



## Personality traits and knowledge sharing in online communities

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### ABSTRACT

Adopting diffusion theory and the concept of social value orientation, the effects of personality traits on knowledge sharing in a virtual open content community are investigated. In addition to the main effects of personality, it was hypothesized that intrinsic motivations would moderate the effects on knowledge sharing. A sample of  $N = 256$  active users of Wikipedia provided measures of personality, motivation, and knowledge sharing. Latent regression analyses support the notion that authorship of Wikipedia is associated with higher levels of trendsetting and a prosocial value orientation. Moreover, moderation analyses demonstrate that the effect of the latter is moderated by individual differences in motivations to write. Differences with regard to opinion leadership could not be confirmed.

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### 1. Introduction

With the advent of web-based technologies that allow individuals without specialized technical expertise to interact with each other and create and share new content via the Internet, the availability of user-generated resources has virtually exploded in recent years. Many web users spend a large proportion of their leisure time in online communities, refining and designing new products (e.g., Niketalk.com; Füller, Jawecki, & Mühlbacher, 2007), developing and debugging new software (e.g., Linux; Hertel, Niedner, & Herrmann, 2003), writing new texts (e.g., Wikipedia.com; Schroer & Hertel, 2009) or sharing ideas (e.g., Weblogs; Yu, Lu, & Liu, 2010), artwork, and photos (e.g., Flickr.com; Nov, Naaman, & Ye, 2010) without even being paid for their work. The initiation and enduring maintenance of these user contributions requires a profound understanding of the specifics of this voluntary behavior. Previous research primarily concentrated on motivational explanations for contributing to online communities (Baytiyeh & Pfaffman, 2010; Schroer & Hertel, 2009; Zeitz, 2003). However, apart from domain-specific motivations, individual behavior is typically also determined by abstract personality traits. Hence, the objective of the present study was to explore the role of stable personality characteristics in knowledge sharing in open content projects. Adopting diffusion theory (Rogers, 2003) and the concept of social value orientation (Van Lange, De Bruin, Otten, & Joireman, 1997), three traits are identified to explain the transition of some individuals

from passive receivers of information to active contributors to web-based knowledge-sharing communities.

#### 1.1. Knowledge sharing in online communities

Knowledge sharing has been predominantly studied within virtual work teams. Virtual teams are groups of geographically dispersed individuals; in the case of business organizations they are typically employees in different organizational units which are flexibly created and brought together by modern information technologies (e.g., email or web-based chats) to accomplish a specific task at hand (Hertel, Geister, & Konradt, 2005). Within organizations, virtual teams are formally created by the leader of an organizational unit for the duration of a specific task at hand. Outside the organizational context, individuals also cooperate in online communities such as open source projects (e.g., Linux) without being given a formal assignment by a supervisor in charge. Online communities are a group of individuals who share a common purpose, are guided by formal or informal policies and, most importantly, whose interactions are supported by various computer systems (Preece & Maloney-Krichmar, 2005). Online communities can be distinguished into communities of practice and communities of interest. Communities of practice include people with special expertise and shared interests who are characterized by collective learning. Members of communities of interest are mainly interested in sharing information to solve a problem and are not necessarily experts (Fischer, 2001). In recent years, online communities have become increasingly important for the initiation and maintenance of knowledge exchange because the Internet offers access to many individuals with rather diverse expertise. For

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example, Amazon's Mechanical Turk, a web-based crowdsourcing service that connects knowledgeable workers with potential employers has proven invaluable for research and practice (cf. Buhrmester, Kwang, & Gosling, 2011; Mason & Suri, 2012). While online communities for knowledge sharing have emerged as an important asset in various commercial settings (Füller et al., 2007), for example to explore consumer needs or evaluate new product prototypes, knowledge sharing over the Internet is also essential in non-profit oriented communities. This study focuses on one of the largest knowledge sharing communities on the Internet, Wikipedia, as access to this community is rather low-level and does not require specialized technical expertise (in contrast to, for example, open source projects that require profound programming skills). Wikipedia is a free online encyclopedia with over nine million articles in approximately 250 languages that are collectively created by volunteers around the world. Within a few years Wikipedia has become the central resource of information for most web-savvy users and has a profound impact on training and education (Lokaiczky, 2008) and even job performance (Tseng & Huang, 2011). A representative survey for Germany, for example, reports that about two thirds of all web users occasionally use Wikipedia to search for new information, while 28% even visit Wikipedia on a weekly basis (Busemann & Gscheidle, 2009). Based on wiki technology (Leuf & Cunningham, 2001) anyone with access to the Internet can add or revise articles without the need of explicit technological expertise. Despite the low level entry barriers for knowledge sharing in terms of authoring new articles, active content contribution is still rather scarce. Compared to about 350 million regular readers per month, only about one million individuals edit articles (West, 2010). Furthermore, a core group of only 10% of all authors is responsible for more than 90% of all new contributions (Ortega, Gonzalez-Barahona, & Robles, 2008). Although this percentage gradually declined in recent years, the majority of work is still done by a small group of highly active individuals (Kittur, Chi, Pendleton, Suh, & Mytkowicz, 2007).

## 1.2. Personality and knowledge sharing

Knowledge sharing is a communication process between two or more individuals that is characterized by an exchange of individual knowledge to collectively create new knowledge (Van den Hoof & de Ridder, 2004). Numerous factors can affect the degree of knowledge sharing within communities and virtual teams. On the individual level, these include several abstract personality traits (Matzler, Renzl, Müller, Herting, & Mooradian, 2008) and also various motivational sources (Lin, 2007). So far, knowledge sharing has been predominantly studied with regard to the Big Five model that posits five broad traits of human personality. Previous research indicated that individuals with relatively stable personality profiles, i.e. high in agreeableness and conscientiousness (Matzler et al., 2008; Mooradian, Renzl, & Matzler, 2006), are more likely to share their knowledge with others than those who are low on these traits. In the following section we propose two alternative frameworks for the study of personality and knowledge sharing in virtual communities: diffusion theory (Rogers, 2003) and the concept of social value orientation (Van Lange et al., 1997).

### 1.2.1. Diffusion theory

Diffusion theory studies factors which influence the rate at which new ideas and technologies spread within a community (Rogers, 2003). Although usage of Wikipedia as a source of information can hardly be conceived as an innovation these days, contribution of new content, on the other hand, is still rather limited (Kittur et al., 2007; Ortega et al., 2008; West, 2010) and for most people represents an unconventional activity on the Internet. Thus, knowledge sharing within Wikipedia, i.e. adding or revising

articles, can be considered an innovation in terms of diffusion theory. The speed with which innovations diffuse among members of a social network occurs through various stages over time: from the point where an individual hears about the innovation for the first time and seeks to increase his/her knowledge about it, over his/her decision to give it a try and, finally, the evaluation which results in a decision to continuously use or abandon the new idea or technology (Rogers, 2003). Besides various situational factors, there are specific individuals with certain personality characteristics who determine the speed others pass through these stages and adopt new ideas and innovations. The most influential individuals in this regard are people with high levels of trendsetting and opinion leadership. Trendsetting characterizes early adopters who like to try new ideas and procedures which few others have used before (Batinic, Wolff, & Haupt, 2008). They are attracted by the novelty of a technology and use an application because they are among the first (or the few) to do so. Although they are rather communicative and discuss their experiences with their peers, they do not possess an inherent need to influence others. In fact, if the adoption of an innovation becomes too wide-spread, it loses its appeal for them, as the uniqueness is its main attraction. Empirical results in agricultural settings, for example, demonstrate that individuals high in trendsetting are the first to implement novel computer-based techniques in crop production (Gunnesh-Luca, Moser, & Klöble, 2010). Therefore, individuals high in trendsetting are expected to contribute to Wikipedia due to the novelty of publishing content over the Internet. The central drive behind their participation is the innovation itself, i.e. the opportunity of actively using the wiki environment. Hence, we propose that

**H1.** Trendsetting predicts knowledge sharing in online communities.

Individuals with high levels of opinion leadership, on the other hand, are not attracted by the innovation itself but generally like influencing others' opinions and attitudes about something they regard as important (Rogers, 2003). They are rather communicative, self-confident and display a strong social orientation. A central attribute of opinion leadership is the tendency to frequently give advice and voice their opinions on diverse topics (Gnambs & Batinic, 2012b). As individuals high in opinion leadership are typically also rather knowledgeable (Gnambs & Batinic, 2012a) and, consequently, are perceived as trustworthy informants by others (Raghupathi, Arazy, Kumar, & Shapira, 2009), they represent the predominant source of information within a social group. Online communities are expected to represent an attractive environment for them as they provide the opportunity to communicate their views on things to a large number of people. With regard to Wikipedia, individuals high in opinion leadership are not so much attracted by the novelty of publishing content over the Internet, but rather they acknowledge Wikipedia as a means to achieve their basic goal: to share their knowledge and opinions on subjects they consider important with others. Hence, it is proposed that:

**H2.** Opinion leadership predicts knowledge sharing in online communities.

### 1.2.2. Social value orientation

Social value orientations are individual differences in "certain patterns of outcome for oneself and others" (Van Lange et al., 1997, p. 733) and are generally regarded as stable personality characteristics. Prosocial, altruistic value orientations characterize individuals who try to maximize the joint outcome for themselves and others, while individualistic orientations result in a tendency to maximize one's own outcome without considering the consequences for others. A previous lab study demonstrated that

prosocial value orientations increase knowledge sharing behavior in face-to-face teams, while individualistic orientations do not (Galletta, Marks, McCoy, & Polak, 2003). Moreover, for many individuals self-centered, individualistic motives are not the primary drive behind their actions; rather, many people generally like helping others (Kankanhalli, Tan, & Wei, 2005). Knowledge sharing in online communities is predominantly driven by an inherent sense of obligation and a feeling of altruism (Wasko & Faraj, 2000). For these reasons, many employees in different organizational units share their knowledge in virtual environments even with strangers they are unlikely to meet in person (Constant, Sproull, & Kiesler, 1996; Lakhani & von Hippel, 2003). The driving force for administrators of Wikipedia, for example, is their desire to create a public knowledge base that is freely available to everybody (Baytiyeh & Pfaffman, 2010). Therefore, we suggest that

**H3.** Prosocial value orientations predict knowledge sharing in online communities.

### 1.3. Motivation for knowledge sharing

Motivation is a core determinant of human behavior for which an extrinsic and an intrinsic component can be distinguished (Ryan & Deci, 2000). Extrinsically motivated behavior does not result from the task itself but, rather, is performed to gain some kind of benefit. Most studies, however, report no (Ko, Kirsch, & King, 2005; Lin, 2007) or at most moderate effects of extrinsic motivations on knowledge sharing behavior (Kankanhalli et al., 2005; Stiglbauer, Gnams, & Gamsjäger, 2011). In general, extrinsic motivations are usually less influential for knowledge sharing than intrinsic motivations. Intrinsic motivations refer to factors located within a person and are a result of the task itself (e.g., task enjoyment). Many employees are intrinsically motivated to share their knowledge because they enjoy intellectual challenges and it enhances their confidence about their value for the organization (Lin, 2007). Intrinsic motivation is increasingly considered a multi-dimensional construct with task enjoyment as its most important aspect (Schroer & Hertel, 2009). In online communities, task enjoyment is also influenced by individual evaluations of the communication channel that is used by team members to interact with each other. Daft and Lengel (1986), for example, highlight the richness of the communication media (e.g., telephone, email, video conference) that determines which medium is most effective in different situations and for different people. Individual differences determine to some degree which communication device is preferred by some and not by others (Chapman, Uggerslev, & Webster, 2003). Individuals with high levels of self monitoring, for example, who react rather sensitively to social and interpersonal cues, typically prefer modes of communication that also include non-verbal information (e.g., video-enhanced chat) and dislike modes lacking this kind of information (e.g., text-based chat). Knowledge sharing on Wikipedia implies a specific form of communication, namely a form of written knowledge exchange. As a consequence, intrinsic motivations to contribute to Wikipedia depend on the individuals' motivation to write; more specifically, the fun and entertainment they derive from writing texts. Individuals differ in their motivation to write (Bruning & Horn, 2000). While some experience great joy from composing new texts, for others it is an effort they prefer to avoid. Hence, a basic motivation to write can be assumed to represent a fundamental requirement for knowledge sharing on Wikipedia. Furthermore, these motivational tendencies are expected to interfere with the effects of stable personality characteristics on knowledge sharing. When individuals lack the proper motivation to write, the influence of the personality traits presented above

are assumed to be significantly reduced in magnitude. Hence, we suggest that

**H4.** Motivation to write moderates the effects of (a) trendsetting, (b) opinion leadership, and (c) prosocial value orientation on knowledge sharing in online communities.

## 2. Materials and methods

### 2.1. Participants

Participants were invited by contacting members of a market research panel (Respondi, <http://www.respondi.com>). As the prevalence of active contribution to Wikipedia is rather low in the general public, we additionally recruited active authors in several public mailing lists related to Wikipedia. All participants were invited by email to finish an anonymous web-based survey. No incentives were provided. This resulted in 117 readers and 139 authors who formed a combined sample of  $N = 256$  (101 women) with a mean age of  $M = 26.87$  ( $SD = 12.83$ ). The participants were generally highly educated; about a third had finished highschool and another third possessed a university degree.

### 2.2. Instruments

Knowledge sharing was operationalized in two ways: First, readers and authors of Wikipedia were identified by one dichotomous item ("How do you use Wikipedia: (a) I exclusively read the content. (b) Sometimes I add new or revise existing content."). Second, participants were asked to indicate how many articles they have created or revised within the last 4 weeks on an ordered categorical response scale with eight options (from "up to 5" to "more than 100") to quantify the degree of knowledge sharing. Trendsetting (Batinic et al., 2008) was operationalized with nine items (e.g., "I like to try something new.") and opinion leadership was measured by nine items (e.g., "It is easy for me to influence other people.") from Gnams and Batinic (2011). Prosocial value orientation was operationalized with nine items by Van Lange et al. (1997). The items were made up of tasks involving a series of decisions that represent decomposed prisoner games by selecting one of three valuable outcomes for oneself and a hypothesized opponent (Kuhlman & Marshello, 1975). As each possible decision conforms to a typical social value orientation, each participant can be characterized by a more prosocial vs. a more individualistic value orientation on the basis of an altruistic parameter (Bekkers, 2004). Motivation to write was measured by six items (e.g., "I am frustrated when I have to write.") based on an adjective list by Klaus, Geider, and Jünger (2002). All items of these instruments were answered on five-point response scales from "strongly disagree" to "strongly agree". Means, standard deviations, and bivariate correlations are summarized in Table 1. The proportion of missing values ranged from zero to 4% for each item, which falls well below the tolerable threshold of 5% (Little & Rubin, 1987).

### 2.3. Statistical analyses

To account for the instruments' measurement error, all analyses were conducted by means of latent variable modeling in Mplus 5 (Muthén & Muthén, 1998–2007) with a robust maximum likelihood algorithm using a numerical integration algorithm (Klein & Moosbrugger, 2000). Compared to the analysis of observed scores, latent variable modeling has the advantage of addressing the problem of a measure's unreliability and thus leads to less biased parameter estimates. For each latent construct the scale's items

**Table 1**  
Descriptive statistics.

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.
1. Trendsetting	3.34	0.78	.90					
2. Opinion leadership	2.74	0.79	.68*	.87				
3. Prosocial value orientation	3.87	1.03	-.01	-.13*	.96			
4. Motivation to write	3.98	0.71	.21*	.19*	.06	.77		
5. Authorship (1...reader/2...author)			.18*	.02	.13*	.16*		
6. Number of revisions	2.75	2.38	.19*	.06	.07	.10	.68*	
<i>AVE</i>			.71	.65	.85	.56		
<i>Rel(ξ)</i>			.90	.88	.96	.78		

Notes: *N* = 256. Cronbach's alpha reliabilities in diagonal. *AVE*...average variance extracted by the latent factor (Fornell and Larcker, 1981), *Rel(ξ)*...latent factor reliability.  
\* *p* < .05.

**Table 2**  
Latent moderation analysis.

Predictors	Regression 1 Criterion: authorship (1...reader, 2...author)			Regression 2 Criterion: authorship (1...reader, 2...author)			Regression 3 Criterion: number of revisions			Regression 4 Criterion: number of revisions		
	OR	<i>B</i> ( <i>SE</i> )	<i>z</i>	OR	<i>B</i> ( <i>SE</i> )	<i>z</i>	OR	<i>B</i> ( <i>SE</i> )	<i>z</i>	OR	<i>B</i> ( <i>SE</i> )	<i>z</i>
1. Trendsetting	2.92	1.07 (.37)	2.93*	3.40	1.22 (.39)	3.16*	2.58	.95 (.30)	3.19*	2.71	1.00 (.30)	3.30*
2. Opinion leadership	0.44	-.82 (.36)	-2.26*	0.35	-1.04 (.40)	-2.60*	0.56	-.58 (.28)	-2.08*	0.50	-.69 (.29)	-2.40*
3. Prosocial value orientation	1.35	.30 (.15)	2.03*	1.27	.24 (.15)	1.58	1.15	.14 (.14)	1.01	1.10	.10 (.14)	.69
4. Motivation to write				1.72	.54 (.17)	3.22*				1.26	.23 (.15)	1.55
Interaction 1 × 4				1.22	.20 (.31)	0.65				0.94	-.06 (.31)	-.21
Interaction 2 × 4				0.97	-.03 (.29)	-.01				1.27	.23 (.29)	.82
Interaction 3 × 4				1.35	.30 (.15)	1.98*				1.07	.06 (.14)	.45
<i>Loglikelihood of model (df)</i>	-9073.82 (55)			-9066.33 (59)			-9247.80 (60)			-9245.67 (64)		
<i>AIC/BIC</i>	18257/18452			18250/18459			18615/18828			18619/18846		

Notes: *N* = 256. Robust maximum likelihood logistic or ordinal regression, *OR*...odds ratio, *B*...regression weight, *SE*...standard error of *B*, *df*...number of free parameters, *AIC*...Akaike's information criterion, *BIC*...Bayesian information criterion.

\* *p* < .05.

were combined to form three parcels. Parceling provides several advantages compared to modeling single items (see Little, Cunningham, Shahar, & Widaman, 2002): (a) it reduces the number of parameters to be estimated and thus leads to more parsimonious models, (b) it reduces the likelihood that an item loads on multiple latent factors, and (c) it frequently results in more reliable latent constructs.

For the moderation analysis, trendsetting, opinion leadership, prosocial value orientations and motivation to write were used to predict either authorship of Wikipedia (latent logistic regression) or the number of contributions to Wikipedia (latent ordinal regression). In the first step, two hierarchically nested models were compared by means of a log-likelihood difference test to gauge the significance of the interaction effect: (a) a regression model without a path from the interaction term to the criterion and (b) a regression model that included a path from the interaction term to the criterion. In the next step, the direction of effects was examined more closely by calculating a confidence band for different values of the moderator (Preacher, Curran, & Bauer, 2006).

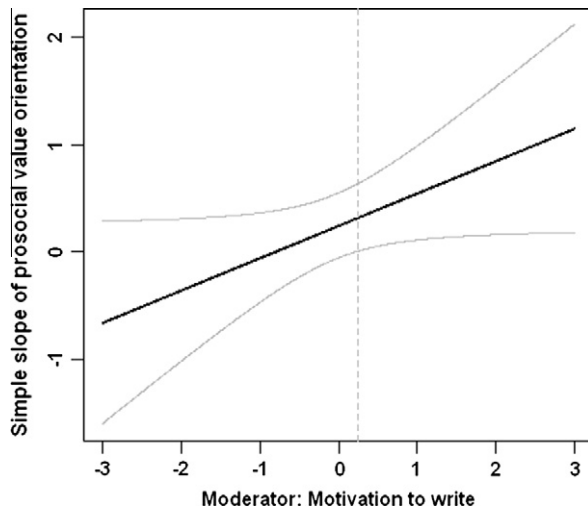
### 3. Results

In the first step, the measurement models of the four constructs were analyzed. A latent variable model with the four correlated factors displayed a satisfactory fit to the data,  $\chi^2(84) = 127.53$ , CFI = .98, TLI = .98, RMSEA = .05 [.03, .06]. The four latent constructs displayed good factor reliabilities between .78 and .96 (see Table 1). Moreover, the average variances explained by the latent factors exceeded the commonly recommended threshold of .50 (Fornell & Larcker, 1981). Hence, the parcels operationalize the constructs adequately.

The hypotheses presented above postulated that active authors of Wikipedia would be characterized by trendsetting, opinion leadership, and prosocial value orientation. Hence, to identify the main effects of these constructs, they were used to predict authorship of Wikipedia (see regression 1 in Table 2). In line with hypotheses 1 and 3, higher levels of trendsetting, odds ratio (OR) = 2.92, *p* < .01, and prosocial value orientation, OR = 1.35, *p* = .04, were associated with authorship of Wikipedia. Moreover, opinion leadership also predicted authorship, albeit negatively in contrast to hypothesis 2, OR = 0.44, *p* = .02; that is, readers of Wikipedia displayed higher degrees of opinion leadership than authors.

Hypothesis 4 stated that the motivation to write would moderate the relationship between the three traits and authorship of Wikipedia. In the next step the previous regression model was thus compared to a model that additionally included paths from motivation to write and its interactions with the three traits to authorship (regression 2 in Table 2). The latter provided a significantly better fit,  $\Delta\chi^2(df = 4) = 15.72$ , *p* < .001. However, only one of the three interaction terms was significant. Motivation to write only moderated the effect of prosocial value orientation, OR = 1.35, *p* = .05, but not trendsetting, OR = 1.22, *p* = .52 or opinion leadership, OR = 0.97, *p* = .91. The direction of effects was examined by calculating a confidence band for the values of the moderator (Preacher et al., 2006). The confidence band in Fig. 1 displays the centered values of motivation to write for which the simple slopes of prosocial value orientation on authorship are statistically significant. The effect of prosocial value orientation on authorship increases for high motivation to write and, by contrast, becomes less important for low values of the moderator. Below the mean of the moderator, prosocial value orientation fails to differentiate between readers and authors of Wikipedia.





**Fig. 1.** Confidence band of simple slopes for prosocial value orientation on authorship of Wikipedia for different values of motivation to write. Gray lines specify the lower and upper bounds of the 95% confidence interval; the dashed line marks the region of significance.

So far, the analyses have presented the effects of the three traits on authorship of Wikipedia as a dichotomous outcome. The respective results for usage intensity, operationalized as the number of articles created or revised within the last 4 weeks, are summarized in Table 2 (regressions 3 and 4). In line with the previous results, trendsetting,  $OR = 2.58$ ,  $p < .01$  and opinion leadership,  $OR = 0.56$ ,  $p = .04$ , significantly predicted usage intensity. However, prosocial value orientation,  $OR = 1.26$ ,  $p = .12$  and its interaction with motivation to write,  $OR = 1.07$ ,  $p = .65$ , failed to predict usage intensity correspondingly.

#### 4. Discussion

Complementing previous research on the role of the Big Five of personality in face-to-face teams (Matzler et al., 2008; Mooradian et al., 2006), the present study introduced three personality traits to predict the degree of knowledge sharing in an online community. The results of this study give support to three main conclusions: First, trendsetting represents the most prominent trait of the three under study by increasing the likelihood of an individual's knowledge contribution to Wikipedia. Hence, contributors of open content are primarily attracted by the unconventional challenge of creating new web content. They tend to be innovative users who are drawn by the novelty of publishing texts on the Internet. Second, to a lesser degree opinion leadership also predicts knowledge sharing on Wikipedia, albeit contrary to expectations in a negative direction; that is, knowledge sharing is associated with lower levels of opinion leadership. Third, prosocial value orientations yielded rather ambiguous results. Although prosocial orientations differentiate between readers and authors of Wikipedia, this effect is moderated by motivational tendencies. Prosocial values increase the likelihood of contributing new content only when individuals have a basic motivation to write. Prosocial values, however, cannot compensate for a lack of motivation. Moreover, in contrast to the two other traits, prosocial orientations did not predict the degree of knowledge sharing, i.e. the number of articles edited. Prosocial values thus seem to be a rather vague predictor of knowledge sharing on Wikipedia, which seems to be effective only under certain conditions.

What are the consequences of these results? Efficient knowledge sharing between team members represents a critical success

factor for many tasks. In particular, organizations that rely on the knowledge contribution of unpaid followers as part of their business model (e.g., as on Twitter.com or Flickr.com) require a profound understanding of factors that foster knowledge sharing in online communities. For organizations that seek to initiate and maintain user contributions in online communities it seems most effective to target individuals with high levels of trendsetting by emphasizing the unique characteristics of the community at hand and the novelty of web-based content authoring as an innovative activity which few others engage in. Trendsetters are important for two reasons. First, they are early adopters of new trends and (in the case of Wikipedia) engage more heavily in knowledge sharing than others. Secondly, their reactions also have an impact on the opinions and behaviors of their social reference group. Although they are generally less influential than individuals with high levels of opinion leadership (Batinic et al., 2008; Gnams & Batinic, 2012a), they are among the first to gain experience with an innovation and communicate it with others. In online communities they are the first who actively participate and engage in knowledge sharing. Hence, their impressions are crucial for the initial development of the exchange process. If individuals with high levels of trendsetting report negative experiences with a community, it might be detrimental for the decision of others to contribute. For organizations trying to develop knowledge sharing communities, it therefore seems essential to consider users with high levels of trendsetting in particular and to create positive experiences for them. In contrast, individuals with high levels of opinion leadership are not necessarily attracted by the novelty of a task itself, but tend to generally try to influence others on topics they regard as important (Gnams & Batinic, 2012b). As a result of their rather communicative nature and social orientation, it was hypothesized that they would participate in knowledge sharing communities to promote important topics and thus indirectly influence others with their contributions. However, on Wikipedia at least, this does not seem to be the case. If anything, opinion leadership is negatively correlated with knowledge sharing. Three explanations might account for these findings. First, a central requirement for the publication of texts on Wikipedia is the need to take an objective point of view. Texts, especially on controversial topics, should present opposing views objectively, without taking a specific side. As individuals high in opinion leadership seek to voice their subjective opinions (Rogers, 2003), the need for objectivity could limit their active contributions on Wikipedia. Moreover, because Wikipedia is envisioned as an encyclopedian resource, it simply might not include the specialized topics most opinion leaders consider important. Second, the lack of direct interaction with others might be a dissuasive factor to their engagement in Wikipedia. Individuals high in opinion leadership typically influence their social reference group in personal conversations (Weimann, 1991). Situations where direct contact with others is not possible or are of a rather limited degree as on Wikipedia might be less attractive for them. Third, the results might also be a consequence of the distinct pattern of media consumption reported previously for opinion leadership (Rogers, 2003). Individuals with high levels of opinion leadership read news papers and magazines more frequently and watch television more often than those with low levels of the trait (Verette, 2004). As Wikipedia is the central resource of information on the Internet for diverse topics, opinion leaders seem to use Wikipedia to stay informed about certain topics. Thus, it is primarily among readers of Wikipedia, among those who use and apply the provided information, that individuals with high levels of opinion leadership are well represented. They influence others to a lesser extent by creating new texts, but use the published information to influence their close social network (Rogers, 2003). As a consequence, for organization seeking to communicate, for example, new product lines to their consumers, it seems prudent

to provide qualitative information that attracts individuals high in opinion leadership who would propagate the respective message within their social circle.

As another major conclusion, the presented results emphasize the importance of the mode of communication for the study of knowledge sharing. The characteristics of the communication channel, for example text-based chat vs. video-conference, strongly influence the effectiveness but also subjective evaluations of different communication media for different purposes (cf. Daft & Lengel, 1986). Therefore, it was suggested that individual differences in the preferences for the mode of communication that is used by team members to interact with each other might also influence the degree of knowledge exchange. Hence, the present study incorporated a variant of intrinsic motivation specific to the mode of communication in Wikipedia: motivation to write. In line with previous results from face-to-face research (Kankanhalli et al., 2005) where team members exchanged knowledge in personal conversations, we identified prosocial value orientations as a stable personality trait that predicted knowledge sharing. However, this effect was significantly reduced when an individual's motivation to write was less pronounced. This highlights that the mode of communication itself can exert an inhibitory effect on knowledge sharing and even moderate the positive influence of personality traits.

Although the results affirm the importance of personality traits for knowledge sharing, there are several caveats worth mentioning. First, the adopted sampling strategy might have biased the results to some degree. The identification of readers and authors of Wikipedia is a challenging endeavor: On the one hand, it is difficult to draw an explicit sample of Wikipedia users, because reading of articles is free without registration and entirely anonymous. However, the prevalence of Wikipedia readers is rather high among the general populations (Ortega et al., 2008; West, 2010). On the other hand, although contribution to Wikipedia is a rather rare activity in the general public, it is possible to sample among active authors of Wikipedia (e.g., in respective mailing lists). Therefore, the present study relied on two different sources to recruit readers and authors of Wikipedia and used the combined sample for the analyses. However, if the two samples varied systematically on important attributes, these unaccounted differences could have distorted the reported results to some degree. Future research, should strive to identify alternative recruitment strategies for readers and authors of Wikipedia that could overcome the putative bias in the sampling method adopted for this study. Second, the measurement of knowledge sharing was based on subjective ratings. Future research should extend these results with objective data not only on the quantity but also the quality of knowledge sharing. Third, miscellaneous covariates were not controlled for and could moderate the presented findings to some degree (e.g., intelligence, amount of free time). Fourth, we studied a specific knowledge sharing community, Wikipedia. To what extent these results also extend to other virtual communities (e.g., product-centered communities like Niketalk.com) remains to be demonstrated in future research.

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