dump that lists all edits made to every page in Wikipedia up to September, 2007. WikiProjects designate their scope by placing a project-specific template on the articles that they oversee. MySQL

database queries allowed us to identify each page a newcomer edited both inside and outside a project before and after joining the project.

### Independent variables

*Responses.* We counted the number of messages a newcomers received from old-timers during the month after the date that they joined the project. For example, if someone joined on Apr 5, we used socialization messages from Apr 5 to May 4 to predict the number of edits the newcomer made from May 5<sup>th</sup> onwards. For invitations, we used communication during the month before the newcomer joined. As noted earlier, old-timers were members who had joined the project prior to a newcomer's joining date.

*Socialization tactics.* We used count data for all seven socialization tactics that we found in study 1. In addition, we generated the count of standardized and personalized tactics by summing the standardized and personalized variants of invitations, welcome messages, and task requests.

*In-project edits before joining the project.* We counted the number of edits made by each newcomer to project-related pages before he or she joined the project. We included in-project edits before joining the project as a control variable.

*Months in project.* Models included the number of months that elapsed since the newcomer first joined the project to see the impact of time

*Projects.* We included project as a dummy variable to control for unknown differences among the 12 WikiProjects. However, because of page limitation, we do not show the impact of these dummy variables in our results.

### Dependent variable

*Contribution.* We counted the number of edits made by each newcomer to project-related pages in a given month.

### Analysis

We examined the influence of socialization tactics on the commitment of newcomers using two analytic approaches. First, we examined the influence of the seven socialization tactics that we found in study1 on newcomers' commitment. Then, we examined the differential impact of standardized and personalized socialization tactics on newcomers' commitment.

Both analyses used negative binomial regression as implemented in Stata (xtnbreg) because the dependent variable, number of edits, is over-dispersed count data. Since each editor had multiple months of editing, we used hierarchical linear modeling with newcomer as a random effect to deal with non-independence in the data.

	Model 1: Response			Model 2: Tactics			Model 3: Tactics X Time		
	IRR	Std. Err.	P> z	IRR	Std. Err.	P> z	IRR	Std. Err.	P> z
Months in project	0.964	0.006	***	0.965	0.006	***	0.964	0.007	***
In project edits before (log2)	1.036	0.014	***	1.037	0.014	***	1.037	0.014	***
Number of responses (log2)	1.124	0.053	**						
Any institutional responses (Count)				0.871	0.054	**	0.870	0.067	*
Any individual responses (Count)				1.074	0.019	***	1.070	0.021	***
Any institutional responses (Count) * Months in project							1.000	0.009	
Any individual responses (Count) * Months in project							1.001	0.003	
Loglikelihood			-5399.652			-5394.679			-5394.530

**Table 2. Impacts of institutional and individual socialization tactics on the number of edits newcomers made (\*\*\* p<.01, \*\* p<.05, \* p<.10)**

**Results**

Table 2 shows the impacts of newcomers’ communication with existing project members in their first month on their subsequent number of edits. Effects are reported as Incidence Rate Ratios (IRR), the ratio by which increasing an independent variable by a unit changes the dependent variable. (e.g., because number of resource is measured in the log base 2 scale, the IRR for number of responses of 1.124 in Table 2 indicates there were 12.4% more in-project edits for every doubling of responses newcomer received).

In Model 1, we found that each doubling of responses led to a 12.4% increase in newcomers’ edits. Each doubling of the number of in-project edits newcomers made before joining the project led to a 3.6% increase in their edits in the first month after joining the project. However, the in-project edits decreased by 3.6% each month after joining the project.

Model 2 decomposes the total responses into standardized and personalized socialization tactics. We found that doubling the standardized response resulted in a 12.9% decrease whereas doubling the number of personalized response resulted in a 7.4% increase in newcomers’ edits.

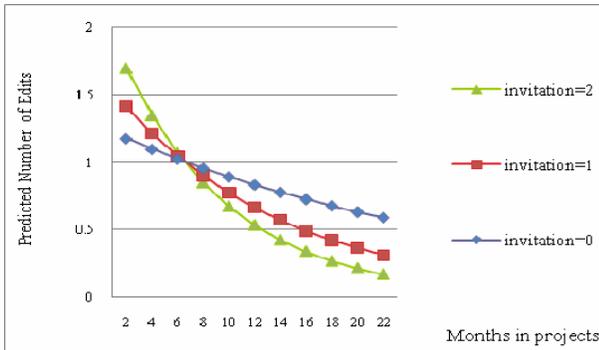
Model 3 contains the interaction effects of standardized and personalized socialization with months in projects since newcomers first joined the project, in order to see if the effects became more pronounced over time. However, there are no significant interactions of standardized or personalized tactics with time.

Table 3 shows the impacts of the seven socialization tactics on the number of edits newcomers made. Model 1 examines the main effects of the seven socialization tactics on the number of newcomers’ subsequent edits. Only the main effect of constructive criticism is significant. Holding constant the number of responses newcomers received, receiving at least one constructive criticism led to a 10.7% increase in newcomers’ edits in the first month.

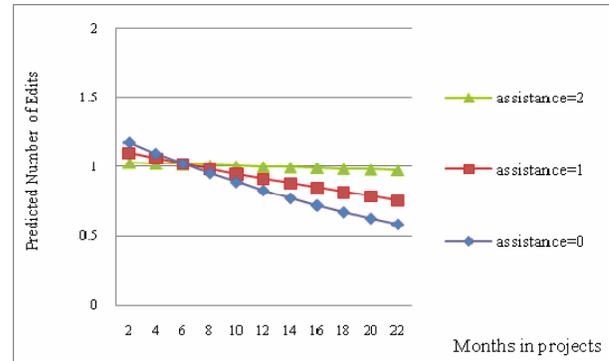
Model 2 adds the interaction effects of socialization tactics and months in projects. These interactions indicate that some of the socialization tactics influenced the standard drop-off in contribution with the time that newcomers remain in the project. Whereas most newcomers contributed fewer edits over time, with a 3.6% decline per month, the declines were reversed for those who were socialized with welcome messages, assistance, and constructive criticism. In contrast, invitations led to a faster drop-off in edits.

	Model 1:Tactics			Model 2: Tactics X Time		
	IRR	Std. Err.	P> z	IRR	Std. Err.	P> z
Months in project	0.969	0.006	***	0.966	0.007	***
In project edits before (log2)	1.038	0.014	***	1.046	0.014	***
Any invitations (Count)	0.933	0.100		1.304	0.191	*
Any welcomes (Count)	1.134	0.102		1.020	0.112	
Any task request (Count)	1.004	0.029		1.037	0.037	
Any assistance (Count)	0.967	0.047		0.906	0.055	
Any postive feedback (Count)	1.040	0.045		1.059	0.060	
Any constructive criticism (Count)	1.107	0.044	**	1.081	0.050	*
Any personal comments (Count)	1.101	0.073		1.009	0.088	
Any invitations (Count) * Months in project				0.960	0.014	***
Any welcomes (Count)* Months in project				1.024	0.012	**
Any task request (Count)* Months in project				0.996	0.004	
Any assistance (Count)* Months in project				1.016	0.010	*
Any postive feedback (Count)* Months in project				0.993	0.006	
Any constructive criticism (Count)* Months in project				1.013	0.006	**
Any personal comments * Months in project				1.013	0.010	
Loglikelihood			-5392.135			-5376.541

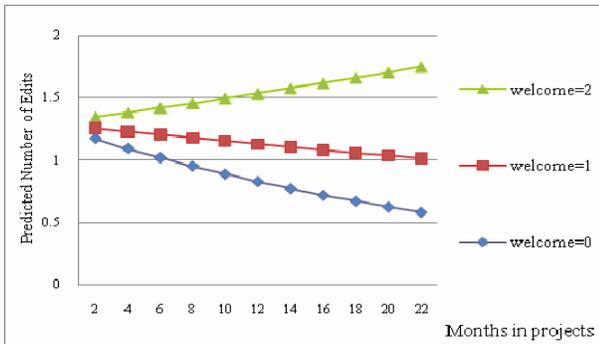
**Table 3. Impacts of seven socialization tactics on the number of edits newcomers made (\*\*\* p<.01, \*\* p<.05, \* p<.10)**



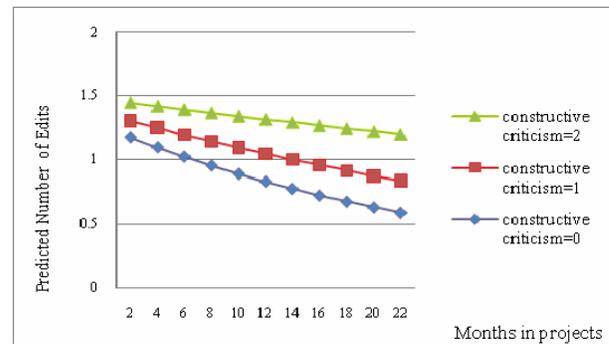
**Figure 8. The impact of invitations on newcomers' amount of edits over time**



**Figure 10. The impact of providing assistance on newcomers' amount of edits over time**



**Figure 9. The impact of welcome messages on newcomers' amount of edits over time**



**Figure 11. The impact of constructive criticisms on newcomers' amount of edits over time**

Compared to newcomers who received no invitations, the rate of editing for those who received an invitation declined faster — 4% fewer edits per month (Figure 8). Compared to newcomers who received no welcoming messages, the rate of editing for those who received a welcome message declined more slowly. They had 2.4% more edits each month (Figure 9). Assistance also led to a slower decline in editing. Compared to newcomers who received no assistance, those who received assistance had 1.3% more edits per month (Figure 10). Lastly, constructive criticism led to a 1.3% increase in newcomer's edits each month (Figure 11).

## DISCUSSION

We identified a set of socialization tactics used by online groups and examined their impact on newcomers' contribution to the group by conducting two studies in WikiProjects.

At the descriptive level, we identified seven socialization tactics that are generally overlooked in research on socialization in conventional organizations. Among the seven tactics, we found that three (invitations, welcoming messages, and task requests) had both standardized and personalized variants. The remaining tactics (providing assistance and positive feedback, constructive criticism, and personal comments) were used only in a personal manner. Analyses showed that that personalized socialization tactics were used much more frequently than standardized tactics in these WikiProjects. We suspect that this is also the case in many off-line organizations, but that limitations in data collection

in offline environments makes it harder to identify socialization done through informal, interpersonal communication than through institutionalized structures like formal mentorship or group training.

The variables identified in our research appeared to influence newcomers' commitment to online groups. All the control variables significantly predicted newcomers' subsequent editing in a project. The more newcomers had edited in the project before joining it, the more contributions they made after joining. This result may simply reflect people's consistency (i.e., that those who are interested in a topic at one time will continue that interest into the future). The result may also reflect the group's greater willingness to maintain a relationship with individuals who have participated actively in the past [14]. Because groups are more willing to engage individuals who have already shown commitment [17, 19], individuals might feel obliged to reciprocate by contributing more after being welcomed into a group.

As time passed, the average contribution of newcomers decreased. It is likely that people joined the project when they were most enthusiastic, but that enthusiasm wanes with time.

Consistent with prior research [9, 11, 14, 25], the number of responses that newcomers received was associated with the amount they subsequently edited. Independent of the content of responses, their mere existence may signal that a social relationship exists between the group and newcomer, and hence may affect an individual's commitment to the group.

Even though communication between established group members and newcomers seems to have increased newcomers' commitment, not all of the socialization tactics embodied in the communication were equally useful. Although firm causal statements are hazardous in light of the correlational nature of our data, constructive criticism appears to have increased newcomers' contributions immediately, and welcome message, assistance, and constructive criticism appears to have retarded the natural decline in newcomers' editing with time. However, invitations were associated with a faster drop-off in edits. One reason for the effects of invitations may be that they attracted people to the group who would not have otherwise joined because they were not sufficiently interested in the groups' goals. The invitation may have introduced a temporary boost in motivation whose effects dissipated quickly.

One particularly intriguing result involves the differing relationships of standardized and personalized socialization communication with newcomers' commitment. Prior research has shown that in conventional organizations standardized socialization tactics are more positively related to commitment than are personalized ones [2, 12]. In the present study, in contrast, standardized tactics were negatively associated with newcomers' contributions, whereas personalized tactics were positively associated with it.

With standardized tactics, newcomers go through common learning experiences designed to produce standardized reactions to situations. By contrast, personalized socialization practices give each newcomer a unique set of learning experiences that may encourage heterogeneity in how they react to situations. Thus, standardized tactics may encourage newcomers to passively accept the requirements of tasks or roles, while personalized tactics may provide newcomers with opportunities to develop differentiated reactions to common situations and to adopt innovative orientations toward roles [12, 24]. Given that people work in different locations and are relatively anonymous in online groups, newcomers may prefer to learn about the group individually and develop their own ways to contribute to it.

Only a handful of studies have examined the impact of socialization tactics in online groups. Our results are important for two reasons. First, we identified unique socialization tactics used in online groups. Second, our results suggest that these tactics influence newcomers' commitment in ways that differ from those suggested by prior research in conventional groups. Our studies suggest interesting questions for further investigation. For example, our finding of a substantial increase in newcomers' contribution after receiving personalized socialization is inconsistent with the findings of studies in offline groups and hence is particularly worthy of additional research..

### **Managerial recommendations**

It is common for online communities to begin interactions with newcomers through (FAQs) that provide the group's mission and rules of conduct, or for automated agents to send newcomers boilerplate welcome messages. Even though these techniques may provide useful information to newcomers, their standardized nature may undercut their effectiveness at encouraging newcomers' commitment.

Wikipedia has formal structures to social newcomers. For example, it has established a welcoming committee whose main activity is to greet new users by posting a welcome message on their talk page. Members of the welcoming committee usually post a boilerplate greeting on the new user's talk page. Although these messages reflect the recognition that developing the individual-community relationship is an integral part of building the community, we believe that the work of welcoming committees can be more effective if they personalized their messages. If welcoming committee members review newcomers' recent work, thank them for particular contributions, suggest improvements to these contributions and offer assistance, they might be more effective in building newcomers' engagement.

### **Limitation and Future Work**

While Wikipedia is one of the most public and successful of the online production communities, our results may not generalize to other groups with different forms and governance structures. Future research on socialization in other groups is therefore necessary.

We examined groups' socialization behavior only during the initial months after newcomers joined projects. Socialization tactics may differ depending on how long newcomers have been in the group. An extension of this paper would be to study newcomers' behavior changes on the later stage.

The data examined here are limited to socialization tactics used by the group and its established members. Because socialization is the process by which groups and prospective members find one another and negotiate a mutually beneficial relationship), future studies need to investigate prospective members' information seeking [16].

The paper primarily examined socialization tactics delivered via interpersonal communication between established members of a group and newcomers, because truly institutionalized socialization tactics like formal mentoring programs or group training were so rarely observed. To the extent, however, that the use of these institutionalized practices vary among WikiProjects, our research methods could not identify their impact, because of the small sample of 12 projects and the use of the project a control variable.

The only measure of commitment used in our research is the number of edits newcomers made per month. However, other measures are possible. We have collected retention data and plan to investigate the impact of socialization on newcomers' retention near future.

Another important limitation of the current model is that it does not take the quality of contribution newcomers made into account. Our analysis might well be improved by examining measures of length, persistence, and page views of edits after the newcomers received specific responses from the group.

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