

**Encouraging Online Engagement: The Role of Interdependent Self-Construal and Social  
Motives in Fostering Online Participation**

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### Abstract

Developing and maintaining a user base that actively contributes to an online community is often essential to a website's success. For many online communities, developing such a user-base can be challenge for web designers. Working from a functionalist perspective, two studies explored how the individual difference of interdependent self-construal was related to participation and engagement in the online community MovieLens.org. In the first study, we found that those individuals high in interdependent self-construal were particularly *unlikely* to contribute to the website. In an attempt to increase the online engagement of this type of user, we then created an interactive web feature that tapped into the social motives of those high in interdependent self-construal. This feature allows users to create Top Five movie lists that can be shared with other users. In the second study, we found that interdependent self-construal was associated with more use of the Top Five lists feature, that using this feature was associated with more interest in seeing others' lists, which in turn predicted more interest in MovieLens. Implications for web design and psychological theory are discussed.

## **Encouraging Online Engagement: The Role of Interdependent Self-Construal and Social Motives in Fostering Online Participation**

User-generated web content, or content created by the members of an online community rather than by a professional source, has become ubiquitous in today's climate of YouTube, Facebook, Twitter, and Instagram (O'Reilly, 2009). Many websites employ "click-based" advertising business-models, such that user-generated content encourages users to view and purchase specific products (Fulgoni, 2007; Krishnamurthy & Dou, 2008). Furthermore, numerous online communities have achieved success not by monetizing their users' clicks on advertisements, but instead by maximizing the value of the actual contributions that their users volunteer and/or create. For example, Wikipedia editors have created the largest encyclopedia in history, which arguably matches the accuracy of more traditional encyclopedias (Giles, 2005), and contributors to open-source software projects have produced operating-system, web-browser, and web-server software rivaling those produced by the largest software companies in the world (Levine, Sheen, & Prietula, 2013; Muffato, 2006). Moreover, some websites leverage user contributions to maintain a large membership. Many tech startups initially depend on user-generated content, without actually generating revenue, and are later valued at billions of dollars simply due to a large membership (Wirtz, Schilke, & Ullrich, 2010).

Because online communities often depend on the contributions of their users (O'Reilly, 2009; Wirtz, Schilke, & Ullrich, 2010), it is essential that administrators of online communities understand the factors that encourage user interest and involvement with a website or online project. As such, it becomes increasingly important for researchers in the field of human-computer interaction to examine the psychological reasons why users might contribute (or fail to contribute) to online communities. Furthermore, encouraging users to contribute content to an

online community often begins with the challenge of determining how best to spark their interest in that community. It seems reasonable that users will be more likely to contribute content to a website when they are engaged with that website and when they are offered a means to provide content that they find compelling. As such, the current research is focused not only on identifying users who might actively contribute, but also to testing an intervention designed to motivate these individuals to actually provide content.

In our first study, we sought to examine the influence of personality traits that, based on relevant theory and previous research, would identify users who are more likely to be oriented towards and engaged with their communities. These traits might then serve as useful predictors in determining who might be particularly likely to participate in online communities. In our second study, we used the insights from our initial findings to create and test a website feature designed to increase the participation of these community-oriented users.

### **Fostering Social Connection Online**

There are numerous examples of online communities that have successfully engaged their users and subsequently benefited from user-generated content. Some communities (i.e., social media) are designed specifically for the sharing of opinions (e.g., Twitter, Reddit, Yelp), while other communities are housed on sites that have an established purpose unrelated to social media, but for which user opinions are a secondary, but still important, component (e.g., Amazon, IMDb). Independent of whether or not community-building is the primary purpose of a website, it is often crucial that online environments foster social connections between users. Although websites will first attract users (i.e., potential content suppliers) through various incentives, further social engagement is often necessary to help the online community continue to grow and flourish (Kraut & Resnick, 2012).

Although some communities have successfully engaged and motivated users to consistently provide content, many other online communities often face significant problems related to lack of contribution, and end up failing as a result (Butler, 2001). Indeed, in many online communities, even ostensibly successful ones like Wikipedia, only a small portion of users actually contribute content, and an even smaller set of users are engaged and dedicated enough to contribute significant amounts of content, as opposed to a single instance of participation (Arthur, 2006; Ortega, Gonzalez-Barahona, & Robles, 2008; Panciera, Halfaker, & Terveen, 2009; Voss, 2005). Although there is some variability among websites, it has been suggested that 90% of website users consume content, 9% of users edit content, and 1% of users actually create content (Arthur, 2006). Because user-generated content is of growing importance to the functioning of many websites, the current research is guided by the following questions: A) Who makes contributions to online communities, and B) why do they do so?

### **Self-Construal Theory**

Consistent with the interdisciplinary nature of human-computer interaction, the present investigation tackles the problem of online contributions using existing theory on personality, motivation, and identity. Although the breadth of these questions invites many directions for research, we chose to examine them using a heretofore-underexplored psychological perspective that may help to identify who will contribute to online communities, and why; specifically, we will examine the role of the psychological construct of *self-construal* (Singelis, 1994). Self-construal was identified as a trait that might predict contributions to online communities, in that it reflects the extent to which people define themselves in terms of connectedness to groups and collectives. To the extent that individuals prioritize collective goals over individual achievements (Cross, Hardin, & Gercek-Swing, 2011), this should manifest itself as behavior such as making

contributions in order to benefit an online community, even if that behaviors requires a sacrifice of individual time and effort.

Although the self-construal construct is heavily rooted in cultural psychology, an area focused on unearthing similarities and differences among people from varying cultures (Markus & Kitayama, 1991), psychologists developed self-construal theory primarily to account for individual variation, rather than assuming homogeneity among all members of a single culture (Singelis, 1994). The theoretical conceptualization of self-construal originally articulated two broad sub-dimensions, *interdependent self-construal* and *independent self-construal* (Singelis, 1994). Although all individuals are thought to define themselves in terms of both dimensions (Brewer, 2008; Cross et al., 2012; Singelis, 1994), people differ to *the extent* to which each dimension is incorporated into the sense of self (i.e., self-construal). Self-construal theory then articulates motivations that are important to people for whom a particular facet of self-construal is prominent. Individuals who are high in *interdependent self-construal* are more likely to define themselves in terms of social roles and qualities that emphasize how they relate to other people. Specifically, individuals high in interdependent self-construal possess an identity that is especially likely to be dependent on social connection and integration within social networks. In contrast, people who are high in *independent self-construal* are tend to define themselves in terms of distinctive qualities that set them apart from other people.

Importantly, being high in one dimension does not preclude high self-construal on another (Singelis, 1994; Cross et al., 2011). As such, although the current research is grounded broadly in self-construal theory, we focus primarily on *interdependent self-construal* as a construct of interest, which specifically addresses prioritizing group-oriented goals into an individual's motivations and goals. Given the motivation of those high in interdependent self-

construal is often to achieve community-based goals, those high in interdependent self-construal may be important individuals to target in fostering online communities through encouraging user-generated content.

Self-construal theory is a prominent psychological theory with clear implications for motivation in numerous domains, but it has yet to be applied in online-participation contexts (Cross et al., 2011). Pockets of research have revealed divergent patterns of online behavior based on interdependent self-construal, providing little consistency among the findings. Specifically, findings indicate that individuals who are higher in interdependent self-construal are more suspicious of purchasing products online (Park & Jun, 2003) and are less likely to purchase products online (Frost, Goode, & Hart, 2010), partly attributed to the absence of human contact during the process. In another line of research, it was shown that when purchasing products online, individuals who are higher in interdependent self-construal are more swayed by reviews written by fellow customers and are less swayed by impersonal organizational testimonials (Sia et al., 2009). Finally, in online settings that are clearly meant to promote social connections (i.e., avatar-based online video games), individuals higher in interdependent self-construal report more immersion and greater satisfaction with the gaming experience (Jin & Park, 2009). Notably, it has consistently been shown that interdependent self-construal is a stronger predictor of online behavior than other aspects of self-construal (e.g., Frost et al., 2010; Park & Jun, 2003), supporting our decision to focus on interdependent self-construal.

Overall, the extant research on self-construal in the online setting 1) is only in its nascent stages, 2) often examines self-construal indirectly using a culturally-based framework, as opposed to the more proper self-construal framework that takes individual variation into account, 3) fails to look at the provision of user-generated content, and 4) has yet to tackle the question

of how web designers can implement features to directly influence their users' behaviors, based on self-construal principles.

### **The Functional Approach to Community Participation**

The present research is also informed by the *functional approach* to behavior, a theoretical perspective that is concerned with the specific reasons or motives (i.e., functions) underlying the initiation and maintenance of behavior across myriad behavioral domains (Katz, 1960; Smith, Bruner, & White, 1956; Snyder & Cantor, 1998). This approach asserts that a specific behavior can have diverse motivational underpinnings, meaning that the same behavior can be performed for entirely different reasons depending on the individual who is performing that behavior. In short, the same behavior can be guided by different motivations (i.e., can perform different functions) for different people. In recent years, this approach has been used, among other purposes, to understand why people choose to serve as volunteers in the communities to which they belong (Clary et al., 1998). Volunteerism is a form of community participation that is widely valued throughout society, but when it comes to actually volunteering one's time, people's actions often fall short of their attitudes and beliefs, with barely one in four people serving as volunteers in their communities on a regular basis (Corporation for National and Community Service, 2015).

We believe that participation in online communities can be conceptualized as a form of volunteerism (i.e., "virtual volunteering"; Cravens, 2000; Fuglestad et al., 2012), and that the widely-recognized "problem of inaction" that has been identified for participation in offline communities (Snyder, 1993) is analogous to the challenge of attracting and maintaining user participation in online communities. Although one may not immediately view online participation as a form of volunteerism, the defining characteristic of numerous online



communities, e.g., Wikipedia, open-source software projects, Yelp, IMDb, and MovieLens (which is the movie-recommendation community that will be targeted in the current set of studies), is that people freely sacrifice their time and energy to accomplish valued tasks together. Consistent with current definitions of volunteerism (e.g., Snyder, Omoto, & Dwyer, 2016), these activities are neither required nor socially mandated. Rather, users choose to perform these activities for the benefit of the community and without payment or compensation, just like people who volunteer in offline communities. Subsequently, they may discover additional avenues for involvement beyond those which drew them to the website in the first place.

Researchers guided by a functionalist perspective have shown that individuals engage in volunteer activities for numerous reasons, with some being more other-oriented and some being more self-oriented in nature (Clary, Snyder, & Stukas, 1996). For instance, whereas one person may volunteer out of a humanitarian concern for people who are in need, someone else may perform the same volunteer activities in order to boost their résumé or to feel better about themselves. Moreover, researchers have consistently shown that individuals may not engage in volunteerism if specific motivational needs are not being met, and that it is possible to *encourage* and *maintain* volunteer behavior by matching recruitment appeals to the motivations that are most important to people (e.g., Clary, Snyder, Ridge, Miene, & Haugen, 1994; for a comprehensive review of this literature, see Snyder & Omoto, 2008).

Researchers have begun to consider how the functional approach can be used to understand participation online. As with investigations into volunteerism, researchers in the field of human-computer interaction have identified various motives that may underlie online participation, and revealed a consistent pattern of findings such that individuals participate to a greater extent when their online experiences match their motivations (e.g., Butler, 2001;

Fuglestad et al., 2012; Lampe, Wash, Velasquez, & Ozkaya, 2010). In a particularly illuminating example, Peddibhotla (2013a; 2013b) conducted a series of analyses on the contribution patterns of Amazon.com reviewers, and discovered behavioral trends very much in line with the functional approach. First, reviewers contributed more reviews and reviews of greater length to the extent that they were higher in either self-oriented motives (e.g., obtaining knowledge) or other-oriented motives (e.g., associating with desired social networks), indicating that the same behavior within an online context could be performed in the service of different motivations (Peddibhotla, 2013b).

More importantly, however, the nature of participation varied depending on the specific motivations of the users. For example, users who were more socially oriented were more likely to contribute reviews on products for which many reviews already existed, thus allowing those users to communicate their opinions with a larger number of people (Peddibhotla, 2013a). This growing body of research suggests that different users might have different motivations for generating content, and these motivations have implications for the online actions they take. Specifically, although Peddibhotla (2013a; 2013b) did not incorporate a social psychological perspective, the findings suggest that online behavior can be heavily influenced by social connectedness as a valued aspect of one's identity.

In another compelling example, Fuglestad et al., (2012) explored the relationship between altruism and online participation using the movie recommendation website Movielens. The research established that those who engage in more altruistic behaviors in face-to-face settings were particularly unlikely to contribute or behave socially on MovieLens. Specifically, MoveiLens users were asked the extent to which they behaved in giving and altruistic ways with others in their day-to-day lives. Those who reported more altruism were *less* likely to engage in a

wide variety of altruistic and social behaviors on MovieLens, such as editing movie descriptions or contributing to discussion forums. This finding may seem counter-intuitive, as it seems reasonable that those who give socially offline, would in turn give of their time and be social online. Viewed through a functionalist lens, however, it may be that MovieLens did not satisfy the social motives of those who report more face-to-face altruism. Although MovieLens seemingly has opportunities to engage with and help others, the design of the website might not effectively facilitate actual user interaction, leaving these users' social motives unsatisfied, and thus driving down participation.

### **Integrating Self-Construal Theory and the Functional Approach**

When viewed through a functionalist lens, self-construal theory offers conceptual clarity regarding the specific kinds of motives that should be especially important to individuals high in interdependent self-construal (Cross et al., 2011; Markus & Kitayama, 1991; Singelis, 1994; Triandis, 1989). These individuals should primarily engage in behaviors in order to fulfill social motives. This notion is consistent with research showing that people scoring high on interdependent self-construal perceive social goals (e.g., harmony with others) to be more important than personal goals (van Horen, Pohlmann, Koeppen, & Hannover, 2008), and often prioritize social concerns (e.g., being a burden on others) over personal concerns (Uskul & Hynie, 2007). In perhaps the most straightforward demonstration of the influence of self-construal on social motivation, Trafimow, Triandis, and Goto (1991) administered a questionnaire in which individuals were asked to describe themselves by filling in the blank for the statement "*I am [BLANK]*" 20 times. They found that individuals high in interdependent self-construal were more likely to describe themselves in terms of social affiliations, rather than the trait adjectives seen by individuals higher in independent self-construal. Also, individuals

who are high in interdependent self-construal are more likely to engage in behavior that may not necessarily reflect positively on them personally as long as the behavior fosters desired group-based goals, as opposed to individuals high in independent self-construal who are more likely to engage in behavior for the purposes of self-enhancement (Akimoto & Sanbonmatsu, 1999; Heine et al., 2001).

Further, individuals scoring higher on interdependent self-construal are more likely to engage in charitable behavior (Moorman & Blakely 1995; Skarmeas & Shabbir 2011; Swaminathan, Page, & Gürhan-Canli 2007). They are especially likely to help other people when they perceive them to be a part of their own ingroup, and unlikely to help other people when they perceive them to be outgroup members, which again suggests the importance of social connectedness as a key motivator of their behavior (Duclos & Barasch, 2014; Kimmelmeier, Jambor, & Letner, 2006; L'Armand & Pepitone, 1975; Leung & Bond, 1984; Miller, Bersoff, & Harwood, 1990). Research has also consistently indicated that individuals who are higher on interdependent self-construal exhibit markedly decreased prosocial behavior if the situation does not sufficiently match their inherent desire for either social engagement or identification (Howard, Gardner, & Thompson, 2007; Kimmelmeier, Jambor, & Letner, 2006; Van Prooijen & Van Den Bos, 2009).

### **The Current Research**

The current research considers self-construal theory through a functionalist lens, but applied to the online setting. Guided by previous empirical work on the functional approach and volunteerism, we believe that users who are higher on interdependent self-construal, relative to users who are lower on interdependent self-construal, will have different motivations for

participating in online communities, and that these differing motivations will lead to distinct patterns of online engagement.

We conducted two studies examining the influence of interdependent self-construal on online involvement. Our first study examined the role of interdependent self-construal within the context of an online community that *lacked* opportunities for users to interact directly with each other (Fuglestad, et al, 2012). Specifically, we examined its influence on user behavior within the existing online community of MovieLens ([www.movielens.org](http://www.movielens.org)), one of the Internet's first movie-recommendation systems. MovieLens users provide movie ratings which the website then uses to generate recommendations for the user, by comparing their ratings with the ratings of other users within the system. As MovieLens is primarily devoted to obtaining recommendations for individual use, social opportunities are somewhat present (e.g., participating in forums or visiting a volunteer-center) but are not featured prominently on the website, nor are these features designed to encourage actual user interaction. Indeed, recall that previous research has demonstrated that those high in altruistic face-to-face behaviors are less likely to engage with MovieLens (Fuglestad, et al, 2012), suggesting this online community might not be optimally tailored to meet the needs of users high in interdependent self-construal. As such, our first hypothesis, grounded in the functional approach, was as follows:

H1: Given an online community that may not provide adequate opportunities to form connections with others, individuals who are higher in interdependent self-construal will demonstrate less involvement, compared to individuals who are lower in interdependent self-construal.

Building on this logic, our second study examined interdependent self-construal and user behavior in an online context that was more explicitly social, to determine whether features of

the website could be designed to increase user engagement, we created a new feature on the MovieLens website specially designed to provide opportunities for social connection. This new “top-five lists” feature allowed users to make lists of their favorite actors, directors, movies, and other movie-related categories. Moreover, it was presented as an explicitly *social* task, in which participants expected to share their lists with other users and believed that they would eventually have access to the lists of other users as well. Because this new feature was tailored to meet the needs of users high in interdependent self-construal, our second hypothesis was as follows:

H2: Given a feature designed to provide opportunities for social connections with others, individuals who are higher in interdependent self-construal will demonstrate more involvement with the feature compared to individuals who are lower in interdependent self-construal. Specifically, we expect that users higher in interdependent self-construal will be more likely to use this feature, which will in turn increase their motivation to engage with other users, and ultimately foster greater interest in the website overall.

## **Study One**

### **Method**

We conducted our first study on MovieLens ([www.movielens.org](http://www.movielens.org)), one of the first online movie-recommendation websites, to explore how interdependent self-construal relates to engagement in online communities. In MovieLens, a user provides ratings for various movies, and then the system compares the user’s ratings to the ratings of all other users in the system, in order to identify and recommend other movies the user is likely to enjoy. For example, if other users who rate a specific movie highly also tend to favorably rate another movie that the user has not seen, then the system will recommend that movie to the user. Although getting movie recommendations is the central purpose of the site, MovieLens has attempted to add occasional

opportunities for user interaction and participation (i.e., provide user-generated content). For example, users can suggest new movies to be added to the database, as well as edit the details (e.g., actors, directors, release date) of movies already in the database. Although opportunities were limited, we identified nine discretionary user behaviors that went beyond the basic activities of logging on and rating movies. We examined the associations among interdependent self-construal, the basic behaviors of logging and rating movies, and each of these discretionary behaviors.

**Participants and Procedure.** Over one year, all newly registered MovieLens users were asked to complete a survey immediately after completing the signup process before they continued to the formal MovieLens site. A total of 3,904 users completed this initial assessment, and participants who completed the survey were given a tracking number so that we could link their survey data with their actual behavior on MovieLens. Six weeks after this initial assessment, these same users were invited to take another survey that included an assessment of interdependent self-construal. Within two weeks of receiving the invitation, a total of 224 users provided usable data, of which 148 users completed the measure of interdependent self-construal.

The mean age of participants was 31.71 years ( $SD = 11.73$ ), with 30% female, 60% male, 10% no gender response; 80% Caucasian, 3% Asian/Asian-American, 3% Latino/a, 3% African-American, 6% reporting “other” or “mixed” ethnicity, and 5% providing no race/ethnicity response.

### **Measures.**

***Interdependent Self-Construal.*** We assessed interdependent self-construal with three self-report items, ranging from 1 (totally disagree) to 7 (totally agree) that we averaged to create

a composite score ( $\alpha = .59$ ). As such, although the alpha was lower than 0.7, these items were taken from a widely used instrument that measures the extent to which users define themselves in terms of their relationships with others (Singelis, 1994), which we had to shorten to three items for logistical reasons. The nature of our sample necessitated using very short forms of all measures. Website users can become frustrated with long surveys, making the prevention of attrition a primary concern (Sue & Ritter, 2012). The size of Cronbach's  $\alpha$  is driven partially by the number of items in an index and an  $\alpha = .59$  can be viewed as acceptable indicator of reliability in cases where the number of items is low (Šerbetar & Sedlar, 2016).

***Behavioral Indicators.*** We tracked the behavior of users during their first three months of MovieLens membership, as we considered this to be a sufficient duration of time to explore the variability in user-behavior on MovieLens. We examined the following specific behaviors: (1) number of times logged into MovieLens, (2) number of movies rated, (3) number of tags applied to movies, (4) votes on the quality of previously applied tags, 5) the number of times users visited the Q&A forum (6) whether or not users edited movie descriptions, (7) whether or not users shared ratings with others, (8) whether or not users added other users as “buddies”, (9) whether or not users edited their profile, (10) whether or not users had an avatar, and (11) whether or not users visited the volunteer center (see Table 1 which summarizes all means and standard deviations for Study 1 variables).

In considering these behaviors, we grouped them into two basic categories, the essential or basic behaviors one would come to a movie recommendation website to engage in versus any additional socially-engaged behaviors, either forming connections or in service of the overall community. The two basic behaviors included logging in and rating movies. Indeed, no one could be involved in the study without having engaged in these two behaviors, at least on one



occasion. You cannot join MovieLens and get recommendations unless you login and rate at least 15 movies. Furthermore, rating movies in order to get personalized recommendations is the explicit purpose of the website.

Beyond these basic behaviors, however, users have a number of optional activities that they could potentially engage in that either connect them with other users or benefit the community as a whole. These behaviors include editing the descriptions of movies, applying useful tags to movies, voting on the usefulness of others' tags, sharing one's own movie ratings with the community, adding buddies, editing one's public user profile, using the Q&A forum, and visiting the volunteer center (which, at the time, did not actually have any volunteer opportunities available).

## **Results and Discussion**

In order to explore the relation between interdependent self-construal and participation in the MovieLens website, we conducted a set of correlational analyses among all relevant variables. Specifically, we assessed the relations among interdependent self-construal and all MovieLens behavioral indicators, including basic participatory behaviors (e.g., logging on to the website), as well as socially-engaged behaviors (e.g., editing the description of a movie). With a single exception (i.e., voting on the quality of others' previously applied tags and editing movie descriptions), all of the MovieLens behavioral indicators were positively and significantly correlated (see Table 2 which summarizes all intercorrelations for Study 1 variables). These correlations ranged from  $r(224) = .134, p = .045$  to (i.e., adding other users as "buddies" and editing movie descriptions) to  $r(224) = .625, p < .001$  (i.e., logging on and rating movies).

In terms of our hypotheses, interdependent self-construal was not associated with the basic behaviors of logging on. More importantly, interdependent self-construal was *negatively*

associated with seven of the nine discretionary behaviors assessed ranging from  $r(148) = -.147, p = .075$  (i.e., having an avatar) to  $r(148) = -.271, p = .001$  (i.e., Q&A forum visits). Those who reported higher interdependent self-construal engaged in fewer of these discretionary behaviors. Those who reported higher interdependent self-construal engaged in these behaviors just as often as those who reported lower interdependent self-construal.

These findings suggest that, as users defined themselves more in terms of their relationships with others, they were less likely to engage in a wide variety of MovieLens behaviors that should have allowed them to interact with other users or engage with the community. Although those high on interdependent self-construal were just as likely to use the website and rate movies, they actually seemed to *not* use the social features of the website. This suggests that MovieLens' current design, and any of its seemingly social features, did not sufficiently serve the social motives of those high on interdependent self-construal. These users may not interpret the currently available activities as being truly social, or they may simply seek social connections elsewhere. The question then becomes can highly interdependent users become socially-interested in a site like MovieLens and if so, how might this be achieved?

## Study Two

### Method

We conducted our second study using Mechanical Turk (mTurk), an online service where Internet users complete tasks and surveys for monetary payment. Based on the findings from Study 1, we aimed to devise a way to motivate highly interdependent users to use a site like MovieLens and encourage these users to contribute content. To this end, we created a feature (i.e., an opportunity to create and share "Top Five Lists") that we hoped would engage those potential users high in interdependent self-construal. Furthermore, we hoped that using this

feature would increase the social motives of these users, which would in turn increase users' motivation to use the actual MovieLens website. Specifically, we sought to establish the mediational model that those with higher interdependent self-construal would be interested in using a socially-oriented feature, that using this feature would lead to greater motivation to see others' lists, and that this higher social motivation would, in turn, lead to greater interest in MovieLens as a whole.

### **Participants and Procedure.**

For this study, we recruited participants via Amazon.com's Mechanical Turk (mTurk) service, an online platform where "requesters" can provide tasks that a pool of "workers" can agree to perform for a predetermined amount of money. Because workers are in high supply and there is marked demand for tasks to complete, mTurk has become especially popular among researchers due to its efficiency as a tool for collecting data. Moreover, evaluations of the mTurk service have consistently found that data collected from mTurk does not differ in quality from data collected from traditional convenience sampling (see Buhrmester, Kwan, & Gosling, 2011; Paolacci & Chandler, 2014).

A total of 414 participants provided usable data, of which 409 provided data for all four variables of interest. On the mTurk website, we specifically advertised for respondents who "love movies," in order to attract individuals who would likely seek out websites like MovieLens on their own. The mean age of participants was 27.92 years ( $SD = 9.13$ ), with 39% female, 56% male, 5% no gender response; 77% Caucasian, 9% Asian/Asian-American, 8% Latino/a, 4% African-American, 1% Native-American/Pacific Islander, and 1% reporting "other" or "mixed" ethnicity.

Upon selecting our study, we described the purpose and functioning of the MovieLens website to the participants. We then informed them that we were piloting a new “Top Five Lists” feature that would allow users to make various lists regarding films, actors, directors, and other movie-related categories.<sup>1</sup> The feature was designed to be, and promoted as, explicitly social in nature, and participants expected to share their lists with others, with the assumption that they would potentially have access to others’ lists as well. Specifically, we informed them that the lists they make would serve as the first lists we would use on the actual website, and that they would later have an opportunity to join MovieLens and see lists that other users had provided.

Users could then create lists within provided categories (e.g., “Top Five Favorite Directors”) or they could choose to create a list within a category of their own choosing (e.g., Top Five Funniest Actors). Respondents were allowed to make as many top-five lists as they wanted. Once respondents finished making their desired number of lists, they were then asked a series of questions assessing their interest in the new feature, their motivation to see the lists of other users, and their interest in joining a site like MovieLens. Finally, all respondents were then given an opportunity to join MovieLens through an external provided link.

**Measures.** As in the first study, we measured interdependent self-construal, using the same measures as in Study 1 ( $M = 4.62$ ,  $SD = 1.26$ ,  $\alpha = .73$ ). We also we assessed the number of top-five lists each user created ( $M = 4.07$ ,  $SD = 3.30$ ) and the extent to which they wanted to see the lists of others (Range 1-9,  $M = 7.15$ ,  $SD = 2.12$ ). Finally, we assessed interest in MovieLens using three self-report items: A) *Getting involved in a movie-oriented website is something I would consider*, B) *I am interested in joining a movie-oriented website*, and C) *I would recommend movie-oriented websites to others*; (Range 1-9,  $M = 4.16$ ,  $SD = 1.12$ ,  $\alpha = .87$ ).

## Results and Discussion

In order to examine the basic relationships among interdependent self-construal, number of lists created, motivation to see others' lists, and interest in MovieLens, we conducted a set of correlational analyses among these four relevant variables (see Table 3). All four variables were positively associated, with correlations ranging from  $r(409) = .117, p = .018$  (i.e., number of lists and interdependent self-construal) to  $r(414) = .561, p < .001$  (i.e., the motivation to see others' lists and interest in MovieLens).

A theoretical model of the relations among these four variables was specified such that higher interdependent self-construal leads to making more top five lists, which in turn increases the motivation to see others' lists, which then increases an interest in MovieLens. Further, we specified that the relation between interdependent self-construal and the motivation to see others' lists was mediated by making lists, and that the relation between making lists and an interest in MovieLens was mediated by the motivation to see others' lists. Results of a structural equation model analysis indicated excellent model fit using all conventional fit indices,  $\chi^2 = 2.82, p = .092$ , CFI = .99, and RMSEA = .07 (see Figure 1 for specified relations). It should be noted that other models with these four variables were tested and none had better model fit than the above a priori specified model. For example, we tested a model wherein interdependent self-construal increased interest in MovieLens, which in turn increased their interest in seeing others' lists, which then increased the number of lists the users made. Although this showed acceptable model fit, it was not as high as our specified model.

We also used a bootstrapping, confidence interval methodology to test the statistical significance of the two mediated effects implied by our model (Preacher & Hayes, 2008). Intervals that do not contain 0 indicate a statistically significant indirect effect. We also employed a Baron and Kenny (1986) regression approach to determine if there was full versus

partial mediation. Specifically, we tested the mediated effect of interdependent self-construal, through the number of lists a participant made, to impact interest in seeing others' lists. We also test the mediated effect of the number of lists a participant made, through interest in seeing others' lists, to impact interest in MovieLens (see Figure 1 for specified relations). We found that interdependent self-construal and motivation to see others' lists was partially mediated by the number of lists a participant made, 95% CI [0.001, 0.058] and the relation between number of lists and interest in MovieLens was partially mediated by motivation to see others' lists, 95% CI [0.004, 0.075].

Our findings suggest that a top-five lists feature may serve to generate interest in a site like MovieLens. Specifically, we designed and presented the top-five lists activity as a social feature that could be shared with others. Not surprisingly, this activity appealed to users higher in interdependent self-construal, resulting in greater use by these individuals. Most importantly, however, we found that using this lists feature increased the social *motivation* of highly interdependent users (i.e., the motivation to see others' lists), which in turn increased interest in the website MovieLens. This is notable because these are the types of users who were particularly unlikely to participate on MovieLens in Study One. Thus, we were successfully able to engage users with a new feature that targeted their predicted social motivation.

### **General Discussion**

Our findings shed light on the following questions: 1) Can we identify user characteristics that will predict who will contribute to an online community? 2) More specifically, can we identify users who potentially could be motivated to contribute to an online community, even if they are not currently making contributions to it? 3) Finally, can we

strategically design a feature that engages these users, who might be motivated to contribute to an online community, but whose motives are not being translated into actual behaviors?

In addressing the first question, we found that interdependent self-construal is predictive of online behaviors. Specifically, although users high in interdependent self-construal were just as likely as users lower in interdependent self-construal to visit MovieLens and rate movies, these same users were *less* likely to engage in behavior in service of connecting with or contributing to the larger MovieLens community (e.g., seeking out buddies, editing movie descriptions, tagging movies). That is, although individuals high in interdependent self-construal used MovieLens for utilitarian purposes just as frequently as those lower in interdependent self-construal, they were less likely to engage in additional discretionary behaviors that went above and beyond basic usage of the website.

These findings are entirely consistent with our current understanding of self-construal theory (e.g., Duclos & Barasch, 2014). Consider, for example, the finding that individuals who are higher on interdependent self-construal were less likely to engage in prosocial behavior when their motivations for social connection and identification are not satisfied (e.g., Howard, Gardner, & Thompson, 2007). Consistent with this previous work, we found that highly interdependent MovieLens users were particularly unlikely to contribute to the website. Thus, our findings suggest that MovieLens, in its existing form, may not have provide enough explicitly social opportunities that would be particularly appealing to those high on interdependent self-construal, and subsequently, they were less likely to engage in behaviors beyond those that explicitly benefited themselves (i.e., rating movies in order to get better movie recommendations).

To address our second and third questions, we surmised that, although being high in interdependent self-construal can discourage prosocial behavior in contexts where social engagement and/or identification is absent, being high on this dimension should *encourage* prosocial behavior when individuals are in fact engaged socially. The results of our second study provided evidence for this proposition. Indeed, we designed our top-five lists feature with the specific intention that it would engage potential users who might be higher in interdependent self-construal. According to our logic, if we could design a social feature that was more enjoyable to users and provided better opportunities for connecting to other users, then this motivation to connect with others would lead them to become more interested in the website and consequently be more likely to contribute to it. Specifically, we proposed that 1) individuals high in interdependent self-construal would make more lists, 2) making more lists would increase the motivation to see others' lists, and consequently, 3) this increased motivation to see others' lists would increase interest in joining the general MovieLens community.

The results from our second study fully support this reasoning. The associations among the variables of interest were all statistically significant and in theoretically expected directions. We found that those higher in interdependent self-construal were more likely to engage with our top-five lists feature. Specifically, those higher in interdependent self-construal made more lists relative to those lower on this trait. Furthermore, those higher in interdependent self-construal reported being more motivated to see the lists of other people relative to those who were lower in interdependent self-construal. Recall that the top-five lists feature was designed and presented as explicitly social in nature, and that potential MovieLens users expected that they would share these lists with other people and see other people's lists. Given the social nature of this activity, it is not surprising that those higher on interdependent self-construal would make more lists and



be more interested in the lists of others relative to those lower in interdependent self-construal. In contrast to the context in first study, Study 2 provided an avenue that adequately served the social motivations of individuals who were more interdependently oriented, and the behavior of these individuals changed accordingly. We also found that those higher in interdependent self-construal were more interested in MovieLens, but this interest was likely encouraged by making the lists themselves.

Taken together, this pattern of associations suggests that it is possible to develop an explicitly social activity that better connects users who are high in interdependent self-construal to other users and therefore causes them to become more engaged in an online community. In our second study, users high in interdependent self-construal made more lists, were more motivated to see others' lists, and were more interested in MovieLens. Beyond this basic pattern of associations, our structural equation model and related mediational tests further support our proposed chain of effects. In our model, we specifically tested the idea that those high in interdependent self-construal will make more lists, and that making more lists will foster their motivation to interact with others by seeing others' lists, which will then ultimately increase their interest in MovieLens. When we specified that the variables should influence each other in this way, we not only obtained excellent model fit, but also better fit than other models in which the aforementioned variables were specified to influence each other in a different order.

Consistent with our hypothesis, which was informed by the functional approach, we found that the motivation to see others' lists mediated the relation between making lists and interest in MovieLens. Importantly, however, the act of making lists was itself an important mediational link between interdependent self-construal and the motivation to see others' lists. This highlights the importance of providing engaging social activities for interdependently

oriented users. Adding a socially-engaged top-five lists feature to a site like MovieLens would seemingly be appealing to those higher in interdependent self-construal, which may lead them to want to share their lists with others and see others lists. This may then foster increased social connection and user contributions serving to benefit the website.

This research clearly suggests that individual differences may be assessed and used as a guide for website design in order to maximize user engagement and contributions to online communities. However, there are limitations to this work that must be acknowledged.

First, we utilized different samples across the two studies, with Study 1 looking at users who had already joined the MovieLens community and Study 2 looking at individuals who were self-professed movie connoisseurs, but not officially part of the MovieLens community. Given the current data, we are unable to say with certainty that MovieLens users who are high in interdependent construal would have responded in the same way to a top-five lists feature as the more general online sample in Study 2. However, we believe that by targeting online movie connoisseurs in Study 2, it is reasonable to assume such findings would generalize, such that MovieLens users would see a top-five lists feature as an opportunity to connect with other users.

Additionally, it is unclear if the specific task of making top-five lists was the key factor that generated interest in the MovieLens website among participants in Study 2, or if it instead was simply the social framing of this activity that affected subsequent interest in the website. It is possible that encouraging current MovieLens users to engage in other explicitly social activities, such as sharing their movie ratings, would similarly increase in their interest in the website, and also increase their own downstream activities on the website. Although we have made a case for why top-five lists are a particularly useful way to elicit social connection in this context, it is

possible that engaging in any new social-engagement activity on MovieLens would be sufficient to influence future interest and behavior.

Finally, we did not explicitly implement the top-five lists feature on MovieLens. Thus, we are unable to directly establish whether such a feature would increase identification with MovieLens or increase the behavior of those high in interdependent self-construal. As a logical next step of this research, we aim to implement the top-five lists feature on MovieLens. This would help determine if the increased interest in MovieLens we saw in our second study can actually be translated into increased identification with the MovieLens community and increased contributions that serve to build and foster the MovieLens community.

In conclusion, these findings highlight the importance of considering individual differences among members of an online community, and of tailoring features of the website to user characteristics. They also identify a feature that may be particularly relevant to individuals with an interdependent self-construal, and suggest more general implications for web-based design. Although our lists feature was specific to movies, we believe that a similar feature could be designed for any online community that is dedicated to a specific interest and that could benefit from user contributions. For example, a cooking-related website that relies on user-generated recipes (e.g., allrecipes.com) could institute a feature that asks users to create top-five lists about cooking-related topics (e.g., favorite chefs, most useful food-related blogs, best cookie recipes), which may then generate more interest in the site by engaging the social motivations of users who are higher in interdependent self-construal. Furthermore, including a wide variety of socially-oriented activities—rather than just a single lists feature—would likely be even more effective in encouraging highly interdependent users to engage with an online community. Thus, future research should examine the utility of other explicitly social activities (e.g., chat features,

direct messaging, and other interactive activities) that would allow more interdependently oriented users to directly connect with other people and consequently increase their online engagement.

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## Footnotes

<sup>1</sup> In an attempt to prime three different social motivations for using the lists, we manipulated the prompt of the top-five list feature with subtle wording differences. This manipulation resulted in entirely null effects for all study variables and was not explored further.

Table 1

*Means, Percentages, and (Standard Deviations) of Relevant Variables from Study 1*

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Interdependent Self- Construal	4.16 (1.12)
Number of Times Logged on into Movielen	6.56 18.08
Number of movies rated	31.26 (66.09)
Number of tags applied to movies	4.79 (26.70)
Votes on the quality of previously applied tags	3.97 (17.60)
The number of times users visited the Q&A forum	4.53 (25.45)
Whether or not users edited movie descriptions	4% of users edited a movie
Whether or not users shared ratings with others	86% of users share ratings
Whether or not users added other users as “buddies”	12% of users had at least one buddy
Whether or not users edited their profile	8% of users edited their profile
Whether or not users had an avatar	6% of users had an avatar
Whether or not users visited the volunteer center	11% of users visited the volunteer center

Table 2

*Correlations Among Interdependent Self-Construal and MovieLens Behavioral Indicators in Study 1*

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Interdependent											
2. Logins	-.002										
3. Ratings	.046	.625***									
4. Movie Edits	-.183*	.305***	.168*								
5. Tags	-.169*	.354***	.314***	.197**							
6. Tag Votes	-.149^	.288***	.336***	.098	.600***						
7. Avatar	-.147^	.144*	.181**	.046	.228**	.314***					
8. Shares Ratings	-.045	.030	.017	.019	.032	.133*	.101				
9. Q&A	-.271**	.427***	.344***	.360***	.384***	.450***	.192**	.033			
10. Buddies	-.211*	.261***	.254***	.134*	.157*	.152*	.260***	-.006	.231***		
11. Volunteer	-.052	.236***	.149*	.296***	.426***	.289***	.154*	.064	.297***	.164*	
12. Profile Edits	-.165*	.172*	.189**	.206**	.191**	.351***	.261***	.079	.308***	.224**	.414***

*Note.* Interdependent = interdependent self-construal; Logins = number of logins; Ratings = number of ratings; Movie Edits = whether or not users edited movie descriptions; Tags = number of tags applied to movies; Tab Votes = number of votes on the quality of others' tags; Avatar = whether or not users had an avatar; Shares Ratings = whether or not users shared their ratings; Q&A = number of visits to the question and answer forum; Buddies = whether or not users added other users as "buddies"; Volunteer Center = whether or not users visited the volunteer center; Profile Edits = whether or not users edited their profiles. For correlations between interdependent self-construal and behaviors,  $n = 148$ . For correlations between behaviors,  $n = 224$ .

^ $p < .10$  \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 3

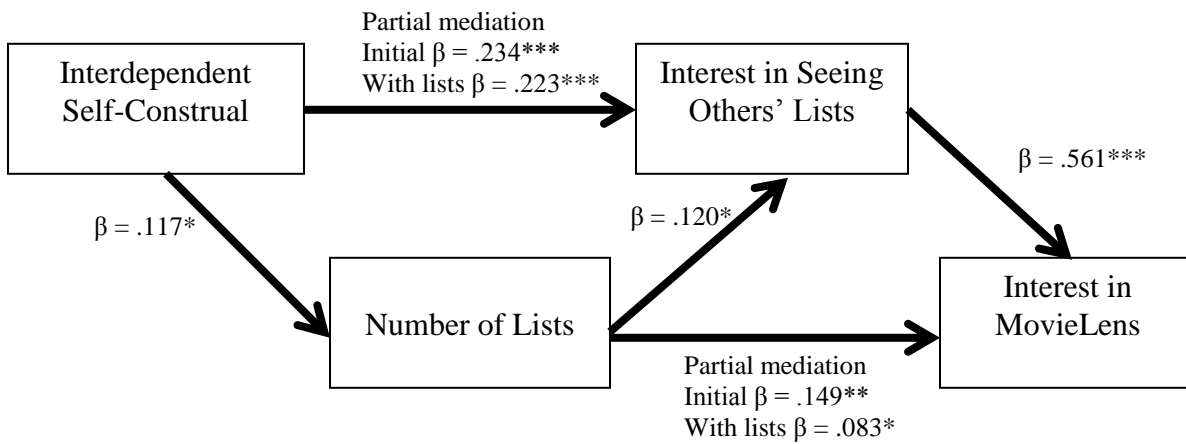
*Correlations Among Study 2 Variables*

Variable	1	2	3
1. Interdependent Self-construal			
2. Number of Lists Created	.117*		
3. Motivation to See Others' Lists	.234***	.120**	
4. Interest in Using a Site Like MovieLens	.205***	.149**	.561***

*Note.* For correlations with interdependent self-construal,  $n = 409$ . For all other correlations,  $n = 414$ .

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Figure 1

*Specified Model*

Model Fit:  $\chi^2 = 2.82$ ,  $p = .092$ , CFI = .99, and RMSEA = .07

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$